







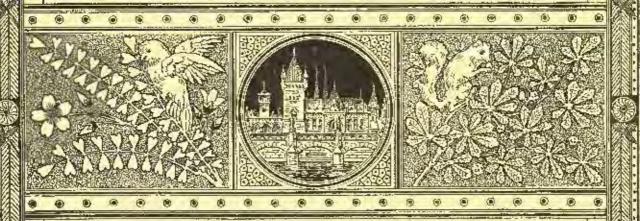


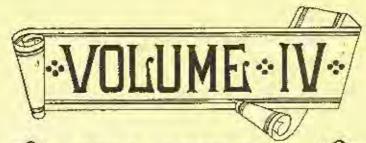


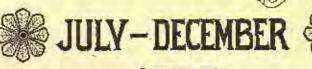




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INDEX TO VOLUME IV.

JULY-DECEMBER, 1878.

Abbey, Biscoveries at Newsatte, 96
Sc. Albania, Restruction of Roof, 508
Academy of Design. Architecture as the
Chicago, 124
Accident:

Beach Sand causes the Fell of a Fiour. No Blowing open a Water Mein to New York,

Roller Rapiosica on the Adelphi, 121 Coroner's Verdiet in the Mott 3t, Acel-Roller naporely Verdet in the mandent, 2
Coroner's Verdet in the mandent, 2
Elevator Archient at Chicago, 22
Elevator Archient, 12

a Blower on E84 St. New York, 95

a Blower on E84 St. New York, 95

a Blower at Wachington, 81

a Flores, 32

n Floris, 32 9 Shup at Cleveland, 134 a Stahin Flore, 160 6 Werehouse Flour at Ekstimore,

a Stand Root, 300

Werehouse Flour at Baltimore, 40

Werehouse Flour at Baltimore, 40

Well at the Hardord Capital, 192

Elevator in Stewart's Store, New York, 130

the 420 Street Tunnel, New York, 1, 25, 184, 184

Mining Accellent in Merada, 51

Old Colony R. B. Accident, 189

Accidents:

From Machinery in France, 104

Belling, 152

Responsibilities for Building, 25

Responsibilities for Building, 25

Responsibility for Elevator Accidents, 184

Scallisis Accidents, 32

Acoustic Colory at Hex, 188

Adoma sed the M. Y. Publishing Department, 544

Supt., 45

Adam and the M. Y. Rubbling Department.
Supt., 45
Address of Mr. Rurry, President R. E. B.
A., 198
Address of President Walter at the Commusion R. L. A., 172
Adelphi. Boiler Explosion on the, 121
Asobal Echose, 123
Elias. Observatory on, 169
Air in San Francher. Pure, 112
Aibon's Nage. St., 173
Albanyr.
Capital. Mr. Hund's Paintings at the,
177
Projection at, 112

117
Protection at, 112
The Scate Capitol at, 67, 112, 196
Alfred's Palece, 280
Algeria, Chinnes Laber to, 96
Algeria, Rallenad in Timbuston, 203
America, Oldest House in, 162
American —

American: — Archeology and, 114

Mith Precedent and without for the form, 138

Awards at Perty, 144

Bottom. Archeology in the, 60
Bricke. Size of, 59
Ingensity, 111
Sculpture to ttaly, 22

Variantitar Architecture, 5
Andean Burblings. Report of the Society for the Francetion of, 37
Anderson on Cheinnach Sawage. Got-, 153
Americals: —

Anderson on Chesianal Sawage, Cot., 153, Anecdota: —, Cainaria Trick, A, 136, Kuta'acte, A Long, 58 Gravestones, What becomes of the, 3 Epitaph. A Caricon, 60 Picture Chesian, The Bangers of, 178 Trecurs aut of Haly. How to Smorgle, 104

San Francisco Undertaker's Tower, A, S7 Steepis-Jack's Feat. A, 41 Tests of Strongth, J84

Amerold Botometers, 205
A new Painting, 276
Appropriations for Posite Buildings, How
Made, 1
Ashorkulture in the United distes, 19

Ayhorkulture in the United states, 13
Archeologies to, Explorers, 12s
Archeology:

And american Architecture, 114
And the Verscoular Architecture, 124
Angles and New Explorations of, 122
Chercary Ures, Curlons, 108
Choiser of One St. Proffs, 128
Cypers, Modisyrd Architecture in, 286
Delphi, Excurating the Temple of, 13d
Equatrian Source found in the Tiber, 116
Indian Mound at Eur. Leasurements, 100

Equipatrian Scattle found to the Tiber, 196
Indian Stound at Fort Leavenworth, 120
In the American Hottom, 80
Lauratrian Relies, 159
King Alfred's Palese, 200
Illacionary Work in Asia and Africa, 138
Mosales at Berlin. Howevers at, 152
Newmorte Aplay. Illacoverins at, 96
Olympia. Discovery at, 152.
Olympia. Discovery at, 152.
Olympian Excevations, 68
Ports Rights at Itself, 151
Respect of the Society for the Protection of Auction Buildings, 31.
Roman Auliquities at Strasburg, 176
Rune. Excevations at, 144
Sochlestons at theses. Dr., 167
State of Valentinianus 1, 156
Transcura of Cyrus. The, 129
Vis Sacca. The, 192
Walbrook. Roman Remains at, 121
Acetes. The Roman Remains at, 121
Acetes. The good Mr. Barry's Address to the R. J. R. A., 183
Arctifect —
And the Chicago Gustom House. The Su-

Architect:
And the Chicago Curtom House. The Su-investing, 109.
Indicted for Frand. The Supervising,

indicted for Frand. The Supervising, 183
Report of the Supervising, 163
Supervision, Suspension of, 193
The Studies of an, 73
Architects — American Institute, Fluncuer of, 291
Architects — Position of Associates, 193, 201
And Sugmeers, 54, 64, 83
And Sugmeers, 54, 64, 83
And Sugmeers, 54, 64, 83
And Sugmeers, 54, 65, 83
And Sugmeers, 54, 65, 83
And Sugmeers, 56, 68
Competitions of, 273
Convention of the american Institute of, 149, 158
For Indiana. Roard of Consulting, 192
Lion on a Building, 81
Position. Difficulties of the Supervising, 63.
Risks, 186, 194

84. Risks, 186, 184
Risks, 186, 184
The Legal Responsibilities of, 180, 104
Architectural:
Copyright, 21
Pipions, 88
Missionary Work, 68
Monographs. New, 182
Profesionaries at College of City of New
Tork, 33
Rafarres, 205
Silvenire, 3

Referent, 205
Sincentre, 5
Sincentre, 5
Styles. Domestic, 4S
spekitecture; —
Asserinsu Versseuler, 5
Archivology and American, 114
At Chicago. Lecture on, 133
At the College of New York, 47
English and French, 153

Architecture:—
Sugh h and French, Seaside, ICG in Cyprus, Medieval, 168, 166 in Fostion, 17 Irish, 88
Of Fouch Expection, 204
Politication, 2
Political Cafficient in 44
WID Processed and without: American, 138

Assay Ciffee, New York, Safety of the, 89, 125

Assay and the Press Exhibition, 200

British Schools of, 152

Licerchange The, 107

Animages and Chinete, 108

Lectures of the New York Seniety of Reconstructor, 522

Schools, 178

The Decay of Italian, 176

Artista, A New Streenth Century, 180

Artista, Longerthy of, 126

Assay Ciffee, New York, Safety of the, 88, 173

This is a Congestive of, 126

Assay Ciffee, New York, Safety of the, 88, 175

This is a Congestive of, 126

Assay Ciffee, New York, Safety of the, 88, 175

This is a Congestive of, 126

Assay Ciffee, New York, Safety of the, 88, 175

This is a Congestive of, 126

Assay Ciffee, New York, Safety of the, 88, 175

This is a Congestive of, 126

Assay Ciffee, New York, Safety of the, 88, 175

This is a Congestive of, 144

Assisi. Mural Painting at 141
Association. The Embeddite Latur, 113
Association. Resease New Explorations in,

As-yrian Cates, The, 215 Affantis Caesa. Bost on, 234 Auggraphie Telegraphy, 128 Awards & the Paris Exhibition, 201

Dartholdl's Status of Liberty, 77 Baths in Lordon. Sea Walet, 68 Bath Tube, 59

Bath Tube, 58
Beverfat.
Cognition in, 200
Hydraule Sain Wining in, 136
Beach Sand course the Wall of a Floor, 90
Reaute, Arts at Furit. L'Ecola des, 119
Brokelt, Sir Edont. dt.
And Mr. Street, 272
And Chaffman ration of St. Attends, 200
Bells of St. Pool in. The, 144
Bennington Mountent. Mr. Meede's Resign for the, 26
Berlia (-26)
Berlia (-26)
Berlia (-26)
Berlia (-26)

Sample of the Assessment of the Control of the Cont

Bolier Explorion : --On the Adaphi, 121
The University, 162
Hollers and White Propes, 178
Rootes, Modero Hinstrated, 1
Rootes, 178 Roston -

Chapter A. J. A. The 190
Chapter A. J. A. The 190
Vice Commissioners Report of lin, 63
Letter from, 57, 142, 148, 148
Mechanic's Exhibition. The, 132, 142, 148, 159
Fothery School at the Art blussum, 162
Berner Tablet. The, 120
Surlivery Condition of Boston Housen, 62
School of Beawing and Cainting, 180
Woman's School for Carring and Model
Ung. The, 122
Boulegon:
A New Histor for, 83

Boulegen:
A New Harlor for, 88
A New Harlor for, 88
Light-houses. The, 734
hourdly, N. Darinud and L. Priz, 88
Row Church, London, 195
Brown a Process for Producing Magnetic
Order, 15
Reichtending by Steam, 62
Reichte. Size of American, 59
Reichte. A Concrete, 62
Leftennia Bridge Rust salem. The, 25,
33

Cubjes: The East Street, 112

Cubies. The East Street, 112
Foundations for, 103
Over the Feith of Forth, 184
Story of an Old, 59
The East Street, 17, 70, 38
Woterino, London, 16
Brighton. The Newers ut, 184
Britanula Bridge. Rusting of the, 35, 28
British:

Art Echools of 122
Workmen at Paris, 18
Driets Architects Defence of Mr. Oodwin, 193

Bronze Statue of Dybutz, 104

Brouze Statue of Dybulz, 104
Brouze Statue of Dybulz, 104
Brouze Hiver Bridge.

Thu, 17
Canter The, 113
Canter

a. Mr. Tallman, 180
luitiday:
Law, 208
Matterial. Into as a, 14
World. The, 38
Buildings:
Smake-stained. Are Lendon, 71
The Rafting of, 183
Buil found at Olymnia. Marble, 162
Built found at Olymnia. Marble, 162
Burners. A Jana, 163
Burnels at Ancient Home, 127
Surrous Grops in California, 30

California Carifornia:—Crop Berning, 89 Frances and Miners, 62, 90, 98 hinting Debels, 62, 90, 98 Carabridge:— Sainte of Concrete Floors at, 174 The Roller Explorent, 172 Carel 1.

Cared :— The Barataria Ship, 184

```
(iana).

Of China. The Grand, 123
The Florida Ship, 123
The Florida Ship, 123
The Inter-Generic, 138
Concl. Factory Explosion. The, 52
Cape Bayton. Grain-draf, 180
Capital:—
As Alleny. The State, 196
Heating the New Fork, 112
The Harthord, 176
Carbone Order shorthed by Living Organ-Jora, 184
Carbone Order shorthed by Living Organ-Jora, 184
Carbone Order shorthed by Living Organ-Jora, 184
Carbone Order Shorthed Baytana, 184
Carbone, 184
Cape Haythen, 183
The New York, 77
The Queen Merceles. Memorial, 38
Carbone, 184
Cape and Merceles. Memorial, 38
Carbone, 184
Cape of Merceles. Memorial, 38
Carbone, 184
Cape of Light on, 184
Cape of Light on, 184
Cape of Light on, 184
Cape of the Memorial, 38
Carbone, 184
Cape of Light on, 184
Cape of the Light on, 184
Cape of th
                                                                               Jollucian of thight on, 18
Quarry le Rusendam, N. Y. Besieging A.
96
                             Chinean St. Louis, Quebec. The, 88
Chicago: — of Insign, 98
Academy of Insign, 98
Arademy of Insign, 98
Chicago: — of Insign, 163, 185, 193
Electure of Academic 183
Lecture on Architecture, 188
Letter from, 110, 124
Suppressing the Typer Stary of the court
House, 146
Thesire Ordinance The New, 183, 187,
143
Wood Pavements in, 116
China —
Electrost-ding on, 188
                   Chinnes—
Hestrarydog on, 188
The Grand Carai of, 123
Sewage in, 85
Chiuses and Japanese Art, 108
Labor in algeria, 91
Send Puse Air. The, 112
Taxing the, 112
Charmey Cowls. Verrinding, 23, 63
Tail of a, 52
Chiennese
    with Dymentic. Destroyleg a, 24

Fiel of a, 52

Chiency, 12

Birst on Guiding, 173

Smoky, 58

Chickers!

Chiency, 18

Chickers!

Charles (Jones in, 34

Letter from, 57

Subcole of Arc, 173

The Schools of Arc, 173

Cheorary Ures. Curlous, 163

Sides:

Sub-off arc, 18, 185

Thoroughta as an Green, 27

Cley Fronto. The Narrowness of, 6)

Cles product. The Narrowness of, 6)

Clessing. The Danjord of Phrone, 170

Cleopatrala Nentin, 39, 172, 185

Ganc of, 30

Ersettin of, 114

The Lasciphton on, 79

Clock Pace. A Luminated, 20

Clock A Usa, 186

Clock. A Usa, 186

Clocker. The Lambach, 30

Clocker of Old Sc. Paul a, London, 128

Cockerell. The Lam Paul, P., 181

Cockerell. The Lam Paul P., 181
Charles of the Ne. Paul 1, Lachton, 129 Cockers in The Last West N. 121 Cohen and the Washington Workingmen, 63
Color's Trick. A, 336
Color's Trick. Beautiful 161
Coloring Ton. Cheminally, 18
Commissioners Found Beaport. The Indisons Commissioners of Coloring Ton. Cheminal 16
Competition:—
A Ordistion of the Patent Office, 105, 108
A Chainers, 183
For the Hilmanipoe Hospital, 150
Cheminal 18, 30
Presidential 18, 30
Presidential 19, 30
Presidential 19, 30
Presidential 19, 30
The Value of a Chance in a, 168
Competitions:—
Architectal, 222
Resolutions of the A, T. A. Insuching, 189
Competitions:—
Beriges, A, 62
Conspects:—
Beriges, A, 62
Conspects:—
Beriges A, 62
Conspects:—
Beriges A, 62
Conspects:—
Beriges A, 62
Conspects:—
Beriges A, 62
French Kall Coloring Health, 190
Ac Stinch. Trades Higher, 112
Present Kall German Warkurenin, 45
Al Patis. Interceptional Health, 90
```

```
Gengressionst: →
Debute, The Tenn of, 1
Investigation of the Luber Question, 53,
81
                                             Investigation of the Lubar Question, SS, 81
Connecticut. The "Sentus of, 60
Construction, Fire-press, 4
Controller for the Indiana State Viruse, 180
Controller for the Indiana State Viruse, 180
Controller for the State Viruse, 180
Controller for the State Viruse, 180
Controller for the State Controller and, 176
Copyrer, Hardesing of, 208
Copyring Process. The Rive, 44
Copyring Process. The Rive, 44
Copyring Process. The Rive, 44
Copyring Process. The Rive, 40
Controller for, 20
Controller for, 20
Controller for, 20
Controller for, 20
Court Fourse, 20
Court Fourse, 20
Court Fourse, 30
Court four
                                             Concurrence. Mr. Cap and the Rockford, 18 is conducted from fer Controlling the Mintisslep Floods, 45.

Cowley Floods, 45.

Cowley Floods, 45.

Commence to Energie, 200

Concrete Floods, 200

Controls Floods, 200

Controls Floods, 200

Controls Floods, 200

Controls of an Architecta Prawings, 113

Control House:

Frants, Mr. Illiand the Chicago, 169

And Mr. Waich. The St. Lands, 31, 146, 186

Capture:
                                             Cyprus:—
Innortered with, Muj. Di Cosnels, Exca-
tations in 185 Muj. Di Cosnels, Exca-
tations in 185 Muj. Di Cosnels, Exca-
Mudicant Archivetops in 133
Cyrus. The Trunsures of, 128
                          Cycus. The Tremsures of, 128

Dangers of Picture Cleaning. The, 176
Enricud and Le Prix Benedia. M., 68
Heimie. The Tone of Congressions!, I
Bergs of Hadina Art, 176
Decorative Art —
At Papils, 97.
Lean Exclinion of the N. Y. Soc. of, 128
Lectures of the N. Y. Soc. of, 122
Decoration:
— Competitions to Interfer, 59, 98
Of St. Funds. The, 168
Declarate Manuals, 16
Declarate Manuals, 17
Declarate Manuals, 17
Declarate Manuals, 18
Declarat
Pric Chicago Academy at, 39

The Rinder Island School of to be opened,

Better A. Simple Bire, 88
Retretorsion of the Paintings, 45
Retretorsion of the Paintings, 45
Retretorsion of the Paintings, 45
Retretorsion and the sing in, 144
Birgh Indians, 84, 160
Birgh Indians, 84, 160
Birgh Indians, 84, 160
Birgh Indians, 84, 160
Bours, Ster Paul's, Recognition of the, 47, 71
Bours, Steries, 167
Brusses Monnarat. The, 36
Rething the Conserous, 256
Rething the Conserous, 256
Rething the Conserous, 256
Rething the Conserous, 256
Rething in French Colleges, 25
Prawings; —
Custody of an Architectus, 115
Mr. Ruskins, 117
Of the Old Sharter, 260
Contensity of the Shineles, 30
Reseles Theory, 7, 175
Reseles Treatre, 175
Burstistor of Pine Shineles, 30
Boren and Regular Existings, 128
Butt of the Paor, 182
Dynatist, 164
Rynamics; —
Postroying a Chimney with, 24
The Edict of, 88
Dynatority Pina for a Natheral Polytechnic School. Dr., 9

Earthquaker, Japanese, 00
For Markey, 181
For Markey, 181
For Markey, 181
For Markey, 182
For Markey, 182
For Markey, 182
For Markey, 183
For Markey, 183
For Ma
Dyrectaring Fine for a Natheral Polytech-
nic School. Dr. 9

Earthquakes. Japanese. (9)

Eart Raver Eridge, The. 17

(ablies. 112.

Kehoge. Acrist, 123.

Echoel. Acrist, 125.

Echoel. Acrist, 125.

Echoel. Acrist, 126.

Art, 88

Medico.—

Lamp. An. 68

Highr. Hid.

In a French Pactory, 8

And Photography 10

Electrotypiag on China, 188

Elevated Resivay:—

The Urant Jury and the New York, 121

Noise of the New York, 7, 112

Opposition to the New York, 7, 112

Opposition to the New York, 7, 126

Elevated Rull way, 174

And Street Archivecture, 15

Electroty Accidents:—

At Cilicago, 83

At Steward's Store, N. Y., 130

Elevator Accidents:—

In New York and Chicago, 154

Responsibility for, 153

Elevator Accidents:—

In New York and Chicago, 154

Responsibility for, 153

Engin Darbles. The Perishing of the, 129

Famire. The N. Y. State Heformatory at, 183

Emigration su Masso, 60
```

```
Inglish :—
And Frough Architecture, 153
Copyright Law, 16
Cest of Production, Fronch and, 128
Education in Art, 89
Education putch and, 190
Vandolom, 162
Water-color Painting. Preach Criticism on, 168
Bonjinering:—
Berateria Ship Casal. The, 104
Bandegne, Acw Harbor for, 88
Bonlogne Light-house. The, 184
Bruckiun Bridge, 11, 70
Canal of China. The Grand, 129
Canal of China. The Grand, 129
Captalla Condol's Plan for Controlling the Missinspip Flouds. 46
Equilibration of Archest. The, 122
Florida Ship Casal. The, 128
Foundation for Bridge, 103
Giralter Tunnel. The, 185
Indexon Rever Tounel. The, 185
Reference Education. The, 186
Rusting of the Bridge Bridge. The, 26
Spholus Steam-healing Scheme, 108, 122
Ratfressis of Feru. The, 85
Rusting of the Bridge Bridge. The, 26
Spholus Steam-healing Scheme, 108, 123
St. Coulard Tounel, 60
Waterlos Bridge, Londow, 11
Willows and Rativoral Embashanett, 136
Editarious Lightheure. Decay of the, 17
Paul Jestice. Report on the, 130
Concrete Bridge. A. 52
And Architect. 54, 62
And Architect. 54, 62
And Architect. 54, 62
And Architect. 54, 62
Editarious Labore, 68
Editarious Themps, 100
Founertain State Found in the Ther, 166
Aquill ration of Architect. 15, 63
Exercial. The, 64
Etchice, 1 June, 69
Received Forestry, 10
Radiologia. The Fart, 170
Regish Furniture at the Paris, 169
Rusting. The Fart, 170
Regish Furniture at the Paris, 169
Rusting at the French, 128
Rusting at the French, 129
Radiolognes at the French, 129
Radiolognes at the French, 129
Radiolognes at th
                                   Morroso at the French, 126
Of the M. Y. Son Decorative Att. Long.
             Of the M. I. Son Developed to 186
Of Turner's Water Colors, 85
Excavat on, The Water-jet in, 80
Excavations, Olympian, 68
Explorers vs. Ayetasologists, 129
Explorion —
On the Adelpid. Botter, 121
The Conductationary, 52
             On the Adelphi. Botter, 121
The Camby Factory, 52
Of Marine Torpedoes. Sympathetic, 172
Replicationers of Floor Dust, 52
Exposition, French, Classe as the Architecture of, 203
Express Co. Petavior to Deliver Competitive Drawings, 155.
          Fans. Youty's Ventilating, 104.
Fatindon's Park, Improvements in, 219
Fatings and Hydraulic Mining. Callborda,
62, 90, 97
Fencion. The Cust of, 8
Fertalizer. Value of Sewage as a, 200
Fever:
Fertilizer. Value of Selesge as a, 200
Fertilizer. Value of Selesge as a, 200
Ferrer:

District and Typhoid, 43
Al Grenuda. Villow, 70
Fifty-third Str. N. V. Fall of House to, 35-
Fitter, 23
Fits Commissioners! Report. The Boston, 62
Fits Detector. A Simple. SS
Fire-place. The Open, 116, 181, 146, 187
Fits proof.

Construction, 4
Danori, 44
Fitour. New, 8
Fire in Chimneys, 152
Fitth of Forth. Bridge over the, 184.
Fisher, Openic of, 216
Fisher, Openic of, 216
Fisher, Openic of, 216
Fisher, Charles of, 216
Fisher of Stathe, 160
New Fire-proof, 6
Fiorre at 4 such bridge. Failure of Courseta, 174
Florere in the Fourteenth Contrary, 186
Florere in the Fourteenth Contrary, 186
Florere in the Canal. The, 128
  174
However in the Fourteenth Contrary, 189
Florida Ship Canal, The, 128
Florid Irint, The Expiral values of, 52
Forestry in Europe. Schools of, 19
Forestry in Europe.
        Forests:—
Duropean, 80
for the Unified Staces, 19
Forty-second Street Tunnel, N. Y. Fall of, 1, 25, 145
Boundation for Bridges, 108
Prante. Archden's from Machinery in, 104
Frankfort on the blain. Bridge st, 58
France.
        Mr. Walsh and the St. Louis Unatum
House, 61
In Paris, Discovery of, 216
Excionis. Natural Cas at, 104
```

```
French, 207
                      French, 207
French, 207
French, 208
Ant Schools, 80
Colleges. Drawing in, 36
Exhibition. Close of the, 170
Magnetic States of the translate at, 186
Covernment Buye Pictures. How the, 175
Minera, 176
Faducting of To-day, 126
Workingment's Congress, 4
Friele. The Tanatherate, 28
Fulcations. States of Robert, 168
Furnitures:
At the Paris Exhibition, Buglisis, 198
Weench, 207
Kotore. The Light of Cov., 164

College of Printeration. Filester at a 146
College of Printeration.
                 Oale at Philadelphia Effects of a, 145
Gallery at Usy. Accounts, 168
Uns. — Clock. A, 138
In Predonia, N. Y. Natural, 104
Decting, 96
Lighthus. Injuries by, 138
Gases, Perliamentary Report on Kozions,
114
Gastilland and Michael and Mariana, 114
         Gares, Parliamentary Report on Korious, 114
Gatolian as a Disinfection, 194
Gatolian as a Disinfection as a disconnection of Mr., 18
General Art Schoole, 18, 18, 194
General Art Schoole, 195
Gient's Grave at Missaya, 24
Gient's Grave at Missaya, 24
Gient's Grave at Missaya, 24
Gient's Grave at Missaya, 25
Gient's Grave at Missaya, 26
Godwin (1971, 18-67), 186
Government Department's Care at 199
Government Department's and the Metric System, 171
Gravite et Sandstone, 19
Grave at Missaya, 29
Grave Oceanenta, 189
Grave
         Hartor:—
The Boologue: A New, 88
Charling Unchee, 88
Charling Unchee, 88
Hagne: Spinoss's House at The, 112
Harmony in Vollow and Gold. Mr. Whistler's, 96
tage and :—
            Harmony in Yellow and Geld. Molerle, 36
Barkford:—
Capital. The, 174

Assident at the, 192
Letter from, 56, 174
Cephon Anglian, 174
Trinity College, 112
Water Supply of, 200
Harden. Cathedral at Cape, 180
Heath: —
Congress at Paris, 100
                 Heard): —
Compress at Paris, 80
Report of the Mass. Heard of, 98
Reated from Their of, 60
Reated from Thribal Illusion Caused by,
         120
Resting:—
Cas. 95
The New York Caphol, 112
Reforded or, Roman Remains ac, 191
Herculaneous and Prompel, 52
Rever.—Pernsylvania's, 50, 168
Rowti's Congressional Labor Committee, 66, 81
Rill, Mr.:—
And the Chicago Custom House, 189
Ludicted for Frauds, 185
Euperwising Architect, auspended, 133
Hittas:
         times;—
On Boilding Chimneys, 173
Flumbing, 176
Hollrock, Mass., Church Competition. The,
              (6) Horton House at Southeld, 102
         Hornoria, Minnie, 38

Inamoria, Minnie, 38

Inventions, 162

Fompolan Sentinel, 68

Hotelde Ville, Pads, 88

Het Water System, 176
  Het Water System, 178
House: —
In America. Oldest, 152
Plans for Brerybody, 101
To America. Oldest, 152
Plans for Brerybody, 101
Discess in Paris. Numbering, 186
Hudden River Tunont. The, 55, 38
Hudt, Mr.: —
Decoration of N. Y. State (Japito), 198
Paristings of the Albany Capitol, 177
Hydraulic: —
Discing California Facunce and, 62, 90
Sale Mining in Barunce, 136
Hiladet—
Board of Fredth. The, 88
Industrial University. Catalogue of, 82
Sixte liquide Commissioners. Extrave—
gaze of the, 19
The Lapitol, 217
Huminorist Choice, 80
Hustrand Books. Modern, 175
Immograte, Blished Angeld, 169
Inchellide. Making Petrill Matks, 152
Indian Mound at Fact Losreaworth
Indiana.—
Board of Consulting Architects, 192
Hospital for the Insace, 7
```

```
indiana:

State House Commissioners' Fourth Report, 37

1 Ontrance, 101

1 Suits. The, 137

Indicted for Frauda in the Chicago Custom House. Mr. If ill and others, 136

Industrial teplerative. Measter Buildar's Chirago Custom House. Mr. If ill and others, 136

Industrial teplerative. Measter Buildar's Chirago Custom House. Mr. If ill and others in the Indian's Chirago Custom Chapters's Needle. The, 78 Inscription on Chapters's Needle. The, 78 Inscription of Plumbing for Baltiniore, 178

Institute:

Convention, 169, 178

Institute of Technology galos a Medal at Farle, 22

Frinting the Frederedings of the, 129
Instruction of Architects at Paris, 30

Interestional:

Congress of Architects at Paris, 30

Interestional:

Congress of Architects at Paris, 30

Inter-Decardo Canal, 128

Inter-Decardo Canal, 128

Inter-Decardo Canal, 128

Architecture, 68

Monument. An, 67

Iron:

Are Hothding Material, 14
   Monument. An, 67
Iron:—
As a Building Material, 14
Free in Nature, 216
Brum Birs. Protecting, 28
Option! Blusion caused by Rested, 120
Spiegal, 144
The Others Speciment, 176
Window Sashes, 112
Italian Art. The Decay of, 176
Italy:—
Color Recreation in, 22
Cremation in, 20
Septiches Monuments of, 192
Ithree, Dr. Schliebenny's Recoveries at, 128, 144, 147
A29, 149, 161
Japanese and Chlurde Atf, 168
Jatha of Dyfnotz, 184
Jarras's Remarks on the Branington, 7t.,
Monument, 25
JaBersoh. Honoment to Thuman, 80
Jerusy City:
Comodery Ahunea, 80
Jerushem. Temple of thered at, 117
Jatha Churden, 180
Jarry, Grand, and the N. V. Elevated Railsway, 121
Jarry, Grand, and the N. V. Elevated Railsway, 121
          Kamehameha Statue of, 188
Kastoey coming East, 37
Kastoey electruity, 120
Kiel: --
Statue at, 152
Statue of or the University of, 10
Kuez Statuerist, 112
       Laber: —
Association. The Entitled, 113
Consolities. AIV. Warker's Tostimony be-
fore the Congressional, 97
Question. Unspressional inventigation of
the, 53, 94, 97
Setting Machines. Assemble on, 16
Statistica. Alassachneetic Euromost, 81.
The Stane Culture and Convict, 179
Trobles, 210
Teother, 210
Teo
       Iskes- Pepth of, 152

Lamp: —
An Electric, 68
A Submarlie, 60
Isand. Chasp. 15
Isan Rulwark, 152
Isan Rulwark, 154
Rands. Durakiliky of, 16
Isangawarth, Indian Mound at Fort, 186
Isan Rulwark, 154
And the Reset of Works. Mr., 104
Albertment. The Filling around due, 164
Icant: —
       Albumeson.

Legal:
Architect's Lica on a Building, 81
Rinks, 188, 188
Case before a South Carolina Court, 194
Custody of an Architect's Drawings. The,
                                   Its English Copyright Law, 19
English Copyright Law, 19
Engress Company delaying to deliver Compelitive Drawings, 163
Gay, Mr., and Rockford Court House Completitive Drawings, 163
Indiana State House Suita. Tha, 187
Lew 22. The Board of Works. Mr., 194
Ownorthin of Drawings. The, 191
Responsibilities of Architecta. 189, 184
Tallman state the Building Department. Mr., 184, 189
Technoont. What is a, 88
Yabre of a Chabberiu a Compaction. Tho, 183
Yerdict on Wall of Elevator at Grand
       Yang of Duagestu a Companyon. Trop. 153

Verdict on Kall of Elevator at Grand Hotel, Paris, 25

Verdict on the Path of 42d St. Tumonf, New York, 18

Whistler etc. Ruskin, 180, 194

Laighaon, Mr., elected Provident of the R. A., 150

Leonardo da Vinci. Drawlugs of, 200

Letter:

From Buston, 51

From Chicago, 124

Voor Haytford, 66, 174

From London, 85, 101, 123, 148, 158
```

```
Letter: — From New York, 10, 82, 77, 148
Prom Parls, 32, 135, 267
Prom Renan, 22
From St. John, 111, 184
Prom St. Louis, 161
Liberty: Barthofd's Statue of, 77
Lichen, or Sciotte stalu, 71
Lien on a Building: Architect's, 81
Light: Recrite. The 184
     hien on a Badding. Acchitect's, $1
Light:

Flectric. The, 184
Of the Future, 184
Of chement. Indicates of, 16
Lighthenia:

Editytour. Deeps of fire, 47
Brom an Interfor Light. Haking a First-class, 183
Lighthoness. The Boulegos, 184
Lighthoness. Nagel, 68
Lighthonescope Parameter, 35
Libertool. District at the Colonsom Theater, 139
Loss Exhibition of the New York Seciety.
   Liverpool.

Acc. 131

Losa Exhibition of the New York Scelecy.
Decoration Art, 126, 181

London J.

Helley. The Old, 129

Bow Church, 135

Burges's House. Mr., 118

Church of All Saines. Who shall papely stee, 85

Cleopatra's Newle, 38, 158

"Final Regardin of, 114

Longon in Landon and Paris, 112
                    Cleonptra's Needle, 38, 153

"Final Resettion of, 114
Henroe in Lendon and Paris, 112
Last Courts, The New, 158
Letter from, 55, 107, 123, 149, 158
bit. Leighton and the Royal Academy, 170
Natural History Museum. The, 123
Opaca House, The National, 244
Outfoll Sewate. The, 181
Queen Ann Work, 188
Roman Kemstos, Dimeovary of, 106
5t. Paulia, Cluster of Oid, 223

"Denoration of, 164

Beconstitute of the Bonne of, 175
The Balla of, 144
Seasonter Bathe in, 38
Senanty Appearance of hondon Buildings, 175

Seasonter Bathe in, 38
Senanty Appearance of hondon Buildings, 175

Seasonter Bathe in, 38
Senanty Appearance of hondon Buildings, 175

Seasonter Bathe in, 38
Senanty Appearance of hondon Buildings, 175
         Strike of the Poline. Theoremed, 88 Waterloo Reiden, 16 Longerior of Artists, 128 Joneson, Vandale in the, 152 Laminous Chek Fisc. A, 81 Lynchharg, Va. Paule in a Church, 244
       Machinery in Prance. Amidents from 104
Magnetic: —
Motor. Miss Resnier's, 182
foxide, 18
           Malega (flauf's Grave et, 21
Manuscole Cerc et Giorgow, Ky., 7, 26
       Managod Charles Grangaw, Ky., 7, 26
Managod Care at Grangaw, Ky., 7, 26
Maccharter:

Architects. Mr. Wargrhause's Address to, 97
Jember Stitle. The, 58
Tawa Rall, 50
Markle. Priviling of the Elgin, 228
Macua, Cornect C. The Old Police etteral, 213
Macua, Cornect C. The Old Police etteral, 213
Macua Cornect C. The Old Police etteral, 213
         Mercachilects Europa of Labor Statistics,
       91
Moster Builders, Course at Illinois Indos-
trial University, S2
Medic's Besign for the Bounlagton Monu-
nyont, Mr. 25
Mechanic's Exhibition, Boston. The, 132,
142, 143, 153
Medial to the Institute of Tachnulugy, S2
Menicial
       Mestal to the Indiffute of Tuchnutury, %2
Mestacini —
Institute, The Knox, 112
The Sir Officer Scatt, 2, 52
Merratur. Monoment of, 162
Merratur. Monoment of, 162
Merratus. Methodial Cathedraf to Quasu, 96
Metric System —
Adopted by the International Congress on
Weights sid Coine, 95
And the Government Departments, TI
Medelet's Torch, 3
Misan. International Exhibition in, 28
Misan. International Exhibition in, 28
Misan International Competition, 160
Mines Tip, 93
Mines. Tip, 93
Mines. Tip, 93
Minings —
         Mines. Tip, 85
Mining:—
California Farmers and Hydraulic, 62,90,
California Farmers and Hydranice, 6
43
10 Bararia. Hydraniin Yait, 126
Milesionary Work. Architectural, 68
Milesionary Work. Architectural, 68
Milesionary Hon. 45
Jetins. The, 130
Modern: =
Hustrated Books, 175
Plumbing, 19, 58, 73, 90, 140, 178
Monastery. A Trapplet, 89
Monographs. New Architectural, 102
Monracks, 30
Monumend: —
An Inth. 126
       Monuments:—
An Inich, 67
Climbing Washington, 44
Climbing Washington, 44
Climbing Washington, 54
Climbing Washington, 54
The Bennington, 8nd Mr. Jurree, 26
The Bennington, 25, 54, 120, 161, 201
To Mercabe, 132
To M. Henri Begennile, 21
Ya Thannia Jefferson, 80
To Victor Emanuel, 3
Moran, Mr. Thomas, Discovery of a new Induling by Turnor, 209
Morane at the Franch Embiddion, 128
Moran, A Curious Placard at, 60
Moran, Block, 95, 120
```

```
Micebius at Berlin. Revenues, 102
Motor: Miss Hounet's Magnetic, 162
Moto Street Accident. Coroner's Verdict on the, 2
Moto Street Accident. Coroner's Verdict on the, 2
Mounda. Itelswisse, 18
Mothenhurg. Status of Gen. Poter, 168
Moundae. New Theory regarding, 5
Mondel Ambithe Brocklyn Jall Plans. Mr., 3
Moral Painting at Avalet, 141
Moseum, London. The Natural History, 128
Myong yr. Lodinas State House, 6
        hipers pr. Judiane State House Commis-
aton, 187
    Sarto surs of City Fronts. The, 51
have of St. Alban's. The, 108
Nordis. Cleopatra's, 38
Nordis. Dining Arnident in, 51
Nowbatth Abbey. Discoveries at, 96
New Redword. Church et, 98
New Redword. Church et, 98
New Redword. St. Sarto et al. 108
New Arban's —
Fifth, 181
Yallow Pever in, 129
New York:
Architecture at the College of New York,
17
Areay Office. Safety of the, 60, 77
                      17
Assaciation for improving the Condition
of the Poor. Report of, 177
Blowing open a Water-main, 28
Building Department. Investigation of
                    Busiquer Personal Inc. 18, 45
Candy Fortney Explosion. The, 52
Cathedral Vork at the, 75
Chapter A. I. A. The New York, 127
Convention A. I. A. Annual, 149, 153
Coronors Vertici on the Moti Street Ac-
                      cidest, 2
Rierated Rollway. And Street Architect-
                    Wester Accident at Steward's Store,
                  Rievator Accident at Steward's Score, 180
Fall of a Bolloing, 125
Roll of a Rolloing, 125
Rolloing the Rolloing of the Society of Percentive Art, 236, 181
Pascenette, 190
Reformatory at Rimits, 188
Society of Decorative Art's Lectures. The, 182
Spinola's Steam heating Puberna, 26, 246
Rolloing Steam heating Puberna, 26, 246
Rolloing Steam heating Puberna, 26, 246
                      Spinola's Steam beating 2: bame, 25, 54,
      Stram-heating Scheme. Mapor Elly re-
toes 154
State Capitol, 153
State House. Reating the, 142
Mr. Hunt'v Paintings at
Mr. Tompkine Square, 128
Tenucles in the Strawts, 128
Tenucles in the Park of the
Missare Lalis. Madive Parks of the
Mr. Proposed International Parks, 129
Netlen SS
Musical Asticks on St. Musy of the Flower,
139
Notion's Asticks on St. Musy of the Flower,
                      Steam-heating Scheme. Mapor Ely ro-
        Norton's Arthree on St. Hary of the Flower,
      188
Natro Imme, Paxia. Loss of the Weather-
cock of, 1/2
Naxtons theses. Perlamentary Report on,
Numbering Hones in Paris, 190

Doublek. Caste of the English, 80
Exection of the, 112
The Inscription on the, 79
Wiod Pressure and the, 226
Ohitmary:—
Death of Sie Francis Grant, 146, 157, 168
Mr. Fred P. Cockerell, 131
Mr. Bieland Upjohn, 61, 82
Ohervatory on Mount Fina, 180
Oll Paintings. Detected of 65
Old Bathey. The, 120
Old Colony R. R. Accident, 130
Old Masture. Drawings of, 210
Olympton Fixearstions, 62
Open Fire-Fixec. The, 116, 131, 145, 187
Open-House. The London, 44
Optical Hinghon, caused by Heated Fron, 120
Ordinaire. The Chicago Theater, 183, 137
Organization. Architect and, 151
Ordersonite. Grack, 138
Ortall. Sinking of Earth at, 144
Outliese, Fixearstip, 188
Ownership of Brawings. The, 120, 135, 191
Orde. Mr. Bowers' Process for producing Magnetic, 18.
Paint. Blackboard, 90
        Numbering Houses in Paris, 190
                                                            Blackboard, 90
      Painting: — Painting: — At Assiel. Mural, 141
Of Today. French, 125
      Of Tooday, French, 193
Frintings;

At the Atheny Capital, Mr. Bunt's, 177
Deterioration of 00, 55
Paints and Wall Papers, Poisopous, 192
Palent. Ling Affect's, 209
Palentines, Architecture, 2
Palent
```

```
Fanle:—
At Strelue, 184
Pagice, 184
Pagice, 184
Panthoon at Rome Scoded, The, 200
Raper, Various Uses of, 184
Paris:—
American Assarda, The, 184
Paris: —

American Assarda, The, 144

Art Awarda at the Extitibition, The, 200
British Worthise may see at Paris.

What, 18.

Discovery of a Tower, 216

Maghish Familiars at the Exhibition, 198
Bribibition. Close of the, 170
Fapates in the Street of the Nations, 65
Oubellus Tabestry at the Exhibition, 36
Hiber of Vibe. The, 38
Houses in Lendon and, 142
International Congress of Architects, 68

"Hearith Congress of Architects, 68

"Hearith Congress of Architects, 68

"Hearith Congress, 20
L'Ecole due Regustrate, 119
Leater Chou, 67, 65, 165
Morocco at the Exhibition, 128
Numbering Mouses, 160
Pathon of the Trocaders. The, 32
Ecower System of The, 41, 615
Society of Decomition and, 37
Tour Jass sons fever, 69
Verlist on Ball of Elevator at Grand
Heart, 25
Weathernook of Notre Dame. Leas of
the, 192
Weathernook of Notre Dame. Leas of
the, 192
Weathernook of Notre Dame. Leas of
the, 192
Patent Office Competition:—

A Criticism of the, 61, 105, 198
Repart on the, 75
The, 2, 17, 53, 61
Patents for 1877-8, 100
Pavament. Limestant, 35
Pavamants:—

In Unitage. Wood, 110
In New York, 123
Parton Marks Indulible. Making, 182
Parton Marks Indulible. Making, 182
Parton Marks Indulible. Making, 182
Parton Marks Indulible. Making, 183
Proposal Elevated Bailway, 24,
Peaceck Rall. Deith. The, 100
Pomeil Marks Indulible. Making, 183
Proposal Elevated Bailway in, 175
Stephell Glevel's Will Konoring Wooden
Buildings, 70
Photography and the Electric Light, 16
Piazza. Full of a, 52
Pictore Cleaning. The Dangers of, 176
Pieture:—

How the Franch Governoused buys, 175
Mr. Laffaggon, 187
The Nomentations of No. Whistier's, 103
Pina Shingles. Durability of, 31
Pinates of Parts, 166
Planing.—

For Ballianos, 108, 73, 90, 140, 178
Prisanosa Parton of Propension of 1 said, 144
Pelsonous Rallots and Wall Papers, 182
Polar Ballots. A, 152
Polar Ballon. A, 152
Paigen. Threatened Striky of the London, 88
        Politics in the Department of Archibect-
      Purifics to the Department of Architecture, 8
Polytechnic School. Pian for a National, 9
Pumpeisa Phys. Bill. A Mudern, 68
Pumpeisa Switnet. Tha, 68
Pumpeis and Herculausum, 52
      Poor: —
Dwellings of the, 103
Report of the N. Y. Association for improving the Condition of the Poor, 171
Ports Nigra at Trevon, 184
Potter, Mr., Indiceed for Franci, 185
Puttery School at the Boston Act Museum, 180
Particles. The Report, 96
      182
Prayletos. The Erus of, 96
Premisons in Competition, 10
Preserving Thebet, 112
Princers Alto Dissets and the London Securit, 101
Princip the Proceedings of the Institute, 160
      150
Prize Mars, 8
Priz Bardin. Le, 68
Prize affered to Workmen, 122
Proceedings of the Institute. Printing the,
198
      Programmes. Competition, 105
Protection of Ancient Buildings. Report of
        the Society for the 37
Providence City Hall. Decoration of 43
        Hulldings. Appropriations for, 1
Works in Indiana, 192
Furn Air, 112
Pyronomes. A Quesdon in, 16
     Quarry in Hospidale, N. Y. Besleging a
Common, SS
Queen Anna Work in London, 148
Quates Harbor, Charley, SS
Quebec Improvements. The, SS
      Radiator. Steam as a Reflector and, 134
Railroad:
Across Schara, 200
Iron. Manufacture of, 129
Of Pern. The, 25
Strike. Non-falliment of the, 27
Up Sesector, 121
Railroad.
     Reliws; Lie Elevated, 112
Note of the Elevated, 112
Opposition to the N. Y. Elevated, 106
Parion's Elevated, 24
Reliwsy: Safety of, 182
```

vi Rassant's Explorations in Accyrin, 198 Lating of Buildings. The, 128 Rassances Mondos as Beelin, 122 References, Accidences, 288 Regnardi. Mediument in M. Henri, 21 Rejour's Housinated Clock, 91 Report: -Of the Reston Fire Completiment, 62 "School of Drawing a Rejourn's IRominated Clock, 9)
Rejourn's IRominated Clock, 9)
Rejourn's Ashool of Drawing and Ydnating, 130
Of the N. Y. Association for Improving the Condition of the Pour. 197
Of the Supervising Architect, 189, 177
Of the Supervising Architect, 189, 177
Of the Supervising Architect, 189, 177
On Noxions Goods. Parliamentary, 114
On the Palent Office Congellition, 16
Representation. Transform without, 123
Reservoirs. Kerwence, 120
Responsibilities of Architecto. The Legal, 180, 184
Reponsibility for Unifoling Diameters, 26
Resourceton:—Movement, 186
Resourceton:—Movement, 186
Of Sc. Albana, 26
The Window Tox and, 88
Of Sc. Albana, 26
Rester Contenne. The, 103
Review To the North Content of Reserving Contenne. The, 103
Review:—Resource of Contenne. 188
Hunse Plant for Everyholy, 101
Ninth Report of the Mars. Report of Meatth, 63
The Resource of Contenne. 189
Riode Plant:—Republic of Resource of Contenne. 189
Riode Plant:—Republic of Resource of Contenne. 189
Riode Plant:—Republic of Resource of Contenne. 199
Republic of Resource of Resource of Contenne. 199
Remains of Reinfelberg, 181
Remains of Reinfelberg, 182
Remains of Reinfelberg, 183
Remains of Reinfelberg, 183
Remains of Reinfelberg, 183
Remains of Reinfelberg, 184
Remains of Reinfelberg, 185
Remains of Reinfelberg, 186
Remains of Remaios at Reidelberg, 191
Rouse:
Ruriele at Annient, 127
Portaining the Collection, 218
Equestrian Status found in the Tiber, 108
Exposurean Status found in the Tiber, 108
Exposurean Status found in the Tiber, 108
Exconstinus et, 131
Hooding of the Panthenn, 259
Letter train, 23
Mr. Struct's American Episoopal Church, 124
Southe of Visioninianus I. Discovery of the, 136
Vis Sacra. Uncovering the, 112
Roofs. Durabitary of Lead, 16
Rosendale Usenest Querry. Beserging a, 86
Royal Academy. Mr. Leighton Elected
President of the, 170
Royal Inst. of Berken Architects. Mr. Earry's Address, 103
Rosenin:
On Colum. Mr., 97
xs. Walntier, 196, 198
Ruskin's Pravings. Mr., 107
On Colum. Mr., 97
young of Turner, 56
Epidand Prof. Eart's Pricess. 1ron, 38
Safety of Hallways, 152

Rold and Prof. Bartin Process. 1ron, 38

Zafety of Kajiwaye, 152
Sahara, Kaliwaye, 152
Sahara, Kaliwaye, 152
Sate Miss in New York, 8

"Hecology of, 216
Sate Miss in New York, 8

"Moing to Breache, 11/2 Intronge, 128
Sand-stone as Gearthy, 50
San Fraumero Undertuder'n Tower. A, 67
Sandarfone as Gearthy, 50
San Fraumero Undertuder'n Tower. A, 67
Sandary :—
Haltimore Wells, Condition of, 70
Haston Houses. Sandary Condition of, 58
S. 52
Cement from Sewage, Making, 7
Cesspool Ventiparion, 102
Dain Breath and Teconomisms, 104
Drain's and Typholit Fever, 43
English National Water Supply, 13
Hartford Water Stuply. The, 200
Handah Outfull Seweye, The, 161
Modern Plandall Seweye, The, 161
Modern Plandalls

International Health Congress by You 20 January Outfall Servers. The, 101 Modern Plumbing, 10, 88, 73, 80, 140 Plumbing Highs, 10, 88, 73, 80, 140 Plumbing Highs, 105 Pure Air In San Francisco, 112 Sanitagy Bearer, "The, 180 Servinge In China, 88 "The 180 Servinge In China, 88 "The 180 Serving of Charleton, 153, 153 Serving of Brighton The, 150 Serving Serving of Brighton, The, 150 Serving Servi

Schiebeher's Public Beilding Fill. Mr., 1 Schliebenun at Ithana. Dr., 128, 141, 187 School: — Ar the Engtan Art Nessum. The Pottery, 142. Fulfilation and Houllog of, 5
Yor Carriag and Modelling. The Wensen's, 132
Of Hedge to be opened. The Rhode Island, 83
Of Drawing and Paletting, Region, 130
Plan for a Newtonal Polymobule, 0 Fina for a Schoolse. Schoolse.

iff Art. Evillels, 129

Gractinas 6, 152

Of Foresky in Europe, 19
Sent Momorful. The Sir Officert, 2, 62
Sent Momorful. The Sir Officert, 2, 62
Sentings Architecture. English and Frencis, 186 160
Secumeter Station in London, 68
Sepulaheal Manamente in Italy, 192
Secure: —
An a Ferrilizer, 200 As a Ferritire, 200
To Chron, 35
To Chron, 35
Making Cement from, 7
Of Cinchmark, 163
System of Freis, The, 41, 59
Senon Yenglishlou, Questionalin, 79
Sewenten of Washington, 216
Sevent:—
And Breise, Yenthetion of, 16
As Brighton, The, 14t
The Friocess Alice and the London, 161
Shingles, Furnishloy of Pine, 36
Shingles, Furnishloy of Pine, 36
Shingles, 160
Factor, 186
Shop, 140
Shop, 140 Northead the Paulin, 1885, 189 Slop, 180 Slop, 180 Slop of American Bricks, 59 Slop Sinks, 140 Smile. Are Lendon Buildings attitled by, 22 71 71 Southy Chienneys, 58 Sortalaus, The Caselansti Typographical Culeu and, 1 South Carelina Court, Cost hafore s, 188 South Carrollia Court. Case hafore a, 198
Spicos I storn, 144
Spicos Streem Beating Scheme, 105, 129
Spiriosa's House at the Bague, 112
Spiriosa's House at the Bague, 112
St. Albun's Nave, 103
St. Gothard Tunnel, 60
Goulrac': far the, 144
St. John. Latter Iron, 111, 134
Tribute Cherch, 42
Sc. Longs:
Ambiliation Description of Landauery Landauery A robite trail Drughtsmen's Association 14

Custom House fovertigation. The, 61, 145, 195
Letter from, 101
St. Fouth. The Bells of, 141
The Decerman of, 45, 11, 164
Stable Floor. Pall of 4, 160
diate House:
At Athony. The, 37, 196
Commissioner's Knorth Report. The Indians, 37
Customets. The Indians, 161
fisheds State House Commissioners. The, 18
Suits. The Indians, 137
Statur.
House, 120
Found in the Tiber. Equestrian, 109
Genius of Connecticut. The, 96
Of these Fater Nublemberg, 168
Of Kateriansha, 193
Of Heberty. Barcholdis, 77
Of Beheet Indian, 283
Con Valentinoma, 138
For the Hariford Capitol, 68
For the University of Edel, 16

Arabite tural Drughtemen's Association

Pempetan dention! The, 68
Starmes:—
For the Hartford Captrol, 68
For the University of Riel, 16
Starm:—
As a Sedector and Radiator of Light, 184
Sollers:—
As a Sedector and Radiator of Light, 184
Sollers:—
The Explosion of, 162
Stream Starting:—
And in Effect on Trace, 54
In Betroit, 184
In New York varced by the Mapne, 151
Solume for New York. Standlers, 26, 105, 168
Stress Frome. 8
Steet in Ships, 276
Steeple-Lack in Next. A, 44
Stone Atliabal, 120
Stone-Outlers and Couviel Labor. The, 176
Story of an Old Eridge, 58
Stress of an Old Eridge, 58

Street: — Filling in New Orleans, 181
Sprinkling, 86
Street, Mr., and Sir Edmund Beckett, 202
Street. — Trenches in New York, 138

Strongth. Tours of, 184

Strike:

Or Cardyiven in New York, 210

Of the Louden Police. Threshood, 83

Non-fulfilment of the Railroid, 37.

The Jessey City, 80

Manchester Joiners', 68

"Manchester Joiners", 68
Studies: —
Art. 159
Of an Architect. The, 70
Storges. Bussell, Professor of Architecture
at the College of New York, 17, 88
Submarine Lamp. A, 90
Sohnermann, Work as Welback, \$4
Submarine In Clier, 105
Subplicit of Carbon and Chimney Fires.
162
Somewhich Architect: —

Supervising Archivet; — And the chicago Custom-house, 189.
And the chicago Custom-house, 189.
Indicted for Brand, 185.
Report of the, 169, 177.
Supposition of, 198.
Supervising Architect's Position. Difficulties of the, 82.
durven, National, Report of the Committee of the 82.
durven, National, Report of the Committee on, 214.
Suspecsion of Mr. Hill Irom Office, 189.
Suite Tamoul. —
Effect of the, 88.
The, 8, 16, 24.

The, 3, 16, 24
Tabler, The Revere, 129
Tabler, The Revere, 129
Tablem, Mc., and the Building Department, 134, 100
Tapenry at the Park Exhibition. Gobelius, 23
The or the Chicase. Impart, 112
Taxation without Representation, 788
Tackation. Dec, 122
Tackation. Dec, 122
Tackation of the Institute of, 22
Takation without Series in the Architectural Sandents of the Institute of, 22
Takation. December of the 104
Takation. Invarion of the, 104
Tample:

At Asposatoin, 117
Of Delphi. Excurating the, 168
Teleguach:
Decorbion of, 36

Tenemone :—
Defrottion of, 96
House, Competition Ins., 208

in New York, 178
Tenesdraid Balance, A, 144
Tenen for Layrines, Water, 7
The University of Works, 161
Phoaster:
Diameter: The Colement, 180
University of The University, 161
Ordinance: The New Chicago, 183, 181, 142

Ordinance. The New Chicago, 123, 137, 142.
Theatrex. Eines in 35.
Theological Institute. The Connecticut, 46.
Theological Institute. The Connecticut, 46.
Theorogaphuse in Orvat Cities, 27.
Ther. Equestrian States found in the, 104.
Touris (London) on Mr. Barry's Address, The, 185.
Touris (London) on Mr. Barry's Address, The, 185.
Touris (London) and Mr. Barry's Address, The, 185.
Touris (London) and the Via Naglocale, Prince, 85.
Touris (London) and the Via Naglocale, Prince, 85.
Tourison's Palace and the Via Naglocale, Prince, 85.
Tourison's Palace and the Via Naglocale, Trince, 85.
Tourison's Palace and Theory of Allo.
Town Itali. Macchester, 20.
Treade, Union Congress at Bristol, 118.
Treappar Michaelery, 39.
Trees:

Trees: Affected by Stanus Heating, 54 Affected by Stanus Heating, 54 Of the Guana Eucalyptus, 184 Planting, 188 Tracetes in New York Streets, 128 Trees: (Trees) The Porta Migra at Trickity: Character 128

Triesty: — The Porth Niges at, 136 Church, St. John, N. R. 42 College, Bartford, 112 Trocaders, Parin. The Pulace of the, 32 Tunnel:

Unnet: —
Contract for the St. Gethard, 144.
Effect of the Sintro, So.
Rew Voyk.
Eult of the Ferty-second
Street, 1, 25, 145
Second Rail of the Fortyrecord Street, 183
Verdiet on Fall of the
Procy-second Street, 18
The Gibraltar, 186

The Cibraltar, 185

The Cibraltar, 185

Italiam River, 85, 88

St. Gottani, 60

Sotro, 3, 16, 24

Tomosting. Accurate, 176

Theory.

Torsor: — Ance Pales, 239

Etchings, 150

Water Colore Exhibited, 85

Varpentine as a Decidents, 104

Typical Ferer. Drains and, 48 Typographical Union and Socialism. The Cincinnati, 1

Cenation Steel Brones Come, 5 Underground Telegraph Wires, 144 United States. Achorisaltons in the, 19 United States. Beath of Richard, 81, 32

Valentinians I. States of, 138
Yalus of Architectural Deskings, 152
Yangakim. English, 152
Yarabbing. Hists on, 101
Yathesia. Hists in the, the
Yach in Pastr-Second St., K.Y. Esti of,
1, 25
Yanib in New York. Government Treasnre, 16
Yentilating:—
Chimney Cow. 24
28 Valentinianne I. Statue of, 136

Calminey Cowis, 24, 38 Fans. Verity's, 104 Ventilation: Ventilation:

And Healing of School Buildings, 5
the pool, 102
Of Sewers and Imains, 76
Ometions to Sewer, 79
Vertical:

On Full of Elevator at Grand Holel, Paris,
25

On Yall of Yorky-Second St. Tunnet, N.
Y., 18
On the Mnej St., N. Y., Accident, 2
Verity's Ventilisting Bans, 101
Yerwood an Architecture !—
Archivelegy and the, 148
American, 0
Vessiving, Proposed Railroad up, 122
Yets of the N. Y. Stenn-Heating Schema, 154
Victor Rivanuel. Munument to, 8
Victor County Count Holse, Refereed for, 298
Ventile, Mr., gains the Farent Office Competition, 60

Walker's, Mr., Tentimony before the Con-greerinant Labor Commutates, 97 Wall-Pupern. Followings Painth and, 192 Walfs, Mr., and the Sc. Louis Guetom House, 61, 136, 186 Walfers, Preddent, Address to the A. I. A. 172 Walfs-Dadms, 38 1 Trays, 140 Warbington, 201 Warbington, 201 Warbington, 201

osningers, 21.
Fall of a Mouse in, 80

Nontingert, 25, 54, 120, 161

Chaning 44, 201

Sewers go of, 20

The Knisted Latter Association, 118
Workingmen. Cohen and the, 53

Greet.—

Markingmen. Cohen shel the, 58
Warer:—
Cleate, 75, 90
Color Psiniting. French Criticism on
Kuginia, 198
Franch Referend, 178
Jet in Francisco. The, 50
Jet in Francisco. The, 50
Jet in New York. Ricording open a, 25
Simply. Knyllen Kational, 13
The Bactiond, 200
Tests for Lugmen, 7
Waterhouse's Address to the Marchetter
Architects, 57
Wentheroods of Natra Jonne. Loss of the,
192

Architect, 57
Wenthere of the Notre Dome. Loss of the, 192
Weibeck. Subject some Work at, 34
Weibeck. Subject some Mork at, 34
Weibeck. Subject some Mork at, 34
Weibeck. Subject some John and Ould, 36
Pictores. The Nomencluture of, 193
Whister's Barmony in Volom and Ould, 36
Pictores. The Nomencluture of, 193
Whiter are we Tending, 18
Wilkie, Str. David, un Dutch and English
Paintongs, 190
William III. of Pensals. Monument of, 103
William III. of Pensals. Monument of, 136
William Sandes. Iron, 112

'Tex and Restoration, 65
Wind Preserve, 215
Wind Preserve, 216
Wend:
Bending Dev, 38
Faremonts in Chicago, 110
Preserving, 112
Focien Bulldiers. Stephen Girard's William Counting, 70
Weelner and the Copyright Commission,

touching, 70 touching, 70 touching, 70 touching, 70 touching, 70 touching, 70 touching and the Congregat Commission, 120

Workingmen's Exhibition at Patis. The,

At Paris. British, 12 At Paris. British, 12 Workman's Congresson. Franch and Sey-man, th

Veilor Ferry at Granada, Mine., to In New Origans, 129

Zine. Chemically Coloring, S.

ILLUSTRATIONS.

[The figures refer to the number of the Journal, and not to the page.]

COLLEGIATE.

Chapter House of the Della Psi Fraterelly, Haptford, Chon. J. C. Cody, Architect, 166 Groundina at Docend, N. H. G. H. Yanng, Architect, 164

DWELLINGS

DWELLINGS.

Block of Three Rousen. Samuel Humeford, Architect, 133
Cottego at Claymant, Dei T. P. Chandler, Jr., Architect, 145

st Elmins, N. Y. W. H. Hayen, Architect, 166
at Lebenna, N. H. C. A. Riels, Acchitect, 147
st Clessale, N. J. E. R. Bonsler, Architect, 155
at Fravillance, R. L., Walter and Gould, Architecte, 155
but Mestalester, N. V. H. R. Marbial, Architect, 141
Uctages, 156

Cottages, 156 Cottages, J. H. Robbeand Son, Architects, 142

Fee Mer. Adams, Oyster Bur, N. Y. Potter und Robertson, Architects, 149
J. C. Banseroft, Milton, Masn. W. B. Emurson, Architects, 150
Ge Gennacowalth Ave., Beston-Kriby and Lewis, Architects, 152
on Brucklyo Heights. W. H. Beers, Architect, 153
at Chicesu Isrados, Prance. B. Létang, Architect, 143
of C. G. Clarz, Intropley, Cal. Mecker and Banks, Architects, 143
of L. Chphane, Washington, D. C. J. France, Architect, 141
of Prof. G. S. Fowler. Cabot and Chandles, Architects, 152
far J. Fraker. Chocimosts, O. J. W. Meinneibliot, Architects, 152
of P. Lorilland. Paulonly and Steams, Architects, 152
Newpert, B. I. Stargls and Brigaham, Architects, 154
at Oyster Bay, Long Faland, N. Y. Petter and Robertson, Architects, 154

House 1431 Wainet St., Philadelphia. T.

P. Chandler, Jr., Architect, 127

for R. W. Producture, Bargeley, UsilMacker and Backs, Architeck, 148

al Schemetady, N. T. Potter and
Rebertson, Architects, 144

at Sneelen's Labding, N. Y., J. C.
Sady, Architect, 152

of S. Senfy, Standurd, Cons. W.

N. Bylges, Architect, 143

of P. M. Smith, Boston, Mem. C.

3. Luca, Architect, 141

at Wageheaper, Mass. Decrand Rand,
Architects, 157

Send-Detuched Houses, Durchester, Muss.
J. A. Fox, Architect, 146

Skerbes for a Country House.

Penhody
and Steurus, Architects, 152.

FOREIGN.

Relgian Facede at the Paris Exhibition, 150 Château d'Ambelies, 142 Château St. Louis, Quebee, Can. W. H., Lyon, Atchitect, 151 Church of St. Bilstra, Reven. L. Sauva-gest, Atchitect, 147 at St. Paul, Roma. G. B. Street, Architect, 147 italia of the Valleau, 137 Interior of a Russian Dining Knoor, 146 Langitedinal Section of St. Paul 8, Lendon, 151

Strument to Henri Regnants, MM, the-quart and Pascal, Architects, 114 Municipal Offices, 2t. John, N. R. Mc-Kean and Bascal, Architects, 152 Music Denn of the King of Bascale, 151 Palars of the Trocadine. UM, Davioud and Bourdale, Architects, 136 Perce Guillaume, Chartree, 149 Sachians at Rathenhurg, 153 St. Lamberth Church, Müneser, Westpha-th, 156, 167

FURNITURE.

Carle Case, F. W. Stickney, 154 Bining Room Farmiture. S. Bawson, 153 Brawing Room and Phoing Roem Sets. Edw. Downer, 153

HOSPITAL.

Modeon River State Receital factive Insume. F. C. Withers, Architect, 183

HOTEL

INTERIORS.

Church of St. Lambert, Mikester, West-pludis, 167
Dining Iteem in Betel (Buny, Boston, J. P. Puttasm, Architect, 139
Fire Place. Bloken and Smith, Architects, 147
W. W. Lewis, Architect, 143

47
W. W. Lewis, Architect, 143
Music Rozan'r the Ming of Barerts, 151
Recoprise Hall of Allemanic Gob. J. W.
McLaughler, Architect, 146
Russian Dusing-Reom, 148
Stairmass, W. W. Lewin, Architect, 143
Stairmass of the Burtford Capillol. R. M.
Upjahn, Architect, 150

INTERIOR DECORATION.

Fire-Times. Peahody and Steams, Architects, 882
Fire-Places. Computition in futerior Dec-cration, 134, 185
Vestibules. last Dec. Competitions, 142

MERCANTILE

he Gozette Building, Cincianati, C., E. Andersen, Architect, 165

MISCELLANEOUS

MISCELLANEOUS.
Alterisals Club House. Ginetomat. J. W. McLaughlin, Architect, 146
An Architecto Alphaltet, 182
Leinetery Carl Lodges. R. M. Uploby, Architect, 132
Châtsan Pc. Leuis, Quebec, Can. W. H. Lyon, Architect, 151
Beiry for H. A. Whitnay, Sangds and Brügham, Architect, 152
Design for a Neumenthal Drowsay. R. Voncogot, 130
Extension of Harrard College Library. Ware and Van Brunt, Architecta, 152
Foundain with Six Columns. R. D. Andrews, 153
Eindergureu. Ober and Band, Ayobitecta, 147
Lindows Stephen Tark Ballegary Md. J. A.

Kindergurren. Ober and Baud, Aychitecta, 147
Koller Skallug Klak, Bellimern, Md. d. A. and W. F. Wilson, Architects, 158
Statte for 44, D. Riberts, Indisaspolis, Fnd. Ober and Band, Architects, 151
The Moorn Memorial. J. F. Hennessy, Architects, 185
The Salisbury Building at Worceater, Mass., 8, C. Rurie, Architect, 157

PERSPECTIVE.

HOTEL. Gurvilleer Perspective, 143
Hatel Brighton, Count Island, N. Y. J. O. Distortions and Corrections, 145
Prague, Architect, 141 Perspective of the Grein, 137

PUBLIC.

tact, 136
The Builed States Capital, Washington, D. C., 166

C. 168
Town Hall for Milton, Mass. Ware and Year
Braud, Architects, 136
Town Fall, Ellion, Mass. W. H. Einerson,
Architect, 146
York City Market, A. Dempwell, Architect, 144

York City Market, A. Dempwell, Archi-

RELIGIOUS.

Cathedral at Cope (Layles, Hayl). Commings and Sears, Architects, 154
Ohrist Church, Oyder Bay, L. 1. Potter and Habertson, Architects, (44)
Church of St. Hildre, Runeu. L. San-Vageol, Architect, 148
Church of St. Michani and Ali Angels, Haltimore. Wyalt and Sperry, Architects, 443

143
Church of St. Paul, Rome. G. B. Street,
Architect, 147.
Design for the Lafayetic Sq. Presbyterian
Church, Raidmorn. R. G. Lind, Architect, 189
Episcopal Theological School at Cambridge,
Mass. Wars and Van Brant, Architects,
150

Mass. Wars and Van Bennt, Architects, 195.

First Unitarius Chapel. Maiden, Mass. H., F. Bure, Architect, 192.

France Dehnottal Clurch, Darthugton, Md. T. F. Chandler, Jr., Architect, 188.

M. E. Church, For Sea Cliff, L. T. Fickes and Spith, Architect, 144.

Figens Chapel, Brooklys, N. T. J. C. Gady, Architect, 144.

St. Paulin Chapel, MacLeuting, Pa. C. E. Cacell, Architect, 145.

The Tampin of Jaronalem. J. Fergusson, Architect, 146.

SHORES.

STORES.

Store on Hawley St., Boston, Commings and Sears, Architects, L53

Stores for H. Bardson, St. John, N. B., McKesn and Federwardner, Architects, 147

147 Wood's Buildlen. B. Price, Architect, 124 Vaughen Baildleng, Providence, R. V. Walker and Goold, Architecta, 142.

INDEX BY LOCATION.

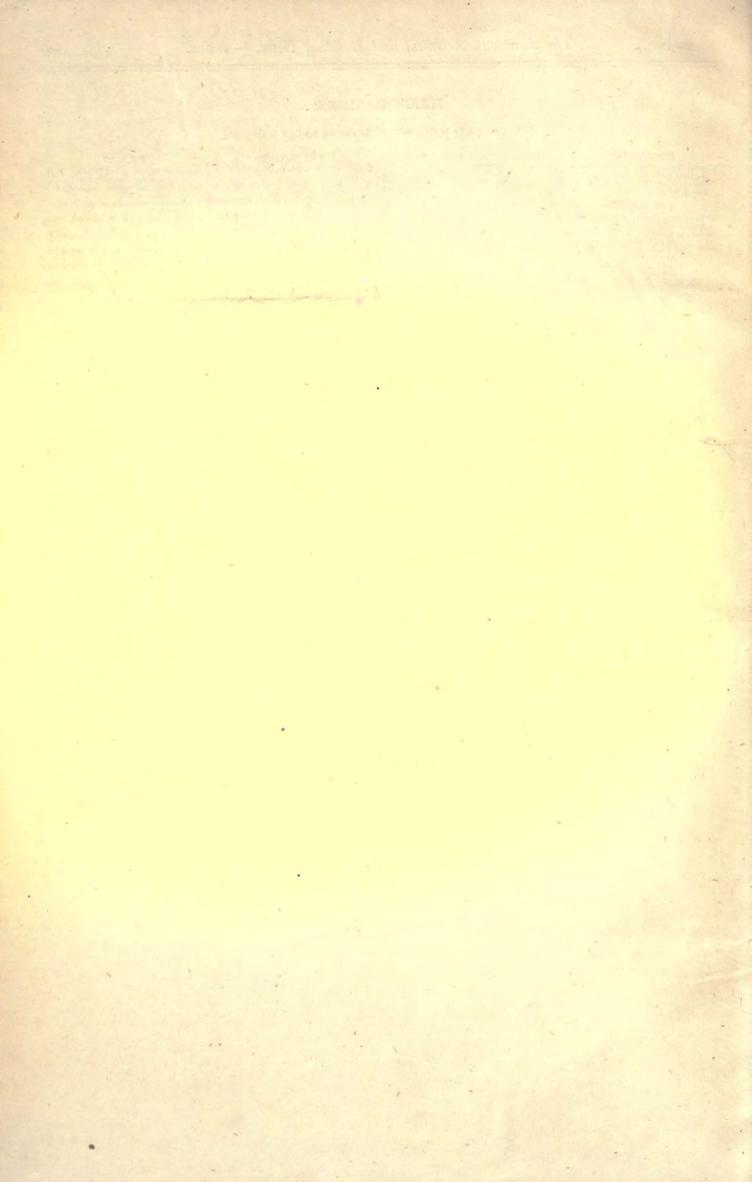
Boston, Mass. Store on Hawley St., Com-mings and Sears, Architect., 152 Cambridge, Mars. Episcopal Theological School at. Wars and Van Brook, Ar-chitects, 156 Chedomats, O. The Gazete Building, E. Anderson, Architect, 155 Courserd, N. H. Cymparlum at, G. H. Young, Architect, 154 Emiles, N. Y. Cetingo at, W. H. Hayes, Architect, 156

Harrishove, Pa. 36, Paul's Church, C. E. Cassell, Architect, 151
Hartfard, Coun. Chapter House of the Delta Pel Fraterolty, Teinity College, J. C. Cudy, Architect, 150
Haytl, Cathedral at Cape Haytlen, Communical Sea, Sens, Architects, 154
Minster, Westphalls. 3t, Lambert's Ch., 155

1 Interior of the Church of St. Lau-hert, 157

Nawport, M. I. House at, Sturgle and Bricham, Archicetts, 164 Onsanks, N. J. Cottage at, R. R. Rossiter, Architect, 155 Oyster Bay, Long Inhard, N. Y. House at, Potter and Robertsois, Architects, 158 Providence, R. L. Cettage at, Walker and Gould, Architects, 166 Sepths, The Gradula at, 153 Steeden's Landing, N. Y. House at, J. C. Chily, Architect, 164

Washington, The Bureau of Engraving and Criming at, J. G. Hill, Supervising Architect, 164
Fanhington, D. C. The United States Capital, 156
Weutstmeter, N. Y. Coltage at, H. R. Murnhall, Architect, Winchester, Man. 115,000 at, Oher and Ennd, Architect, 157
Worensher, Mass. The Sallshury Building S. C. Barle, Architect, 157



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CONTENTS.

e a la la la
BUMMART:
Mr. Schleicher on the Present System of Annual Appropria-
tions How Appropriations are actually made The Tony
of Congressional Debate The Platform of the Cincinnati
Typographical Union The Fall of the Forty-second Street
Tunnel Verdict on the Mott Street Accident The Pa-
tent Office Competition The Memorial to Sir Gilbert
Scott
PATERNITAN ANGINTECTURE
THE LILUSTRATIONS:-
An Architect's Illustrated Alphabet House of P. Lorillard,
Req., Newport, R. I Fireplaces in the same
Fige-Proof Construction, Jl
AMERICAN VERNAUDLAR ARCHITECTURE, IV.
THE VESTILATION AND HEATING OF SCHOOL BRILLINGS
Confesition in Interior Decoration, V
Notes and Chippings

Mr. Schleicher's bill, as might have been expected, did not get to the front in the burry of the last days of the session of Congress, and so has died a natural death. We have not even the satisfaction of judging from debate upon it how the House would have booked upon the change of policy in ear-rying on the public building which it proposed. Mr. Schleicher himself, however, in debate upon the general appropriations for public buildings, gave an outline of the arguments which he had to offer in support of his bill, in which he stigmatized the presout system of building by annual appropriations as "crude and incorrect in principle; vicious, wasteful, and corrupt in princtice." The greater or less annual allowance made for a building depended, he said, on the feeling or necessities of a congressional committee, not on any known principle. "When that amount has been expended the work ceases for that year, the walls are covered, the outfit and tools are put away to rust and rot, and the corps of laborers discharged until the following year, when the machinery is again set in motion by a piecemeal appropriation." This method of interrupted work, the result of the smallness of the annual appropriations, he called with reason cruste and wasteful. As a matter of finance, he considered that building was not properly one of the current expenses of the Government, but an extraordinary expense, and therefore should be provided for by borrowing and funding, not, according to the " mediæval" system, by taxation.

WE will not follow Mr. Schleicher into the question of finance further than to say that there are two sides to it; that "mediaval" cannot nowadays be considered a name had enough to hang a dog for, and that paying as you go is a habit that has its advantages in our time as well as in that of our grandfathers.

Mr. S bleicher's arguments actually hold against the misuse of the system of annual appropriations rather than against the system itself. It is true, as he says, that "an economical Congress, intending to save money by making small appropriations, really wastes money instead of saving it;" and if the habit of roaking them animally tends peculiarly to this abuse, as perhaps to does, this is an argument against it. At all events, although it is the duty of Congress to guard against extravagant expenditure or misuse of the public money, where this is accomplished it is desirable that the public work should go on with as little interference as possible. The real difficulty lies behind the question of finance, in the fact that the appropriations are voted hy an uninformed body and with an eye to other things than their legitimate use. They are apportioned as much to the influence of the town and the energy of its representative as to the exigency of the work. Congress, or the committee which fixes the amount, has its rough notion of what a post-office or custom-house for such and such a town ought to cost, which is always less than such buildings have actually cost. The local senator or representative has his notion of how much money ought to go for his town, or wants to get all he can. With those two grinding influences, and with more or less attention to the advice of the Supervising Architect, a limit is fixed by

gness-work, which has usually to be enlarged two or three times before a building is finished, and in the end there is great complaint. This difficulty is independent of the manner in which the appropriations are divided or the money raised. It will not be got over until the appropriations are taken out of polities, with which they have properly no concern whatever, and fixed by an authority which knows what it is doing. This last will be done only when Congress delegates a part of its authority, a case that it is not worth while to discuss, or when it adjusts the appropriation on the information of a trusted officer, who shall explain in each case just what he proposes to do and shall be beld to justify by explanation all his demands. The system of annual appropriations has made it possible by its elasticity to get the government buildings built and to let Congress know what they were costing; but at the price of much inconvenience and under a false pretence. A limit of oust ought to be either merely advisory or else rigorously binding; but to be binding it should be made with accurate knowledge of what it is to cover. By the present system it pretends to be binding and is in reality only advisory.

THE one kind of discussion which such a bill was likely to call up may be inferred from the debates on the Eight-hour Law a while ago, and from some of the speeches on the appropriation hills at the close of the session, wherein it was urged by some Congressmen that it was the duty of the Government to relieve the present distress of the country and find work for the unemployed by undertaking public improvements with vigor. This sort of delate sounds very much like extracts from the planforms of the Socialists' and workingmen's public meetings. If so important a bill had been earried through by these arguments it would have been a strong encouragement of the spirit of Communism among workiners, and the harm of the debate might have outweighted the good of the bill. Such a way of relieving the hardship of dull times is like the use of alcoholic stimulants for physical depression; it creates an appetite which is never appeased, but grows with every includence. On this subject the New York Times had lately a very sensible article, saving that to so use the public money was only alms-giving by the Government, which was as much bound to provide for the needy of every other class as for a small number of workmen, and could do it more directly and economically by open charity than by a roundabout process that directed a good part of the money into the pockets of their natural enemies, the contractors.

As an offset to this tendency we have the failure of Congress to enact that a day of eight boars shall be paid for as a day of ten, and the order of the Secretary of the Navy which graduates the pay of workmen in his department according to the reduction of hours. The appointment of the Labor Commission of Congress discs not please the Labor League, we are told. which holds to the popular notion that a commission to discuss any subject fairly most be composed of men who are already committed to decided opinions on it. We notice that one society of workingmen, the Cincinnati Typographical Union, in a circular issued as a call to form a Central Labor Union, which is of unusual good sense and moderation in tone, denies "most solemnly and compliatically all taint or suspicion of Communism, Socialism, Nationalism, or Politics." The circular adds truly, that "the relations between equital and labor are not as harmo-rious as they should be. Their relations being mutual," it says, "they should go hand in hand. In our opinion there are far more effective means of bettering the condition of our followworkingmen than by strikes, which can be perfected only by cooperation through such an organization as is now proposed." This looks like new light, and we hope it may spread; but then the trouble with most trades-unions has been that their only conception of what would better the condition of the workingmen was doing less work and getting more pay for it. prove the quality of their work or cultivate their intelligence, or even to encourage the convenient virtues of theilt and temperance, has been beneath their care.

The demands of travel have for a long time required that there should be some means of communication between First and Second Avenues at Forty-second Street, New York, which runs along a bluff in that part of the city. To make the

connection of the same grade with the avenues would involve making a deep and unsightly cutting, which would leave the existing houses perched in unsocial inaccessibility on either side It was therefore decided to build a tunuel under the street, which should be two hundred and lifty feet long, with a span of forty feet; the rise of the brick arch above the granite abutments being am feat. This work, like other city work, could be done only by contract, and bids were called for with the customary assurance that the maker of the lowest bid should have the work, provided he could furnish satisfactory bomismen. This, Mr. J. R. Byron found no difficulty in doing, and three months ago the contract was awarded to him for \$19,000, this being, it is said, \$9,000 lower than the bid made by any other contractor. Too much weight should not be attached to these figures, for it is well known that the discrepancies between one man's bid and another's are perfectly inexplicable, even to the makers of the bids themselves. Work was begun at once, and at the time of the accident, on Friday last, one humbred and fifty-four feet of tunnel had been arched over with a brick vault composed of six layers of brick. The tunnel was built in sections seventy-five feet in length, and the centering had been some time removed from below the second section at the time that that fell and crushed to death an old man, who had gone under the archway in order to read his paper in the earl draught blowing through the tunnel. Since writing the above another body has been discovered, and as the rains have not yet been all cleared away, the accident may have caused more deaths than is now supposed.

The immediate cause of the accident may have been the unequally distributed weight of the filling which was being packed in on the newly built section, which may have consed the collapse by foreing up the too lightly loaded crown. But examination of the ruins shows that there was possibly another reason for the accident. The beavy rains of the few preceding days probably did much damage to the martar; but these could not have been enough to wash out every trace of cement and almost every trace of mortar in the fallen brickwork, as well as in that which still preserves its form, for it is said that what pretends to be comout-mortar has almost the appearance of pure soud, and is as friable as brown sugar. However negligent or criminal the contractor, who dischains all theoretical knowledge, may have been, the Department of Public Works must share the respaniability, for one of its inspectors was detailed to watch over the work. This inspector is a master builder by trade, and should know the difference between good and had work, and certainly between good concent-mortar and bad, unless, indeed, political influences may have caused him to forget momentarily his knowledge, for there are not a few who say that the extraordinarily low bid of the contractor was to be offset by claims for extras, curincered to a satisfactory issue for him by political tricksters and wire-pullers.

It the coroner's impost shall bring to light evidence to show that the contractor was guilty of intentional or even unindentional criminal neglect, we hope to hear that the coroner's jury have returned as outspoken a vendict as was rendered on the late accident in Mott Street, New York. This verdict declares: That Martin Metzger came to his death by injuries received by the breaking of an iron girder in the building No. 130 Mott Street, on June 22, 1878. That Mr. H. Hermann, the lesses of the building, is responsible for not taking proper precautions in testing the building as to its strength and ability to withstand the weights placed in it in the prosecution of his business. The jury further recommended that a law should be passed making it the imperative duty of persons occupying or leasing premises for the purpose of carrying on other business, where weighty materials are to be used, to have the carrying capacity of the buildings thoroughly tested and certified to by the Department of Buildings.

Last week we stated that the Secretary of the Treasury had invited various architects to present competitive designs for the restoration and entargement of the Patent Office at Washington; and that many had declined to compete an account of the inadequacy of the compensation. The Secretary has therefore addressed to the invited architects a second circular, stating that Congress had appropriated only six hundred dollars to this purpose, and that, out of regard to the protests of the profession, he

had concluded so far to alter the scheme of the competition as in give the whole amount in one award to the successful compotitor, according to the advice of a board of three architects selected by the Secretary. It would seem that the authorities are disposed, in this competition at least, to make every practicable concession to the architects, and we trust that they in turn may in their contributions be enabled to justify this unusual and unexpected attitude of the Government towards the pro-fession. It is true that the programme is not one to make the largest demands upon the resources of design; to alter and enlarge a vast Greek Doric building like the Patent Office, with its blank mechanical repetitions of a misused order, is certainly not an inspiring theme; the scope for inventive genius in such a work is by no means great. Yet the effort satisfactorily to fulfil even such conditions as these may be sufficient to prove that if the architectural resources of our country are properly and fairly used, we may at length be enabled in our great public buildings to express somewhat of our highest civili-zation. By the present system the best professional ability of the country is practically kept from its proper monumental work, and confined to inconspications, often numerthy, and generally unremunerative fields of labor. Any effort on the part of the Government to change this state of things should be welcouncil by the profession in no narrow or exacting spirit.

Exerty in June a public meeting was held in the Chapter House of Westminster Abbey, for the purpose of determining what should be done to commemorate the life and life-work of the late Sir Gilbert Scott. Of the many schemes that have been proposed, the most favored have been the restoration of the west front of St. Alban's Albay, and the endowment of a scholarship in connection with the Architectural Museum, of which he was the founder. After some discussion it was decided, on the mo-tion of the Dean of Lichfield, to "invite the assistance of the public towards excrying out a personal memorial in Westminster Althey, and the endowment of a professorship or studentship in connection with the Architectural Museum." The Dean of Westminster, Dr. Stanley, in supporting the motion, said that it was not his desire, and he thought it would not be the desire of the Chapter, that this memorial should take the form of the execution of any of the three schemes for the improvement of the Abbey that Sir Gilbert was cutertaining at the time of his death. These are : the completion of the stained glass in the Chapter Honse; the building of a new cloister, ample enough to give burial to the illustrious dead for a thousand years to come; and the remodelling of the north purch, once the principal entrance to the Abbey. These works the Dean thought should be accomplished either by the Dean and Chapter from their own resources, or by Government, who had already promised to provide the stained glass, or by public aid secured for these specific pur-The Rishop of St. Alban's endeavored to turn the decision of the meeting in favor of St. Alban's Abbey, pleading that it had no promise of government aid, and had no wealthy Dean and Chapter to carry on the work. He was reminded that it would be as appropriate to finish the west front of Lichfield Cathedral, or complete various other undertakings, which, as much as the work at St. Alban's, were equally "last works" of Sir Gilbert. All things considered, it seems most suitable that there where his body lies, in one of the few buildings where in-tra-mural interments are still allowed, a memorial should be erected which all men can recognize as such, a recognition which would be difficult of accomplishment in the case of stained glass, a half-finished cloister, or a restored porch. As between the scholarship and the restoration of St. Alhan's the right choice seems to have been made, for never will there be a more approprists occasion for founding such a scholarship, which is, moreover, as a memorial, most professional in its character, while it is not unlikely that the Bishop of St. Alban's will find other means of securing money for his restorations.

PALERMITAN ARCHITECTURE,

The capital of Sicily is, as we have already implied, the head-quarters of an architectural style which is historically one of the most interesting forms that the art has ever taken, and it contains examples of other styles which are well worthy of attention. But its really most important buildings are not those which are the first to thrust themselves on the eye. Not a few of them have to be looked for; the noblest of all is elaborately stowed away our of sight. The best churches and houses have either been elaborately speiled, or have

July 6, 1878.]

always stood in the less prominent quarters of the city. The metropolitan church and the royal palace stand prominently enough in their several open spaces; but both have grievously suffered. The noblest feature of the palace, the renowned and matchless chapel, can be seen from no external point at all. Truly all glorious within, it is only wishin that it can be seen at all. The best private palaces stand in secondary, sometimes in very nurrow, screets, and sometimes only seraps and fragments of what has been are left. Only one at once forms a prominent object and keeps any great measure of ancient character. The charges which have taken place in the lay of the city absolutely forbid the existence of walls or gates of any great antiquity. It is only some small parts of them that are even mediaval; the greater part belongs to the days when walls and gates were needed, not to keep off foreign enemies, but to keep Sicily and her capital in boulage to the foreign enemies, but to keep Sicily and her capital in boulage to the foreign enemy who called bluself her king. The general aspect of the two great streets, the Cassaro or Toledo, once the Via Marmorea, — we cannot being outselves to speak of Via Victorio Emmanuele, — is that of a stately city of the seventeenth and eighteenth centuries. Italian clurch fronts, built without regard to east, west, north, or south, with their stacked mounsteries, range with the houses in the street. The hong line of the Toledo, a mile or more from the eastern sea to the western gate, filled as it commonly seems to be with a crowd of human heads, is striking sight. Paterno, after all that it bore at the hands of its Spanish lords, if it did not remain the rival of those German and Italian cities where history looks us in the face at every steps at least never fell so low as Bararian Adlana, as Hanssmannized Paris and Rohen, or as the city which is rising on the colles of Rome to make the lookelyes.

Still, in these two long lines of street, stretching as it seems to the eye from the mountains to the mountains, and from the mountains to the sea, there is but little of historic architecture, save at two points where the long line of the Toledo is broken, at one end by the Piezza Of these the del Duomo, and at the other by the Piazza Marina. former, as its name implies, contains the metropolitan church; the other contains the most important, in a general view, of the buildings which were reared as private palaces, that now known as the Tribunal. In the chiler times the waters of the harbor flowed between them, and the line of the Cassaro, the Kasr, was far longer than it is now. The same opening brings in the view of the portion of the church of Sta. Maria della Catena, the church which stand by the chain which guarded the harbor, and whose portion is one of the best of the later buildings of Palermo. Otherwise, the look of the four great arms, stately and solid as it certainly is, is wearisome enough. It has not a trace, nor has any part of Palermo a trace, of the best feature in civic architecture which the revived classic styles can supply. We look in vain for anything of that system of arcades wi less such an effect in Bologna, Padna, and other Italian cities. We took in vain for anything of that system of areades which the general effect of these streets the only point of antiquity or in-terest is to be found in the shops, the openings of which present many singular and interesting forms. It is in the narrow, cracked streets which (il) up the four regions, each with its presiding virgin saint, into which the cross lines divide the city, that we find the fragments of ancient Palermo. There the ere of the traveller must never be closed; every corner must be carefully explored. A careless observer might fancy that there was little left but the royal palace, the cathedral, and the Tribunal. He must look more nerrowly, and he will find that the great days when the Suracen built at the hidding of the Norman have, after all changes, left no small traces behind them.

The great monuments of Sicily belong to two periods,—to the two periods of Sicilian greatness. There are the works of the Greek commonwealths, and there are the works of the Norman kings. Of Roman remains there must be much below the ground, and there is smeething above; but they do not form a marked feature, us in Italy and Provence. Byzantine and Saraeen rule have indeed left their stamp behind them; but it is a stamp impressed at second-hand. Constantinople and Bagdad are dumb as for as their own voices are concerned, though both speak plainly enough by the tongue of a Norman dragoman. Of the later medieval eyles, the examples are, to our taste, greatly to be preferred to any of the kind on the Italian mainland; but till quite the end of the period they hold a very secondary place when compared with the masterpieces of French, Gorman, and English are. The days when Corinth sent her fleets to colonize Syracuse, and the days when Palermo sent her fleets to harry Cominch, are the two great times whose mighty records in stame still abide on Sicilian ground.

Of those two periods the napital of Sicily has her share in the latter only. Phonoician Panormos had no part or let in the glories of Gelön and Timoleón. Yet the Roman colony undoubtedly possessed Roman halldings; the fact needs no proof; and, if it did, an occasional mosaic found below the present level, an occasional column used up again in the accases of a church or at the corner of a pulace, would be proof enough. Nor can we venture to say that no Greek buildings went before them. As non-Hellonic Segesta boxsts of one of the most perfect of Greek temples, non-Hellonic Panormos may well have rivalled her. Again, we need not prove, and, if it were needed, we know the fact historically, that the Christian city had churches, that the Mahometan city had anoques. But lemples, pat-

nees, churches, mosques, have all perished, except so far as palueds, churches, and mosques supplied both models and materials for the works of the great dynasty which for a century made Palermo the head of the most brilliant of European kingdoms.

It must always be remembered that it was only with the Saracen

It must always be remembered that it was only with the Sarasen conquest that Palermo became the head of Sicily. From that day Syracuse shrank up and Palermo grew. It not only became the head of Sicily, it became one of the great cities of the Mussulman world. And it was emphatically the Mussulman city of Sicily. If we rightly understand the story of the Norman Conquest, no Christian church was allowed within its walls; the Greek archbishop was confined to a small duapel outside, while the former metropolitan church had become the head mosque. The first act of the conquerors was to install the banished prelate in the seat of his predecessors. The great age of Sicilian architecture was the twelfth century, and the architecture of that age is undoubteally the Sarasenic architecture, continued in use and adapted to Christian and European purposes. This Sarasenic architecture is of course in its origin Byzantine, but modified by the introduction of the pointed arch. This style is so unique and so interesting on every historical and artistic ground that we must keep some of its more remarkable monuments for a more special notice. We monition it here in its historic order as the Palermitan style of the twelfth century. There is here no Romanesque style answering to the styles of England, Gaul, Gormany, or traly. The place of the later and finished Romanesque is taken by what we can call nothing but the Christian Saracon style.

In truth, so far as Palermolas anything which answers in the faintest degree to ordinary Komunesque, it belongs to a later time,— to the time which elsewhere is the time of the earlier Gothic. In the thirteenth, iourteenth, and even in the beginning of the fifteenth century we find a style which, like the Saracan style, uses pointed scales, but whose details are rather those of the transition pointed arches, but whose details are rather those of the transition from Romanesque to Gothin. We can see some of the steps by which the Savacenic type changes into this second Stellan style, pointed Romanesque rather than Gothie. It is hard to explain the changes without illustrations and without going into great technical detail; but any one who can compare the east end of the cathedral with the west, and that again with the monastic buildings of St. Salvatore and the palace called Casa Matteo, will be able to follow them. To say so is perhaps rather a mockery. Several works, though mostly large and costly, illustrate the cerelesiastical buildings of Palermos, we know not whither to send any one for even a photograph of most we know not whither to send any one for even a photograph of most of its domestic buildings. Even dwellers in Palermo seem hardly to know the existence of the Casa Matteo; yet it is something thoroughly l'alermitan. It is a characteristie example of a once splendid range of building in a street which has gone sadly down in the world. The street without must, even in the best of times, have been so narrow that it is hard to tell whether a range of windows, outdoing anything of the kind which we ever saw in domestic work, and coming nearer to Northern Romanesque than anything else in Palerno, has its arches round or pointed. Get on the opposite halconies, the only way, and you learn that there are some of both. Through these stages the Soraccu style passes into a quasi-Gothic, which is decidedly better than any form of Italian Gothie, but which still is, in its doorways and windows,—almost the only features by which we can judge of it,—very tlat, trusting quite as much to surface ornament as to mouldings strictly so called, and burdly getting so far as even plate tracery. A building which we have glassed at more than once, the Chiaramonte palace, afterwards the abode of the viceroys and then of the Inquisition, and therefore still known as L'alazzo de' Tribunali, is a marked example of this style, and is almost the only domestic building in Palermo besides the royal malace which stands out mestic building in Palermo busides the royal palace which stands out prominently in a good position. It stands in the Kalsa, and it may stand on the site of the palace of the Emirs; but, as it now stands, it is a work of the years from 1307 to 1320. So far as it could have stood in England at all, it would have been set down as more than a hondred years earlier. Ten years later a rival noble named Sclafani rowed, and carried out his vow, to build in one your a greater palace than Chiaramonte had built in thirteen. First a palace, then a hospital, now a barrack, the Schafani palace falts even further back from our actions of a fourteenth-century building, and keeps some distinct features of the old Saraconic. Yet there is in it one little nicke more like early Northern Gothic than anything else in Palermo. Here and there, as in the churches of St. Augustine and St. Francis of Assisi, doorways and windows of this style may be found, and we now and then light on them in demostle buildings. Its romains are always striking; in a stern, fortress-like looking house like the Chiaramonte palace, their flatness and half-Romanesque character is not out of place. But we are not clear, as we hinted when speaking of some of the Savoyard buildings, whether the latest form of good Palermitan architecture has not a greater interest than

this intermediate form.

The style which we have just been describing lingers on into the filteenth century, to the first years of which the tower of St. Nicolas in the Albergberia is assigned. In the course of that century it was supplanted by a form of late Gothie, distantly akin to French, or rather Burgoudian, Flamboyant, but quite unlike anything in Italy. We now get, what we do not get in the carlier style, deep monthings and most claborate tracery. But the rounds and bollows of the mouldings are often set on a single plane, giving a wonderfully flat

look, and the trucery, most delicately wrought and supported on the slenderest of shafts, is usually placed under square or flattened arches. The flattened arch, which should be, but which so not always, elliptical, is also in constant use in the doorways; and the round arch, hitherto hardly seen in Pulermo, now and then comes in. The best preserved specimen of this style is the Patella palace, with its striking gateway and square-headed windows. This was built in 1495 by Francisco Patella, who commemorates his exploits in a way which at first sight is puzzling:—

In Gallos inque Hispanes sub rege Sicano Proclin que gessi rex multi testis crit.

It needs a little thought to take in that "rex Sicanus" - so called It needs a little thought to take in that "rex Sicanus"—so called with singular propriety rather than "Sicalus"—means Ferdinand of Aragon, and that the "Hispani" of the inscription can hardly mean any one but the Moors of Granada. This is a truly insular way of looking at things, to which we have tried in voit to find or to invent an light parallel. There is a good deal of this style scattered up and news Paterno, both whole hunses and scraps. The other chief example besides the Patella is the palare called Pateno, Moncada, and Ajutamieristo, in which Charles the Fifth lived after his return from Tuois. This is much larger than the Patella, but not so well preserved. In the archibishop's palace is a large window of this style with a pointed arch, a thing unique, or nearly so, in Paterno.

The effect of this late Palermitan Gothic is by no means bad; but The effect of this late Palerman Gothic is by no means bad; but it is perhaps almost more remarkable for the effect which it had on the local Renaissance. It is, in short, hard to draw the live between the two. The column seems server to have gone out of use; only we see slight marks of Renaissance in the capitals, while everything else is still late Gothic. In some palace courts, specially in that of the Palerno, in the parties of Santa Maria della Catena, and in the lower part of Santa Maria Nuova, this stage comes out with excellower part of Santa Maria Nuova, this stage comes out with excellent effect. The two portices suggest for a noment the lifteenth and sixteenth century Romanisque of the Dalmatian Ragusa. (Here is smother and less famous Ragusa, a case of "two Wussesters," the distinction is needed.) But a second glance shows that they could have been built only by men who were used to the same late Gathic which we see in the palaces. Graceful coltions support that mouldn't arches set, Saracen fusition, on stilled. They are in strath the best examples of a variety of Renaissance with much of Golbie feeling langing about it which is characteristic of Palermo. Springer, in an excellent treatise, "The Mittelalterliche kinest" in Palermo, remarks that as the Saracenic style industrical Kinst? in Paterno, remarks that as the Saracetic style influenced the early Gathie, so the laze Gothic influenced the Renaissance, Sicily, it would seem, did not at any time easily take to new ways. There is much of this riyle in both churches and houses. Doorways and windows keeping some traces of moddlings, columns - real coland windows keeping some traces of moddings, columns — real col-mons — supporting elliptical arches, a general Inodines for that form of arch in all cases, keeping some memory of better things to a very lase date. And, just as the Renaissance was coming in, the church of the Spasimo, built in 1506, night almost be a bit of German Gothie. This however, is purely exotic. More interesting locally is the tower, one of the few emigratio of Palermo, of Santa Maria della Gronta, where this architecture may be well studied. The local type gradually goes off from this very invious and interesting intermediate type into all the horrors of a vulgar Italian style, gauly within and strapeless without. Of hideaux churches of this kind arwithin and strapeless without. Of hideaux chirreless of this kind at-tuched to the endless and mostly hideous monesteries Polermo is full. Some of the street fronts of both churches and houses keep a certain ol. But go behind, and see their notions A good building of any good style will stateliness of their own kind. of aisles and elerestories. bear being seen maked:-

induitor, formos; est; exuitor, ipsa forma est.

Let it be perfectly plain, and we see the lines of its outline all the better. If curiebed, it is enriched by adorning the necessary features. In the Jesuit style, the naked building has no outline; it is simply hideous; the ornament is not made out of the essential features; it is something nailed or plastered on. And this kind of stuff, bries; it is something nailed or plastered on. And this kind of stuff, brieco or rocco, or whatever its rance is, has come to line the Kasr of the Saracen, the Via Marmorca of the Norman. One peep of day is given through the Ports Nuova at the west end. Built late in the seventeenth century, it has a top to it, and it has a small decorative areade, which might almost be Romanesque. And even where all else has vanished, courts and christers aften keep very decent areades, the bases of whose columns still show, in Jesuit days, the leaves which with us died out in the thirtseath century. The arch rising holdly from the column is everywhere a relief. Even if a still is thrust in, it may regaind us of Ravenna. But wherever the arch rises straight from the abacus, be it in a Spanish make he it even rises straight from the abacus, be it in a Spanish palace, he it even in a Jesuius' college, it carries the thoughts back to the works of Javius in his own home. — The Saturday Review.

THE ILLUSTRATIONS.

AN ABCHITECT'S ILLUSTRATED ALPHABET. PAINTED BY F. WEERER, ESQ.

WE reproduce this week from the British Architect the first por-tion of an illustrated alphabet that Mr. Weekes has painted for the new house of Mr. Walter Burges, the architect, in Kensington. The

figures are painted upon the panels of the bookease doors in the library, and are left to tell their own story

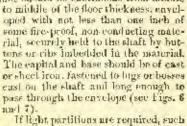
MEBSRS. HOUSE OF PIERRE CORLLARD, ESQ., NEWPORT, R. I. PRABOUT AND STRARMS, ARCHITECTS, BOSTON.

PIRE-PLACES IN THE SAME.

FIRE-PROOF CONSTRUCTION.4 II.

THE shafts of east-iron columns should be continuous from middle

CAST-IRON COLUMNS. No portion of the constructive ixon-work exposed.



as do not scart from the foundation, and for which emmon brick would be impracticable by reason of its weight, hollow terra-cotta tile or brick can he used. Another method, more ex-pensive, but admitting a construction which is self-supporting, consists of

SECTION ELEVATION.

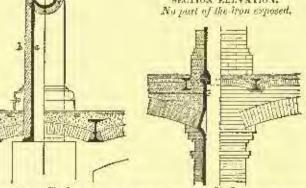


Fig. 7.

Trusc: shell of shutton of eact-from; Cast-from columns propertied by 41 line of brick, 9, 10 tenting correlage of a first line and of gloders, brick arches are gloving 1-1-16, from-conducting meterial. between columns for supporting the flaors.

light I-hearns, generally four inches deep, placed vertically two feet from centres, with the ends riveted or helical to plates or channel-irons secured to the floor and coiling; to these beams the iron lath is bolted for receiving the platter. These partitions can be resultly trussed, so that they add no weight to the thore from which they start.

All steep parts of stated roufs are provided with rolled iron purling. To relaxated with rolled iron purling the plant of the control o

SLATED ROOF.

lins. T or L shaped, weighing about two pounds per linear foot, riveted to the jack-rafters or trusses. The spans of these puritus should not exceed six feet for slate weighing ten pounds cuch. The distance between cen-

Fig. 8.

Slam factored to Ler I share substrates.
Slam factored to Ler I share substrates are fine of slate; for example:
With four inches lap, requires the purilins to be ten inches to the weather, with four inches lap, requires the purilins to be ten inches from centres. The slate is fastened to purlins by No. 16 B. W. G. copper, wire passing through two holes in the tail of the slate and around the purlin (see Fig. 8).

Another method, name expensive, but in proportion to its greater security, counsists of two 15 inch diameter bulls with heads countersunk in the slate, and fastened with a nut to a hook hanging to the purlins (see Fig. 9). Instead of purlins, corrugated sheet-ironic sometimes used, runnito to rafter:

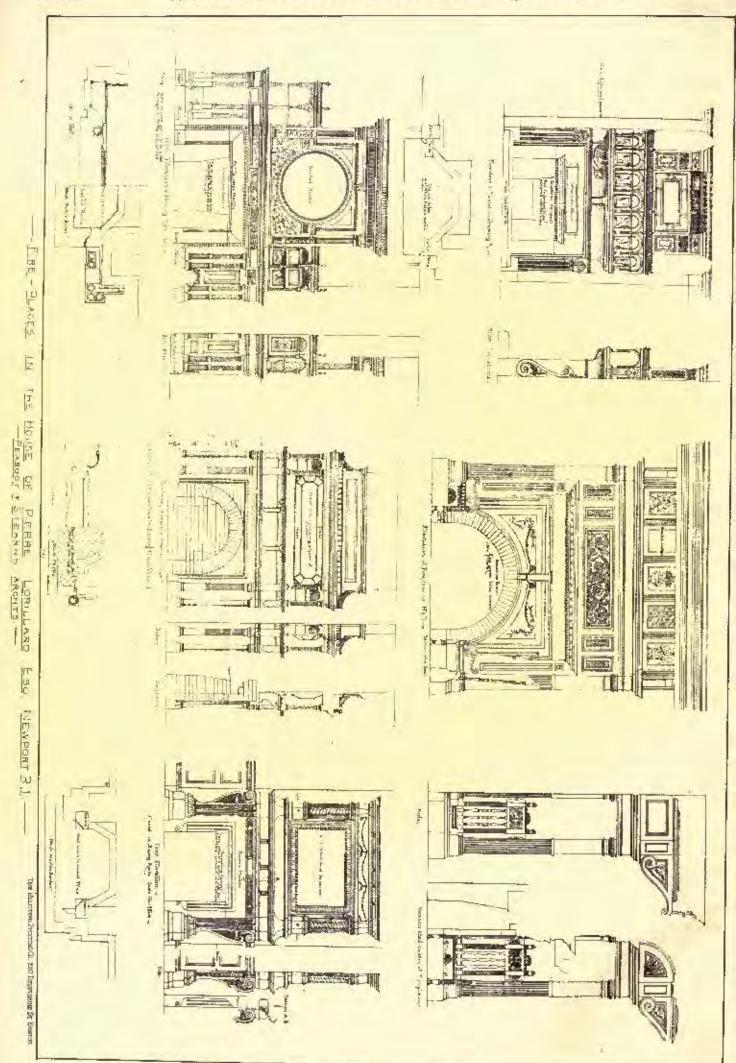
by wrought-iron pins, countersunk and passing through the slate and corrugated spects, where they are bent so as to form a book or clinch; the slate roay also be beided in a layer of cement applied to the corrugated iron (see Fig. 10).

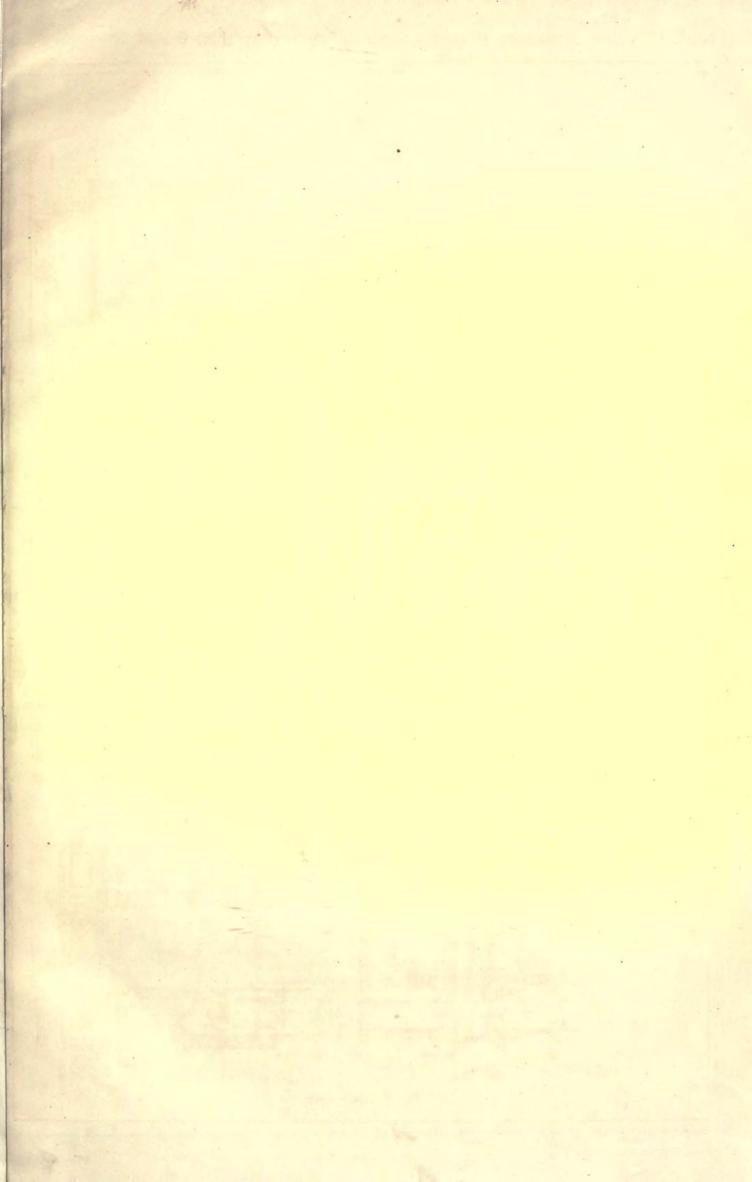


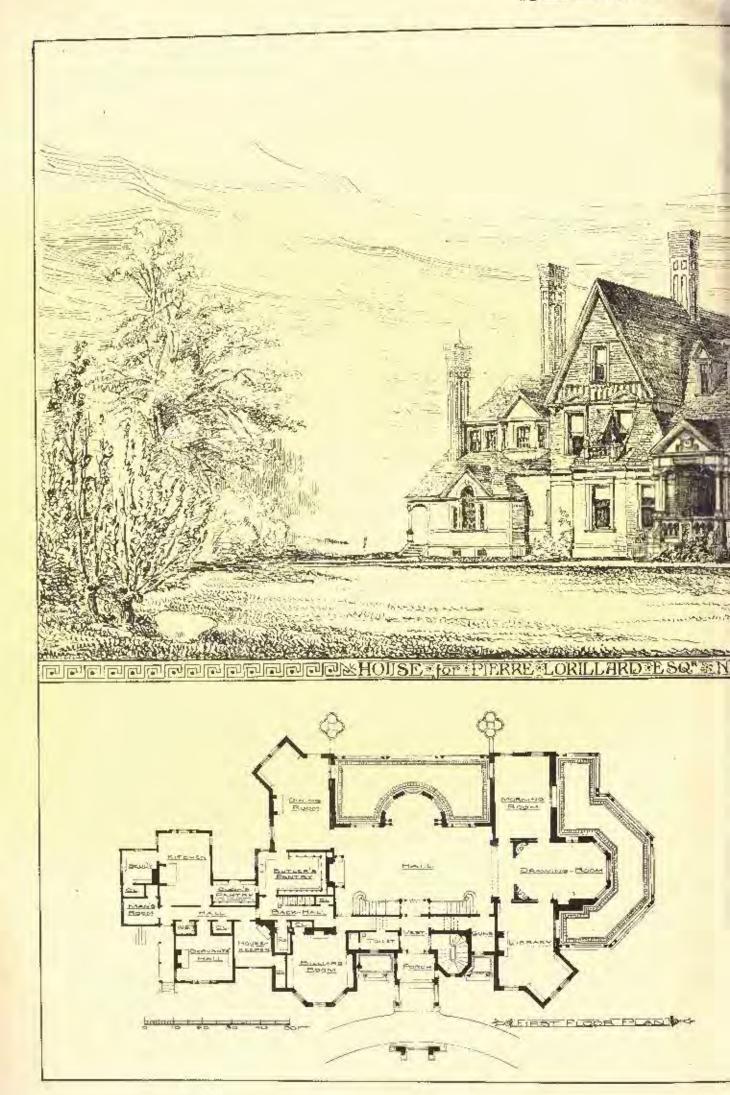
Fig. 10.
State from ned to-corrugated sheet-from by wrought-lenn countree nok plon, State is also bedded in a layer of central applied to corrugated from

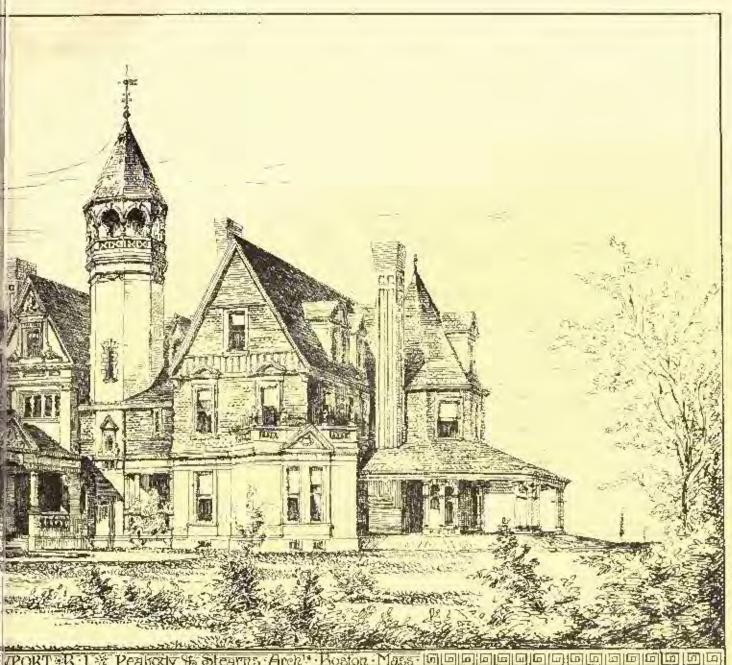
A paper by F. Schumann, C. R., read at the last annual convention of the American Institute of Architecta.





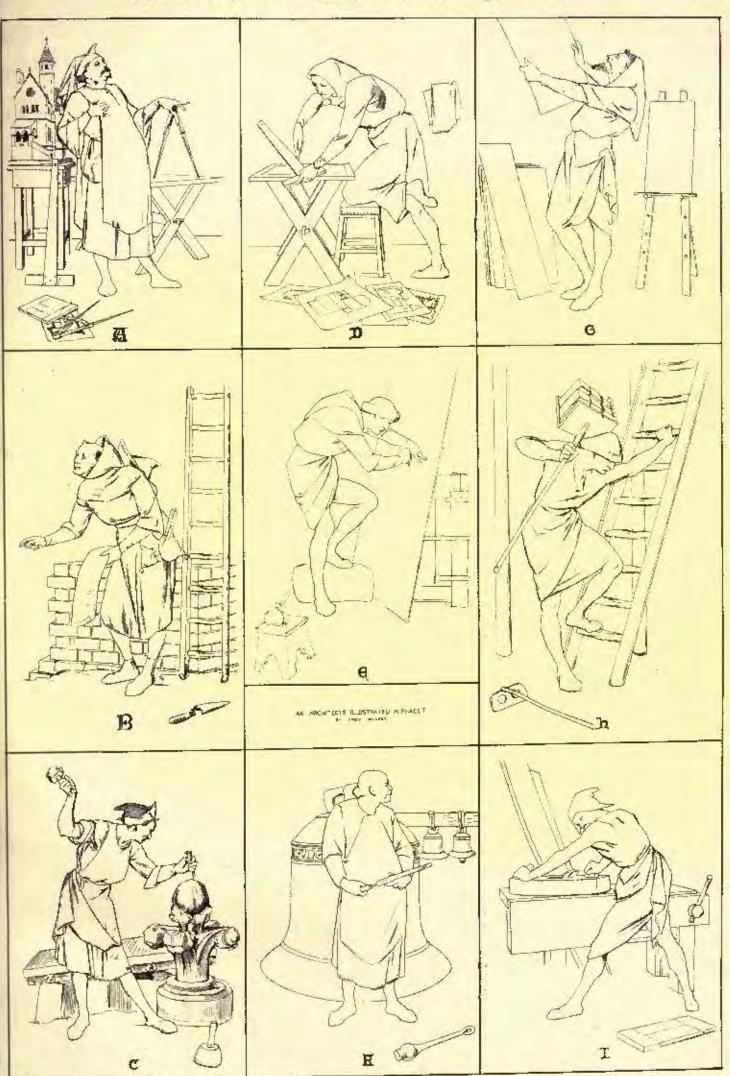






PORTER TO PERSON SE STERRE A PER SONO A PORTER DE LA PORTE DE LA P





THE PARTITION PRINTING OF BUILDING ST. BOSTON



PLAT ROOFS COVERED WITH METAL SHEETS OR CEMENT.



Fig. 11.

Ascense or consistence of the second No. 20 B. W. G. Weight of construction from 40 St 60 Hz. presq. 11. m, correspond into savis & robest hospital, promote little; d. Tayer of consent; r, conserve little; d. Tayer of consent; r, install togs for fastening should nower.

clay tile, resting on T-irons (see Fig. 12). Another very good method consists of metal boxes filled with fire-proof material; the boxes are about two feet wide, from two to three inches deep, and of lengths up to eight feet spans; the bottom, sides, and crols are formed of galvanized sheet iron, and the top of copper or galvanized sheet-iron; the hoxes are placed alongside of each other and fastened

ancet-iron) the hoxes are placed alongside it each other and tracelled to the Learns of the roof. This method possesses an advantage in that it is light, strong, overcomes the difficulties from expansion and contraction, and forms a smooth ceiling (see Fig. 13).

Fire-proof doors and slutters are indispensable. They consist sither of sheet-iron boxes filled with fire-proof material, or layers of a sheet-iron boxes filled with fire-proof material, or layers of corrugated sheet-from riveted together; they are also made of a sheetiron plate surrounded by an iron frame forming an open box, into which a fire-proof preparation is filled and secured by lath of a peculhar construction; this is an effective shotter or door, in that the fireproof material is directly exposed to an enerosching fire and no part

1-57



Weight al construction from 12 to 15 lbs. Boxes are follow with nan-conducting dro-point material.



Maximum weight 40 lbs. per sq. 11. The fill may consist of the fills with but street, juict 5, counterceiling to reather citing; discring to the spread, non-conducting filling.



Fig. 16.

Survisce for more goods.

Joint of large searting from 1 to 8 II. apart. Davimum weight 60 lbs. The dotted line represents a
configuous source wire netting, maked to joist and
imbedded in the filling; it is for the purpose of retaining the filling it place about the celling boards
be board through. taining the filling be burnt through

seribed. AMERICAN VERNACULAR ARCHITECTURE. 1V.

Pentastiens of the experience of Messrs. A. J. Bickwell & Co. probably have excellent business reasons for printing such compilations as their Specimen Book of One Hundred Architectural Designs, 1

I Spectrum Buck of One thereford Architectural Designs, showing Plans, Elevations, and Plans of Suburban Houses, Villas, Sen-Side and Camp-Ground Coctages, Homestands, Planses, Spectral Conference, House Standards, Editor States and Several Original Bestges for Modern Styles of Matterials, etc.; also Several Original Bestges for Modern Styles of Matterials and Furniture, prepared especially for this work. New York, A. J. Mcknell 2: 60, 1878.

Flat parts of roof are covered with either cement, copper, lead, zinc, tin, or galvanized sheer-iron; either one of the metal coverings are fastened to a layer of cement, about one inch thick, overlying concrete supported by corrugated sheetiron awhes, by the tags im-budded therein (see Fig. bedded therein (see Fig. 11). The supporting material

may also consist of borne

of the metallic construction is in rerial falling out. It is essential, to insure a proper working consensus extraction of the per working consensus a construct the season of a constr danger of warping and the ma-terial falling out. It is essential,

track, so that the eash cannot be opened without also moving the shutter. In buildings where subdividing fire-walls are made use of, it would be well to so arrange the slutters that they can be operated from an adjoining room or compactsecond ment by means of rolls or

Cites III. All ginlers, joists, struts, and roof timbers to be of wood and, if possible, of large scanting. All floors to be counterseiled so that unt less than two inches of non-conducting material will lie between the flooring and counter-eciling. The spages between the scantlings of purtitious to be filled with mortar or a mixture of clay and cut straw not less than one foot above the floor level (see Figs. 14, 15, 16).

The roof sanstruction may be of wood. For the slated parts strips of wood 2 x 2 ordinate reconst.

Maximum weight 20 hs.; is more effective than inches are mailed horizontally
Fig. 14 ognors for from below.

to the sheathing boards; the to the sheathing boards; the

spaces between strips being filled, level with their tops, by a mixture of clay and cut straw or any other fire-proof nonconducting preparation. The same method is also used for flat parts of roots; the metal tags for holding roof covering being nailed to strips.

The skerehes bereto accached illustrate the various methods de-

which by the by does not fulfil the promise of its ample title, either in respect to the number of the designs, of which there are by no means one hundred, or as regards bills of materials, of which there are but two and those useless, or as regards specifications, of which there are none at all. But it is not easy for the general or the professional reader to understand why the market, already overhordened apparently with such works, should be charged with this new fardel. It is a disjointed and illiterate collection of wood-cuts mostly blurred by long usage, berrowed from a dozen authors, and each accompanied by a brief description in various types, giving also the price and title of the work from which it is extracted. It is in fact an illustrated catalogue of such works as Bicknell's "Village Buibler," Cumming's "Architectural Details," Atword's "Modern Builler, "Cumming's "Architectural Details," Alwood's "Modern American Homesteads," Horsey's "Home Buildings," Croff's "Progressive American Architecture," Allen's "Huma Architecture, "Gardner's "Home Interiors," and Woolett's "Villas and Cottages." Two dilapidated wood-cuts out of Withers's "Church Architecture" are not sufficient to redeen the collection from its essential character The book, however, has the curious advantage of preof sulgarity. senting to the student a clear proof of the essential unity of our Vernamlar Architecture. The many minds herein represented as working upon the American thome of house building have fairly kept to the dead level. Scarcely has one successful in extricating himself from the strong entanglement of "the popular styles."
The best of these designs are the simplest; the worst are those which are most freely given up to decoration. In the latter we recognize an extraordinary numbrity of bracketed cornices; strep bastard French roofs in every variety of simple and complex curvature, fretted with theap finials and creetings, and broken with compound gables, dormers, and towers; windows with every form of arch. and enclosed with architraves and cornices such as the carpenters fancy so haishly bestows upon our suburban villas; purches and verandas richly jig-saved; and, in short, all there features made familiar to us in the neighborhood of every large American town, and to be seen nowhere else in the wide world.

In the presence of such diverse witnesses it expand he denied that To the presence of such diverse witnesses it cannot be defined that we have an architecture of our own, with its distinct characteristics, based, as we have more than once had occasion to say, upon legitimate conditions of living and material, but developed by intrained hands into painful absorbities and exaggrations. We have it to others to draw inferences as to the significance of these developments in their relation to national character. We do not believe, however, that a careful tracing of effects back to causes would flat-

ter our self-exteen.
Concerning the function of the architect under such circumstances we have no question; it is plainly to simplify and to purify; to distinguish his work by self-denial and reserved force; to chasten and correct this national expherance of fancy. He may be assured that every builder in his neighborhood will have his eye upon the new idea which is thus taking shape, and the lesson will not be lost. The characteristics of our popular architecture which we have noted are for the most part grafted upon a good stock. The ground-work and plant of our common dwellings are reasonable for the most part, and proved that the second part of the most part, and a natural growth out of our habits and necessities; but this ar-chirectural blossoming is extraneous, and for it we are primarily in-debted to the influence of natrained architects. There are now in the profession men of education, sufficient in number, though lew, to leaven the whole lump, if they will only keep free from the affeerations of their knowledge, will not masquerade with foreign shapes possible to our conditions and strange to our ensions and climate, and will content themselves with developing our own natural and proper heritage. The vast unjority of house-building prople do not employ architects but are satisfied with the services of carpenters and builders. These are prompt to horrow from the works of the nearest architect, such decentive ideas as they can comprehend, and although, by passing through the alembic of untu-tored maginations, these ideas become naturally somewhat distorted and volgarized, yet, if the ideas are good in the beginning the result of this bregular copying is of course less fiable to be bad than if it started from an indifferent original. The responsibility of the architect therefore seems to extend far beyond his own immediate interests or thuse of his client. It is for him to assist in moulding the vertue-ular architecture into shapes consistent with the higher eivilization. It is from this that the first impulse of improvement must come, and if, in his designs, he is loyar to the conditions of life by which he is surrounded, he becomes a direct and active agent of reform.

Let us then respect the vernacular forms.

THE VENTILATION AND HEATING OF SCHOOL BUILDINGS?

VENTILATION.

Pune air contains about .04 of one per cent of carbonic acid gas; the viliated air of close rooms contains from .07 to .2 per cent of this gas, and other imporities in proportion. This increase in the quantity of cerbonic acid is due to the breach of the occupants, which contains about 4 per cent thereof. Although this gas is not thu only impurity with which the air is vitiated, and not so injurious to health as some other exhalations from the human body, yet, as it is easily

1 Condensed from the Educational Montidy.

obtained by test and is supposed to be generated in about the same ratio as the others, it is taken in chemical analysis as an indication of the various impurities given off into the air by the occupants of a room. It is not well to allow the proportion of carbonic soid in the air to reach more than 107 per cent. When it thus become more the impurities will be evident to the senses, and it is essential to health that the ventilation receive attention.

The most accessible test for the impurities in the atmosphere is an active sense of smell. It is true that a person may remain so long in a vitiated atmosphere, or the air may become foul so gradually, that this sense will become inactive and not warn him of the existing condition; but upon reëntering a room after a few minutes spent in the obtained by test and is supposed to be generated in about the same

dition; but upon resourcing a room after a few infinites spent in the outer or a purer atmosphere, the impurities will be evident if they exist to an injurious extent.

Another easy method of determining whether air contains an in-jurious amount of importion is based upon the fact that a certain amount of earhouse acid is necessary to cause a visible precipitate in a scream amount of line-water. When to a bottle holding 12.58 oz. a cercain amount of time-water. When to a poster moving resonant of air half an ounce of lime-water is added, it will give a precipitate if the air contain .07 per cent of carbonic acid. A bottle holding 10:57 uz, would give a precipitate with the same amount of limewater, if the air contained .05 per cent, of carbonic acid. A larger hottle and more lime-water could be used if the proportions were precipitate with the proportions were precipitate. served. The line-water should be added by means of a pipette holding the exact quantity. The use of this test, which requires no skil-(ul manipulation or troublesome calculations, might be adopted with advantage in school-rooms.

In some kinds of buildings natural ventilation afone is sufficient to supply the wants of the inmates during the summer months; but for schools, where so many persons are congregated in one room, artifi-cial assistance is needed at all times.

The watery vapors from the lungs of the occupants of a room absorb the various organic impurities with which they come in contact, sorb the various organic impurities with which they come in contact, and when the former are condensed upon the walls and furniture the latter are deposited with it, and remain there after the moisture is evaporated again. The floors, wood-work, furniture, and all other possible parts should be frequently and thoroughly sembled and dried, and all empainted walls and collings should be wiped with dry cloths. Out furniture, books, clothing, awarpings, or any kind of rubbish should never be allowed to accumulate anywhere about the building. The yard and entire premises should be kept clean and from from dust and every impurity by which the air may become contaminated.

There are two systems of artificial ventilation: the rangum system, There are two systems of artificial vertalition; the recuent systems or that of extraction, which by means of heated shafts or chambers draws the air out of an apartment, apenings being provided for the admission of fresh air; and the picanin system, or that of proposition, which forces the air into an apartment by means of a fan or other apparatus, and provides openings for the escape of the full air. The latter system is seldow necessary in the condition of buildings. It may be used with advantage in hospitals, and also in mining operations, and in certain manufactories; but in the ventilation of school buildings the vacuum method is altogether the more desirable, being buildings the vacuum method is altogether the more desirable, being

The supply of twenty entire feet of frosts air per minute to each of the occupants of a room is sufficient to keep the air pure. In school-rooms filteen cultic feet per head per minute, in addition so that which is furnished by natural movements of the air, is ordinarily

sufficient.

In removing the foul air from an apartment, it should be taken as nearly as possible from where it is generated. It is well to provide openings in or near the floor for its exit. By this plan the air is constantly settling flownward over the occupants, taking with it the constantly settling downward over the occupants, taking with it the exhalations from their hodies, and removing at once any odoes from the dampness or filth brought in upon their fact. These openings should be of such size as to be depended upon entirely during the winter months; for if outlets were placed near the eciling the warned, fresh air, which finds its way at once to the upper part of the room, would escape without mixing materially with the fool air. During the summer months it would be theoretically correct to place the openings for the exit of the foul air near the ceiling, the coal air coming in near the floor and rising towards the ceiling and taking with it the warm exhatations from the hodies of the neceptants. But it is found in practice that with the temperature of the air not far removed from that of the human body it may be drawn in any direction, and with the aid of the natural ventilation afforded in warm weather the exact position of the entrances to the draws is of little importance. It is well to place them near the floor, on account of the downward tendency of those organic impurities which are held in suspension by the six. A current of air flowing at the rate of one and one half (cet pur second does not produce an appreciable draft. and one half feet pur second does not produce an appreciable draft. If the current at the openings for the extraction of the air is not over four times this, there will be little danger of unpleasant drufts toward them.

If the vetocity of the current in the duct is six feet per second, and asch person needs twenty cubic feet per minute, or one third of a cubic foot per second, there would be needed by each occupant of a room one righteenth of a duct the cross-section of which measured one square foot. It there were a duct to every ten persons its cross-sec-

tion should measure eighty square inches. If the current is slower, the dusts should be correspondingly large. It is not best to have the ducts smaller in proportion and the currents correspondingly faster than those spoken of above, as there would be danger of ampleasant drafts toward the openings into them.

The ducts should be fixed with lin or iron their entire length, unless they are built in a brick wall, as they may endanger the building from fire. They should lead to an upright shaft extending to the outer air above the roof. This shaft, the capacity of which for extraction depends upon the difference in weight of the air inside and outside of the building, should be of such size that the area of its cross-section will equal three fourths of those of all the dusts emptrying into it, if the current in the duets is about as mentioned above. The duets should enter the shaft in an upward direction, that the current from them may not be checked by that from briow, and should be supplied with dampers, that their currents may be regulated, as

duets from the nearer rooms are inclined to furnish an under amount of air, which the shaft extracts.

The best shaft consists of a brick stack extending from the ground to above the roof. By applying heat at the bottom of this form of shaft the column of rarefied air will be the whole height of the building. If the entrances of the ducts into the shall are properly secured from danger, the fire for rarefying the air can be kindled in the shaft, and the smoke-tipe from the heating apparatus may be turned directly into it. If the building is a large one the smoke from the heating apparatus is usually taken to the top of the ventilating shaft heating apparatus is usually taken to the lop of the ventilating shaft in a cast-iron flue; but in a brick stack, with waits of sufficient thickness and properly built, this may be unnecessary. However, it is best, in any ease, to extend the smoke-pipe up after it enters the shaft, to above the entrances of the duets from the first floor, in arter to give the current of smoke the proper direction and the air in the shaft the benefit of the asperating effect of this rapid current from the fernace. Another method is to brick up a flue for smoke baside the air shaft, louiding the partition between the two with bricks set on edge, thus making a partition through which sufficient heat passes to aid materially in racetying the air.

If the shaft and the duets leading to it are of sufficient size there will be un need for head during the larger part of the year. In a shaft of good size a current of ten feet per second is common. However, the passing for head during the larger part of the cent.

shaft of good size a current of ten feet per second is common. However, the provisions for heating must in no case be omitted, as the draft is as sure to be downward when the air in the shaft is cooler than that outside as it is to be upward when the opposite condition prevalls. During the spring months, it very clien happens, in a building that is not constantly occupied, that the walls are colder

than the external atmosphere.

Sometimes, as in the remodelling of an old building, a brick shaft is not available. In this case a short shaft can be constructed, extending from the floor of the arrie to above the roof, and the fines be all taken to that. It may be heated at its lower part, and some of the duets may be separately beated by steam-pipes or gas-jets. A shaft built in this manner should equal in its cross-section the combined area of all the heater to remove the steam of the duets.

bined area of all the ducts emplying into it.

The amount of cubic space voguired by the occupants of a room is of less consequence than is generally supposed. If there is abundant provision for ventilation all that is necessary being oungly to enable the occupants to keep out of the drafts; and without ventilation, no obtainable amount will be sufficient to keep the air pure through a session of a squool. The greatest need of space seems to occur during the summer months. About two hundred cable feet per person will be though in the ventilated school-room.

There should be some means provided for the ventilation of the cellur at all times. Its ground air and mould are particularly unwholesome, and if not attended to find their way continually to the cours above. The collars can be ventilated by making connection with the main ventilating shafe, or by a separate duet to the open air above the roof. The air should be taken from near the fleor. In ease there is no cellar the space beneath the lower floor should be

ventilated.

HEATING.

It is essential to the health and comfort of the occupants of a room during the cotter months that heat be applied in two ways: first, the air should be slightly warmed before it reaches the lungs; and second, the huilding, that is the walls, ceilings, furniture, etc., should be heated to a degree higher than that of the air. Air receives its heat by contact alone, the radiated heat from any source passing through it without materially increasing its comperature; and it is practicable to warm the walls of a building from the inside without heating the air to the same extent.

Any apparatus for furnishing heat that is not used in conjunction with a plentiful supply of fresh, warmed air is incomplete and unhealthful; and any apparatus that furnishes heated air slone, and does not provide for the direct resistation of heat to the walls, is also unhealthful, unless preuffarly and carefully managed. The reason for this lies in the fact that in order to formish all the summth required in an apartment by supplying heated air it must be heated to a degree too hut to be breathed with comfort. Under these conditions (the walls receiving their heat from the air, and consequently remaining always the cooler) the occupants give off too much heat har redistrict for the cooler) the occupants by radiation from the surface of their bodies to the walls, and too fit-tle by means of exhatation from their lungs. The use of an ordinary air-tight stove is one example of the improper method of warming

t This striker usad a small altowance. We should father double it. - Eng. Annagan

without ventilating, and that where steam radiators pieced about a room without connection with an air passage is another. The ordi-mary hot-air furnace is an apparatus that furnishes air warmed to

too togh a degree.

Staves are a very economical kind of apparatus for heating small Shaves are a very economical kind of apparatus for heating small school buildings, and if properly constructed and managed will warm the incoming air to a healthful degree. A ventilating store consists of the necessary parts of an ordinary store, and in addition a metallic casing enclosing a space around the ordinary outer parts. This space, which is open at the top, is connected with the outer air by means of a dust entering it near the bottom. If practicable, the casing is arranged so as to enclose most parts of the stoves except those deors and dampers by means of which the fire is fed and managed. Stores of this description are manufactured in some parts of aged. Stoves of this description are manufactured in some parts of this country, and many stores of ordinary patterns may be made into ventilating staves by adding the metaltic casing. If necessary, this casing may be made to enclose the whole stove, and a large door be

provided through which the fire can be reached.

A valve should be provided in the fresh-air duct, by means of which some of the supply from the outer atmosphere can be out off and a part of the air be taken directly from the room. This will and a part of the air be taken directly from the room. This will chuck the exit of the air through the foul-air flows, and that in the room may be warmed to a higher degree. This arrangement can be used with advantage to beat the walls of the room before it is necupied, the cooler air being turned on after the session begins.

The warm-air furnace is like a large ventilating store set in the basement, the outer casing being of metal or brick. Their action is somewhat similar, but the direct radiant heat from the apparatus is best to the apparatus is like to a partments there. The greatest affection to the furnace.

lost to the apartments above. The greatest objection to the furnace lies in the fact that with the usual management the zir is admitted at

too high a temperature during the sessions of the selicol.

If a furnace were properly constructed and managed, a correct of hot air might be introduced before the sessions begin, and a current hot air might be introduced before the essions begun, and a current of cooler air while the room was occupied. By this method, or if used in connection with stoves situated in the apartment, which furnish radians heat, the use of the farnace may be healthful. To enable the furnace to supply but air before the room is occupied a connection could be made from the solved-room to the fresh-air duct, so that a current would be established similar to that spoken of in connection with the ventilating stove.

With furnaces, ventilating stoves, or any apparatus to which air The normales, remaining stoves, or any apparatus to which air is conveyed by means of duets, the greatest annoyance usually comes from the impurities which cullect therein, and being burned or heated by the formase generate offensive gases. The channels for fresh air should be made so us to receive no part of their supply from the basement, but from that source where its purity can be best secured. They should be so constructed that they can be easily opened and thoroughly cleaned.

The necessary sizes for fresh-air duets can be estimated by a process shoular to that for the foul-or duets, taking the relegit as found

ess similar to that for the fool-air ducts, taking the velocity as found

by experience. They are usually too small.

The passage of warmed air to a room through upright passages and duces forms a means of propulsion which assists the drafts in

the foul-air duces.

For heating large buildings there is no apparatus so complete as a system of steam-pipes and radiators. If they be properly arranged they will invest radiant heat to the walls and will warm the air to any degree desired. The best way of using steam apparatus in school haddings is to place radiators in different parts of each room, and to provide openings near them from the outer air. By this plan the incoming air is warmed by flowing around the pipes of the radiators, and the walls are warmed by radiated heat. To make this plan complete there should be screens in front of the radiators to protect the scholars from the direct radiated heat and from the currents of incoming air.

F. A. COBURN. currents of incaming air.

COMPETITION IN INTERIOR DECORATION.

V. THE VESTIBULE OF A CITY HOUSE.

THE subject of the fifth competition will be the interior of the THE subject of the util compensan will be the interior of the entrance-vestibule of a city house. In plan it will be ten feet by twelve, and it will be fourteen feet high. By day it is to be well lighted by transom or side-lights; and as it must be lighted at night, special attention must be paid to the chandeller, gas-brackets, or other attributes of artificial lighting. Required: A plan showing the arrangement of coat-closets, and the design of the floor-tiling; an elevation looking towards the street, a section, and denoits to a larger scale. Or instead of this, a plan, a perspective view of the interior and details, will be accepted. Drawings must be received at the ofnee of the American Architect and Euclding News on, or before, August 20.

NOTES AND CLIPPINGS.

The Noise of the Elevateo Railways.—The New York Evening Post suggests that a remody for the autovance caused by the noise of the elevated railroads may be had by following the example of beschunters, who, when they find a honey tree on land whose owner, would object to the follow of the tree, gird it tightly about with no exchain. This is said to deaden the seeind of blows that a tree may be chopped down unlarged to the course theorem within case surabot. known to the owner, though within easy ear-shot.

Some Water-Tests roa Layrass.— The need of simple tests for the more deleterious substances to be found in possible water, base been often fet, we doubt not, by many of our readers. The presence of a few understrable eaths and acids are discoverable by simple means. Among these are the nitrates, while, diletates, and chlorides. Amondia can be easily detected, if in oxcess. The presence of a first six of nitrates allows that organic matter has been acud upon; and may be present. The saits are not dangerous; the danger lies in thoir source, and this shooth, it possible, be asceptained. The presence of a nitrate may be readily detected by the following reaction: Place a small quantity of the warm to be tested in a test tabe; add an equal quantity of pure subplant cade, using care so that the finide shall not mix: to this add carefully a few dreps of a esturated solution of ferrous subplace (subplace of iron). The statutum where the two fluids meet will, if nieric acid be present, show a purple, afterwards a brown color. If the nitric acid be in minute quantities, a reddish color will result. The presence of ammonic, if in excess, can be determined by treating the water with a small quantity of pobasic bydiate. Ammonic if present, will be insented and may be recognized by its olor, or by the white funes of ammonic chloride when a glass-rod wer with hydrochloric acid is passed over also month of the test tipe. Why chlorine is present in any form in water used for drinking should always be uscernained. In itself, its presence is evidence that sewage contamination in some form exists. The presence and amount of chlorine may be ascertained by the following simple methal: Take 0 grains of argentic uitrate (autrase of silver), chemically pure, and dissolve it in 200 mins of discilled water. (We have found the calic centrimeter too but very convenient uitrate (autrase of silver), chemically pure, and dissolve it in 200 mins of discilled water. Add to the water a stood quantity of the souther, if chlorine be present, a whi

The water should be stightly acidulated with aitric acid before the test is applied.

We will conclude by recommending Heisch's sugar test for the presence of dangerous organic matter. It is mentioned by high authority as a simple and sudicient test: Place a quantity of the water in a clean, glass etoppered bottle; add a few grains of pure sugar and expose to the light in the window of a warm room. If the water becomes turbid even after exposure for a week, reject it. If it remains clear it is safe. — Engineering News.

A New Mannorn Cave. — At Glasgow, Ky., a cave has been discovered within a short time which will probably ontrival the famous Monthorneoth Cave of the same State. It has been explored for a distance of tremphore miles in one direction and sixteen in moster. The axistness are powide and the bed so good that a span of borses can be driven through them for a distance of eleven miles. Three rivers flow through it by different channels; one of them is navigable for a length of foresteen miles. Aster from the natural interest attaching to the discovery of each a place, the discovery promises to be of some ethnographical importance, for in one of the large channels of the cave were found several mannoirs, which were enclosed in rude stone collins. It is said that they are not dissimilar in apparance to Egyptian mannoirs. The cave has been mined the Grand Crystal Cave. Crystal Cavo.

A New Theory excession Mumius. — Raving observed that Exception mammins could be divided into two classes, one embracing those bodies which had been ambalmed image, and the other mediate themest bodies which had been eviscerated. Dr. Gauselbark, a Swodish chemist of reporte and professor in the University of Upsal, has formed the opinion that the muminies of the first class are not really dead, but are only in a condition of suspended animation; though, autorimentally for historians, the secret of bringing them again to life has been test. In support of this theory he address the results of his own researches and experiments, one of which consists in submitting a spake to a process, the details of which are of course kept secret, which petriles it. In this condition it has been half aside for a year or two at a time, and is then vestored to life by some equally mysterious visitiving process. This has now been during a space of fifteen years, and the suchs does not seem to distike it. In tiansetbach is said to have applied to the Swedish Government for have to experiment on a condemned criminal, the understanding being that if the experiment is successful the criminal shall receive parton, because of the service thus rendered to science, and, possibly, to humanity.

Making Cement from Sewace. The London Pail Mail Gazette says: "Among the many devices for the utilization of sawage that of converting it into cement is not the least curious, and it has actually been preinted practice at Burnley. The town sewage runs into setting tasks, pure mixed on the way with 'time cream.' After settling, the studge is dried, and thally packed in kilns and burned, no other Inch heing necessary than just sufficient real and shavings to set it alight. 'Cement clinkers' are the result; and these ground ince course powder make the cement, which is salable as Portland or other hydraulic sement. Either Fortland or Reman cement, or agricultural lime, is produced according to the quantity of line employed. The corporation of Burnley are said to be satisfied with the purification thus effected of the sewage, and the company working the invention (General Scott's Cement Process) find it problable. The system is alleged to be applicable to London."

The Indiana Reserral you the Insane.—The new Indiana Respital for the Insane, which is about ruely for the reception of immates, contains 20,000,000 bricks, 80,000 panes of glass, and 400,000 square feet of flooring, the entaide line of the walls being one and one eighth mile in length. The building's estimated cost was \$550,000, but it will be completed for \$650,000. The architect is Mr. Edwin May, the same who is to build the new State Rouse.

A New Fine-Proper Fidor. — A test of a fire-resisting flooring was on Thorsday week made in Victoria Sweet, Westminster, for the information of the Metropolitan Board of Works. The Board has the power to refuse leave to architects to ever buildings of greater height than 100 fg., and objection was made to the block called the "Members' Buildings" in Victoria Street, on the score of the bisecurity of life in case of fire. The cojection was mot by the provision of five-relating floors, and to prove that the means taken were secure was the purpose of Thorsday's experiment. A square building with 9-tuch brick walls had been oracted on the open apace to the west of the Westminster Palaca Hotel, the building representing the floor of a house with windows, doors, and a carridor. A room this building contained the materials for a fire carefully hidd, many timbers being so placed as readily to catch in dame, and shavings being heaped round the apartment. The material was then fired, and as others was a through draught from window to door a fierce fire soon raged. The flooring to be rested formed the roof of the building, consisting of ordinary woman joists, cased with terra-cotts tiles, and there are in the eyelem three open spaces helween do ceiling of the one room and the dooring of the room above, the room above in the experiment groom being, of course, open. While the fire was raping in the room and throwing out an intense heat, the gentlemen witnessing the experiment walked above the lighted room, and proved, by the application of the land to the from high protective tiles, that the heat had not penetrated, though the fremhal lurant for upwards of an home. Mr. Vullianny, the architect of the Metropolitan Board of Works, expressed binned quite suitsied with the experiment, and considered that buildings pretected with this flooring would cause times to be limited in the room in which they commanged. Mr. Francis Butler is the inventure. The invention is said to be inexpensive, costing about 50 s. for 100 ic. square. —

Stern Bronze. — The London New says that the Austrian gun-makers seem to be able to make bronze as hard as steel, and as capable of resisting the wear and tear of rified projectiles, since it would be althogether impossible to piece armor plates with a bronze gun made in the ordinary way. If we are to believe the last reports of their big gen experiments, the bere of the weapons after some three handred rounds had anatained an indirey at ail, note instanding that comparatively heavy projectiles were fired, and with buttering charges of guapowder. But the most surprising feature about the Uchatins gun is the fact of its secret having been so closely kept. The Austrian Government has placed no difficulty in the way of an inspection of its guns, and has permitted even the presence of foreign military attaches in the government work-clops. Kay, more, samples of the wonderful steel-bronze metal have been freely distributed, and chemists have tried their best to discover its mode of preparation by analysis. All has been in vain. Despire fur means and foul, the secret of the Uchatine metal still remains a mystery, and bids fair to be so, outil its inventor divulges the composition himself.

Parson Bans.—The Scientific American says that a recent potent by a Western juil-builder consists in using steel bars with a wrought from core, and after cutting them to defined lengths and drilling them, heating them to ared heat and immersing them in water, while rightly held in clamps of the exact size, so as to render the salges of the bars as hard as flint, perfectly resisting the file or chisel, and impossible to be broken on account of the iron core. The champ holds the bar so that warping is prevented.

The firm oors. The charp holds the bar so that warping is prevented.

The Morter Power of Kiagara Falls.—We have mentioned (American Archivel for May 5, 1877) the suggestion of Dr. Siemens, that the Falls of Nicears could be turned to practical use for manufacturing purposes, by causing the greens to work dynamo electrical machines, which could transmit the force to towns at a distance. The Bagiota University and wastes that a company has been formed who are going to use the Foil to make compressed air, which is to be the means of causmitting motion to a distance. In this whense the canal built by Mr. Day at a cost of about a million delbare will play an important part. "It is 33 feet wide by H feet deep, and leads from a point jue above the rapids a mile across to the back below. At its lower end is a large basin 70 feet wide and 800 feet long and 11 feet in depth. From the basin a thing 300 foot long is digging to the edge of the precipica. At the month of the flume will be a massive iron gaie with an 8-foot opening. The water from the flume will be a massive iron gaie with an 8-foot opening. The water from the flume will pass into the reservoir, which will be connected with the sir receptacles below (from cylinders is feet in diameter and 70 feet long) by means of large pipes siphonshaped. Attached to the cylinders will be a requisite number of large automatic valves, to let the water mount of the cylinders after the compressed at has been allowed to escape. The practical working of the machinery will be briarly as follows: After the water find the reservoir on the top of the bank is high enough to reach the bond of the siphon it will escape down the pipe to the air cylinders below. The pressure thus obtained very soon closes the automatic valves. There being no escape for the water which containes to pour into the cylinder is so arranged that the reservoir will be exhausted by the time the defined compression has been obtained below. While the reservoir is again filling with water, that in the eylinder is e

Urtilizing whe Electric Liour.—The intensity of the shadows caused by the electric light is one of the great disadvantages which prevant its introduction into general use. A Fronch woollen manufacturer has successfully lighted his spinning-room, which measures 140 feet by 5 feet, by placing two electric lights at a height of aix feet from the fluor, and projecting their light upon white-washed walls and colling by means of conical relicators, which are so a ranged that the room is lighted by reflected light alone.

THE SETHO TUNNEL.—For some time past heavy blasts in the header of the Setre tunnel have loosened blacks of rock weighing as much as a ten from the drift from which the Savage Company is running to connect with the tunnel. The men in the Savage have been withdrawn from the face to the drift. The tunnel is believed not to be further away than eighty feet, and it may be that connection will be made by the Fourth of July.

A SAIT MIND.—A mine of pure rock salt has been discovered at Wyoning, N. Y., 1,200 feet beneath the surface. It was discovered while sinking an oil well. The stratum is said to be 100 feet thick. There are but few extensive mines of pure esit in the world. There is one in Vulencia, one in Poland, and one in Armenia, near Monat Ararat.

This Cost or Funcine.—According to United States statistics, worm or Virginia fence costs 95 cents, post and rail \$1.35, heard fence \$1.25, and stone wall \$2.34 per rud. This estimate is based upon boards at \$16 per thousand and rails at \$56. From the same source it would seem that of one fences 65 per cent are of the kind known as worm or snake fence, 17 per cent of pest rail, 12 per cent of board, and only 4 per cent of pestimated stone wall. The returns embrace 156,377,721 rods of fence, enclosing 16,374,641 mores, at a cost of \$179,834,494, or at the raile of 955 rads to each 100 neres. Each dollar's worth of live-stack requires one dollar's worth of fence to keep 6 in bounds.

Powerent Engines.—In the United States steamer Wampanong, possibly the fastest steamer affect, are a pair of "hundred inch" engines, each of which is said to be six limes as powerful as the great Cerliss engine, which was one of the mechanical wooders of the Centamial Enhancement for the pair ago together with six others, one pair of which, built at a cost of \$250,000, has never been placed in a vessel, but still lies at the Washington navy-yard.

Cuenteal Process for governoe Zine with the worth Britians Litholorum Charlings. — The articles of zine are first brightened by
rigorous scouring with quarta sand, moistened with dilate morbide acid,
puriting them quickly in wester and then wiping dry most carefully with
white blotting-paper. To insure success, however, it is necessary to empley zine as free as possible from lead, and to have it bright like a mirror.
When show conditions are fulfilled, the metal may be costed with a variety of most beautiful colors by immersion in a solution of alkaline factract of copper for a shorter or longer interval of time, depending on the
color that is desired. The solution is made by dissolving three parts of
ait siried tartrane of copper in caustic soda lye containing four parts of
hydrome of soda to forcy-eight parts of water. If the zine is disped in that
liquid at a temperature of 10° C. (=50° Fahr.), it appears violet after two
minutes, takes a splendid dark-brown in three onimites, changes to green
in four and a half, to golden-yellow in six and a balf, and in purple in
sight and a half minutes. If the liquid be employed at another temperature than that given shove, the appearance of the different colors will
also vary in other short periods of time. If the zine be left longer than
eight and a half minutes in the copper liquid at 10° C., the last-mentioned
purple color disappears, being replaced by one or another of the preceding
hues, depending on the time; but then they are never of the same brilliquer, and will continually dimbrish, mail after some days immersion the
zine is covered with a miscolored suboxide of copper. For this remon the
articles are removed from the bath as soon as the desired color is fairly
developed, and timed humanismly in water. After careful drying, the
metal may be costed with a good varnish, to make the colors more derable. — Engineering and Mining Journal.

What arcomes of the Gravestones.—The cotrespondent of the Sheffeld Independent says it has often been regarded as a mystery what becomes of all the pine that are manufactured, but it has puzzled him scarcely less to know what becomes of all the gravestones created during past years over the remains of departed relatives. Recently he came upon a clew likely to solve the mystery. He was in a remote Dorbyshire village which has an old church and a very well filled churchyard. The late rector was both squire and parson, and as squire he owned rome farms. What did he pave his farmyards and farm buildings with? With gravestones; and so little was he ashamed of the process, that the stones were laid with the inscriptions apwards, telling their own tails. Take another example. A somewhat famous Derbyshirs church, lying about seven miles eastward from Clesterfield, has lately been undergoing the process assayly known as "restoration;" that is to say, things have been pretty well knocked about. The work is now approaching completion. Indeed, the workingn are engaged in laying down the floor. The airles are being paved with stone obtained, you say, from some quarry famous for its flag-stones? Not at all. There is an illegitimate quarry hearer at hand with stone already worked. The churchyard is hear, resorted to, and grave-stones are pulled down, got into convenient sizes, and laid down in the aboles.

Michigan's Tome. — The measurement to Michelet will soon be creeted, about \$5,000 having been subscribed for the purpose. It will represent the historian lying on his tomb. The Muse of History, rising to Heaven, writes on the score, "Wistory is a Resurrection." From the pedested of the monument is to epring the fountain which is to keep over fresh the flowers with which Michelet asked his tomb to be covered.

THE LARGEST CASE. — The largest cask in the world is that at Königskele, which was finished in 1725 after three years' work. This cask, as soon as durished, was filled with 6,000 quintals of good Meissen wine, which cost £6,000 starling. It contains 648 hogsheads more than the famous ben of Ruidetherg. The top is railed in, and affords room sufficient for differen or twenty persons to stand.

A MONTHER TO VIOTOR FUNDABLE. - King Humbert has set apart \$200,000 out of the income of his civil list towards the monument to his father to be raised in Turin.

COMMUNICATION :-

BOSTON, JULY 13, 1878.

The scheme of Dr. R. P. Dyrenforth for a National Polytechnic School, as recommended in the speech of the Hon. Henry Blair, of New Hampshire, in the House of Representatives, on the 18th of June, contemplates the establishment of a great central institution of instruction in science and the useful arts, supported by the surplus income of the Patent Office, which amounts to \$100,000 annually. The accumulation of this mappropriated balance during many years now amounts, we are informed, to a fund of \$1,200,000. It seems proper that this considerable fund and income should be applied in some way to benefit the national spirit of useful invention, whether by promoting scientific investigation or by feeding and enriching the sources of the industrial arts through processes of education. The plan in question was submitted in the last days of the session without any expectation of immediate action, but with the intention of awakening profitable discussion of the subject. It provides for schools of mathematics of civil and mining engineering, of machinery, architecture, chemistry, agriculture, and forestry, with a Board of Regents, composed of the Vice-President of the United Scatos, who is to be the chief executive officer, of the Secretary of the Interior, who is to be ex-officio Director, of the Commissioner of Patents, and of six members each of the Senate and House of Representatives. It is proposed that each of the eight schools shall have a principal, that the students shall be appointed in the same manner as are those of the Military and Naval Academies, that they shall pay \$250 per annum for tnition, board, and lodging, with certain fees for practice in the laboratory, etc., shall wear a uniform and be subject to such discipline as shall most effectually increase the efficiency and maintain the authority of the school.

In behalf of this scheme it is claimed that it contemplates no expense to the national treasury; that it will be free from political influences; that, by the equal territorial distribution of polytechnic graduates, it will fairly diffuse the benefits of scientific education; that these graduates will stimulate healthy enterprise and useful invention, and afford a sound basis for the advancement of all the practical arts of civilization; that the proposed school will enjoy the advantage of proximity to examples of the best mechanical inventions in the model rooms of the l'atent Office; that, by the method of appointing its pupils, it will not interfere with existing institutions; and that, by the nominal cost of their instruction, it will open the benefits of scientific training to many who are now practically excluded from them.

As yet this proposition has attracted but little public attention, but it deserves to be fully discussed. Its merits are obvious enough; the greatest of them, perhaps, is, that it points out the fact of the existence of a great available fond emimently fit for the endowment of technical education. As for the especial contrivances of Dr. Dyrenfurth, by which he would divert this newly-discovered treasure to its natural uses, we commend them to the careful consideration of our readers. As at present advised, we are not of those who consider the establishment of centralized institutions of instruction best adapted to our

needs. Naturally the same arguments brought against a national university must apply to a national school of science. Naval Academy at Annapolis, and the Military Academy at West. Point are maintained for the education of officers in the public service. They occupy a place which no private or local institu-tions could possibly fill, and are necessarily based upon arbitrary standards of discipline, so that their graduates may conform to a type and become parts of an elaborate machine, the efficiency of which largely depends upon the subordination of the individual to the system. The object of a polytechnic school, or a school of technology, on the other band, is to develop individual and independent minds for the various uses of civil life; the primary aim is through the individual to improve the arts of civilization. To this cud numerous technical schools have been provided in various parts of the country, each of them requiring, for the perfection of its use, more complete apparatus of every kind, a burger and better paid body of instructors, larger loan funds, more numerous scholarships, and, in short, a more ample endowment than any of them at present enjoy. These institutions are distributed according to the enterprise and meda of the commonwealths, and to meet natural demands. It would seem, therefore, that the large surplus funds of such an institution as the Patent Office would be more usefully and economically applied by distribution, under proper restrictions, among these various naturally established nuclei, than by adding yet another nucleus, and one which from the nature of the case, must be subjected. like the present national schools of the military arts, to the annual chances of imperfect and moddlesome legislation. Let us, however, thank Dr. Dyrenfurth for drawing our attention to these unexpected national resources, and let us hope that his ingenious scheme may in the end result, by whatever means, in giving to technical education in this country the most effective and the most judicious assistance.

WE desire to give our readers the benefit of an invention in architectural practice which, while it may possibly suggest to the more energetic members of the profession the existence of new and untried fields of remunerative if not honorable employment, may also admonish them that such fields, however promising, are sometimes fertile only in brambles. The crection of a new county jail has for some time been contemplated by the Board of Supervisors of the city of Brooklyn. Most of the profession, even in these hard times, would content themselves with awaiting at the Board-room doors until the assembled wisdom within should have finally determined to build the jail, when the usual professional swoop and scramble for the apoits would have been witnessed; but Mr. Wm. A. Mundell with superior enterprise, volunteered to assist the Board by laying before them a full set of plans for the building in question, which plans of course were not to be paid for if the scheme of building came to maught, The Roard, being human, could not but assent to a proposition so easy as this and accompanied with such a saving charse, and the plans in due time were unrolled upon the talde before them. The real building, however, is apparently not foreshadowed by these drawings and a full fledged claim forthwith comes into existence, which on the 1st instant was laid before the Board in a motion to pay said Mundell the sum of \$4,500 "out of the buexpended balance of the out-door relief account," for his plans and specifications for the new jail, as payment in full for his services, he to deliver all such plans and specifications to the clerk of the Board and to agree, if at any time it should be desired to begin the erection of a new jull, that he should superintend the work for the sum of two and one half per cent on the cost thereof. It is to be supposed that Mr. Mundell, for the sake of the public interests involved, was willing to sacrifice himself in this manner, for the motion was adopted by the Roard and the architect departed with a feeling that he had by his clever professional management benefited himself, if not the county. But the next day the Taxpayers' Association obtained from the city court an injunction forbidding the payment or the receiving of the check for \$4,500 for the services in question, and now Mr. Mumbell has only his plans and the sympathy of his friends in the majority of the Board with which to cousole himself.

Actnorea, apparently, the testimony before the Potter committee has so far failed to meet the expectations of its friends, it certainly has succeeded in opening to public view some of the

curious hidden machinery of politics, in showing how widely extended are its wires and in what old places the party-puppers jump. The lasest exhibition of this kind occurred in the Department of Architecture, where it might be supposed those only who could manage a T-square or superintend a piece of mechanical work would find place. One Mr. Demis was lately compelled to narrate before the committee his adventures in search of an office in reward for certain alleged political services in Florida. It appears that he aspired first to he an auditor in the Treasury Department, then to be a special agent, and then to be custodian of plates and dies, but, failing in these efforts he finally applied for and obtained a place in the Department of Architecture, where, although, as he confessed, he know nothing of architecture and of course had passed no examination, he discovered a congenial fauction for drawing pay without any equivalent of service; so that when he asked for a leave of absence of three or four months to go to Massachusetts, he was qualiful to say to the Assistant Secretary of the Treasury that he " was put on there to draw pay," and would not lose his "capacity to do so" if he went away. We regret to say, for the credit of the Administration and notwithstanding its phelges of civil service reform, that, according to his testimony, he got his leave and drew his pay regularly at the rate of six or seven dollars a day. We are much exercised to know with what show of ou-enpation the Supervising Architect supplies those who hold those desocrative positions in his Department. Architecture is said to be the reconciliation of the useful with the beautiful. Is this reconciliation exemplified in the government office, and do the working droughtsmen there manage to maintain a symmetrical and entirely operative union with their purely ornamental comtades? An explanation in his next annual report how in architemare "they also serve who only stand and wait," may afford some useful bints to the profession and would be altankfully re-

A countsmon, appointed by the crown in England, to investigate the copyright laws, and to suggest new enactments by which the rights of the public and of authors, publishers, painters, sculptors, architects, and of all intellectual producers, should be more distinctly defined and more properly adjusted, has just made its report. After an elaborate investigation, the commission concludes, as regards painture, that, in the absence of a writtun agreement to the contrary, the copyright in a picture should belong to the parelisser, or the person for whom it is printed, and should follow the ewnership of a picture, without however, prejudicing the right of the artist to make such use of his proliminary studies and sketches for such picture as shall result in works which are not direct imitations or replicas of it. Mr. Charles Barry, on behalf of the Royal Institute of British Architects, appeared before the commission, and claimed that architects were subjected to great injustice and injury by the absence of a copyright which should protect their designs and prevent their use by other persons than the authors for building purposes. He suggested that the right to reproduce a building, whether in whole or in part, or on a different scale, or for other persons than the original client, should be reserved to the architeet for twenty years from the date of erection, or from the sale of the design. The commission, however, considered it impraeficable to reserve this right to the architects to reproduce buildings, but recommended that property in architectural designs should be protected as drawings, "so that they may not be copied on paper."

In follows from this apparently that, in the judgment of the commissioners, among whom, by the hy, there was neither a painter nor an architect, the execution of a design in a building is practically, on the part of the architect, a surrender of all right to it in the future to the public; it becomes common property as a work of art, and tony be imitated to any extent by any builder, just, indeed, as he himself consciously or anconsciously, in whole or in part, has imitated, or, at least, has been influenced by the works of his producessors or contemporaries. This is certainly a reasonable condition. If it were practicable to reserve to the architect for twenty years the exclusive right to reproduce his buildings, in whole or in part, as proposed by the representative of the British Institute, the law, as it seems to us, would operate directly to check the natural advancement of the art, and the free development of style, and introduce into design a deleterious element of agressive personality, a sort of patent system, entirely inconsistent with healthy artistic work.

It would be the business of every architect to strive easily for individuality or originality of expression in his work, and surdiously to avoid, so far as he could, any appearance of copying, or of being influenced by the works of his brethren, — certainly the lowest motive which can actuate the artist in the process of designing, and one which would make modern architecture even more self-conscious and affected than it is. To place any such arbitrary check upon the landable tendency to initiate a good work of architecture or to copy the good points thereon with a proposed by the Institute, would be a direct interference with a natural law of progress. Architecture can live and grow only in a generous atmosphere. The enforcement of such patent rights, if enforcement were possible, would stifle the act and style would disappear in a generation.

PREMIUMS IN COMPETITIONS.

The invitation issued by the Government for a competition for the restoration of the Patent Office calls to mind a usage of competitions, which is at the same time one of the most universal and one of the least reasonable of them all, - we mean the habit of offering graduated prominus for competitive designs. It is, perhaps, not one of the vital points in the management of competitions, yet it seems as if building committees or even archibets scarce ever imagined a competition without attacking to it this perverse notion, - for such it appears to us, yet it has nothing better than habit to recommend it, and many things to discredit it. It is probably a survival of the custom of giving a first, accound, and third prize and so on, in public games, or school examinations, natural enough, but is transferred to a rivalry in which any gradation among the unsuccessful competitors is as much out of place as it would be among the disappointed suitors for the hand of a princess. In the present case there is no reason to complain of the action of the Government which having at its command only the six hundred dollars allowed for the purpose by Congress; followed the usual custom by offering it in three prizes, of three hundred, two hundred, and one hundred dollars, and then, when the architects pro-tested that the prizes were too small, did what it could to make the stake more valuable by rolling them into one. It is the prevailing custom that is at fault, as we think, simply because the matter has nover been sufficiently considered to set it right, and for this architects are as responsible as anyhody.

The objection to a graduation of premiums is, that it gives a wrong turn to competitions, and, while it does not advance their legitimate end, it aggravates their peculiar cyils. The purpose of all competitions is, to get the best choice of designs for particular works. The inducements to architects are, first, the hope of getting work to do, and second, a greater or less opportunity to make known their names and capabilities. The disadvantages of them—and they are so serious that a great many thoughtful architects condemn competitions altegether because of them—are, that they are upt to be disaded by incompetent persons or committees, and therefore not according to the real merits of the designs; that therefore they are as much a matter of chance as a lottery; that they allure architects by an excitement like that of gaudding, and lead to a great amount of trickery, partizanship, ill-feeling, and recrimination. It is important, if competitions are to continue, that they should secure their object as directly and with as little of these disad-

vantages as possible.

Now the one prize in any competition, the only thing that to an architect of assured position is worth the effort of competing, is the execution of the work itself. There are also the advantages, to those whose position is not yet assured, of the opportunity to attract attention and to make their names known by even an unaccepted design. The premiums offered are never, unless in very extraordinary cases, an equivalent for the work that is rendered by the competitors. It is desirable that committees should be disabused of the idea that they offer any thing, except the work they have to give, which is an equivalent for the labor they demand. No architect in successful practice would think of giving designs for the premiums which are ordinarily offered in competitions were it not for the chance of getting the work for which he competes. The nominal benor of being classed as second or third or fourth in a general competition may naturally appeal to school children, but is worthless to professional men who respect their own position. That a committee, after having obtained what they want and selected a design, should go on to assign an order of merit to the archi-

teets whom they have decided not to employ, is at least gratuitons; if, as is almost always the case, they are tuchnically uninformed, it would be considered an unwarrantable assumption if it were not sanctioned by habit. As a matter of fact the classification of premiums does not command the respect of competitors. The only effect of it is to add a little excitation thy the chance of one's getting a little better premium than some one else, which, as far as it goes, is simply unwholesome. Neither the rather childish gratification of being rated above the next competitor by a doubtful authority, nor the pecuniary advantage of having one's small remaneration increased at the expense of his fellow's, is a worthy eliject of professional ambition.

What, then, is the use of the premiums? An ideal competition

would give the work to the best man and pay the rest, all alike, a fair remuneration for their labor. This is sometimes atto be looked for. The next best thing is, while securing what is thought the best design, to domand as little infremimerated labor as possible, that is, to pay for as much of it as possible. Since there is a regular and uniform fee for architectural work, it may be assumed that the work of the competitors should be paid alike. Whatever money is afforded in premiums might therefore he fairly divided in equal shares among the unsuccessful competitors, the successful one being employed in the ordimary way. But this would in most cases make the sums ridirulously disproportionate to the work done, and so small as to be hardly worth having. Competitors would prefer the chances of a substantial fee to the certainty of a trivial one. The other alternative, then, is to divide the whole amount into equal shares large comigh to bear some proportion to the work submitted, and if possible to at least prevent those who receive them from being out of pocket by the competition. The adjustment of these sums would be a matter for judgment in each case. They might be assigned by lot among the disappointed ones, but no one would object to a committee's natural desire to award them, with this limitation, to the designs they preferred. An equal division of premiums seems to us to be the only one which clocs not belie the true idea of a professional competition; to adopt it would be at least to lessen the aleatory element which is the bane of all honest competitions.

From the point of view of a committeeman we should say that equal premiums were much to be commended. Few judicial positions are more difficult and more thankless then his. By undertaking to decide competitions at all he too often exposes himself to solicitation and recrimination, as well as to error. He cannot avoid the responsibility of choosing a design, nor can be hope to score good competitors without premiums; but he would do well to spare himself extra labor and responsibility. It is no part of his duty to assign rank to disappointed competitors, and any graduation of premiums is to him an added risk. He must take the risk of selection; but to assume in addition that of classification is simply to invite superfluous opportuni-

ties of blundering and of exciting ill-will.

It is the care of architects in this as in other things, to encourage right views of their professional relations. They may properly let it be understood that, if they compete, their competitions are for practice and not for procedures. They want first the natural prizes of their profession, — work to do, and a reasonable recognition of it, -- and then to throw away as little unrecompensed labor as possible.

MODERN PLUMBING. V.

WASH-BASINS.

To take up now the particular forms of phunbing appearatus, we will begin with that most universally used, the most delightful when clean and sweet, and the most dangerous when foul or improperly put

clean and sweet, and the most orange varieties in,—the set wach-bowt.

Perhaps this is the discinctive lawary of the Northern States in the way of household appliances. There are thousands of modest dwellings, destitute of any other plumling work, which display their one set hasin, either in the best chamber, or, not unfrequently, in the parlor, for greater effect upon visitors; and Americans generally of all classes take great pleasure in marble slabs and running water. There is something touching in this universal love of cleanliness to those who have learned how heavy is the price at which it is gratified; but it can no longer be deaded that plumbing work in living or cleaning rooms, especially cheap plumbing work, in the majorials. sleeping rooms, especially cheap plumbing work, in the majority of cases, contributes toward shortening the lives, or at least diminish-

ing the health and happiness of the occupants.

As set wash-basins, from being usually placed in or near sleeping cooms, are the source of more cylls than any other plumbing appliances, and as from the smallness of their traps these are peculiarly

subject to siphonege, we will take occasion, in describing the differem varieties of bowls, to explain the principles on which the system of waste-pipes within the walls of a bouse should be arranged. The same principles apply also to the drainage of sides, baths, or other apparatus, but as the evil effects of neglect of them will appear sconest, and with the worst consequences, through the medium of the basins, it will be well to cuforce them thus carry and in this connections.

Our ordinary wash-bowl apparatus consists of a marbled earthen-Our ordinary wash-bowl apparatus consists of a marbled earthen-wide bowl, fourteen, fifteen, or sixteen inches in outside diameter, with a brass socket and strainer comented into the bottom, secured beneath a marble glab by three clamps, and the joint filled with plaster of Paris. The waste-pipe, usually one and a quarter or one and a half inch, is secured to the outlet of the socket by a brass coup-ling, and the upper part of the bowl is pierced with ten or twelve small boles, opening into a short eartherware tube or "hore" attached to the bowl, which is inserted into a lead pipe communicating with the waste pipe below, and this join is alled with putty. This serves as an overflow. Hot and cold water cocks are fixed into the mar-ble by a server passing through it and a not below, and the lower ble by a serow passing through it and a nut below, and the lower

part of the screw, when the cocks are fixed, is furnished with a coupling for the attachment of the lead supply pipes.

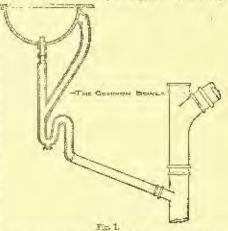
To hold the water in the bowl there is a plug of earthenware, brass, or rubber, as the case may be, fitting the rocket, and a chain to pull it up, fastened to a chain-stay bolted down to the marble. All the visible metal is silver or nickel placed. The supply pipes are generally supply to the control of the couple The stoneware or brass plug is perhaps more durable than rubbur, and to save annoyance should be attached by a safety chain, each link of which is in one piece, so that it cannot be separated except by a force sufficient to take asender the metal.

A little homeon the breef decreases

A little beneath the bowl the waste and overflow pipes join, and run together to the S-trap, which is apt to be inconveniently placed under the floor. The trap, in the old practice, was often larger than the waste-pipe, but is now made of the same, or even smaller, distu-

The defects of this arrangement are many and great. Referring

The defects of this in to Fig. 1, it is existent that any sewer-gas which returns past the trap will enter the room ins-mediatery, if not though the waste, which may be stopped by the ploy, through the averlow. which remains atways open; and it is correduction Strap without ventilation, which not one in a thousand has, is very permeable to the vapors of the drain. Even if the S-trap remained full of water, the prus-



of water, the pres-sure of gas in the soil-pipe, which occurs if the pipe is not open at the top whenever the tide rises in the sewers, or a heavy rain fills thom, or when but water is powed down, and in any soil-pipe, rentilated or not, if a considerable quantity of water is powed in at the top, will force a stream of bubbles through the trapping water; even without any pressure the vapor on the drain side of the trap will be slowly transmitted through the water to diffuse itself in the room. But in practice an S-trap in an unventilated drain-pipe is rarely full of water, and in very many cases it never retains water enough to send the outlet at all. An instructive experiment may be number by cutting holes in an S-trap under an ordinary basin, and inserting pieces of glass, making the joints water-tight. If the hasin is partly filled with water, and the plug drawn, the water will be seen to descend to the trap, and after some building the whole holy passes around the bend, as if drawn by suction beyond. After a moment the sucking force relaxes, and we see a little water run hack into the bend of the trap, more or less according to the length of the the water-pipe or other efreumstances, but rarely more than just enough to touch the top of the bend, and very often not enough even for that, so that a free though perhaps narrow massage is left for air to pass from the drain to the overflow of the basin. Whether the quantity of water discharged is large or small, the result is about

the same.

Fig. 2 shows the theoretical condition of the water in an unventilated basis trap after discharge. Fig. 3 shows the actual condition under favorable circumstances, and Fig. 4 the actual condition under favorable of passes.

inton under tavarance carcamatances, and Fig. 1 are metall condi-tion in a very great number of cases.

If the air in the pipe beyond the trap should be rarefied by the passage of a large body of water down the soil-pipe, or by the low-ering of the total volume of water in the sewer, the trapping water, as soon as the difference of barometic pressure becomes sufficient to overcome its weight, will all vanish, as if by magic, leaving the trap

This nuscaling by rarefaction of the air below, as well as by siphonage, and the forcing of the trap by pressure, may be prevented by ventilation of the trap; but ventilation will only hasten evaporation, which will suon unsual any ordinary water-trap, again leaving the way free for gas to enter the room. This is especially to be feared in city houses left closed for the summer. The basic traps soon lose what little protection they ever had, and foul air pours un-



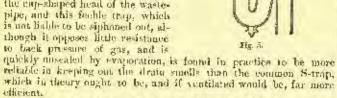
checked into the room, saturating the carpets and curtains so that no airing will restore their freshness. All city houses left vacant in the summer, and country houses left in the winter, should have the plugs or waste values tightly closed, and paper pasted over all the overflows; and any basin, bath, or sink left muscel should have water run through it at least once a week, if it is not scaled up altogether. Some plumbers put a stop-enck on the waste-pipe, below the junction of the overflow, to be shut off when the house or room is uninhabited. This is a thorough protection and easily applied.

With so many causes of failure, it is not surprising that there are few wash basing which do not sometimes form inlets for sewer gas.

An evidence of the uncertainty of S-traps is found in the popularity of the Wellington wash-low!

larity of the Wellington wash-low! (Fig. 5), which consists of an onter and inner shall, the lower edge of the outer shall projecting down-ward so as to dip below the surface of a cup filled with water, which overflows into the waste-pipe. The overflow of the basin takes place over the edge of the inner shell. Both the nverilow and outlet are thus trapped by the slight dip of the outer shell into the enpedaged head of the waste-

efficient.



efficient.

There are other basins, which go much farther in their resistance to the calls of unventilated waste-piper by substituting for the water-trap a brass plunger valve, which is ground to its seat in the mouth of the waste-pipe, closing it perfectly until raised by the hand. The weak point of apparatus of this class is the overflow, which is either carried down separately, defended only by a water-trap, or is managed by having the phanger hollow and open at the top, so that when the water level rises to the upper opening it runs over into the waster-pipe. The obvious effect of this is that the chamber in which the plunger works is filled with gas, which once constantly into the room around the stem of the valve, unless a good trap is placed below the

patinger works is intend with gas, which cozes constantly into the room around the stem of the valve, unless a good trap is placed below the basin. A far superior device has been lately introduced under the name of Boyle's patent (Fig. 6), in which the waste is shut off by a brass planger, as in other basins; but the planger is made hollow, and of such dimensions that when the water rises in the howl and in the valve rhambur. the howl and in the valve chamber which communicates freely with it to a certain height the displacement of the plunger is sufficient to that it up from

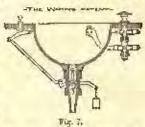
panager is sancient to least it up from
its seat, when the water escapes from
below. A chain attached to the top serves to raise the plunger
when it is desired to empty the hasin. The lower edge of the
plunger dips into a channel managed around the top of the wasteplunger is reject there is still a quarter of activity and to complete interest. valve is raised there is still a quarter of so inch seal to guard against

stray pulls of returning vapor.

It the waste-pipe is furnished with a ventilating pipe heading from a point near the outlet of the bowl to the air, this basin leaves nothing to be desired; the brass plunger, closed at all points, is a perfect protection against returning gas, and no siphonage, vacuum, or evaporation affects its action, even if the boase is deserted for years; and the bowl itself, with its valve chamber in one piece of porcelair, and the tran which can be compared and according the trap which can be opened and examined or cleaned by simply onthe trap which can be opened and examined or cleaned by simply onerowing a plate on top of the marble slab, form a very next and
compact apparatus. If the waste-pipe is long and unventilated, the
action of the overflow in the basins, as now made, will be interfered
with by the suction inevitably attending the discharge of water down
ench a pipe, which will draw the floating plunger back to its seat
for a few seconds at a time, and possibly allow the bowl to overflow.

Col. Geo. E. Waring, Jr., devised a basin in which the overflow was effectually protected by being furnished with a stopcock, worked by the same spindle as the supply cock, so that the over-flow was open only when the supply cock was also open. The waste was closed by a valve, weighted so as to remain closed unless the lever was held up (Fig. 1). This was thorough work, but rather cambrons, as overflows had to be pro-

vided for both hot and cold water to insure perfect action, and it was not always convenient to stand and hold up the waste-valve until the water had run out; and his later apparatus, in which the basin and cocks are not different from those commonly used, but the trap below the junction of waste and overflow is guarded by a



waste and overflow is gnarded by a brass valve, seems much better adapted for general use. The trap, as shown in the figure in its latest form, consists of a water-called trap, provided with a emp-shaped, weighted valve, which is thrown up by the passage of fluids, and falls back into pisce afterwards. No returning gas can pass the valve, which is only more tightly closed by the pressure, and any possible siphomage or evaporation of the water in the trap will not impair the seal of the valve. The action of the overflow and waste is smallested by any suetion or other action due to too great length of the waste-pipe; and to complete the list of good qualities of this apparatus, the two trap screws, one above and one below, permit easy and thorough cleaning.

Among traps without a merallic "gate"-valve, the rubber balltrup most nearly approaches in efficiency that just described, and under untinary dreumstances may be quite equal to it.

under ordinary circumstances may be prile equal to it.

All there devices must, however, be regarded as palliatives, more or less efficient, of the ovils arising from the radical defect of want of ventilation in the drains. With drains and waste-pipes thoroughly ventilated, the dangers against which such elaborate precamions must be taken cease to exist; with air-pipes below the traps, siphonage becomes impossible; with soil-pipes open at each end, back pressure is no longer to be feared. The only risk to which the efficiency even of water-sealed traps is exposed is that of losing their seal by evaporation, while in an unventilated system, although we can, by the use of valves, as we have seen, close our waste-taxins against the entrance of sewer-gas, the foul air nevertheless remains in the pipes, at times under considerable pressure, ready to escape into the house through a leaky pipe or joint, or by the way of the sinks, bath-tubs, or other apparatus, whose traps cannot be, or have not yet been, guarded with the same successful care that has been bestowed upon hasin traps.

or have not yet been, gnamed with the same succession care that has been bestowed upon hasin maps.

The partial ventilation of the soil-pipe by carrying it up through the roof of the full size, and leaving the end open, or petting on a ventilating cap, is now quite general, at least in city plumbing; but the opening at the bottom, accessary to perfect action, is almost unknown in this country, though common in England. If the pipe is open only at the top, its condition is like that of a deep well, filled with stagmant vapors, which are ready to diffuse themselves through any opening. Under ordinary circumstances the gas will not accuin also pressure arounds to force the replacements the gas will not accommand pressure arounds to force the replacement on the upper and of a soil-pipe will close the bore of the pipe, and descending, like a piston, will compress the air between usell and the tight cospool or water-trap at the bottom of the pipe, so as to force all the connecting traps with violence, sometimes even throwing their contents out into

By admitting fresh air at the hottom of the sail-pipe all this is changed; a convent is set up, the pipe acting as a chimney, so rapid that the air is only slightly tainted in passing, and compression by descending water is impossible.

The admission of air at the foot of the pipe is effected in Eng-

land by arranging it to discharge a little above a grating, under which is a trapped receptach communicating with the drain, but such an arrangement is impossible in our climate. In country houses ventilation may be obtained by allowing the drain to run directly to the cosspool, without the intervention of a map; then by a grated opening in the cover of the cesspool air is admitted to the whole length of the pipe. In city houses it is better to trap the drain between the house and the sewer, and carry an air-pipe from within the trap, of the same size as the soil pipe, up through the root. This air-pipe is conclines carried to the external atmosphere at the surphysical part this is chimically.

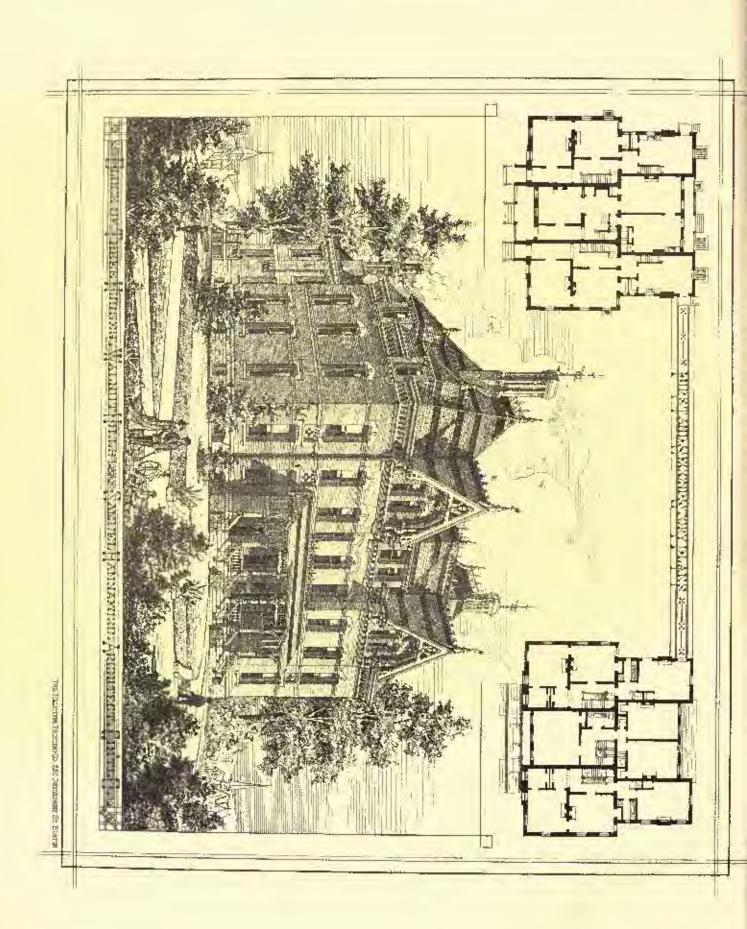
This air-pipe is conclines carried to the external amosphere at the curb-stone, but this is objectionable.

Busides the ventilation of the drains and soil-pipes, the siphoning of the traps must be prevented by carrying a good-stard pipe from each trap, just beyond the bend, to the open sir. These may conveniently be connected into a certical pipe extending up through the roof, with open month. Every trap should have a vent-pipe, whether the soil-pipe is ventilated or not; with such vent, even an S-trap is as secure as any water-scaded trap can be; without one, even so good an apparatus as Boyle's valve works at a disadvantage, and the independent ventilation of the smaller wasts-pipes is an important auxiliary to that of the soil-pipe.

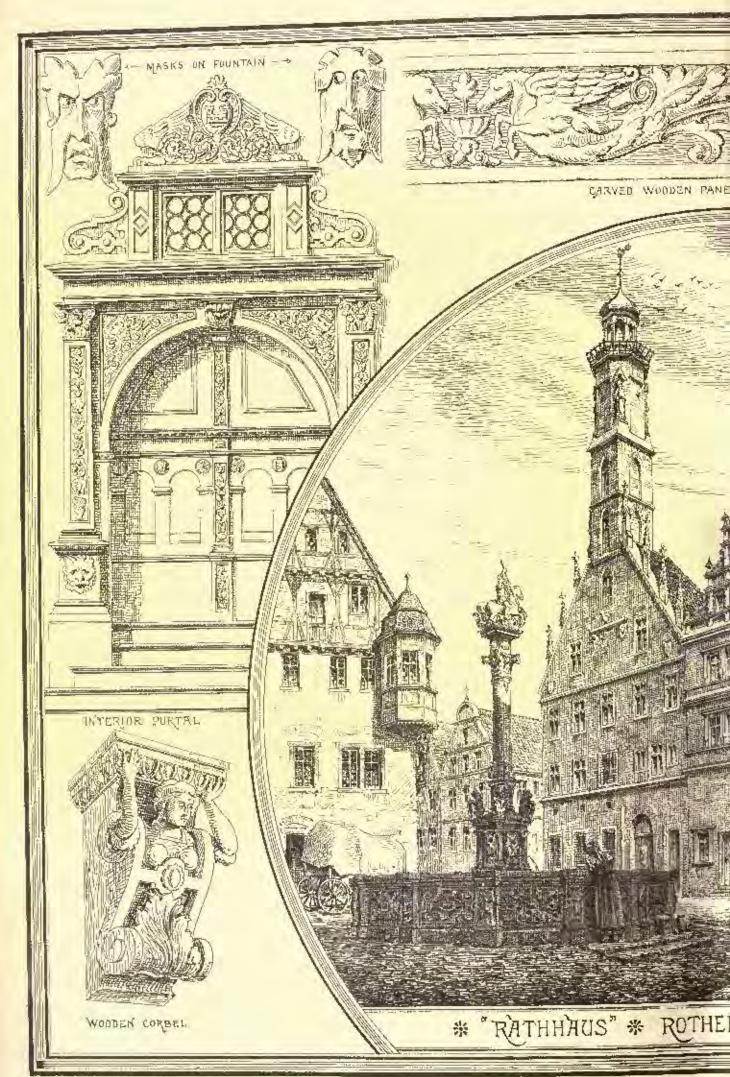
With soil and waste pipes thus ventilated, we should have little to

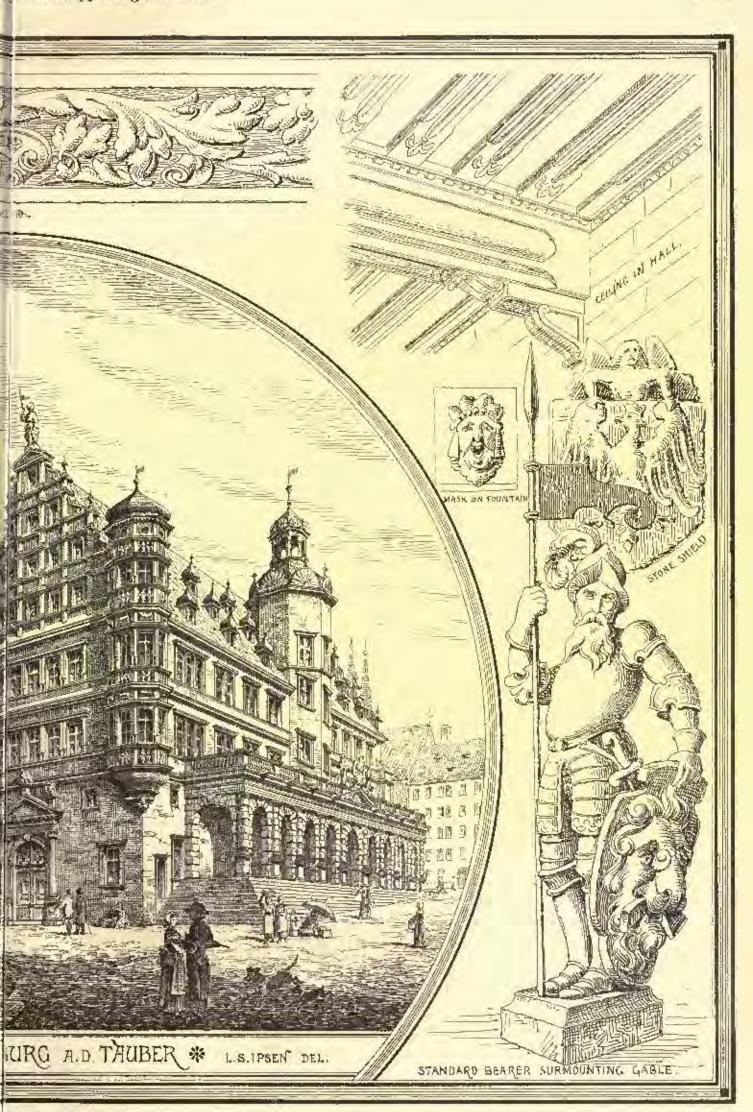
With soil and waste pipes thus ventilated, we should have little to



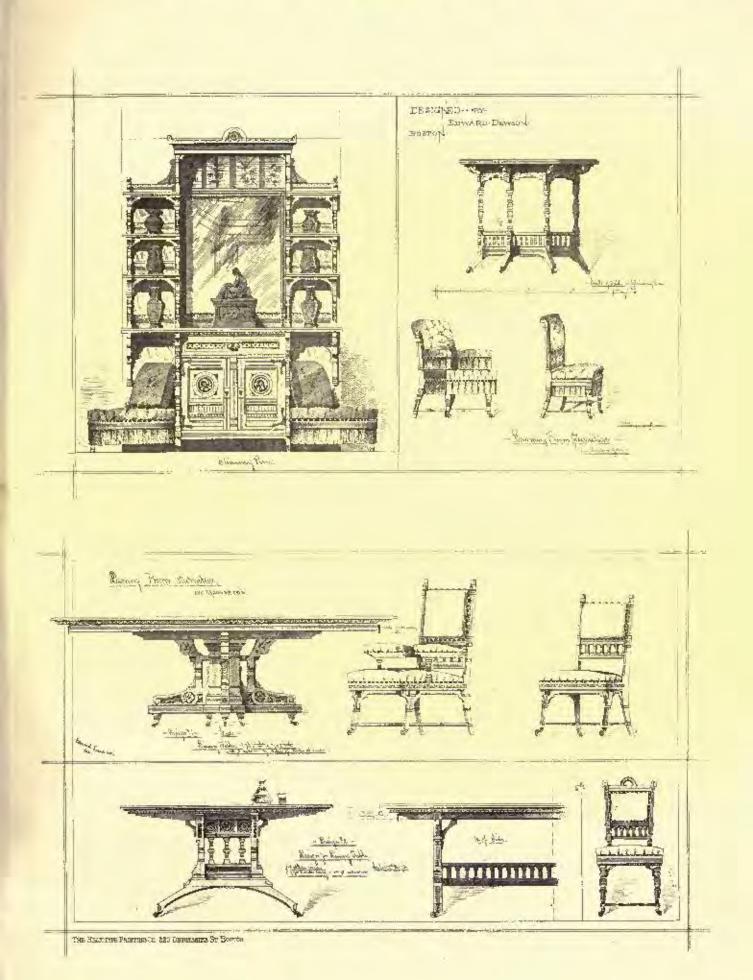














loar from foul air. Not only does the free access of air keep the traps in their highest efficiency, but in case of their failure by evaporation the current in the soil-pipe will tend to draw in air through the basins or sinks, instead of allowing vapor to escape, and even it, by reason of a considerable difference in temperature between the outgile air and that of the room, the contrary should take place, the exidation and dilution of the gas will have proceeded so far as to deprive it of its worst qualities.

THE ILLUSTRATIONS.

THE RATHRAUS AT ROTHENBURG. DRAWN BY MR. J. S. IPSKN,

ARCHITECY.
FURNITURE FOR LIBRARY AND DINING ROOM, BY MR. EDWARD
DEWSON, DEBIGNER.
BLOCK OF THREE HOUSES NEAR CINCINNATI, O. MR. S. HANNA-

FORD, ARCHITECT.

THE ENGLISH NATIONAL WATER SUPPLY.

No one who has given attention to the subject can doubt that great advantage will result from the public discussion which H. R. H. that initiated; for, although it is not possible to devise any one achiene of works or mode of supply applicable to the whole country, it is equally certain that it will be only by a perfect comprehension of the facts bearing upon the subject that any general action can be

To secure general action of any kind it is necessary that every one should be convinced, in the first instance, that there exists at command a superahundance of water for all present and inture require-ments, even in the driest years, not by mere general statements, but by sufficient data to satisfy the most critical minds; and, in the next, by summarity data to satisfy the most critical minds; and, in the next, that it only requires appropriate legislative facilities and a proper presiding control to develop the special capabilities of districts under their varying conditions, and to satisfy small villages and rural districts as well as towns and wealthy places.

To realize the first consideration, it is desirable that the following data should be before the meeting:—

The quantity of water falling upon the surface of England and Wales, in the shape of rain, — which is the source of all water supply, —taking the total area to be \$7,324,853 acres, and the average annual rainfall to be thirty-two inches, is 27,019,692,000,000 gallons per year, which is equal to a supply of 723,904 gallons per

2. The present population of England and Wales (1878) may be 2. The present population of Logland and Wales (1978) may be taken to be 25,000,000— almost exactly two persons to every three aeres of surface; and it this number be multiplied by 25, which may be taken to be the number of gallons required per person for all purposes, public as well as private, the quantity of water at present wanted would amount to \$25,000,000 of gallons per diem, or 228,125,000,000 per amount; and if we double this quantity for future requirements, and able to it the quantity of water consumed by farm stock, horses and other animals, and that which is lost by conversion into steam, the total quantity prospectively remined for all pur-

stock, horses and other animals, and that which is tost by conversion into steam, the total quantity prospectively required for all purposes may be put at 500,000,000,000 gallous per animal. This, it will be seen, is equal to one fifty-fourth part of the average rainfall.

3 The minimum quantity of rain that has been known to fall on
the surface of England and Wales in any year within the puriod during which there has been any systematic record of the rainfall may
be taken to have has been any systematic record of the rainfall may ing which there has been any systematic record of the minfall may be taken to have been twenty-two inches, or about thirry-five and a half times the necessary provision; but inasmuch as a quantity approaching three fourths of the rainfall (in dry pears) is lost by evaporation as soon as it reaches the surface, there practically remains in such years only five and one half inches of water to maintain the river systems. This minimum depth of rain, however, represents about nine times the quantity of water required for all purposes when the present population of the country shall have been doubled,—say lifty years hence.

4. The maximum quantity of rain falling on the surface of the country may be taken to be as much above the average fall as the minimum is below it. At least forty inches of rain falls in the wettest years, and then as much water runs to waste and causes injury

test years, and then as much water runs to waste and causes injury in the shape of floods and fresbots as equals the whole rainfall in

the driest years.

To realize the second consideration, the following physical and

To realize the second consideration, the content of partial social facts should be recognized. —

1. That rain falling on uncultivated surfaces, naturally impurvious and for the most part so much elevated as to be heyond the pernicious influence of human habitations and trade emanations, is the best of all waters for domestic supply, and is capable of storage to a

beet of all waters for dones.

Yery great extent as such.

That all rivers and watercourses originate in springs issuing from the water-bearing strata, and are maintained by the rain as it is absorbed at their surfaces. These springs, as they issue from the is absorbed at their surfaces. surfaces, remain, with few exceptions, as pure at the present time, and are as serviceable for potable use. — if their position were known and recorded, and their volume collected and stored, — as when the country existed in its aboriginal condition.

3. That the water bearing strata which absorb, store, and eject,

A paper precusied to the late National Water Supply Congress by Mr. J. Belley Bouton, and published in the Journal of the Society of Arts

in the shape of springs, a considerable share of the rainfall, repre-sent at their outcrop the larger proportion of the surface of Eng-land and Wales. The waters collected and stored in their subterrunean depths are capable of affording to towns and villages singly, or in combination, throughout the breadth of their outerops, a very large and cheap supply, if the condition of those subterranean waters were accurately known and tangibly recorded.

4. That he well years, when a large proportion of the rainfall is not absorbed, but passes at once off the surface to collect in the valleys on its way to the sea, there exists a capability of storing such surplus water, not for potable use, for which it is unfit, but for com-pensating rivers and streams for the abstraction of pure water at

pensating rivers and streams for the abstraction of pure water as their sources.

5. That all our principal rivers, and the majority of the tributary watercourses which support them, as soon as they form a collected volume, become unlit for potable uses, owing to their position as the drains of valleys, whereby they must receive all liquids flowing off the sorfaces within their water-sheds, let the conditions of such liquids be what they may. Although rivers and streams, if they are once contaminated with puttescible matters, cease to be serviceable for human consumption, they may be retained for he serviceable and agriculture, and for the production of fish, if vertain standards of purity for liquids admissible into rivers were adopted and enforced, such as were suggested by the Rivers Pollution Commissioners.

sioners.

6. That no jurisdiction of rivers can fully develop their capabilities that does not extend from their source to the sea; and that inaspunch as many springs which feed rivers rise at a great distance from their trunks, and flow by minor courses through private properties, it follows that no conservancy can be perfect which does not extend beyond the main rivers and minor streams to the extreme water-shed that is tributary to them. All springs which maintain rivers and rise in private estates, and are thus made private property, should be guarded by conservancy as vigilantly as the rivercourses themselves, on the ground that they contribute to the general water supply of the country, and should be available for human con-semption at their source before pollution. Many of the streams fed by these springs, and by the water of noder-drainings, being polluted by mixture with the off-flowing water from cultivated surfaces, may be restored to a safe condition by filtration through natural soil, and thereby rendered fit for human consumption, where waters from uncultivated surfaces, or from springs, or from subterranean water-beds cannot be directly obtained.

7. That Parliamentary powers are irrepently sought, and occasionally obtained, enabling large and wealthy communities to obtain supplies of water from distant river-basius, irrespective of local and prospective demands, before the capabilities of the basins within prospective denistids, before the capabilities of the basilis within which such wealthy and large towns exist have been exhausted, although the committees granting these powers are incompetent in themselves to appreciate the difficult questions involved in the water economy of a country, the population of which has doubted itself within the last fifty years, without any means of extending its superficial area, or of increasing the rain falling upon it.

As it is the wish of H. R. H. the Prince of Wales to ascertain a bow far the grant pressures of the klassides middle by some larges.

As it is the wish of it. it. If, the Prince of Wales to asserting "how far the great resources of the kingdom might, by some large and comprehensive scheme of a national character, adapted to the various specialities and wants of districts, be turned to account for the advantage of the general body of the nation at large," I desire to express my conviction that if by the term "large and comprehensive scheme of a national character" it is suggested that one scheme sive scheme of a national character," it is suggested that one settempt of works or one mode of supply can be devised which shall be applicable to the whole country. I am not of opinion that such an object is practicable. The great difference that exists in the validal as a source of supply, the diversity of surface, the variety of soil upon which the rain falls, and the irregular densences or sparseness. of population in proportion to space forbid the realization of such an idea.

an idea.

I am, nevertheless, perfectly convinced that if there existed (I) a proper conservancy of rivers extending over the whole area of their basins, (2) an exact knowledge of the hydrogeological conditions of each river-basin, and (3) legal facilities for dealing with the water rising up within, and flowing through, and existing under private properties, there would not be a single village in the country but might be abundantly supplied with pure water.

To render river conservancies competent to exercise that control over river systems which would preserve riparian and private rights, while securing to the public the enjoyment of the chief element of

while securing to the public the enjoyment of the chief element of health, — pure water, — the first step to be taken should be the collection of all existing information bearing upon the surface and subterrane an waters within each river-basin, prepared on such a form as to be immediately available and capable of enlargement as fresh information may be obtained. At present there is no reliable record of such data within the reach of either local authorities or engineers, although a mass of information exists in a scattered and very costly form, in the Ordinauce and Geological Survey Departments, which might afford data whereby neglected springs and subterranean waters might be turned to account. Were this information obtainable in an authoritative shape, the indisposition of the owners of landed estates to place at the service of smittary authorities the sources of supply which they possess by territorial right would cease to operate as injuriously as it now does,

Numberless examples of what may be done in the way of water Numberiers examples or what may be noble to the way of water economy, by the use of wheels, turbines, rams, and pumps, and in the way of storage, for village supply, are to be found scattered over the whole face of the country. If these instances, instead of being disregarded, or only encoulty mentioned in Parliamentary Committess, were carefully extended and described in a popular but practical form, the serious want of water experienced in villages and rural districts, which induced H. R. H. the Princoof Wales to come to their rescue, would vanish in a great majority of cases; though so long as permissive laws stand in the place of compulsory laws in a matter of such vital consequence to every one as pure water, and Boards of Guardians are the judges of the time and course of action,

Sartis of Outstand are in jurges on this and rest of the sartis of long will the present state of things exist.

During the last session "The Limited Owners Reservoirs and Water Supply Further Facilities Act, 1977," was passed, enabling land-owners to construct works of water-supply on their own estates, after having outered into a contract with any neighboring southary authority, to supply the inhabitants of their district with borrow money for the purpose, and, with the approval of the Inclosure Commissioners, to charge their estates with the amount berrowed. Two conditions are imposed; first, that the amount berrowed should be repaid by instalments extending over a limited period of years; and, second, that the income to be derived from the sanitary authority for water should be sufficient to satisfy the Commissioners that the reversionary interests in the estates charged will be benefited by the transaction. If the powers of this Act were ju-diciously administered, they would work most advantageously to the country. So rouppediensive are its provisions that a land-owner can not only construct reservoirs, or creek dams, for the storage of water, but he may milize springs issuing from the surface, or he may sink wells into a water-bearing stratom, and, having assured a sufficient quantity, conduct it by proper service mains, in connection with suitable appliances, to any inhabited district within reach.

In the present session of Parliament, "a Bill to amond the Public Health Act, 1876, so har as relates to the supply of water," leading the property of water, "I have also because the supply of water," leading the property of the supply of water, "I have also been also because the supply of water," leading the supply of water, "I have also been also because the supply of water, "I have also been also because the supply of water," leading the supply of water, "I have also been also because the supply of water, "I have also been also because the supply of water," and the supply of water, "I have also been also been

passed through committee. Its object is, primarily, to compel the passed through commission. Its object is, primarily, to compet the owners of small dwellings in rural districts to provide water where it does not exist " within a reasonable distance;" and, secondly, to facilitate the acquisition of a district supply where it is shown that a general provision would be more economical than separate arrangements. To those who are intimately acquainted with the conditions and influences which govern rural districts, and know that the owners of patterns in village are constantly presents of small property with ers of contages in villages are generally persons of small means, with very limited belief in sanitary benefits, while the members of the Board of Guardians, who are to order the water to be supplied, are themselves, for the most part, the employers of the behavers who ocimpy those coltages to be supplied, and who will therefore, have to pay for the water in one way if not in another, this bill does not promise much. It is believed that the want of proper dwellings for rural labovers, and the absence of all profit from contage-building, are difficulties in themselves, which should be arrecone before it is legally declared that the cost of providing water to corrages in a village should be borne by the owners of those costages rather than by

the village community as a nody.

IRON AS A BUILDING MATERIAL.

Using a popular formula of speech, it is often said that iron is the material of the luture. The fancy of the philosophic builder is supposed to run over a bundled instances in which the more commonlate substances used in construction are found wanting. Visions of what might have been if ingenuity had not been hampered in its expressions by the conditions attaching a part of the conditions of what might have been if ingenuity and prior the property of the conditions attaching a part of the conditions. ions of what might have been if argainity had not been hampered in its enterprise by the conditions attaching to were stone and brick, timber and loants, are supposed to overwhelm his mind. He finds cost in the contemplation of the Crystal Palace, the St. Paneras roof, the Britannia Bridge, the Vienna done; perhaps the Great Eastern, the Devastation, and the Thunderer. Ah, well, he reflects, "iron is the material of the future; the time will come, also the half the first the first the line will come, also the first the first the first the line. though I shall not live to see it, when a gentleman will run his iron though I shall not live to see it, when a gentleman will run his iron house down to his place in the country by rail in August, and up again to the Belgravia of the day in February; when balloons of No. 40 or 50 gauge sleet will travel dully between London and New York; and which a new St. Albert's Cathedrai, in a central situation at Wimbelson, will be built of Professor Barll's best black exidized." Professor Barry, for instance, of the Royal Academy, who officially might not have been expected to look so far ahead, it accompany others as enthusiastic mean this point at would be decided. amongst others as enthusiastic upon this point as could be desired. The architecture of the world in the future can scarcely fail, he says, to be modified by our scientific knowledge of iron, which as a building material has been almost discovered by the present genera-tion. From the Egyptians — to whom it is, of course, impossible not to allude — we have no doubt much to learn; from the Greeks also. But had the Romans known as much about iron as we do they would have been able to teach us something. The medieval builders also would not have clung to their primitive aroundion if they had known about iron. In the present day architects are too conhad known about from. In the present day architects are too considerate of the past; if they would but consent to let engineers help them in construction in exchange for similar assistance in decoration, — in short, iron would then become the material of the fature.

The Conference of Architects, which was held last week, seems to have dealt with tron, if no ling else, seriously. Professor Barff ex-

plained his system of creating upon the surface of this metal - as the weather does upon certain others, such as lead and zine - a preservative oxide. Under the presidency of Mr. George Godwin a variety of fireproof inventors discoursed to each other upon the protection of iron from its inevitable destruction in great fives. Barlow, C. E., described at another meeting the construction of an iron roof recently designed by him; and therespon Mr. E. M. Barry wound up the whole with the thoughtful reflections we have quoted. If nothing comes of all this, it cannot be said that architects have

not at least, and at last, taken the subject into consideration.

But there are people of still more careful habits of thought who will shake their heads, and say that nothing can come of it after all. Indeed, when Mr. Barlow, speaking Incidentally of the great Tu-bular Bridge of Robert Stephenson, tells us of one thing being perthe tycker, — that no such structure will ever be built again; and when Mr. Carroll, of "suppractical, romantic Dublin," tails us how he such an engineer companion, as they travelled along it, shook in their shoes with a great fear lost the wonder of the world should chake itself and all that was within it forthwith into eternity, by reason of the "tons upon tons" of ruinous real rust chaken perpetually from its dreadful dance there are hostering and chaken perpetually from its dreadful dance there are the second industrial. reason of the "loss upon tons" of random real rust enatern perpetually from its dreadful danks, those authorities are indicating pretty clearly that the scientific mind is already being rapidly disillusioned, and that before long there will be no one left to believe in the periectibility of iron buildings, unless it he such a one as a professor, whether of architecture or of chemistry, in the Royal Academy.

It is by no means a paradux to say that nature does not undertake to supply man with building materials. He is permitted, no doubt, to her stone from the rock, and to left timber in the forest, and it must be acknowledged that these accidental products have gone very far indeed to serve the buildor's purposes; but the not unreasonable theory that the artificial objects of building must be taken to point to the use of correspondingly artificial materials is one that has in reality been exemplified from the most primitive ages. — in the invention, for instance, of such an odd thing as brickwork; and when we are led to modern times to try what can be done wish from it is the self-same principle that is unmilesting itself, - building is being driven by its own essential artificiality to seek artificial materials. In other words, reasoning upon the matter a priorial not otherwise, we are entitled to say that nature council be expected to provide to the architect and the engineer, more than to the machinist, anything beyond the grade components out of which he shall make for himself such antirials as shall heat serve his ends. But however this may be, it is plain enough that in this respect the line must be drawn somewhere which shall divide the practicable from the impracticable; and it is, perhaps, more than probable just now that that life must be taken to exclude from in a very great measure from the list of true - that is, permanent In the way great has and to heave it almost entirely to mechanical engineering and other such manufacturing art as its more proper province. Such perfectly ortificial materials, for instance, as brick, terra-touta, artificial some, concente, coments and plasters, lead, glass, paint, and so on, answer the builder's artificial purpose admirably. Those are, likewise, many appliances of building, akin to mechanical work, in which iron is almost as invaluable as it is to the mechanician generally. There are also certain incidents of building in which, for even a ruetural features, iron comes to take the piace of timber with extellent effect, as in commiss and girders judiciously introduced. But here it would readly seem as if we must stop forever; crude us natural stone may be, from cannot take its place, and, latal as may be the effect upon timber of the dilapidation of conturies, the case of from as a substitute is much more serious within much shorter periods of time.

The employment of iron in ordinary building is to be fairly de-The employment of iron in ordinary building is to be fairly described as being altogether that of an equivalent for rimber. The principles involved — those of the post and girder, the bent arch, the truss, and whatever the — are precisely those of timber-work, and a sheet-iron covering merely takes the place of boarding. Bolts and rivets represent screws and mills, and even the angle-iron has iraprototype in the work of the joiner. The only advantages derived from the use of the metal are in respect of strength and lightness, complexity of scientific design, and minute precision of calculation. Anart from these considerations, we might just as well even now be Apart from these considerations, we might just as well even now be dependent exclusively upon our old-fashioned fir and oak, — oldfashioned, no doubt, but still as far as ever from being obsolete. Where, then, is the great drawbank in the use of iron-work? Why is it that it has not during the last lifty years, since the invaluable article of poor Cort's invention — rolled iron — has become so intimately available and so cheap, acquired an absolute ascendency over the timber-work which seems by its side so clams; and unmanageable? The answer may be given in a single word, - rust. Of all metals, The answer may me given to a single word, — rast. Of all metals, perhaps this, the most useful in a thousand ways, is the worst to wear against the weather. Moisture in the simplest form is its deadliest enemy. Lead or zinc, for instance, as we have already binted, when exposed to atmospheric action, becomes coated with an oxide of itself, which renders paint usiless as a preservative; hot iron, in forming its oxide in the same circumstances, develops a process of absolute disintegration, and falls rapidly to powder, and no preserva-tive process yet known will protect it. Common painting, it has to be borne in mind, is simply the act of attaching to the surface of any more perishable material a conting of earbonate of lead as a material less perishable and easily renewed. Not merely oil paint, however, but the application of a coating of zinc, a much more scientific and

successful invention, is scarcely of any permanent use in practice; and if we fail in proceeding our from work from disastrous rust, we fail in making it really serviceable as a recognized brilding material. Not only the architect, but the engineer none the less, must acknowledge this; and when the architect is obliged to discard from in so great a measure, it becomes a question of time when the engineer also may have, however reluctantly, to regard it with universal

Supposing that the general surface of the iron may, by the judi-cious application of some specially adapted coading, and its frequent renewal, he kept quite free from oxidation; this unfortunately does not help us, after all. It is the peculiarity of iron-work that it is never at rest. It expands and contracts considerably under ordinary changes of temperature. It vibrates still more considerably under ordinary pressures. If, therefore, we are obliged to put it tagether by means of such a process as rivering, — if, in other words, we have to make it up of small pieces planted together, - then are these con-siderations which at once appear with reference to right. A thousand joints offer access to the microscopic influence of atmospheric sand joints ofter access to the misroscopic influence or almospheric moisture in a thousand places. A discussion pins—call them by what name we please—are in one way or another constantly moving ander strain, however minute their movement. Not is this all; for, in the very act of putting the work together at first, if any preservative had been previously applied to the surfaces that are now brought into contact maler the force of the surfaces that are now brought into contact maler the force of the surfaces that are now brought into contact maler the force of the surfaces that are now brought into contact maler the force of the surfaces that are now brought into contact maler the force of the surfaces. plain that at the very weakest points of all the preservative has been abraded quite away, and the veriest nakedness of the metal exposed again to the most direct and rapid creation of rust. Not only all point, but what is called the galvanized continu of zinc, is obviously immediately rubbed off whenever a rivet is hammered, or even a bolt tightened by a wrench. What makes the case still worse is the circumstance that oxidation, when once begin, will insidiously continue to progress even under the preservative coating. It is easy, time to progress even under the preservative costing. It is easy, then, to see that, of all materials as yet employed in building, iron is in practice the most incapable of defence against a peculiarly disastrons decay produced by the most commonplace, most universal, most mavoidable, and most insidious process of actack. The invisible and mortonless vapor of the air, which nonrishes the world, is the inevitable and special destroyer of the mightiest substance manufactured by the investigate of air. factured by the ingenuity of man.

That these reflections are a serious check to the aspirations of building science it is needless to deny, but enough has been said to show even to the meanest capacity that, so for as it has yet gone, iron is amphatically not the material of the inture. — The Archicet.

CORRESPONDENCE.

WHAT THE ELEVATED BAILWAY ADIBALLY DOES FOR STREET ARCHITECTURE.

It had been my pleasure, as it had been no doubt the agreeable It had been my pleasure, as it had been no doubt the agreeable occupation of many others as well, to take droppent stroils about the city, studying the buildings and finding monoscener and profit in eacing what had been accomplished, and gaining warning and wisdom by the failures of others. But now upon several important assumes of the rity this experience is enjoyed only in reminiscence, for with the rise of the elevated roads the opportunity to do anything in the way of right-seeing is entirely gone. Refuse the stream were stradded by those gridient structures there was opportunity to see the collection of buildings which make up the town, but now it is only because he care in selection that one may high a visit, where in and by much care in selection that one may find a vista, where up and down the thoroughfare the eye may wander along the lines of buildings, and onjoy a panorama which can only be met in the heart of a great sity. Do you not believe it? Come with me, and let us work our way up town, under the shadow of this thing, which stands at once a monoment of American character and simplicity, shows with what a reckless disregard of cost New Yorkers set about securing their ends, and proves that their squandering is not all done dur-

We are at the liattery, where, if the will only existed, the finest residence in the city might be seemed without any need of rapid transit. Throing into New Church Street, cut through at so great an expense but a few years ago, we find one and of the long iron rildon. The street is dark and damp; not quite as dark as a tunnel, not is it running with water, but it has not the bright, open sunniness nor is it running with water, but it has not the bright, open sunniness that we have a right to expect. The first few blocks are ordinary warehouses and not much is lost when they are ent off from view. To our right is the great pile of the rear of the Adams Express Company's Building, worth looking at, but lost to view forever. Trinity Church comes next, and here the sacrilege of the road begins; not content with making a Pandemonium of the neighborhood of the church, they have cut off what was one of the less views of it. The seven-lighted chancel window, with the quatre-foil in the galle, and the storestory and the rows of pianneles, bearing testimony to the honest, mambigious work of one of the first architects New York ever had, all are most, while the Withers addition to the chancel end of the thurch. gone; while the Withers addition to the chancel end of the church, which we have hardly yet had an opportunity of seeing, is, as it were, smothered in its birth. Its effect may be good, as its details are certainly carefully studied, but it is gridinoned out of sight. Across the street a lowly structure, now a vila-smelling stable, bows its ancient head before the iren Moloch, and recalls the poet Bry-

ant's natal year in the inscription over the door, "The Episemal Chariev School, 1794." Mr. R. M. Upjohn suffers no less than his father in having the Trinity schools cut off. To be sure, from Trinity Place the upper story and tower may be seen, but such dispinited views of a building are unsatisfactory, while the gargoyle hends at the tower corners look out as though to venit their indignation upon the incubus below. St. Peter's School, on the corner street, suffers with its neighbor, showing that the railway is no respecter of creeds, as it surely is not of personal rights. The Liberty Street Police Station next is thrown into the shade, while the view of Liberty Street to the Mutual Insurance clock is another of the past privileges. The Coal and Iron Exchange suffers with a station directly at its side. The angle view of the building is gone, but then one can walk Church Street, even though it be in partial darkness, without catching a glimpse of that meaningless pediatent and pair of colourns which make the main entrance of the building so pretentions. St. Pan's Church, now the oldest exclesiastical structure in the city, is not spared, and the view from Fulton Street across the old church-yard to the Wreniste spire, is gone, with all its associations. At the northwest corner of the street spire, is gone, with all its associations. isle spire, is gone, with all its associations. At the northwest cor-ner of Vesey and Church Streets is an iron front worth the looking at if it could be taken in perspective; but now the only view is one in elevation, had with the penalty of an almost dislocated need. The classic front of St. Peter's Church, at Barelay and Church Streets, from the opposite junction of three thoroughfairs, now shows only a few bases with bits of cohean attached.

We will be honest in our observations, not shot our eyes to the good points of the road and note that at Park Place a providentially placed station hides in a measure the Tribuse tower. But the road is leaving Church Street, and makes an ugly twist over the sidewalk at Murray Street; and it is noteworthy with what respect-ful deference thus for even the busiest of those below avoid the chance of a crush, and give the iron horse the right of way below chance of a crush, and give the iron horse the right of way below as he certainly has it above. When he has passed on we resume our walk. College Place lying low the posts run high, and the groping is rather less strongly felt. At Chambers Street the view up West Broadway and along to South Fifth Arenue can no more he taken. Throber's store is there yet, about this point, but its check is rudely rubbed by the introduct. Challin's wholesale house is caught by the iron hand about the third floor, and no warm days the dust, by the fron hand about the third floor, and on warm days the dust, smoke, and einders flying in at the open windows can be no advantage to the fine goods. One result of having the road high is that all the little, scrubby shandes show off as well as ever. The little parks along the route are pounced upon by the station designers to drop their dog-largest sexies and threatening platforms upon. Sc. John's Church has a Renaissance tower, and looking up York Street is good once be fairly viewed, but can be so looked upon no longer. Jumping Canal Street, the comparatively new church of St. Al-phonese gets whatever of heauty it may have had effectually hinted from sight. Very considerately the road of South Fifth Avenue constricts itself, giving us a chance to still look upon the "dear cabin fixaces" which boister each other up along this broad avenue, and give shelter to countless broads of pickaniunics. Along this section, too, the hollow bax-girders which are employed respond like so many sounding-boards to the roar of the passing trains, and a capital initation of heavy thunder is afforded the street passenger. At the corner of West Third Street is another twist and another passage over the sidewalk, and again the sub-ferruginous public respectfully stand aside. Here St. Ciement's Church gets its quaint little face still further hidden. The Union Reformed Dutch Church wardens no doubt thought they had a choice site on Sixth Avenue opposite Third Street, but they must now take a very close view of their skrine, since the iron will of the contractors has cut off the long view. St. Joseph's Church, on the block above, never very conspicuous, is still less so now, and the Greenwich Bank building. too, the hollow bax-girders which are employed respond like so long view. So, Joseph's Church, on the block above, never very conspicuous, is still less so now, and the Greenwich Bank building, by Mr. Thomas, architect, has lost its quiet dignity in the company of the mid-air rail. At the Jofferson Market Court House there is provocation for a downright anotherna. We had hardly begun to get at the full merits of the tower and its attachments, and had only begun to enjoy this really good thing, when it is swept from our sight by this piece of convenient ugliness. The old Lutheran Church at Fifteenth Street, and the Jardine flats corner Fifteenth and Six-

at Fifteenth Street, and the Jardine flats corner Fifteenth and Sixteenth streets, suffer for their contiguity with the road by having all good view of them cut off. The modest bit of crude Gotkic in the Church of the Haly Communion, corner Twentieth Street, has gone into an iron, in addition to its leafy, seclation.

At the corner of Twenty-third Street the road makes a double stroke, and decapitates at once Renwick's exculent bit of Italian in Booth's Thuatre and Le Brun's Masonic Temple. No doubt there are many who admire both of the buildings, but they can do so now no more. The confusion and the obscuration are intensified by the great platform built at this point. Sc. Omer's Hotel, under the flank of the Temple, runs chance of having its sceres exposed to the rattling passengers, while its garish face is lost to sight.

The Rampuet Club building is the next victim of the road, and a read victim too, for it had a story to impress of honesty in construc-

real victim too, for it had a story to impress of honesty in construc-tion, freedom from shams, and truth of expression which no other building of the city so well combines; but it is gone. It was one of the few buildings of the city that are coally architectural in conception and treatment. Ah, here is another good point! By keeping carefully to the west sule of Sixth Avenue the traveler may walk up and down without having the Union Dime monstrosity thrust in his

fase; for this, thanks. Dr. Taylor's church once enjoyed a favored and conspicuous site, but now it takes its chance with the other victims along the line. From the upposite side of Reservoir Square the passing to and fro of trains makes a pretty speciale; but Lyrie Hall is out of view, and on the opposite way the churches on Fortieth and Forty-second Streets, with the Harmony Club House and the Hotel Royal, all go into obscurity to Sixth Avenue pedestrians. Above Forty-second Street a few showy flats have their gandiness put out of sight by the road, though no one loses much except perhaps the owner, who finds pleasure in seeing brown sions toxtured. At Fiftieth Street, there was at one time a view up the street to the Roman Catholic Cadledral, where one tower could be seen, but the pleasure of this view is henceforth a mere remembrance. Dt. Hall's church and Dr. Morgan's church have towers and spires which are worth the looking at, but now the occasional glimpses that night have been cought over the house-top or along the street openings are gone. At last we reach the Park, where there is a great pother of pulling dummies backing to and froe making an escape into the Park a leap from Hades to the shady side of Elysium. With such a construction before him, there is no encouragement for a property owner on the line to build a striking or expensive facade. And then think of the money sunk in attractive signs along the route! The four miles of the road reader useless, because invisible to any large number of people, at least twenty thousand dollars' worth of signs. But tet as shake off the general dustiness we have gathered by the

But let us shake off the general dustiness we have gathered by the walk along the substructure of the road, lorget the boles hurned in our goats by hot cinders, overlook the few greass splashes upon our summer last, and lorgive the brakemen who found amusement in squirting tohereo juice down upon us, and let us go up and follow the nothinking populace in succuraging the monopoly. Oh, how delightful! Bless me, here we are at old Teinity again! I take it all back; let architecure and property rights and personal privileges and pass associations, perish, so lung as we can so fly through the air without following suit.

W.

A QUESTION IN PYRONOMICS.

CHAMMSTON, S. C.

To the Editor of the American Anchitect:

Dear Sir,—Will you be kind enough to inform us, if you can, if there is danger of spontaneous combustion arising from sawdast being southead in the floors and walls, etc., of a factory (door) such as our own.

Also, if there would be danger from the same material being used as filling to deaden sound between the ceiling and floor of a schoolhouse; would spontaneous combustion be likely to arise under these circumstances?

An carly reply will greatly oldige, yours very respectfully, T. Maxuv. Co.

NOTES AND CLIPPINGS.

The Assault on Lahon-Savino Machines. — The Grangers of Ohio and Illinois are reported to be suffering just now from a most audacious areaupy at wholesale "rationly," which is done either at the instance of the army of tramps or of communistic weekingmen. The old-time war cry against labor-saving muchines has been raised once more, and the farmers, under threats of barn-barning and hedlify injury, have in many places area obliged to put by the reaging machines out binders, on whose powers they have depended to save them from pecuniary loss in harvesning the crops, and have been forced to get in their grain by hand. It is a spection whether those who yield to the threats will be any better off than those who resist them, as far as pecuniary matters are concerned; for it can hardly be the intention of the men who make the threats to labor honestly as was done before the days of reaping machines, even if disuse has not caused them to lose their gaundam skill. Wages have not fallen in the same ratio as the market private of diffy necessaries, and to attempt to make a profit on grain that must be sold at ante-bellum private, while wages double those paid fifteen yours ago must now be paid for half the wages double those paid fifteen yours ago must now be paid for half the farmers have decided to harvery by machinery, or also let the crops you where they stand.

What British Wormer wat see at Paris.—Apropos of the suggestion of the Prince of Wales that a body of English arisans should be sent to Paris to examine and report on the Exhibition, in the same way that the Prince outer's visited the Centennial Exhibition and as a similar body of Assivian workmen is risking the Exhibition and Paris, the Pail Mall Gazette offers this persinent bit of advec; "In order that it may be as useful as possible, the arisan reporters should be advised to take careful note of the great advance made by foreign manufacturers in competition with linglish, an advance that of course arises mainly from two sauses,—the superiority of their workmen, and the first that they can be depended upon to excente orders. They will find that strikes, and the uncertainty they have introduced late contracts—no manufacturer feeling sure that he shall be able to excent his contract either as to time or as to price,—are rapidly throwing the work of the world into foreign hadds. They will find that while they have been standing fiels,—in a reference paradise, as if they had a monopoly of technical latelligence and skill,—the foreigner has gone shead, and that his work manufacture and skill,—the foreigner has gone shead, and that his work manufacture in many departments of skilled labor is now equal to or even better than English. If they bring back from Paris a conviction that no time must be lost in retroing false steps, and can succeed in imparting that conviction to their fellows in their reversal workshops, they will so a service to the class to which they bolong exceeding any knowledge of processes or products which they holong exceeding any knowledge of processes or products which by our own weekmen.

Government Transure Values in New York.—In addition to the great valls attached to the Assay Office in Wall Street, built about three years ago, and having space for the surage of \$8,800,001 in silver coin, the Federal Government has in course of construction in the basement of the Sub-Transury building still another of fat larger dimensions, which will be finished October t. The former is 18 x 174 feet, and 2 feet in height, made of boiler iron; the latter, 47 x 28 feet inside, and 12 feet high, made burglar proof, designed for the expected large accumulation of silver only under the operation of the new law. This new valls is high, made another to contract with Geo. L. Damon, of Boston, who has about twenty men employed on the work, and is special of as the largest in the world, considered as a single inclosure, surpassing even that of the Bank of England. The estimated cost is \$22,000. The outside granite walls are six feet thick, while the safe proper will be two inches in thickness on all sides, formed of alternate layers of iron and steel. The planes for the floor are laid directly on a stone flagging, supported by a solid led of concrete, so that it would be folly for burglam to attempt to reach the treasure within by any process of excavation from outside. The top of the vault will be supported by rollod iron beams and girders let into granics columns, while lattice partitions of from to support the bags of columial divide the vault into a dozen stalls, arranged on either side of a longitudinal aisle. The general plan is not unlike that of an ordinary horse stable, and keeping in mind the heaps of trousure to be stored on the spot hereafter, is suggestive of excellent feeding. Four quantings in the ceiling and as many in the floor, onvered by strong gratings, will provide for ventilation. The process of cutting out the brick floor of the Sul-Treasury building so as to convert two stories into one, is the laborious task new engaging attention, directly inder what is known as "the gold-roon." When complet

CHEAF LAND. — A large sale of land was made in New York on June 26, which was remarkable for the low price at which the land was sold. The awarde price per sale, realized on \$60,000 acres of good white-task dimber and mineral lands in McDowell County, W. Va., was only one cent.

DELAWARE MOUNDS.— Certain mounds on Middle Sound, about ben miles east of Wilmington, Del., have been opened lately, and in the middle of one of them were found charred bones which evidently belonged to more than one person. It has been suggested that they may be the remains of some of the colonists of Sir Walter Ralleigh's infortunate expediction, concerning whose fate so little is known.

The Surko Turkers. — About II o'clock is at July 8, connection was made between the tunnol and the 1650 foot level of the Savage mine. A strong draft of air at once poured into the mine, blowing out the miners' labtens and walling the Savage drift with dust and gravel.

WATERLOO BRIDGE, LONDON. — The crouble with the Waterloo Bridge in London is that when it was built sixty years ago the masonry was started on piles, only two feet below the held of the river. The river is now night feet deeper than it was then, and the wooden rentches appear to have antifered from undermining, and are now considered macqual to support the superstructure above. The engineers recommend that the wooden per he femed round with wrongh-from caisasous filed with concrete till the whole is a solid mass, which, it is stated, will render the bridge perfectly safe.

DUBABLIET OF J.F.AD RODES. — It is said that the lead roof of George Revious Respiral, at Edinburgh, has based since 1650, an occasional pacel being the only repairing that climatic action has made necessary.

INFLUENCE OF LIGHT BYON CREAKY.— Dr. Heintzel thinks that the influence of light upon cases that not hitherto been sufficiently considered. He lost rated some experiments upon a quantity of cament, which he divided into three paracle, expessing parcel A to the air and full light, B to the air and diffused light, and seclading C in divinces from the air. After six months be found that A made a weak mortar, by absorbing 38 per cent of its weight in water, and it had become crandity; B, with 332 per cent of water, made a mortar which was too adhesive to the travel, and it yielded up none of its water; C, with 332 per cent of water, made an excellent mortar, easily stirred and flowing, and it reliaquished some of its water. After setting for twenty-right case, the relative strength was: A, 3; B, 37.9; C, 44.6.— Dingler's Journal.

Protogrammy and the Beautric Lieur. — An architectural photograph of a large building, says the Emerican American, has been taken in Danidee by means of the light from a Gramme dynamo-electric machine of a power equal to Sim candles. The view was taken by fifteen manufest exposure in a crowded thoroughfare, during a droubling rain, and within an hour of midright.

A New Way or Production Magnetic Oxtor. — The Chicago Tribute says that a process simpler than Professor Barll's for protecting from from rost has been invented by Mr. G. Bower. He places the articles to be custed in a chamber of fire-clay provided with two pipes, one for the admission and the other for the escape of air. Huch pipes having been closed, the heat is raised so a comperature of about 1,700 degrees Fabrencheit. At the end of such home the pipes are opened, so that atmospheric air may be forced into the chamber by the one, and the deaxodized air divien out through the other. This is continued until a sufficient film of magnetic oxide is formed on the articles. The coating is a beautiful light gray or neutral tint, very delicate in appearance, and it perfectly protects iron from rust. Under all giroumstances, the invention is decided to be invaluable.

STATURE FOR THE UNIVERSITY OF KILL.—The models of the reatures which are to decorate the façade of the University of Kirl have been submitted for approval by the scalptor, Leopold Rau. They represent Plato, Solon, Hippocrates, and Aristotle, and are kirkly commended.

BOSTON, JULY 20, 1878.

CONTENTS.

Summary:-
The New Chair of Architecture in the College of the City of
New York The Chance that the present Patent Office Com-
petition will become a Precedent, —Opposition to the Com-
pletion of the East River Bridge The Financial Manage-
ment of the Enterprise, - The Illinois State-House - Who
is the present Architect of the Rockford, Ill., Court-House?
- The Forty-second Street Tunnel Accident The Con-
dition of our Forests European Schools of Furestry 1
NOTICE OF THE FORETH COMPATITION IN INTERIOR DECORATION
THE LIGHTHATIONS:-
Monument to Henri Regnault at Paris Design for a Town
Hall at Milton, Mass. — Designs for Firephres
ARCHITECTERAL COTTHIGHT 2
CORRESPONDENCE :-
Letter from Rome, July
Communication:-
Whither me we bending !
Norge and Chirrings

The commissioners of education of the city of New York, in their capacity as trustees of the College of the City of New York, have, after careful consideration, voted, by a majority of ten to four, to create a professorship of architecture and the arts of design in that institution. We are led to understand that the opposition to this scheme was based upon the theory that the establishment of such a special department would be inconsistent with the general education and culture to which the curriculum is devoted; that it would be the creation of a sort of technical school within a college properly devoted to the liberal arts, adding new expenses and imposing conferencing responsibilities. We are not informed whether the new department is intended directly to ereate architects, or whether its functions are to be similar to those of the Chair of the History of Art in Harvard University. In the latter case it cannot be doubted that the duties of the new professorship will be entirely consistent with any scheme of generous culture. The neglect of art as an illustration of history and ethnology, and as the sister of literature in its relation to the study of the mental progress of mankind, is one of the most noticeable detects in the higher education. The results of this neglect are evident from the fact that the important testimony of architecture and the arts of design is never duly acknowledged in historical works, and that a knowledge of the growth of styles and of the development of schools is not recognized by scholars and men of letters as an essential part of their equipment. The chief value of the lustorical essays of Freeman is mainly attributable to his exceptional respect for this neglected but singularly significant department of human achievement. It is evident, moreover, that architects can never work to good advantage, can never produce really great work, without a far closer sympathy and a far more intelligent encouragement than they at presont obtain from cultivated men; and we believe it is no awaygeration to say that to the entire absence of this Athenian sympully and encouragement may be attributed the unsatisfactory condition of modern architecture. The tendency therefore to include this study as a part of liberal education we consider no unimportant step towards the perfecting of knowledge, and we heartily congratulate the College of the City of New York for this wise action on the part of its trustees, and for its good fortane in having obtained as occupant for its new chair an architect so accomplished and in every way competent as Mr. Russell Surgis. And we may compliment Mr. Storgis also upon the greatness of his opportunities.

We have authority for stating that the Secretary of the Interior regards the l'atent Office competition as an experiment to ascertain the practicability of obtaining designs for public buildings by general competition among architects. Although only a certain number of architects have been invited, practically, we suppose, the competition must be an open one; and therefore the authorities cannot properly commit themselves to the assurance that the author of the successful design will be employed as architect of the work, or to prepare the working drawings.

Such employment must of course depend upon the repute, resources, and experience of the fortunate competitor. If he is not knows, or if his experience has been insufficient, the public interests cannot be entrusted to his hands without a risk which the authorities should not incur. It is to be hoped that because this experimental case is an experiment to the architects as well as to the Government, the Secretary can find it consistent with the public interests to employ the author of the selected design to prepare the working drawings; if he cannot do so there will be great danger that most architects of position and character will hereafter avoid an arena apparently so barren of solid rewards. Of course the success of the experiment, as regards the interests both of the public and of the profession, must turn upon the ability and judgment of the advisory committee of architects; and we cannot but think that if the selection of its members were deputed to the executive committee of the American Institute of Architects, it would not only be less liable to contain any doubtful element than if appointed without such assistance, but would inspire the competitors with contidence in the importial charactor of the decision. In all such cases, there must necessarily be a large amount of labor, money, and time expended in vain by the competitors, and it is therefore reasonable and expedient to give those who are willing to run the risk every practicable assurance of fair play. Indeed, without some such assurance, the whole project must become a more game of chance, in which the odds are enormous, and in which no respectable architect would take a hand. Since writing the above we have learned that the Secretary has already, by telegraph, invited a jury of three responsible architects from various parts of the country to meet at Washington on Monday next, to consider the designs submitted.

THE Council of Political Reform in New York, which represents the interests of the tax-payers in that city, and aims to prevent the unnecessary increase of the municipal indebtedness, has at length begun a contest to stop further appropriation for the great East River Bridge. In so doing, the Council doubthers gives voice to an increasing feeling among property owners in that city that the time has come to decide whether it is not after all consistent with the public interests to stop further expenditures and alambor this gigantic enterprise. The movement is a very serious and respectable one, although the work is almost sufficiently advanced to afferd passage for foot traffic. The principal points made against it are, first, that it is virtually in violation of the laws of the United States, prohibiting the obstruction of mavigable rivers; second, that it will prove a very serious obstruction to the commerce of the port, and therefore a very serious injury to all the wharfage property above the bridge; third, that the trustees are violating the law which created them in greatly expecting the amount of money which they were authorized to expend; fourth, that it will bring no material return of profit, directly or indirectly, to the city, and that the share of New York in the cost will be paid to ber detriment in many ways; fifth, that the access to the bridge from the city requires a succession of enormous piers and arches, which will destroy a large amount of tax-paying property, and will ulti-mately render necessary the making of new streets and the re-aujustment of the plan of the city in that neighborhood; sixth, that in accordance with the opinion of Mr. Roebling, the engineer of the bridge, it cannot safely be used for the passage of trains (see American Architect, pp. 190, 214, vol. iii.). These points are sustained by a very imposing array of specifications. More than 17,500 sen-going vessels entered the port last year, all leaving masts above the height which can safely pass under the cables; and of the 10,500 coastwise vessels which passed under the bridge last year, a large proportion will not be able to do so ultimately without bousing their topmasts,—an operation which, especially with small crows, will be attended with great expense and inconvenience, thus showing that practically the bridge will prove an obscruction to navigation within the meaning of the laws of the United States. As regards expense, the original estimate of three millions of dollars has been successively increased to eight and twelve millions; and now it is quite impossible to fix any limit of cost, some estimates placing the total as high as twenty millions.

As a financial exhibition this Brooklyn bridge, a new Cobssus of Rhodes, is equally curious, whether it demonstrates the

imperfection of scientific estimates, or shows how, as was the case with its classic prototype, a great public monument may be so managed as to divert no small part of the money given for its projectors. Many of the points above mentioned are in the nature of legal questions, pending the decision of which by the courts the Council of Political Reform arge the suspension of work, that the money now going out may be saved to the city in case of a decision adverse to the completion of the structure. Meanwhile a corresponding movement has been made in the Common Council — apparently inspired, however, by political influences - against any further subscription by New York towards the bridge, on the ground that the second appropriation, that of eight millions, was inclusive of and not additional to the four and a half millions which had already been expended up to the date of that appropriation; and that the appropriation itself was unconstitutional, in that it violated the provision that "no city shall incur indebtedness except for the purposes of such city." Charges are also made against the management of the work. Doubtless these points and charges, general and special, will be promptly and vigorously met by the friends of the bridge, and we shall be interested to know by what arguments they will enforce and defead the status que. There are elements of cost in every great work of engineering and architecture - elements frequently arising from exceptional and unprecedented circumstances, or from conditions which cannot be foreseen —which tend to make all pro-liminary estimates for such work factitious, however liberally such contingencies may be allowed for in the contract. But the present advance from three to twelve millions or more secura far too great to be explained on general principles.

Ir the colosed piers of the East River Bridge are destined to remain unfinished monuments of an enterprise too incrutiously undertaken or too extravagantly conducted, they will be matched by the uncompleted pile of the unfortunate Hinois State-House; and both may, in their way, serve as illustrations of the manner in which the New World seems to follow the medieval cathedralbuilders in not counting the cost of its great undertakings. Figrope is full of these "broken promises," and our own country may yet be decorated with a melancholy series of unfinished monu-ments, exhibiting in language unmistakable our national tendoury to great conceptions and to indifference or carelessness as to the cost thereof. We have had occasion (see American Architect, p. 35, vol. iii.) to state that, in the beginning of the year, work on the new Illinois State House entirely ceased because the people of the Slate, by a vote of 309,000 to 80,000, refused to ratify a proposition, submitted by the legislature, to make an additional appropriation, amounting to \$531,712.18, to complete the building. The amount limited by law for the completion and total cost of the structure, namely, \$3,500,000, has been antirely expeaded, and a deficiency of some \$800,000 remains, a result indicative of scandalous incompetency on the part of the commissioners, or of yet more scandalous htwlessness and extravagance. Our national tendency to indifference as to cost, to which we have alluded, could not have received a better illustration than in the conduct of the governor in not dismissing the commissioners, and in the conduct of the legislature, which, instead of impeaching them for this shameful breach of trust, protected them with disgraceful apologies, and appropriated more than half a million of dollars to justify their wasternliess and com-plete the work. But the judgment of the people upon the conduct of all concerned was clearly expressed in the popular vote by which the appropriation was rejected. It is now understood that the governor proposes to avail himself of a provision in the law authorizing the construction of the building, by which he is empowered, in case of such an adverse vote, to submit the question again to the people at any subsequent general election. But it is safe to say that the people of the State will never vote another dollar to be expended by a commission which has proved so faithless to its trust, and that the building will remain in its present condition until perhaps a new commission of tried and competent men shall have been appointed to control its completion. In view of the readiness with which these great structures are permitted to create colossal debts for the people, it is hardly surprising to see the state-house commissioners of the adjoining State of Indiana shifting upon the shoulders of poor Mr. May, the architect, the antire responsibility for the satisfactory completion of that building within the present contracts, and holding him to a stern fulfilment of their trust by the imposition of heavy bonds, out of which are to be paid all extra costs incurred over and above the contract price. Happy the State possessing an architect so willing, for nominal pay, and without proper control over the work, to insure the commonwealth against a state-house debt unprovided for in the original law!

On the 8th instant, in the town of Rockford, Dl., Mr. Henry

L. Gay, architect of the ill-fated court-house there, surprised the county commissioners by appearing before them, at their regular session, and reading a statement in which he set forth his claims still to be considered the architect of the building, there being nothing on record indicating his discharge from such functions, and charged the contractor, Richardson, with criminal carclessoes and malfeasance in the execution of the work. He specified that the fall of the dome was directly attributable to the quauthorized reduction made by the contractor in the size of the supporting pier, and to the employment therein of material inferior to that specified in the contract; that the conduct of the work, over which he had not been allowed to have proper architectural supervision, had, ouknown to him, been marked in other respects by a shameful disregard of plans and specifications which sufficiently provided for good building. He protested that the new contract which had been made for the completion of the building was extravagant, and included many items of expense which had already been paid for; that it was a shameful imposition upon the county; and that the architect had not been consulted in any way. Those charges were denounced by the superintendent, Jackson, as falseboods, and were "burled back" in the usual manner; but it is evident that a fair and impartial examination should follow upon them, so that Mr. Gay may have a fuller opportunity than heretofore to define his position with regard to the building. We have never sought to screen the architect from the fullest responsibilities which could properly be laid upon him professionally, but the conduct of the board, which, by the bye, declines to give Mr. Gay's statement in full to the press, and of Mr. Richardson, the contractor, in modifying essential features of the architect's plans without his concurrence, lays upon them, as we have always said, a very heavy burden of blame. Mr. Gay is the greatest sufferer, though he is by no means the greatest criminal. He really seems to have been treated throughout with a contemptuous neglect, which cannot but demand a certain amount of sympathy from us, and for certain errors of judgment in the planning of the building, as pointed out by General Smith, the engineer of the committoe of experts, before which he was not asked to appear, he suffers the grievous penalty of loss of professional repute. He should therefore be allowed, we think, the fullest and most publie opportunity to substantiate his case. He should be promptly relieved from every blame which cannot justly be laid at his door.

The evidence before the coroner's jury in the case of the fall of the arch of the tuonel connecting First and Second avenues under Forty-second Street, New York city, seems to indicate a fault, first, in the designing of the elliptical arch, and in the specifications thereof, the height of ten fect in a span of forty, although not unprecedented, being musual and requiring a much higher standard of materials and workmanship than was called for; second, in the supervision and inspection of the construction, which was unscientific and careless; and, third, in the execution, which, although good enough perhaps for common work, was by no means good enough for a work of scientific engineering, especially in the matter of loading, which was done irregularly and in such a manner as to betray the shaky construction and to procure its early fall. The verdict of the jury, instead of attaching the responsibility for the catastrophe to that high functionary, the Commissioner of Public Works, Mr. Allan Campbell, from whose office the design emanated, and under the eye of whose representatives it was arrested, mildly blames the uneven loading of the arch by the contractor, and the superintendence of this part of the work by Inspector O'Brien, who did not order a change in the everloading as soon as he saw itsubordinates are the commissioner's scapegoats, selected to bear the responsibility. Where it really belongs must be evident to any one having any knowledge of the circumstances. Thus another opportunity for pointing out and nunishing the real of-fonder in a case of bad designing and had workmanship is al-lowed to pass by, and the public is not profited by the admonition of a high example.

Two years ago, when the chords of sentiment and patriotism were vibrating to so many impulses, it was suggested — and possibly the suggestion was, to a limited degree, carried into offset that at the proper season of the year each person should plant a contennial tree." Such a step as this could not have had a very material effect in restocking our already somewhat depleted forests, but it was a movement in the right direction. forest fices in the spring and autumn, and the thoughtless and reckless cutting and clearing done by individuals, as well as the nuprincipled depredations of the timber thieves, which have been brought to light so recently, are capidly bringing this great contiment with its vast forests to the condition of those European countries in which the same tree is often made to supply fagots to several generations. Some of our state legislatures have felt tho need of doing something to repair this waste, and have already passed laws looking to a systematic roplanting; foremest among these is California, which, considering its population, its great trees, and its comparatively recent settlement, might be expected rather to fellow than to lead in the matter of arboriculture. Michigan has a State Forestry Association, construenced by the legislature, which awards prizes to those who plant the greatest number of trees on "Arlor Day;" and Massachusetts bas, we believe, done something quite lately in the same direction. statistics, variously obtained, concerning the growth and uses of wood are significant and little reassuring. Those who read an wood are significant and little reassuring. article we published some little time ago, on the ways in which wood is consumed, will not be surprised at the statement that, at the time of the last census, there were in this country about one hundred and seventy thousand manufacturing establishments in which wood was used. The forests in the United States which supply this incessant demand are estimated to cover about one fourth part of the national domain, or, roughly, about six hundred million acres. North Carolina has the largest proportionate forest area and California the least; and it is said that the woods of Mississippi, though extensive, if drawn on exclusively by all the States would be entirely consumed in five months. The consumption of word as fuel less of course much to do with this enormous depletion; for instance, it is said that ten thousand acres of woodhand were stripped of timber to supply the fact market of Chicago for one year. The Government, however, is not entirely neglectful of its obvious duties in this emergency, and the Commissioner of Agriculture has lately published in his report many facts, statistics, and suggestions, which, if they could be brought to the notice of the proper persons, would do more real good than often fulls to the fate of government reports. The facts all tend to show the necessity of prompt action. As a first step the report recommends the establishment of special government schools of forestry at suitable points. Much also might be done by attaching to the already organized universities and technical schools chairs of forest science.

Schools of Forestry are in Europe a growth of this centary, and among the nations which support them are G rmany, Austria, France, Italy, Russia, Portugal, Spain, and Sweden, although the titles under which they are organized and the studies pursued in them are often quite different. In Germany there are time institutious where forestry is taughtof these is the High Institution of Forest Science at Neustault-Eberswalde, where the average attendance has been for forty years somewhat over fifty pupils, and the number of hours required to complete the course of instruction is 2,648. The curriculum of studies, which might well be copied, embraces the cultivation and protection of forests, the study of statistics, the jurisprudence relating to forests, the surveying, measuring, and valuing of woodlands, as well as road making, draining, public economy, and finance; it also includes the special studies of botany, vegetable physiology and pathology, geology, geodesy, geognosy, mineralogy, and meteorology; and the more common studies of chemistry, physics, microscopy, and zeillogy. Thus it will be seen that the graduates of the school leave it well equipped for the work the State expects from them. To obtain entrance to some of the schools a year's apprenticeship under a skilled forester is a prerequisite. France has had a similar school at Nancy since 1825, which receives pupils in proportion to the demands of the state forest service. It averages about twenty graduates a year. England, seemingly, does not have a demand for such skilled persons, possibly because the erownlands are not large enough to require the establishment of a government school to provide them with foresters; but as there is great need of such trained persons in India, an arrangement

has been made with the French Government by which three or four English students are each year received at Nancy and trained for service in the Indian forests.

NOTICE OF THE FOURTH COMPETITION IN INTE-RIOR DECORATION.

The subject of this competition, as given on page 188, vol. fil., is as follows: "A chimney-breast and stone fire-place situated at the end of a diving ruom in a city house. The room is thirteen feet in the clear, and is sixteen feet wide; the chimney-breast is five feet wide; the fire-place may be used for wood or coal fires. Required balf plans, taken through the fire-place and above the fire-place, an elevation and section, with details to a larger scale."

Nineteen designs have been received, and on the whole the competitors have succeeded in maintaining the standard of thought and workmanship, established in the meyious connections. The third

workmanship established in the previous competitions. The third competition was remarkable as indicating the influence of the latest school of English design upon the younger, and therefore the more receptive minds in the profession here, scarcely one competitor having failed to acknowledge his allegiance to the "free classic" according to the light that was in him. The contents of the present portfolio indicate a less restricted and a more intelligent use of prece-

Although the order in which the following notices appear is intended roughly to indicate our opinion as to the relative rank of the competitors as regards the question of design and rendering, we have in several instances found in convenient to group designs independently of absolute merit, in order to present a more symmetrical statement of the competition as a whole. This arrangement is entirely independent of the judgment of the committee. It is to be observed that the provision of the programme relative to width of breast has not been abserved by several, and that requiring a "stone free place" has evidently not been understood by half of the competitors.

"Hope" (with an anchor) and "Absens" submit studies of

nearly equal merit in conception and execution but of very different medif; the former presents a very effective rendering of a late French Gother chimmey-piece, giving indications of a conscientions couly of the pages of Viollet-le-Duc both in idea and in method of presenta-tion. Stone and wood are intelligently combined, the style is nowhere suffered to incommode modern usages, the chimney-piece is where somered to incommode modern usages, the chimney-piece is well married to the wall and coiling, the carving in panels and canopy is well suggested, and the characteristic besove of the style is presented with spirit and clegance. But a more careful study of the peculiar unsuled seroll panels of the period is needed, the examples of this feature in the long upright panels being neither well drawn nor properly understood; the manuer in which the moulding is chaustered in the detail descript in the account. ferred in the detail drawing is, in execution, impossible. The brack-etest shelves on the returns of the breast would have been far more effective if more closely allied to the treatment of the breast itself. But, nevertheless, we consider this a very meritorious composition; and so is that of his mearest competitor, "Abacus," who contributes an elegant study in French Renaissance with a delicate full Doric order elegant sunty in French Renaissance with a delicate full Doric order and entablature of mabogany, ingeniously carried across the recesses on either side of the breast and around the room; the details have the great virtue (in American work especially) of temperance have self-restraint, but the general idea is sufficiently original to proved the design from the charge of being merely common if faut. There is however a timeli of national enterprise in the treatment of the ceiling and cornice of the room, which latter is connected with the entablature aforesaid by a bold conge, making a dangerous load for the sleader order beneath. The idea is ingenous, but we fear it would prove parilous in excention. The conge is a mistake in such a place; it gathers visible dust and connects teatures which in fact should be it gathers visible dust and connects features which in fact should be separated. The delicate ceiling beams need some architectural expression of connection with the flatness of the ceiling. The vertical pression of connection with the harness of the central. The vertical creatment of surface in the wall-paper competes unhappily with the slender columns and pilasters. This is a case in which the color should be applied in styles and panels or in damask stamped patterns or arabesques, opposed to the whole movement of the columns, so as, by contrast, to assist in their characteristic expression and not, by connection and likeness, to detract from it. competition and likeness, to detract from it.

"Advant" presents us with a drawing, the merit of which resides

in the execution, which is clean, clear, and vigorous, and in the acecesories, which are bright and elever, rather than in the chimney-piece itself, which is a fair example of the iashionable "free classie" piece itself, which is a fair example of the tashionable "free classie" or Jacobean style, but without striking points of excellence or invention. The crowning feature of the chimney-piece over the mirror is wanting in analy and interest, and has up proper and essential connection with the substructure. In geometrical clevation, the part below the mantel-shelf, is, apparently, the best part of the design, but a perspective would betray how tatally the shelf overhangs and conecals what is immediately beneath; there is no provision in the design for this practical obliteration of a large part of the surface. The stone five-place should have been brought forward at least six or eight inches, and place is nothing in the design of it is warrant the eight inches, and there is nothing in the design of it to warrant the costly complication of its construction by increasing the three stones, of which it should have been made, to twenty-seven. A work which, like this fire-place, is easy to design but very costly to build, is a sign of degenerate architecture, and no true artist will willingly allow such a disproportion between the bessl-work and the band-work. If be has armey sufficient to lavish on such details he should bestow a commousurate amount of thought upon them. "Voltaire," in this competition, has shown what may be done with a similar motif. The reflection in the mirror is impracticable, and the shadows are not correctly balanced; thus the wassess under the exhincts and those on either wing of the chimney-piece should be marked by much deeper shadows. The execution of this design is so firm and brilliant, and the design of it in parts, especially in the treatment of wall surfaces, is so good, that the author must be held to a stricter accountability than many of his competitors. We would only add that his twistest shalts should, by a contrary direction of the spiral, balance each other on the two wings. This fault of detail is evident in several

other designs in this competition.

"Arrivez to fig." This is a monumental discubean design, very well put together and vigorously drawn with a clear, firm touch, but the massive and well-composed balastred pilasters of models which flank the fire-place should have had a more exact relation with the coupled pilasters of the chiamey-piece above; their central lines aboutd have coincided, and the mantel-shelf should have been broken around it with slight returns so as to render visible the decorated quarterround mondring beneath; as it is, this feature must be lost in the centre under the projection of the shelf; the frieze is good, but its double angles should have beer carried up into the coved counter, which should not have been left to overlang at the corners, design is very architectural in its general treatment, and for that

reason, though it is perhaps presented in a less striking manner, we are inclined to prefer it to that of ". Ideas."

"Fra Thirdle" gives us a veritable chemical in maride of pyramidal form above the shelf, with detail too course and archaic for interior work and insufficient in quantity; the mattel shelf is really six feet high, but its treatment is rather suggestive of three and one half feet; it is inconsistent with the finer domestic life of modern times. But, in ideal, it is fronk and manly, and it is rendered with a dash and confidence which cannot but interest one in the hand which did the work and the mind which conceived it. The bobily when not the work and the mind when conceived it. The holdy gets near the difficulty of reconciling the monumental material his chimney-piece with its surroundings by catending the matchet treatment to the whole and of the soons, but this devine only transfers the difficulty to the contern of the room and to the junction of the wall with the reiling; the thing is not bully managed, however, as it is; we commend this bold asparent to a study of such detail as the first named compatitor has adopted with excellent results. Civilization has its reincements, and these most be provided for by the accluded even if he thinks it necessary bradopt a right better suited for the eastle of Front-de-Point than for the residence of a scholar

and gentleman of the needern type,

"A Anoles" (there are two of this signature) presents a compact
little design and one not without points of inguinity,—a panelled ethinney there slightly overhanging successively in four well-divided stages. The deeply recessed division over the mastel shelf suggests a LoEuw breast above, and the inference is that the picture which occupies the central panel above swings on its hinges and is capable of behaving committe mysteries in the depths behind. But the capacity of this design is not realized in the details of its execution. which need study and experience fully to develop them. bracketed shelves are awkwardly planted and the penelling is crude;

but the cornice over the whole is a good crowning feature.

** Albim's ** design covers his chimney-breast in what would be vulgarly reenguized as the Eastlake style, and is remarkably well. presented in his perspective. The metal brackets supporting the appear shelf and the candles are ingeniously contrived, and on the whole the best capacities of this very modern phase of the Victo-Fig. Gothic are as well set forth in this study as in any that we have seen. The manner in which the panel over the mirror is occupied is affected and thes violence in the space it would decorate. The relations of the chimney with the ceiling through the coved cornice and the heates are very well managed. As a matter of com-position this design is in advance of those of "Fre Diagnos" and "Norice," and the draughtsmanship of the perspective is not ex-

called by any of the competitors.
"Fairlead" presents us with one of the two recessed chimneycorners shown in this competition. It is an English classic design with a three-centered arch over the rocess, starting from a continuous impost which is in the form of a full entablature supported by pilasters; this arrangement, in order to provide for the arch, renders pilasters; this arrangement, in order to provide for the arch, renders necessary a frieze space above of disproportionate width, dividing the wall-space very awkwardly indeed. The chimney-corner recess, as is the case in abaost every modern interpretation of this feature, is far too small, and no one but a salamander could occupy the heaches when a log was blizzing on the hearth. A red brick chimney breast with stone dressings and cornice is bester saised for a ball or a pulslie place than for an inhabited room, and the three lancets by which the breast is pierced over the shelf are in depth of multion a tour-de-force of design which is not justified by the results. The draw-ing, though exertions and, indeed, feeble, indicates an earnest inten-tion; the chimney-breast proper is wanting in detail and shadow; if some of the courage which has been wasted on the three cavernous and ineffective fancers had been bestowed upon the crowning pediment and upon the mantel below, the composition would have been far more valuable and effective.

The author of the design marked "(?)" occupies the recesses on

either side of the chimney with panelled haffets of monumental character forming a dade and superdade, and sumounted by an order of Innie pilastees forming the wall-screen, with pointed panels between, a full entablature and a broad frieze, — all very formal and stately. This classical composition, when it is carried across the chimney-breast, is readily developed into a frontispiece, over-hold in projection and crude in some of its details, but such perhaps as might have been seen in some manor-house of the time of Charles II., before the ca-partities of the orders for a light interior treatment had been worked out. The design is in outline quite correct and careful, and the anthor of it is in a fair way to better things. For interior work he has to enhivate a lighter, a more freely imaginative and graceful habit of thought than is bere indicated. He seems to "know his orders;" and this is certainly a solid advantage; with this possession be can advance into the regions of fancy with far greater profit than some of his competitors, who are already there expatiating, each after his kind, but who are by no means so well grounded in this primary

knowledge. "Foliates" here presents us with the well-known dzeobean forms according to Bernard E. Smith, with perhaps even more of the mixture of Chinese gratesquerie which distinguishes some of the lighter designs of the Englishman. It certainly is rather a composition of furniture than of architecture, although the basis of it all, the fireplace, is of good masurey, and each stone of it is rusticated with a carved design in low relief. The close pattern of the wall screen on either side is remliared as heavily and relantlessly that the design of

the chimney-piece, in teed! light and frivolous, is well-nigh lost.

Another "Hope" here trackes his appearance, with a very monumental design of Jacobean character surmounted by a steep gable; the details are not elegant or schelastic or, indeed, interesting; there is an absence of harmonious contrasts in the proportion and an antiorthroate similarity of vertical dimensions in the orders below and above the mantel-shelf. If the middle division had been enlarged at the expense of the order of arches which strutours it, and had been separated from it by a more pronounced horizontal feature, if the areads had been furnished with a raison-d'size by having in each niche something more significant than a chandered projecting panel, and if the polliment in its bold outlines had received some touch of grace not recognized in Virrovius, this design might have claimed a higher place in the list. The wainscoting and wall-screen on either side have no unity with the central feature, are no more fortunate in their proportions, and the descration of the wall-screen is far too coarse and large. A very small alteration of proportions would go

far to redecon this design.

Of the Dulch? This is a less grammatical, but a more interesting and ingenious performance. It has some good hits of detail, especially in the carving, but as a whole it is wanting in lightness and grand. It has a very generous arched fire-place of rough masonry, too rough for the genule life which it is intended to comfort, this masonry is framed with word panelling, crude and unstudied in character. The superstructure is not without elements of good de-sign, but it has no relation whatever with the parts below. The corbelled shelves on the returns are good points, and if the disjointed composition had been united and reconciled at the top with a good growning feature, we would have laid a far better whole. The author believe a straining after originably without the necessary foundation of correct taste, he has knowledge, apparently, but is wanting in judyment. If he should apply to his general outlines the same rules of design which would guide him in an architectural façade, so that each detail would become an essential part of the while, he would be surprised to see how fundamentally his composition would be

"Acadhus" on the other hand has so applied his architectural rules, but the batterfly of his fancy is broken upon the wheel, and his room is overpowered with a structure which with no great changes might serve for a functual monument. Much of this effect might have been avoided if the central division over the shelf had been made narrower and a greater contrast of proportion introduced. It is a fair composition, however, in Italian Kenaissance, and is in many essential respects commendable. It is not well to wooden wings to a stone centre with the same continuous mould-The open canopies by which the design is tanked above are bold but hald in design; a panelled back would have recomined these little portiones to their demostic uses, and we are disposed to think that if they had been connected with the ceiling and if the main corolec had been broken around them, the result, if less original, would have been safer and more elegant. This aspirant is on the

right track.

right track.

"J, (-4-11-44) P." This is another recessed chinney-corner, somewhat similar to that of " Pairdeal," but injerior in design and drawing. In the latter regard the work is careless and scratchy, and the second seco the absence of shadows places the author at a disadvantage. The recess is far too narrow for its depth, the settles could not be occupied with a fire on the hearth, and the want of scales leaves much to be explained. The wall surfaces are very badly out up; the fun-damental principle of design for the treatment of walt surfaces is to diamental principle of design for the treatment of what subtraces is a subordinate the parts to one predominating feature; here there is a dado, a wall-serven, and two friezes, all of nearly equal importance in the composition. The plans do not explain the elevation, and the infentions of the methor are by no means clearly set forth. The chimney-piece is on too small a scale to be carefully studied, and it would be impossible to give an estimate of cost, because of the ab-

sence of the necessary information as to detail.

"Morgenstands" is far better than his predecessor in drawing and composition. He presents a design with some crudeness of tetails, but capable of execution and easily understood. The arch of the five-place is of juggled stores, in buff and red, fairly studied, but the slock above would in perspective need visible monthings underneath. The chimney-breast is meagre in design, and the cove above is without the necessary cornice mouldings. The chimney-breast is without the necessary cornice mouldings. The chimney-breast bas an enexplained and awkward enlargement over the top of the

has an inexplained and awkward entargement over the top of the core. The design seems on the whole to be conscientiously considered, but the author needs experience.

"Hand Work" justifies his signature with a drawing very carefully elaborated and a design with some good points. For the required stonework of his fire-place he has, like most of his competitors, contents a himself with an arch of core result accordingly. tented bimself with an arch of very small voussoirs; this is sur-mounted by a thin shelf, whose supporting brackets would be invisible in perspective. The superstructure embodies an idea capable of good treatment, but, as presented, it is crude and inelegant in detail, and shows a mind unusal to the language of forms; the balasters used below and above the mantel-shelf are badly designed and the shadows are incorract. A perspective study, in this case as in many others, would have betrayed to the author the must obvious errors of his design.

"A Novice"—the second of the title—gives as a very earcful and very serious composition, too massive and heavy for the place it would have to occupy in the household. The detail is quite out of scale, and the features all too large; he has also, in common with hump others, committed the error of continuing in word the marble details of his montel. The design needs detail and refinement, but the arthur of it, therefore any correct

the outlines of it, though coarse and erdde, are correct.

"Walpurgie." This is a leave little effort in a sort This is a brave little effort in a sort of bad German Gothic, but very carefully deawn and full of elaborate detail; it is on a higher grade than that of its predicessor. If the author had defined his shadows with vigor and precision, his ideas would have been far more effectively presented; but at hert flue design is as frivalous and whimsted as that of "A Novice" is serious and bare. Between these two designs lies a great region in which are many forms of truth. If "Wolpargis" had shown a greater reserve of imagination, and his namediate competitor had given rains to his, both works would have been better for the discipline. Detail which is merely capricious and whose presence cannot be explained is inconsistent with the dignity which must have expression in every work of architecture.

" Peter " is another Novice with a crude and illicerate design, in parts ladify out of scale, and sadly wanting in detail and longination. But the composition is by nomeans hopeless; it has premising parts. The window-sill is far too high from the floor. The drawing is also

the work of a novice.

THE BLUSTRATIONS.

MONUMENT TO M. DENRI REGNAULT AT THE ÉCOLE DES BEAUX-ARTS, PARIS. MM. COQUART AND PASCAL, ARCHITECTS; MM. CHAPU AND DEGEORGE, SCHIPTORS.

At the Salon of 1874 there was exhibited a partially finished, nearly lifesize figure of the denderse, sculptured by M. Chapu, now member of the Academy, of such surpassing heauty and grace that members in the Academy, of its receiving the prix d'houseur. This statue was to be one of the accessories of the monament to the young printer. Hence Remarks and the other mustle of the Fords due Remarks. statue was to be one at the accessories of the nonument to the young painter, Henri Regmanlt, and the other pupils of the Ecole des Beaux-Arts who fell during the war of 1879-71, which has been placed in the court of the Malkerry Tree at the Ecole des Beaux-Arts. M. Henri Regnandt, whose works are familiar to all visitors to the Loxembourg Palace at Paris, was exempted from military service by treason of being a pensioner of the Academy of France in that he had gained the Grand Prix in the section of pointing. Nevertheless the cuthusins a which during the Franco-German war fired the real patriots of France led him to enlist, only to lose his life at the battle of Buzenval, thus closing a career already marked with unusual promise and specess. The monoment, which we here reproduce from "FEncyclopedic d'Architecture," was creeted partly by private subscription and partly by government aid. The broaze bost of young fiegmant which summonts the pedestal was entrested to M. Degeorge; the architecture of the composition was the care of MM. Coquart and Pascal, while to M. Chapa belongs the honor of creating, what must always be the point of chief interest, the figure of to Leunesse; which we shall always regret was not loft semi-finished as it was at the time of its first exhibiting, when one was at liberty to interpret at will the tender yet sad enthusiasm of its face, and to take delight in the grace of its pose unaffected by thoughts of death and battle. gained the Grand Priz in the section of painting. Nevertheless the death and battle.

DESIGNS FOR A STONE FIRE PLACE, - COMPETITION NO. IV.

Nineteen designs have been submitted in competition in accordance with the programme amounced for the fourth competition. The jury has decided to award the first and second prizes to the designs distinguished by the mottors "Hope" and "Hope" (with an anchor) respectively. To the design by "Acandius" an honorable mention is awarded. We must once more call the attention of thus who take part in these competitions to Regulation No. 9, which says:

"The limits of the drawings must in no case exercil 164 inches in largth by 104 inches in breadth." As we are much troubled by relength by 101 inches in breadth." As we are much troubled by re-ceiving drawings which are not only larger but also smaller than the prescrined size, we will regularore the regulation by saying that we wish all drawings to be of the exact size mentioned in the regulation.

COMPRETITIVE DESIGN FOR A TOWN HALL AT MULTON, MASS. MESSES, WARE AND VAN BRUNT, ARCHITECTS, BOSTON.

ARCHITECTURAL COPYRIGHT.

Att good things, say the Germans, are three. There are three things, therefore, which it is understond the architectural world in its highest form of English development has long been carnestly desiring. The first is the practice of high art. The second is the protection of that high art by law of experight. The third is the distinction of the high artist by an academical diploma. It need senreely be pointed out that these three propositions hang very much together. Grant any one of them and the other two follow. But at the same time it is almost equally clear that, if either of the three can be supposed in he effectually disposed of, as being hengable of practical recognition, neither of the others will be likely to succeed in being so recognized. Admit the high art, and it is worthy of both copyright and diploma. Admit the high art and it nay be said to presuppose the high art and the title to copyright. Admit things, therefore, which it is understood the architectural world in said to presuppose the high art and the title to copyright. Admit the copyright, and it would be very much of a farce if it were not worthly earned by merit and accompanied by honor. On the other hand, if there he no high art, why the personal distinguishment or the dread of prace? If there he no recognizable title to academical status, why make a fuse about the value of the work? And if there he no copyright—well, some appear to think that, if there and the way the desired of the works are the desired. until be, we should soon see the designs of our architects exhibiting something more worthy of preservation, and fluir value to the pullic becoming a matter of more honorable recognition for the indi-

The general principle of copyright is one that commonly itself alike to common sense and to common konesty. Everybody has heard of "the petition of Thomas Carlyle, a writer of hooks," which was presented to the House of Commons nearly farry years which was presented to the House of Commons nearly farry years ago. Recounting briefly the laborious nature of an anthor's task and the ancertainty of his reward, he sets forth the issue as regards obvious proprietieship in a way that is so plain as to be incomposedible, even it there he a little in it of the accustomed joenlarity. He prays the legislature, in short, "to forbid all Thomas Teggs and other extraorous persons to steal from him (and his) his small winnings for a space of sixty years at shortest;" and he is willing to consent, if required, that "after sixty years they may begin to steal." The sturdy intelligence of the petitioner cannot ignore the obvious fact that there is stealing of some sort in the transaction to obvious fact that there is stealing of some sort in the transaction to the last, but in deference to liminan weakness he will wisk at the theft if it be postponed in decency to a period reasonably remote.

The principle of patents for inventions is not exactly the same as that of literary capyright. The invention does not seem to be authorized to consider his invention as a property which is his own by axiom. If he thinks he can keep the secret of it to himself, he is axions. If he future he can keep the secret of it to himself, he is welcome to try. But if he does not encoved, the law somehow declines to protect him in its use. He is, therefore, authorized to reveal it as an act of contract with the public; and in consideration of the price thus paid, in the form of conferring a public benefit, he is endowed with a statutory right of monopoly in manufacture for a certain term of years. The public benefit in question is, in a word, certain term of years. The public neutral in question is, in a word, the communication to everybely—and it must therefore be fully and musserveilly done—of the scientific knowledge involved in the invention; and so jealous is the law with respect to other people's freadom of discovery that if any rival inventor or other "extransous person" can but pick a technical hole in the parentee's title, he will find himself amply encouraged to "stead" what he can.

The registration of patterns in articles of arrisan design is still another different thing. Even in the most artistic subjects of this class (he iden which is in the legal mind seems to be that the designer shall simply be protected in the manufacture of copies of the precise acticle which he presents to the public authority for identification. The copyright of pictures and scalpture is similar to this. Other painters and sculptors cannot be prevented from even "slav-ishly imitating " thuse works (as the phrase goes) arristically, but they are not in principle allowed to reproduce them commercially. Both the artistan and the artist, therefore, are thus protected in the monopoly of their designs upon at least a simpler principle that which is applied to the inventor of a new machine or a new that which is applied to the inventor of a new machine or a new quack medicine, and almost in a more intelligible way than the author of a book or a poem is dealt with. The case of stage-plays is, on the whole, not difficult to understand; but when the copyright of a song is made to go so far that nobody done sing it in a public hall carrent on payment of an arbitrary royalty to the owner of the plates of the music, this might provoke a little argument if it were of sufficient importance.

How, then, does the case stand with regard to the drawings of an architect? In what way is there in them any design that is recognizably novel; any discovery that it benefits the public to have revealed; any article of manufacture whose value can be appraised commercially; saything that can be performed in public for the performur's profit; anything upon which a royalty can be made payable; anything which the Thomas Teggs of the brick-and-morter world can steal and sell, as Carlyle plainly implies, to receivers of stolen goods? To answer this it is necessary to look dispassionately

at the process of architectural composition.

at the process of architectural composition.

No one will protend to say that "the poet's eye in a fine frenzy rolling" is steamed eagerly over the homely drawing-hoant, or the rapt mesician's fingers clasped cestatically upon the honest T-square, or even the pencil of a Miliais or a Leighton swept breathlessly across the animate canvas, as Mr. Barry, R. A., or Mr. Street, R. A., himself, "with head awry and curious eye peeps knowingly" into his portfolio of photographs, or explores, at loast in the latter case, his teeming sketch-books. Still less will it be imagined, even by the most courteously creditions of admirres, that the mysteries of scientific contrivance in St. Thomas's Hospital, or in the prunises of scientific contrivance in St. Thomas's Hospital, or in the prunises of scientific contrivance in St. Thomas's Hospital, or in the prunises of interfectual parterition. When Mr. Norman Shaw, R. A., obligingly communicates to the public an excellent trick of fence in respect of the sweetening of soil-pipes, or Mr. Waterhouse, A. R. A., expounds his way of using terracouta to the heart's content, at last, of Sir Henry Co'e, tew, it any, will be found to have so little knowledge of the world as to attribute to those promising arrists a vast amount of the pseuliar ment attaching to a Siemens or a Bessener, If, again, we look attentively at the Government Offices in Parliament Struct or truntominal attaching to a Siemens or a Bessener. If, again, we look attentively at the Government Offices in Parliament Street, or contemplate with awe the Manchester Town Hall, or gaze affectionately upon Kehle College, or even marvel exceedingly at the cathedral restoration of Gloucester, or Bristol, or Dublia, or gape in annuzement at the Albert Memorial or the Albert Hall, who gape in amazement at the Albert Memocial or the Albert Hall, who will undertake to point out to us in these great works that which the Thomas Teggs of the profession are to be prevented by legislation from fraudadently appropriating to their own sortlid use? True, it is not men like Mr. Street and Mr. Norman Shaw who cry out for copyright; they who can throw off gems of design as if by instinct have their arrivite vanity gratified, perhaps, rather than their commercial sensibilities exasperated, when those minor enthusiasts who always themselves as their followers happen to be successful in imitation. In the fertile funcy of a really mean architectural designer from In the fertile funcy of a really great architectural designer there is so much of the material of design continually pulsating with an earnest desire for the outlet which it can never achieve, and in his resilves judgment so little permanent satisfaction with the ten-tatives of his own performance, that he would rather south at the success of an act of hordinately pulpable plagurism than begin to extentate the amount of imaginary duringe done to his brucches pockets. But, in the next street, perhaps, there is to be found, in all the pump of pretentious practice; some gentleman whose only profinable occupation has to do with the very small try of building, who is an eager adventurer in those private and condidential competitions where the race is more to the swift than the battle to the strong; who langs the walls of his office with futile perspectives, which he haves to look at because of the waste of hard-carbed dash they recall to his recollection; and who, if he attains to such a victory over adverse fath as the accomplishment of a presentable design, — possible by the help of an arbitree to the trade, — considers be has scated binnedf at last upon the very pinnacle of tame. This is the gentleman who wants copyright. He knows only too well what it is to copy, and it some one like himself were to copy this, his masterpiace, — especially as the period of its execution is incidnitely postponed, and still more especially as he may have to recopy calculate the amount of imaginary duringe done to his breeches ins masserphase. — especially as has period of its execution is masser-nitely postponed, and still more especially as he may have to recopy it himself a great many times yet. — he would indeed be only left to cry ou, with the despoiled patriarch, "Ye have taken away my pe-mates, and what have I left?"

The Copyright Cournissioners may therefore be permitted to have felt somewhat embarrassed when they "received an application from the Royal Institute of British Architects, that a representative of the Institute totaln bring before them a grievance under which archi-tects considered themselves to suffer." They may also not unreasontects considered themselves to suffer." They may also not unreasonably be allowed to have failed to see very clearly what the grievance could be when "Mr. Charles Barry, the Prevident, attended, and after reading a copy of a petition on the subject, which had been presented to the House of Lords in the year 1869, and some other papers, contended that architects were subjected to great injustice and injury through their designs not having the protection of copyright, so as to prevent them from being used by other persons than the author for building purposes." Still more may they have been obfuseated when 5 he suggested that the right to reproduce a building chould be reserved to the architect for twenty peace." We may even sympathize at once with the conclusion they arrived at, and only hope they did not arrive at it with too much trouble, when they only hope they did not arrive at it with too much truthle, when they say, "We are satisfied that it would be impracticable to reserve this right to reproduce a bailding." Lastly, we may allow the contribations to be excussed for at length turning the tables upon as with a little mystification of their own when they add that, "though are obtained decimal large we restricted as decimal thus are in their chitectural designs have no protestion as designs, they are in their printed as drawings, so that they may not be copied on paper;" and we ought, purhaps, to think the play very well played out when the further opinion is expressed "that such protection should be preserved."

No doubt, some thoughtful commissioner had asked the represent-alive, in that off-hand, practical way which is characteristic of com-missioners, whether be misself had ever suffered by plagiarism, or

whither any other architect to his certain knowledge had ever done so; whether he himself had ever been tempted to steal the designaof another, or whether, in his experience, such that he fact any form or substance whatever except as the baseless fabric of a vision,—at the base the dream of some honest but surgaine dog in the manger, who hopes that the time may come when, in his own lumble person, Nature may at length have produced a great original architect.—The declines architect. - The Architect.

CORRESPONDENCE.

THE INTERIOR COLOR-DECORATIONS OF ITALY. - THE PACILITY AND SELL OF COMMON HOUSE PAINTERS. - AMERICAN SCULP-TORS APPROPRIATING NATIVE SKILL.

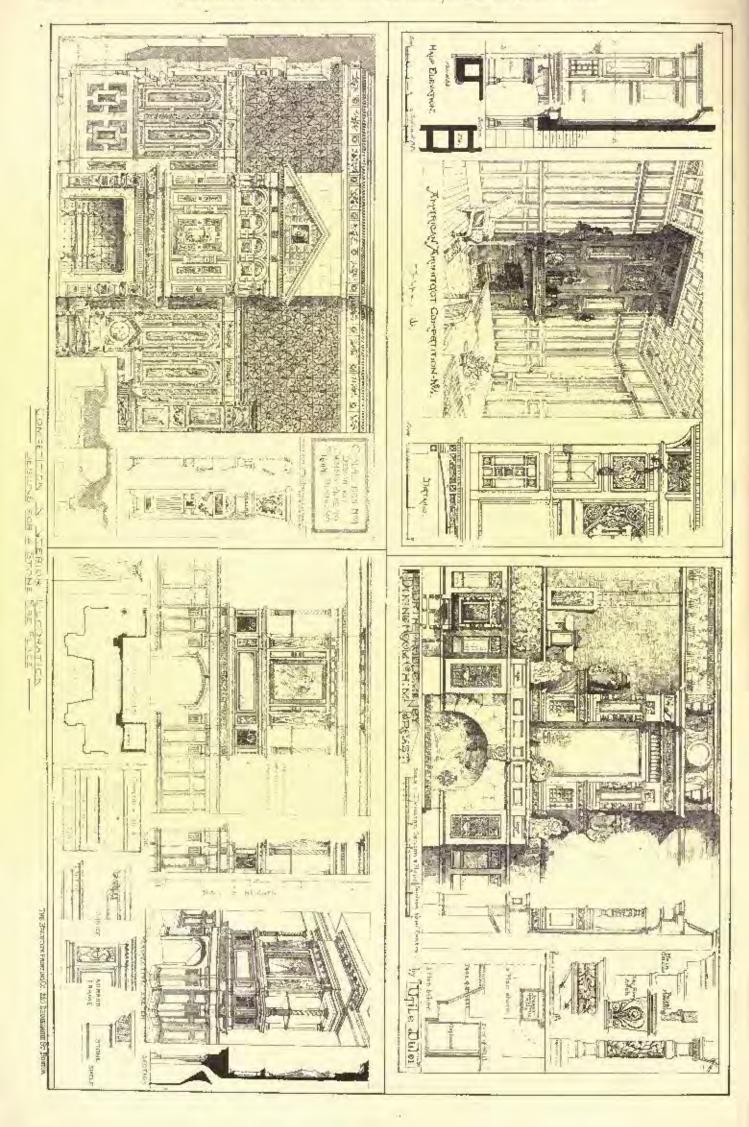
The first approach to Italy cannot fail to fill the architect with delightful anticipations; but coming from the medieval cities of France and tiermeny, where varied façades of quaint design and deate sculpture appeal constantly to the sketch-book, these anticipations are likely to be disappointed at first. He no longer is wantering by the side of a war ward stream full of architely helicibality. dering by the side of a war ward stream full of artistic individuality and ingenious caprice, such as is the Renaissance of the North, but he finds limeself rather on the shere of a great sen whose tide, swayed by its nwn prescribed laws, drowns individuality and sweeps unchanged through cities and provinces. Here and there a Michael Angelo or a Bramanie rises to the surface, but they seem rather to interpret than to control this academic inundation, and the monotony is hardly rulled. After the steep gables and broken outlines of the North, there is, too, a more absolute monotony than that of uniform-Ity of proportion and design, for the eye, wearled by the glare of a southern sun, does not seek variety in silhouette and decuration, but finds relief in plain surfaces and broad shadows.

At first even the finest palmes appear square and hare, while — as the guilds never give to the private citizen the same wealth and power in Italy as to the enterprising burgher of the North — the ordinary dwelling houses are without character, lines of plain stuctoral walls pierced by the plainest of doors and windows. Art has no place here away from the monumental huidings. These, thanks to Vignota and his successors, are recognized as old friends, but their familiar remiers and capitals cannot excite much enthusiases or tempt the pencil, which is likely to remain itle till one realizes that its chief use, and a modern architect's best profit, will be found in the magnificant interiors of Italy, less known because less easily cepthe magnificant interiors of Italy, less known because less easily represented in books than the facades. These very books, too, have been preparing some illusions for us, especially in Rome, immunch as we do not suspect, on turning over Leuseoully and other books, that the stately palaces with rich corniers and friezes are of stuccol Even photographs hardly betray the beautiful columns in the court of the Palazzo Veredio at Florence, and yet those celebrated columns, covered with exquisite analosques and figures, are of stucco. The discovery is disagrecable, for in view of its cheap and provisional character with us it respires no small effort to look on succe with respect, much less with admiration; yet we are undoubtedly wrong, for both Greeks and Romans, whom we cannot represed with lutiling flussity, used it in their finest buildings. Perhaps had our ignorance been less and never allowed us to mistake it for fine stone we

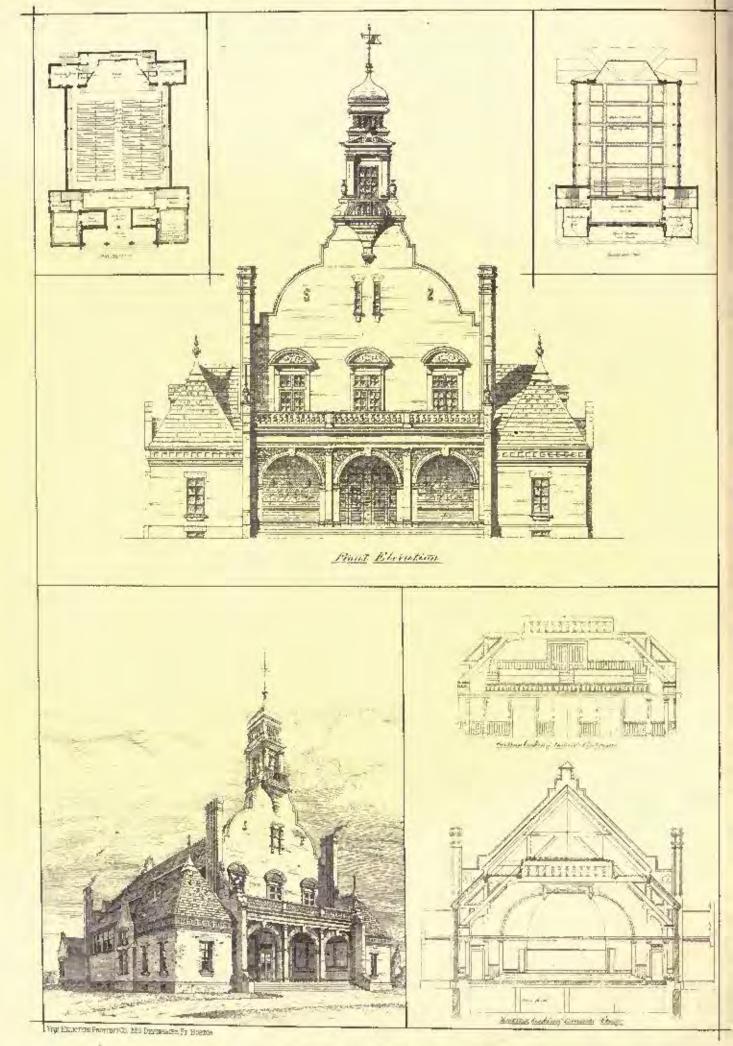
rance been less and never allowed us to mistake it for line stone we might never have regarded it as a sham, but have seen in it, as the anchora did, a natural and valuable medium for tinting or painting. are instable, a natural and valuable medium for tinting or painting. As classic architecture is inseparable from scalpture, so the Italians odded to it another ally in painting, and the distinctive character of the Renaissance is the prominunce given to interior color-decoration. In the subordination of every other interest to the study of this, an architect will derive most advantage hore. The world has learned by rate but too well the Italian orders; it has much yet to gain from the noble interiors due to the unrivalled painters of Italy. Artist and amateur return with countless photographs and drawings of facults and sculpture, but beyond a few shadowy interiors of churches and their own vague reminiscences of a multitude of magnificent collings and frescores, little is added elsewhere to our modern resources from the inexhaustible examples here of great masters, which begin from the grand mosaics of the fifth century, come to a perfect development in the fifteenth, and continue to the brillian chie. of Tiepolo a century ago. Further improvements in polychromatic printing will some day open up this field, but at present one's own slow studies and notes are almost the only way of carrying oil any accurate ideas of these things, especially of the grand panelled and frescood ceilings, which, perhaps above all, will some day interest us in adorning our public limitings, as yet more façades, but which further art development will sometime seek to render monumental within as without. within as without.
On all sides one sees a movement for reviving mutal decoration,

and with it comes the feeling that as an art it is at present lest. England and Germany are striving earnortly to create or revive a school, and the severe criticisms on the new Paris Opera coused even the complaisant French to the conviction that their own noble school and its tradition had disappeared, a loss which will be the more marked as the restoration of the Hötel de Ville calls for painters to replace those paintings which were regarded as the highest expression of French secular descration. Among us, two, recent efforts have awakened interest in the same subject, and have called to it the atcultion not only of our architects, to whom this is no new interest,





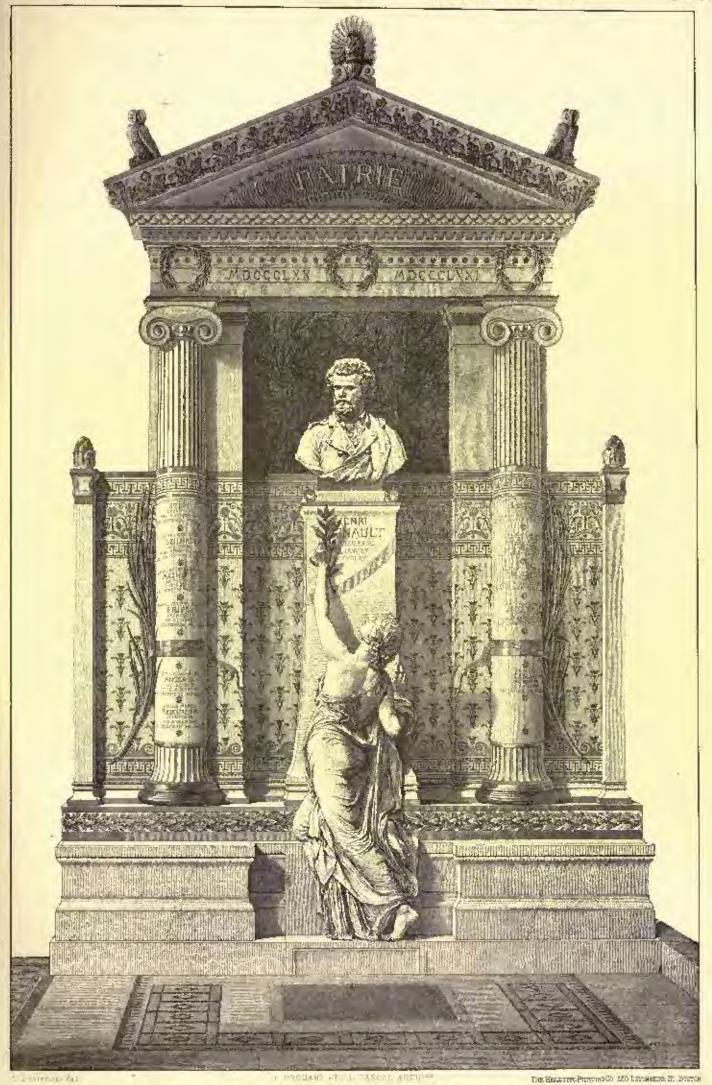




Study for Milton Town Hall

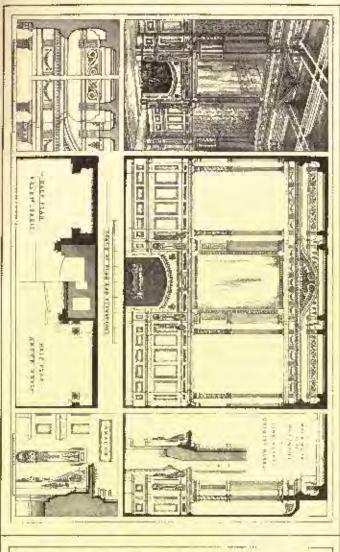
Naive & Kan Brant Archie.

Buston

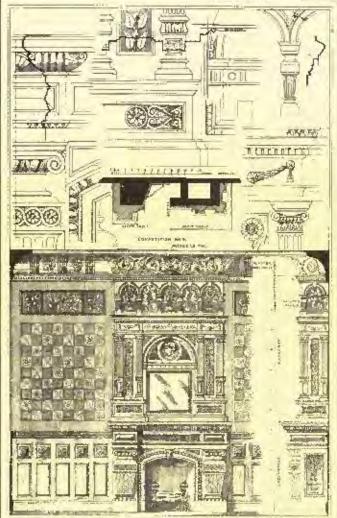


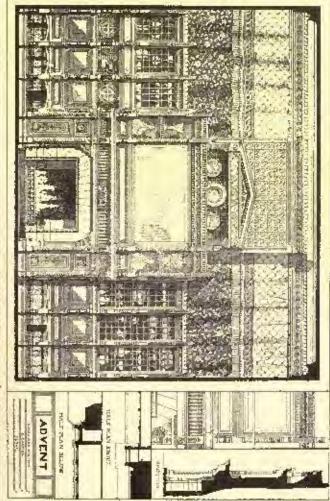
MONUMENT TO M HENRI REGNAULT .-

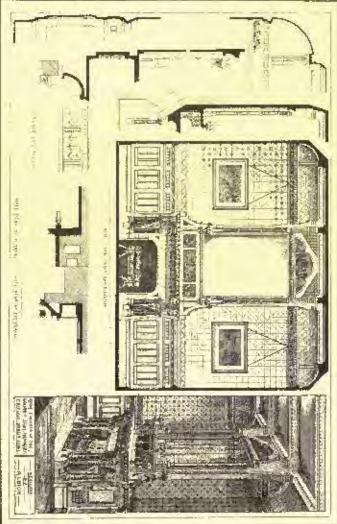




COMPETITION IN INTERIOR DECORATION









but also of our painters. To the latter no branch of painting offers so wide and promising a field of distinction as that of mural degoration. If they examine themselves they will probably find that they are at present wordly deficient in their technical ability to carry out are at present worthly dencient in their technical ability to carry out an architect's or their own scheme for the decoration of a monument. Not to speak of the special studies in drawing and anatomy required for figures seen from below, which come within their own regular sphere, how many of them are thoroughly at home in perspective as applied to architectural accessories in sciling painting? Refuge would at first of course be taken in providential clouds to hide everything except the easy parts of foreshortening, but one would soon be foresit to protest against this innocent monotony as much as did the honest inform to the received idea that heaven " was

sitting on the butt-end of a cloud, picking on a harp." So thoroughly were all these purspective effects understood by the Italian judinters, that even the most mediocre never seem in the least embarrassed by them, but play with the most difficult foreshortening with a facility which would seem almost genius nowallys. ening with a facility which would seem almost genius nowalays. These traditions have been preserved through the decadence of Italian art, and the commonest house painters there inher an astonishing facility in drawing, as well as a native instinct for color. They will dash oif readily a ceiling with flying cherules, and in a central compartment a view looking up through balustrates surrounded by figures or vases with flowers, etc., or will paint a most deceptive

frieze and cornice with admirable shades and shadows.

While the highest artistic intelligence seems wanting among them, there is a wonderfully developed instinct for decorative effects, which though below what might be done by the best men elsewhere is far above medicerity in other countries. The walls in the simplest rooms of the hotels are prettily painted in distemper with borders or pat-terns, while the dining-rooms have more pretentious but usually admirable designs. I mention the hotels, as they are generally new and are indicative of contemporary skill. In a new hotel at Naples the dining-room, with vantring and pillars, is descrated with flowers and vines, following no fixed scheme, but grouped or trailing here and there on the white ground of the pillars and ceiling with the simplicity and taste of the bighest art. The color is charming, and the whole would have made a reputation for the painter in the North; but I found he was only an ordinary house painter, nuknown and ill paid. Their instinct and their traditions are akin to the skill which we to this day admire at Pompeii; for it is now thought that those graceful figures and exquisite designs are not the work of eminent artists, but that of bands of ordinary house decorators, whose pattern books furnished them a variety of designs, which they dashed off with mar-vellous facility, and in this case with musual rapidity, as at the time

of its final destruction Pompeii was being hastily rebuilt after a partial overthrow by carthquake a few years before.

These paintees are poor and poorly paid, and it would be an immense advantage to our country if, instead of organ-grimlers. Italy would supply its with more of these elever-lingered grinders of color, who would find ready work, and give us that facility we so much

need.

In another department of art, Americans have already turned to account this Italian skill, not perhaps in a way as conditible to their cander as to their shrewdness. Amid much feelish scandal prompted by breat jealunsy there was some truth in the recent report that some of our semptors in Rome had supplemented their own want of technical skill by an unfair amount of aid from obscure but clever natives, whose want of general intelligence or enterprise that not give them the opportunities of our countrymen. The latter took all the credit they could get for what came car of their studies. Their employes were content with the pecuniary remuneration, and only the jealousy. of rival scutprors stirred up the trouble. Of course there are various degrees of assistance, but since it is admitted that a sculptor, after finishing his model, need not blusself much the statue, it is futile to inquire how much superior the finished statue is to the model, or why it is 90.

Architects have, however, an limitations in turning to account the ability of their assistants, and we must gather to us all the technical skill we can, so as to meet the older countries with those of their advantages we can get. We should find in these decorators one pernicious fault, which it may fairly be allowed we should oppose, that is, their passion for substituting imitation for the real. Their very eleverness, as in most decadence, has betrayed them. To a profest against some most deceptive imitation of brickwork, the painter of it naively replied that anybody could lay real brickwork, but only an artist like himself could permetly imitate it on plaster!

An international Exhibition to be held at Milin next year, states that the proposed exhibition is to be the third in size of any that have taken place beretefore, still the space open to exhibitiors will be one fourth larger than at Paris. The main building is to be 612 feet square and five stodes logb. There will be twenty galleries in it, 812 feet long. The art galleries are right in number, and will be sample for the exhibit of the Vast humber of art breasures that will be sent by striess and expects of collections. The buildings are to be massive, in the Lambard style of architecture, and will be permanent. Exhibitors can ship their goods from the Paris Exposition, in bond, by the Alex Italia Railroad to the building. The opening will be April 1, 1879. The Director General of the Exhibition is Mr. Frederick Guscetti, an American of Italian descent.

WHITHER ARE WE TENDING?

GALVESTON, TEX.

To THE EDITOR OF THE AMERICAN ARCHITECT.

Dear Sir, — Having been a constant reader of the American Architect from its beginning, and feeling that it marks a new era in the architectural publications of this country, leasungth as it represents the forenest element among our architectus. I have noted a tendency in the wrong direction, especially in what is decorative, in so many of the compositions, that I cannot let it pass without asking the question healing these limes: Whither are we tending? In the hope that it may induce some of our leading talent to take a retrospect ever the bistory of architecture and especially of decoration. Decoration, although secondary to architecture, is yet very important Decoration, although secondary to architecture, is yet very important in a composition. Michael Angelo said, "Triffes make perfection, but perfection is no trifle." The tendency of our day seems to be, like that in the early period of Gethic, towards the naturalistic and where we conventionalize the grotesque or whinsical. The old maxim, "Nature is the archetype of all art," will hold good for all times but another maxim of equal value and age, "Art should beautify time; but another maxim of equal value and age, "Art should be antify nature." has about gone out of print nowadays; sometimes for want of capacity to fill the bill, at other times it seems out of pure ill-will; and again at others, for want of skill coupled with an inordinate ambition to make something new. This latter phase is the most mischlevous. We forget that the correct, the pure, the true, are eternal and will always command respect. My all master, when I was a boy, once told me, "A good copy of a good thing is always worth something; a poor original is never worth anything, no matter how much it is claborated."

Now it seems to me that history has established certain principles that underlie all art, as definitely as the diameter of the ordered column, and these cannot be righted with impunity. Taking, for exsauple, the designs in interior decoration in the American Architect for June 1st, which represent the tendency of our time about as well as anything at land, I will use them for reference and give the im-

pression they make on mc.

The first of these principles before mentioned is peace, — "the eye nmst have rest." It is impossible for any one to enjoy a decoration. must have rest. At a simple some for may one to empty a decoration, unless he is at rest; and not only must the spectator be at rest, but the decoration also: the man or woman who would enjoy an architic decoration around him would scarcely appreciate a dog-fight; and here comes in one of the most important propositions that art has to solve among men: (1.) It should enable the burgan mind, and in order to be able to do it, "it must be nothed in itself." (2.) It should help to clear the mind of the inclination for what is ignoble, stoud help a eter the mind of the mendation for what is ignore, vicious, and barbarons (and there is a good deal almost everywhere). In this respect Art goes hand in hand with Religion; therefore purden me if I give a new application to the trite saving, "Let us have peace," In the wall-decorations in No. 127 there is all fight and no peace; everything is challenging attention with the atmost possible importunity. One goes from a room of this kind with a feeling

of refiel, as on heaving a charity fair where roung ladies sell things.

The second of these principles is the division of the subject into main and subordinate parts.—" building a pyramid." This principle has been acknowledged from the Egyptian line down to ours in all important compositions, both in architecture and in decoration, the whole world over; and yet some of our compositions of the present seem rather to aim at making things profilectous than otherwise;— our example has it all over. The wall-descrations of Pompeii and Herentaneous recognize this principle in every line. In the Alkambra the main lines are the architectural lines, and the decorations are equally subordinate, giving an extended are related to the soft tone in color, produced by the juxtaposition of various primary culors and gold in the designs; of the decorations, the lines and forms being abnost lost, only their tendency is clearly discernible. In the divisamost loss, only their tendency is surery discretions. In the orision of a subject, a wall for instance, there should be a natio contral point, to which all other lines and objects han and are secondary. Now this taking a square and filling half of it with a quarter-circle ornament, all inclining one way in a roun, is not allied to anything in nature, as far as I know; and in architecture there are but two forms of this kinds the Grack wave consmout, and meaniler; but two forms of this know and ples yet those rou in the Greek examples the form or to a control. The

either from or to a contro. The squares before mentioned run straight along; and in the wall-lecoration by "Minus," where it is hitched on to

one side of a sun-flower, it produces a still more unsatisfactory result.

(a feeling of lopsidedness), that may be very old but is never pretty. All unnatural things should be avoided. I knew a lady who earnest book at a caryarid with uplifted arms, for ten minutes, without getting a headache. All decurations should produce agreeable emotions only. In the same category with the beforementioned squares with quarter-tirele comments in one corons, would go the scroll ornaments in the arches of the design of "Incomus." Here we have a number of scrolls, following each other, ignoring the principal statements.

ciple that "every line in orna-ment must have its contra line." Wherever one line forms a certain sweep the following one must go in another direction, The Kenaissance bus given us a new



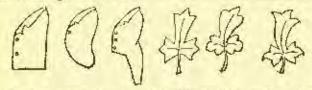
line of beauty in place of the antique. This combination of two curves with a straight line, in place of the convex and concave circles without it, as the nacients had it, has given as many of the most without it, as the nacients had it, has given as many of the most peasitful forms of nacient times. Where it is applied with judgment, it is astonishing how much vigor it adds to the design. Above the wanned in this design, between the windows, there is a picture introduced; why it is so narrow up and down I don't know (unless for addity); it represents a grand dining-party at table in a dising-room seven or eight feet high, the walls of which, if it has any, are hung with tapestries. Now would not a wall-deceration treated in the same monner, with damask panels, quiet but effective in treatment, have been much better than the one introduced, which in form has very much the character of what a school-girl would do, it distinction from the master, hearned in what is known and has been done in this line before he was horn? "But," it may be said, "your idea is old." To this I reply, So lung as you don't give us something equally as post or better than the old. I would rather forego the pleasure of having semething engined. In general the original and new must ever stand abreast with the old before it can command recognition; the wall pattern of the middle design in No. 127 represents vines erceping over a very primitive, simple, and charp lattice-work, and looks very much as though somebody had made it himself. If a good artist makes it it may become very expensive, but will always look cheap. Per contra, see Her Majesty's Summer house, Buckinghan Palaes, published by Gruner; and as a motif for ceilings—Greek temples, and Schinkel's theatre decorations.

In the design of "Minus" the frieze and picture are very good and appropriate, because here the architectural lines around their give the necessary system and severity; but the little square panes of glass above the windows remind one very much of the carly langlish stained glass figures and Romanesque sculptures of, say, from the eleventh to the horizonth centuries, which are grand for their time and people, but would be desidedly feable and weak for our time and people, but would be desidedly feable and weak for our time and people, but would be actived a relieved these compositions especially, in order to make myself understood, in the hope of influcing one of the keading architects and decorators of our time to recent." The path thoy have taken, and where this kind of thing will be up at a that at represents a grand dining-party at table in a dining-room seven or eight feet high, the walls of which, it it has any, are hung with tap-

will be ug up at, that at some fature time our age may not be looked

will be ag up at, that at some feture time our age may not be looked upon as a time when art got crazy.

The national character of a people is expressed in its dress and its ornaments in the same manner than handwriting carries with it the character of the writer. For example, take the English, the French, and the German. In England the leaders of fashion, etc., are from twenty to thirty years old; in France, old and young alike interest themselves; in Germany, the old professor gives the tone in art matters. Now take a coat of each and note the characteristics of the people in the cut of it; the English, square and angular, the French, graceful and soft in its lines; and the German has some



of the former, and adds some scholasticism inclining to the pedantic. Take, again, the treatment of a simple trefoil by the different peoples; and we find the first is all vigor, nearly everything in straight lines; the second is all grace and elogance; the last, with some vigor (sharp corners), and some grace in the motion, has the scholasticism in the contral divisions, which must all have the convex and concave sweep. New it weems to me a big smallower hewn out with a broad-axe does not express the national character of this great people; and get there is so much of this crudeness in the ornamentation of our day, that I cannot think of anything else that would fill the bill; and I feel that our leading men should be able to give as something original, appropriate for our time (we are no longer in the dark ages), that would be characteristic of us, and that would not disgrace us when the future antiquarian shall find the sites where we dwelt and worked

JOHN MOSICE.

NOTES AND CLIPPINGS.

NOTES AND CLIPPINGS.

The Clart's firste at Malaga.— After dinner, our heat took us on to see his vineyard, and the great curtosity which it contained, — for behind the house was a vericable Gisant's Gravet. It lay on the slope of the hill, he head toward the north, its test printing southward,— in height eighteen English feet, and in brendth six. It was lined with smooth-hown blocks of stone, and some few years believe our visit had been opened by our present host, when a skull about three times the ordinary human sixe was bound, with other houses of proportionate magnitude. Of ornaments only one carring was discovered, large enough almost to serve for a lady's bracelet. No enajecture could be made as to the era or race to which the giant belonged. Malaga dates back three theusand years, and is an arcredited colony of the Phanteones; and it was strange to pender that on this lonely hill, now stirred only by the vine-dresser's stop, multicodes of an unknown race and tongon might have not to do house to their fallen chief, and that their resitess eyes had perhaps rolled over the same magnificent features of land and son.— Correspondence N. Y. Post.

VENTILATING CHIMPEY COWLS. — A sub-committee, consisting of three eminent sanitarians, Capt. Douglas Galton, Mr. Rogers Field, and Mr. William Eassie, appointed by the Sanitary Institute of Great Britain to test chimpey cowls and similar rentilating devices, have made a report as follows: "The sub-committee appointed at Learnington to test the vuntilating exhaust cowls bug to report that they have given the matter their most careful attention and carried out at the Royal Observatory, Row, an elaborate series of about one hundred experiments on seven different days, at different times of the day, and under different conditions of wind and temperature. After comparing the cools very carefully with each ether, and all of them with a plain open pipe, as the simpless, and, in fact, only mysilable standard, the sub-committee find that none of the exhaust cowle cause a more rapid current of air then prevails in an open pipe ander available standard, the sub-contributes find that name of the exhaust cowle cause a more rapid current of air then prerails in go open pige ander similar conditions, but without any cowl fitted on it. The only use of the cowls, therefore, appears to be to exclude rain from the restilating paper, and as this can be done equally, if not more efficiently, in other and simpler whys, without diminishing the rapidity of the current in the open pigs, the sub-committee are tradile to recommend the grant of the medal of the Sapitary Institute of Great Britain to any of the exhaust cowle submitted to them for trial. Signed by W. Eassie, Regers Field, and Douglas Galton."

Panton's Emerated Raitway.—In the year 1856, when London was much exercised on the question of rapid transit, Sir Joseph Panton, who is well known from his connection with the first Crystal Palace, emocived and perfected the details of a scheme which may fairly be considered the preparent of the New York atwated railwards. He proposed to baild a railroad which should be contained within a glass and from gallery some eleven or twelve noises in length. This gallery was to be thout 180 feet high and 72 feet wide, so as to allow from tracks to be laid. The rails were to be laid at an elevation of 26 feet from the ground, so as not of incorfere with traille in the shoets below. On either side of the gallery were to be shope and dwellings, with stations at convenient intervals. An ordinary roadway was to serve for the tenants of the bouses and the shopping public. Below the railway were to be, on either side of the street, the ordinary houses said shops; but as the vibration and noise of passing trains were expected to be more annoying to those below than to those above, those buildings were to be built with double walls, and a current of air was to be made to pass through the space so left. Three times was this extended crystal padace to cross the Thames by bridges built for its service, the runtal of the houses on them being estimated at \$5,000 each per annum. The road was to begin at the Royal Exchange, to cross the river scen after at Queenhithe, and after passing through a portion of Lambeth, to corms the river at Hongerford and stop at Regent's Circus; the main line, however, was to pass through Belgravia, Brompton, Kensington Gardens, Ketting Hill, to the Great Wosten Station at Paddington. On the north side it would pass over the London and Northwestern and the Great Northern railways, then back through Islington to the Royal Exchange. The estimated cost of this brittle enterprise was placed at about \$170,000,000, and as such an other true Institute the equity is should be added, were to be propelled by preun

Denotitios of a Factory Chinney with Dynamics. — An account is given in the It was be Baarding of the denotion of a workshop chimney at Berlin by means of dynamits. This chimney was 170 feet high and contained about 10,000 entire feet of manney, weighing 864 tons. It had a division to the centre. It was necessary to make it full toward the cost, and the charge was required to be as small as receible that the materials might not be much damaged. Eight blosting holes were made from the exterior near the base, on two apposite sites, and their charges were placed as near the middle of the thickness as possible. The two charbers nearest the clearing hole on the was side received only I be of dynamits; the four other chambers were charged with 2.2 lbs. of dynamite. The temping was effected by bricks and mortar. The total charge of 33 bis, was exploded by electricity, all the parts simultaneously. The dull explosion shock the ground only to 950 feet distance; the chimney did not fall, but took an evident melination, while three great cracks rese to 50 feet in height, and the lower part of the wall was had open. Other holes were now made in the part of the wall explosied; the chimney then fell slightly toward the east.

The Suture Tunner, — The Virginia City (Nev.) Chronicle gives the following brief history of the Sutro Tunnel, which was connected with the mines of the Constock lode on Menday, July 8th:—

"Ground was broken for the Sutro Tunnel on the 19th of October, 1859. The work loss, therefore, required cight years, eight months, and ton days to complete. The progress was very show at first, all drifting having been by hand; but, in the spring of 1874, experiments with a Burleigh drift having demonstrated the advantages to be derived from the use of that machine, a carriage capable of supporting six of these drifts while at work was made, and on the 22d of June, 1874, four were started. The progress was now much more rapid than over before in the history of tunnelling, and on August 7th in the same year, two more drifts were put to work. From that date the average progress was over three hundred feet per motule up to April, 1877; when, the header having entered the broad Cemstock universal belt, the heat became so intense that two drifts had to be taken off the carriage. From that day the average monthly progress did not exceed two betalered and fifty feet. Work has been continued unintegraptedly from the time that ground was broken until to-day, but at times only two men were at work in the tonnel. The greatest progress was in December, 1875, when the header was advanced 417 feet, and the least in October, 1875, when it was advanced may 19 feet. The total length of the tunnel, as stated in the official chart published hast September, is 20,170 feet. The tunnel being cennected with the Constock workings, the next more of Mr. Sutro well doubless be to start morth and south drifts to connect with all the mines on the lode. The work has cost nearly \$4,000,000."

BOSTON, JULY 27, 1878.

CONTENTS.

Sounday:
The True Responsibility for Ruilding Disasters.—A Chance to Fix the Responsibility in the Rockford Court House Case. — Engineers' Crinicism on the Full of the Forty-Second Street Tunnel. — Shall the Washington Obelisk be Pinished?—Another costly Monumental Failure. — Accident to a Water Main in New York.—A Project to Heat New York by Steam. — Possible Effects of the Undertaking.
THOROCOUPARES IN GUELT CITIES
Lightning-Hoss
The Lieustrations;-
The Palace of the Trocadéro, Paris. — House at Manchester, Mass. — Design for the Moore Memorial. — Design for a
Monument Designs for a Stone Fire-Place 30
MONREALE,
CORRESPONDENCE :-
Letter from Paris, - Letler from New York
Feres in Tubathus ,
THE STETERRANEAN WORKS AT WELBECK
Communication:
German Houses in Cincinnati
THE RAILHOADS OF PERU
A DANGEROUS LIGHTNING-ROU
Notes and Clippings

It is a great misfortune to the cause of sound building that neither from coroner's juries, county commissioners, nor from other special officials whatsoever, can we obtain a fair apportionment of responsibilities even in such flagrant cases as the fall of the Rockford Court-House dome and the collapse of the tunnel on Forty-Second Street, New York. If honest and thorough investigation and just panishment, instead of partial inquiry and mild consure, ill-bestowed, promptly cosned upon such cases, the adminition would inevitably be felt "where it would do the most good." Architects, engineers, and builders, would be far less apt to go on laying foundations, building piers, and turning arches according to the lazy rule-of-thumb process which must prevail where there is small danger of criminal procedure in case of disaster, and an oven chance that the blame will be placed upon the immediate instead of the altimate cause, upon the careless subordinate instead of the blundering principal. We rarely hear of accidents in France such as these pages are so frequently forced to chronicle out of nor own experience, because there the law watches over the public interests and punishes a fault of construction or carelessness as it punishes highway-robbery or any other crime against society. We learn, for instance, that the Freuch courts, which have been investigating the case of the fall of the passenger elevator at the Grand Hötel in Paris, not being able to fix the responsibility upon the manufacturer, have fined and imprisoned the engineer in charge for careless oversight of the condition of his hoisting gear, and announced that the proprietors of the hotel are liable to criminal process for damages. The case seems a hard one for the engineer and for the hotel-keepers; but we picture with what renewed care all the engineers in charge throughout Paris will look after their apparatus, and with what fresh solicitude every proprietor will inspect his elevators. Thus, out of the nettle danger, if properly cultivated, will grow the flower safety.

We have frequently had occasion to refer to the nusatisfactory condition in which the Rockford Court-House affair has been left by the investigations. The responsibilities of the architect have not been defined; the contractor, Richardson, who, according to the testimony, tampered with the plans, and put in poor workmanship and worse materials, has not only been continued in charge, but has been allowed a large sum with which to repair damages, and the Building Committee has escaped all consure. Now, however, we learn that the affair is about to go into court, where we may hope for a complete and exhaustive examination and a proper distribution of blane. Two suits, in the amounts of \$5,000 cach, have been entered by the widow of one of the victims of the disaster, one against Richardson, who is held to be immediately responsible, and one against the

Building Committee, whose members, it is claimed, must, under the law, stand judgment as individuals and not as officials backed by the county. If either of these suits results favorably to the plaintiff, there will be a number of others to follows. It appears as if at last we shall now get at the "true inwardness" of this unfortunate affair, and that architect, contractor, and committee will find themselves set right before the public.

As for the New York tunnel, in default of open and complete expert testimony before the coroner's jury, the local press has availed itself in several instances of the services of well-known engineers, who give their opinions at great length and with much circumstance of figures and calculation. Their conclusions are virtually identical, and may be opinimized as follows: that the arch was "an oflipse within an ellipse," and as such had a rise of only ten feet in the width of forty feet; whereas it should have been "a true ellipse," which would have had a rise of twelve and a half fact; that the arch, even if bailt exactly according to Commissioner Campbell's specifications, could not possibly stand; that the arch had no conntering whatever; that the ubutments were not properly built; that the cement was radically bad, and the stones used improperly cut; that the commissioner's specification was vague and undefined, and its application could not possibly give stability to a brick arch so flat and disproportioned. The conclusion is, that for similar work a railroad company would hold its chief engineer responsible. When our manicipalities conduct their affairs on a business basis like the corporation of a mill or of a railroad, we shall no longer see this baleful process of political whitewashing to cover the criminal defects in the public services

WORKMEN are now engaged in removing from the liase of the Washington Monument the accumulations and debris of a quarter of a century, preliminary to the resumption of work upon that long-neglected and dreary pile of masoury. We fear, notwithstanding the precautionary provise in the joint resolu-tion of Congress (American Architect, vol. iii., p. 170), that we are destined to see the completion of it in accordance with the modified plan; the discordant and barbarous conception of the Pantheon at its hase having been replaced by Mr. Mead's terraced and balastraded explanade, and the proposed height of six hundred feet for the central obelisk having been reduced to four hundred and eighty-five, at which elevation it still will overtop by five feet the highest structure now existing. But as the spire of Cologue Cathodral will, when completed, rise some twenty-six feet above our republican monument, and there is no knowing what superior aerial heights the effete monarchies of Europe may think it worth their while to attain with steeple or dome, fifty or a bundred feet will be added doubtless, if the money holds out, to the great republican obelisk, in order that it may still stand presiminent in this respect, if in no other. Fortunately, the structure is not and cannot be so picely studied that such an addition would interfere with its essential proportions. A brute mass is not sensitive in this respect, like a work of art, and we sincerely trust that our mounment may never be suffered to lose the only claim it can possibly have to the consideration of mankind; unless indeed some such claim can be found in the fact that never since the dawn of civilization has a public monument been erected in which has been combined so small a proportion of buman thought with so large a proportion of human labor. The result of plainness, squareness, simplicity, and extreme height will doubtless assert itself to the common mind as a clear achievement (in the vernacular, a big thing), disturbing the spectator, however, with no necessity of analyzing details, requiring no intellectual effort to understand, creating no tumult of emotions, and inspiring no thought worth the thinking. If its sides were engraved or sculptured, like the Egyptian monoliths, its prototypes, or like the Column of Trajan, with legends and bas-reliefs, so that they could be read and studied and understood, if it were treated not like a monolith, but like a form built up of small parts into a great structural harmony, as the spire of Surasbourg, for instance, - which, by the bye, is only ten foot lower than our aspiration, but is crowded with evidence of human thought, skill, and love, - it would be a work of art, a true monument, a denkmal or think-token as the Germans call it. It is the highest function of art to inspire thought in this manner, and it is quite possible to couceive of such a

monument which should yet have every desirable quality of breadth and repose. The resources of the country are fully capable of an achievement, the morit of which should be, not that it is the highest structure in the world, but that it sets forth to the senses the idea of a national tribute to a great and pure life. In the presence of such an offence to civilization as this bald obelisk will prove to be, if ever erceted, artists, whether painters, sculptors, or architects, will have need to ask themselves why they are encouraged to exist and ply their vocations if such a memorial can by any possibility, or in any way, accomplish the results which should be expected of it. The gentlemen of the results which should be expected of it. The gendemen of the Washington Monument Association, if they really decline to submit to public competition the form which this conspicuous should ultimately assume, and if they really prefer testimonial to retain the easential features of a design made some thirty-five years ago, when there was little or no art in the country, will doubtless save themselves an infinity of vexation, labor, and delay, but they will have irrecoverably lost a great opportunity. We again, on behalf of the high interests of art, commend this subject to their careful revision. It may not yet be too late,

MR. JAMES JACKSON JARVES Writes from Florence to the New York Times that it is proposed in France to form a separate ministry of the fine arts as one of the departments of govproment, in order to secure a greater efficiency in the administration of the artistic interests of the country than is obtained by the present system of entrusting them to a bureau in the Department of Public Instruction. This would be a character-Department of Public Instruction. This would be a characteristic recognition of the importance of the highest artistic culture to the welfare and happiness of a great people, and it is out of such recognition that proceeds the molaulited precommence of France in all that pertains to monumental art. How far we ourselves are behindband in such matters may be measured by considering our lamentable failures in respect to our public monuments. Thus, Mr. Larkin G. Meade, to whom we are in-debted for the modified Washington Monument, which we so heartily deprecate, has completed the model for the monument to be created at Beautington, Vt., at the joint expense of Vermont. New Hampshire, and Massachusetts, in monory of General Stark. According to the description in the papers, the statue of the hero, twelve feet high, is to be placed upon a structure one hundred feet high, "which in some respects is to he a copy of the famous tower of Giotto in Florence." which "will be ornancered with bas-reliefs representing Inci-dents in General Stark's campaigns." The Italian city spent the equivalent of five millions of dollars in creening the Campanile, exhausting the resources of invention and skill in the midst of the greatest era of Florentine art. It is more than three times as high as the proposed American copy, and is filled with minute detail, on which its essential expression depends. The imagination cannot entertain the idea of a small copy of this monument, to be built as a cost of about sixty thousand dollars, and cannot canceive what sort of an inspiration can be derived from the great original to suggest a pedestal for a statue; and the imagination would certainly be the only means of ascertaining the qualities of a twelve-foot statue surmounting this strange pile. As Mr. Jarves justly remarks, the statue might as well be one hundred feet underground. If the description does justice to the design, the figure might as well be St. Simeon Stylites as poor General Stark. No good purpose of art, history, or patriotism can be subserved by such an erection. We trust it is not too late to be reconsidered. When will our great characters and achievements be honored as Henri Reguault and his compatrious are honored in the court of the Ecole des Beaux-Arts, in Paris? When will our art he worthy of our heroes?

The democratic institutions and instincts of this country could have few better illustrations than the accident that happened in New York on July 15th, where a blast, improperly fired, fractured the thirty-six inch water-main at a short distance only from the obstructing rock, and was the cause of damage to the cellars of the abutting buildings to the amount of some eight thousand dollars. It seems that one Henry McGucken, a plumber, had taken a contract to connect a bonse on Third Avenue with the service-pipe that rous alongside of the Croton main, which, at this point, is taid in a trench cut through a ledge of rock. Through this ledge a new cutting had to be made, and it was in making this cut that the unfortunate blast, either too beavily charged or improperly covered, was fired. We question

whether in any other country it is allowable, as it seems to be in this, for a person, he he liceused plumber or not, to tear up the causeway and act his pleasure on such corporate or private property as he may find below the surface. Fortunately, as no death was caused by the accident, we shall not be forced to content ourselves with the dictum of a coroner's jury; but from the litigation which will doubtless ensue, we may be able to guther some enlightenment as to how far our lives and property are at the mercy of private individuals who may choose, for purposes of their own, to put them in jeopardy. One thing seems plain, that this arcident, following so closely on the fall of the Forty-Second Street tunnel, will teach the officials of the Department of l'ablic Works the importance of attending strictly to their duries, and that even the simplest operation, for whose maladministration the city may be held responsible, ought not to be left in the hands of ordinary and inexpert workmen morestrained by competent supervision. If experience has shown the advantage of having a special set of men who slone are qualified to tap rewers, this assident seems to show the need of linensing a similar body of men, who alone shall have the right to make connections with water-pipes. As the suggestion affects both parties, we recommend it alike to city governments and to water companies.

The communist and proleuriat may rejoice at any change that will avonge, even for a short time, the fancied wrong done him and his by the engineer and the machinist who are ever on the alert to replace manual by mechanical labor, and may see in the introduction of a system of heating cities by steam, one of the first effects of which will be to throw out of employment a large number of engineers, holler-tenders, and steam-litters, a species of partical justice, The experiments that have been made at Lockport, and, we believe, at Buffaro, have proved, scanningly beyond peradventure, the feasibility of heating a large number of buildings by steam supplied from a contmon source; though the possibility of supplying in the same way steam for manufacturing purposes seems not to be so clearly established. A number of citizens of New York have lately purchased the right to introduce into that city the Holly system of town-heating; and already more than a million dollars have been subscribed for the purpose of making prelimimany experiments; these proving satisfactory is is supposed that there will be small difficulty in obtaining money to extend the system so as to embrace the whole city. The scheme so far as system so as to embrace the whole city. The scheme so far as at present developed is, ultimately to divide the city into five sections, in each of which is to be a battery of lifty builders, which, it is thought, will be able to meet all probable demands. These batteries are to be placed in four-story brick buildings, presumably isolated, having an area at the ground of some two lumified square feet. Starting from these centres a system of mains and connecting pipes will be laid throughout the city, and each consumer will be furnished with a meter, so that he may be called on to pay for only as much steam as he uses. Means are provided for heating the condensed water by live steam, and causing it to circulate over the house by a separate system of pipes. No statement is at present made of the first cost of the plant, But some idea of the running expenses may be conceived from the statement that the five batteries are calculated to consume about twenty-five hundred tons of enal each day. In the economical introduction of the system the shape of the island may be of use, as it is stated that a battery of the size mentioned is capable of scuding steam to points two miles distant without much loss of effective power.

The possibilities of such a system are curious to picture to one's self. Experiments made last winter show that steam can be used to advantage to dissipate snow, either as it falls or after it has collected in the streets, the actual cost of melting a ten of snow having proved to be only five cents. This use of steam may, then, be looked upon as certain, and the thousands of dollars that the city is now obliged to spend in the fruitless unleaver to keep the streets passable in a heavy winter may then, with a certain justice, he diverted to the better preservation of hygienic conditions in the summer. As the system provides for the robesting and circulating of the condensed water, it will be possible to establish hydrants on the street where het water can be drawn at all times, and the rold water pipe alongside may be kept from freezing by the accompanying steam-coil. Not only horses and cattle, but incidentally the sparrows and other winter birds, which perish in great numbers

in a hard winter, will be benefited by these unfrozen drinkingtroughs. Alongside of the cold-water hydrant may be placed a steam chest to which the fire-engines may be actached, thus making possible such remodelling of the present fire-engine that the boiler, fire-box, etc., can be dispensed with, enabling the engine to reach a fire more specifily than now. It may be possible to so apply steam to street cars as to do away in one case with horses, and in the other with the noisy locomotive overhead. It extend fail to make the use of elevators in stores, dwellings, and, we hope, in schools, more common than at prosont; and the same may be said of the introduction of ventilating fans into hospitals, schools, public halls, and factories. Many of the lesser industries now carried on by manual labor will owe their development to this cheapness of the steam supply. In opposition to the scheme may be urged the increased uncheerfulness of homes steam-heated, and the spread of those ailments common to the people who inhabit them; but the saving in expense, allowing a more general use of open fires, would prevent the first, and greater attention to vontilation would obviate the second of these defects. To the charge that the explusion of one of those batteries would cause immense damage and less of life, it may be answered that the explosions that now take place continually at unexpected places and under irresponsible charge probably cause as much damage in the course of one year as the explosion of a carefully watched and competently managed battery in an isolated building could possibly inflict in a very much longer period. The halteries could easily be arranged in relays so that accidents need not affect the working of a whole battery and so bring to a stand-still the operations of one fifth of the city.

THOROUGHFARES IN GREAT CITIES.

The crowding of the thoroughfares of great cities is becoming a serious avil, the daily traffic leaving grown until it actually outstrips the capacities of their streets. There are cities, like Paris, Berlin, or Vienna, in which the circulation is so far diffused as not to be greatly embarrassed, and is tempted into particular streets mainly by their greater capacity and magnificence. But there are others, such as London, or New York, in which natural conditions concoutrate such a flow into one or two channels that no existing thoroughfare would comfortably hold it. The first resort, when a street becomes intolerably crowded, is to widen it, and this, except in a few instances, is the only thing that has been tried. But there are limits to the convenient width of streets, limits which have sometimes been overstopped. If Broadway or the Strand were made wide enough for the convenience of all the passing in them, and all that their added wilth would tempt into them, the width would bring sorious inconveniences. Too wide streets are made disagreeable by the wind in cold weather, and by the sun in hot. They are expensive to maintain, difficult to keep free of dirt and dust, and extremely ancomfortable for foot-passengers who have to cross them. In such a street as we have imagined, the opposite sides would be almost as hopelussly isolated from each other as the banks of a river. Even in Paris, where the mercantile traffic is not heavy, the crossing of the wide Boulevands is at cortain hours of the day almost perilous, especially for women; filled with the traffic of Broadway, they would be almost impassable. As most New Yorkers will remember, a dozon years ago the difficulty of crossing the lower part of Broadway had grown so annoying that a foot-bridge was built across it. It was found, however, that the obstruction of the sidewalks by the piers of the bridge and the stairs which led to it, and the labor of ascending and descending every time it was crossed, more than balanced the relief it gave, and it was soon taken down. A notable instance of a city which has suffered from a too ambitious expansion of its thoroughfares is Washington; and one of the good things which the Board of Works did for it was to constrict some of the waste streets by parking them. We doubt whether a street for traffic so wide as Pennsylvania Avenue, for instance, can ever be a success. A fashionable drive, like the Avenue des Champs Elysées, at Parls, which is laid out for a throng of fast-moving carriages, and which foot-passengers are to cross at their paril, may be of such width; but for a business thoroughfare it is minimageable. It would be extremely dangerous to invite the throng of vehicles which crowds Broadway to move at speed, and there is a limit to the size of the current which foot-passengers should be required to stem in crossing; but one born or the other of this dilemma presents

itself as soon as we got husy streets of immoderate width. There is, in fact, some natural antagonism between vehicles and foot-passengers, in which it is as important to defend the last as the first. Danger and inconvenience to foot-passengers increase with the number of vehicles which are allowed abreast, as well as with their speed, till they reach a point where they become intolerable. We are inclined to set eighty feet between curbstones as the maximum width of a convenient thoroughfare, and where there is no line of car rails we should say sixty. This gives room for two lines of carriages moving deliberately in each direction, and for a file to stand at each sidewalk. Footways of from sixteen to twenty feet on each side would in-crease the width to ninety-two or a hundred feet between the houses, with a greater proportion of footway than is common, though not more, we think, then is desirable in a first-class thoroughfure if the travel is to be all at one level. But Ponnsylvania Avenue is two hundred fact hotwean the houses. Such a street must be a failure in its architectural and pictpresque aspect, for it dwarfs any building that can be put upon it, and men and vohicles, unless in the swarm of a great celebration, are lost in it like flies on a floor.

Finally, we may add that such enormous streets are as difficult to light and police as they are to pave and clean; that they consume a great deal of space that might be more profitably used, thus diminishing the ratio of taxable property to the cost of the highway at its charge, and furnishing a poor equivalent for the parks and pleasure-grounds which might be substituted

for them.

It seems, then, that while the natural increase of ordinary traffic and circulation in modern cities has crowded thorough-fares much beyond convenience, the simple remedy of increasing their size is not adequate. This is the effect even of the growth of uses that are immemorial, but is greatly aggravated by the new tases which this country has found for its streets. The gas-pipes, water-pipes, and sewers with which cities are nowadays netted over were necessarily thrust under ground as soon as they appeared, but even then they do not cease to be obstructive. The interruption which is caused when they have to be altered or repaired is an annoyance which ought not to be tolerated. When to all the rest is added the periodic passage in certain streets of a vast number of people who, necessing to the fashion of many cities, live in suburbs and do business in the interior of the city, and so must further crowd those streets with special vehicles for through passengers, we find the thor-

oughfares altogether overhurdened,

Mere increase of size being an insufficient remedy, the next resource is in classification and separation of the uses to which streets are put. The rough division into roadway and foot payement is no longer sufficient for this; but through traffic and way-traffic in both kinds may be encouraged to divide, and the wayside-traffic will bear subdivision according as it is for heavy business or ordinary shopping, or the mere passing of residents. The obvious device of carrying the gas, water, and sewerage services in under-ground galleries or subways, so that they may be reached without interfering with the streets above, is a costly one, and so far as we know has not yet been adopted except he Paris; yet it is one that must ultimately, we suspect, become imperative in large cities. To divide the traffic above is more difficult. One way would be to distribute the light and the heavy traffic, the through and the wayside, in different streets, parallel if necessary. But truffic is obstituate and will not be led by the mose, even though ultimate convenience were to be promoted by it. Light and heavy business jobbing and retailing will crystallize apart when they are compelled to. But the wayside-traffic clings to the through-traffic. Shops, offices, hotels, and - when they are not absolutely driven out - residences eling tenaciously to those streets which are natural thoroughfares. It is almost impossible to absolutely separate the two corrects; the resource is to carry them as smoothly as possible side by side, keeping them as distinct as may be and allowing free opportunity to pass at will from one current to the other. The exigencies of quick transit have already, in London and New York, made some separation between the two classes of city passengers. Loudoners and New Yorkers have solved the problem in their different ways, withdrawing the through travel from the local, by carrying it, in London, under ground beneath the other, in New York, in the air above it. The Londoners sacrifice their passengers, and they travel uncomfortably, but the streets and the way-traffic are undisturbed. The New Yorkers have sacrificed the streets to the through

passengers, or perhaps to the economy of the transit companies, in a way that is characteristic of the readiness of Americans to sacrifico everything to an immediate object, and that if persisted in must permanently change the character of the streets it affects. The method of relief which we suggested for this exigency a short time ago (American Architec, June 29, 1878) desorves a few more words, for it is applicable to the relief of other streets than those in which elevated railways run. is simply the carrying out of what is already foreshadowed, a system of circulation on different levels. The subways of Paris, receiving the roubuits of the city and the traffic to which they give rise, are the first bint of such a system. The Broadway bridge was another hint at a double-level circulation. It failed simply because it was isolated and of difficult access, and because its position made it an obstruction; but as part of a well-adapted system it would have succeeded. The elevated roads are another step in the sum direction, and they may lead to a new order of things.

What we suggested was the lifting of a range of footways to near the level of the second stories of buildings, so that there might be a continuous circulation at a higher level as well as on the ground. This was to be done either by cutting out a passage-way from the second stories of the buildings, to be treated as an areade, or "row;" or else by setting back the façades above the first story and leaving an open terrace in front of them. In either case the upper footway would retreat behind the under, passing over a part of the lower stories of the houses, and be continued by bridges across the side streats, with stairs at their intersections. But in the one case it would be covered by the overhanging buildings above it, and in the other open to the air. The Nation lately, while mentioning our suggestion with encouragement, cited some of its natural difficulties, such as the irregularity of stories in existing houses, and the reverberation of the poise of the elevated roads in case are also galleries These, however, are difficulties incident to particuwere used. lar cases. When old buildings were to be adapted, there would be some trouble, some paring and piecing of the portions of the lower stories overrun by the footway; but perhaps no greater difficulty than is common in the remodelling of old fronts; white new buildings would be adapted without trouble. Where there was an elevated railway the open terraces would doubtless be preferable, as the Nation suggests, to the arcaded gulleries, at least unless the street were exceptionally wide. It is hoped that some way will be found of abating the noise of the railways, , which is said to be at present almost intolerable.

There would be many advantages in what we may call a double-tevel circulation, besides those we mentioned in our former article. The tendency to stratification in modern cities is very marked, and is increasing. It distinguishes many continental cities. — Vienna, Berlin. Brussels, for instance, — and is found in its completeness in Paris, where the whole city is in layers: a layer of shops and warehouses, a layer of lesser business and domestic apartments, layers of first-class, second-class, and third-class dwellings, and layers of cheap holgings above. The tendency is resisted by people of English descent, but legion to show itself even in England, while Americans, especially in New York, already turn to it with characteristic recognition of its convenience. It is in accordance with this tendency that people who use the same quarters of a city for different purposes abould circulate at different levels, where the levels are discriminated by heavier and lighter business, as by jobbing and rotail trade; by shops and offices; by business premises and dwellings; or by dwellings of different classes. If women intent on shopping, or men on professional business, could make their rounds above the level of the busiest and noisiest traffic, it would doubtless he a wolcome relief; but the greatest gain might be in giving facility to rapid transit in a new way. In an American city, as soon as business invades the lower atories of a block all but the poorer residents floe apace, and that quarter is lost for dwelling-places. But except in those quarters where the business tide rises to the upper floors the insulation of a single story in height might be made as effectual as that of several blocks horizontally. It is the visible juxtsposition of business and dwelling, and the living right against a busy street, that offends the Anglo-Saxon sense of domesticity. But if the two currents of business and social life were kept part, and actually out of sight of each other, as they might be at different levels, privacy and accessibility might be reconciled. The case and safety with which - thanks to incombustible construction and the use of elevators - we are learning to carry our buildings upwards make it the more desirable to raise the level at which we can pass from one to the other, and give a chance to improve the healthfulness as well as the comfort of them by putting as large a proportion up in the light and air as practicable.

There are cities to whose natural conformation such a treatment of streets seems particularly suited. We have before called attention (American Architect, June 30, 1877) to the value of natural elevations in the sites of cities, and the singular perverseness with which they are neglected or deliberately sacrificed in American cities. Towns set in a natural hollow, like Cinciumti, or built on uneven ground, like Baltimere, or Boston in its old days, might he especially benefited by a plan which would allow people to pass from one high site to another without descending to a lower plane. Inhabitants might learn the excellence of the higher levels, with their natural advantages of drainage, air, and retirement. People whose eyes were wonted to a terraced construction might be spared the temptation to pare everything down to a hopeless flatness, which has already begun the ruin of many fair sites. Natural elevations might be preserved and prized for their value as resting-places, and as determining the flow of population as well as drainage,

Let us imagine a city street with a roadway of fifty or sixty or even eighty feet, flanked by lower sidewalks, say a dozen feet wide, against which rise the lower stories of a row of buildings; and upon these stories a terraced walk somewhat wider than the lower, having for its background the fronts of the buildings carried up to their full beight, with a width of a hundred feet or more from house to house. Light foot-bridges would span the side streets and also the main thoroughfare at the crossings, so that the upper current at least would pass from side to side without clanger or hindrance to themselves or to the traffic in carriages below. The architectural effect of such a street might be very imposing, and its convenience, we are personaled, would solve many difficulties. The frequent bridges, as seen from below, would more or less interrupt the long perspectives, but would be a triffing impediment compared with the clevated reads, and would not hide any building except from one or two points. But the real field of view would be transferred to the upper level, where the outlook would be nearly unobstructed. Phere would be some impediment to those who came in their carriages to visit the upper stories of the haildings; but the natural tendency of this system of communication would be to encourage building breadly in flats around interior courts, with a great advantage to light, air, and cleanliness, which courts would give, as in Paris, the carriage entrances to all the upper apartments.

As between arcades and terraces, both would have their mer-Areades would suit naturally with wider streets. Terroces would suit with any street that was not so excessively wide as to belittle the buildings upon it, and would by expanding upwards increase the supply of air and light. Arcades would be a shelter from hot and cold winds, and in hot weather would give the great blessing of a circulation under cover. They would also altow the abutting owners the use of their whole depth on every story except one. Either would be somewhat costly; but we are speaking of the highways of large cities, which are always costly, and either would give, architecturally and picturesquely, the means of magnificent effects.

LIGHTNING-RODS.

Ix alluding to the plan which is now so commonly advocated, of enlisting the mains of gas service in towns to do duty as earth couenlisting the mains of gas service in towns to do duty as earth connections for lightning-tods, it may be necessary to say, in the way of caution, that no icon gas-pipe smaller than an inch should over be allowed to appearsh to any part of a system of lightning defence, and that no gas-pipe of soft metal of any kind should be permitted to be near to the conductor. It must be well kept in mind that the very circumstance which makes the gas-main so good an earth-contact for a conductor constitutes at the same time a grave danger if this precaution is not observed. The mains of the gas service are generally so ample and excellent in the carth connections which they supply, that lightning striking a conductor with an ordinary earth-plate, or probably with some earth connection even less carefully provided than that, would be almost certain to leap across to any soft-metal gas-pipe placed near to the conductor, in order to avail itself of that better and easier path to the carth; and in doing so would malt the soft metal and serior path to the carth; and in doing so would malt the soft metal and serior path to the carth; and in doing protection that the conductor must never be carried near to small, and especially to soft-metal, gas-pipes.

1 From a reper read before the Society of Arts by the R. B. Bapn, F. R. A. S., and

² From a raper read busine the Society of Arts by Dr. R. B. Mann, P. R. A. S., and published in the Journal of the Society of Arts.

One of the most interesting features of the work which Professor Molsens has been carrying on in connection with his labors at Brus-Melsens has been carrying on in connection with his moors at pres-sels is that various points of theory have been subjected to experi-mental investigation as the construction has been in progress. The professor was kind enough to show me some of his experiments when I was in Brussels. I may advantageously speak of two of these. He has devised an acrangement of apparatus to show that it certainly is not true that an electrical discharge goes by the nearust and easiest path to the earth. He has distributed a series of conductors, somewhat in the form of a gridiron, in which a large contral sum goes from a battery direct to the earth by the nearest pos-sible path, and in which lateral branches of much smaller diameter make longer parts on each side of the central stem. When an intensity current, or rather a stream of Intensity-discharges from an induction coil, is transmitted to the ground through this system of

induction, the knuckle advanced to the ground through this system of conduction, the knuckle advanced to the small outside and roundabout threads receives a sharp shock, as well as when it is presented to the central stem. The fact is simply that the discharge traverses all the paths that are open to it, and distributes itself amongst them in proportion to the resistance which each different route affords.

Another very beautiful experiment is arranged, to show that although copper is a better conductor of electricity than iron it has less molecular strength to resist the disintegrating influence of a powerful discharge. A fine wire is carried along for soveral feet, of which one half is made of copper and one half of iron. The two lalves are of exactly the same diameter and length. These wires are so placed as to be continuous with each other, so that the same haves are of attactly the same diameter and longit. These wires are so placed as to be continuous with each other, so that the same discharge may have to pass through both. The discharge of a Leyden battery of lifteen large jars is then passed through these wires, and it is found that the copper wire is dissipated into black powder, but that the iron wire is only headed along its entire extent, and not broken in its continuity. This affords some incidental support to the selection of iron, instead of copper, for the conductor at the Hötel de Vilke, at Brussels. But the clief reason for this preference has really been the large cost of capper in a work of this dimension, where the conductors have to be so profusely spread in all parts of the building without any concomitant advantage from its comployment, since an equally good result can be insured by iron. The copper, it was conceived, would also have furnished a greater

The copper, it was conceived, would also have furnished a greater temptation to this ves in any exposed part of the structure to which light fingers could have found access.

In his "Description Désailée des Paratonnerres," Professor Melsous insists very strongly upon a principle which I have already urged with some persistence from this place, namely, that "the chances of a lateral discharge from a lightning-rod decrease in proportion to the enqueity of the conductor." I allude once again to this, because it is the fundamental condition upon which the disciency of a lightning-rod depends. The importance of the large narth-contact and the aboundant stopply of points is but a part of the more general question of capacity as a whole. The traspor of the more general question of capacity as a whole. The tension of an electrical discharge has to be kept as low as possible as it passes through the rod, and that is accomplished in three ways: (1) by easy inlets through points; (2) by large sectional area of the rod;

and (3) by spacious and true outlets to the curth.

There is one other passage in this book to which I desire also to draw something more than a mere passing attention, because I glean from it that Professor Melsans holds that a good earth? for purposes of telegraphy dues not necessarily imply a good earth? for the safe discharge of the lightning-rad, and that the indications of lear resistance to a galaxy is grown to a general porce of the safe discharge of the fightning-rad, and that the indications of low resistance to a galvanic current do not certainly prove the efficient condition of a peralouneers. He obviously conceives that the view which is ordinarily accepted upon this point should not in all cases be admitted without some qualification and reserve, and without precautions in carrying out processes of testing.

The method employed by practical electricians in testing the espacity of conductors for electrical currents and discharges is a very ingenious one, which depends for its efficiency upon the fact already alfaded to in connection with one of Professor Melsens' experiments, that electrical currents diffuse themselves through conductors in proportion to the resistance offered in different directions. instrument employed in the operation is some form of what is termed the "differential galvanometer." A copper wire is so arranged as to branch out into two circles, which run round a suspended magnetic needle, the one in a direction from left to right, and the other netic needle, the one in a direction from left to right, and the other the opposite way. When a galvanic current is passed through this wire to the earth, as the two circles are of equal size and made of the same kind of wire, the current divides itself equally between them, and as one half of the current consequently goes round the needle one way, and the other half the opposite way, the needle is not deflected by either of them. It remains evenly suspended between the antargonistic impulses. If, however, a gap is made in one of the sizeless and a source of increased revisioners is introduced into of the circles, and a source of increased resistance is introduced into that gap, a larger proportion of the current is immediately thrown into the other circle, and the needle does consequently deviate from its central position of rest to an extent dependent upon the excess of current that is influencing it. Known quantities of resistance, in the form of coils, can then be introduced into the other circle until the consequence. til the needle is brought back to its original position, and in that way those become the measures of the resistance which is required

to be known. When a lightning rod is introduced into one of the circuits of such a galvanometer, the needle will not deviate from the central line by more than one or two degrees, if the capacity and connections of the conductor are good. If, on the other hand, the conductor be faulty, the needle will diverge to a considerable de-

From the reference which has been made to Professor Melsons' great work at Brussels, it will have been gleaned that there are two different systems of protection against lightning recognized by seientific electricians at the present day; (1) the system of multiple rods of weak sectional area, which has been so skilfully carried into effect by its distinguished advocate at Brussels; and (2) the system of a single rod of large area so placed as to protect a consid-

erable space around by its deminant height and ample dimensions.

Experience has virtually shown that either of these systems may be followed with equally satisfactory results, if intelligently and skilicity administered. M. Melsens holds that the multiple-rod plan is best adapted to structures such as he has had to deal with. A widely extended adoption and a very successful use indicate that the single-rod system is, in its turn, as well suited for its work with buildings of a more ordinary size and of a different character. But the most important practical lesson which comes out of the comparison of the two systems is, perhaps, the suggestion that the one most commonly used has some points which are capable of being materially strangered by the commonly used has some points which are capable of being materially strangered by the commonly used has some points which are capable of being materially strangered by the commonly used the commonly used to the commonly used ally strengthened by horrowing something from the alternative plan. This may, however, be most serviceably expressed in the form of a condensed aphorismal abstract of the tendamental conditions that, in the existing state of electrical science, may be most advantageously observed in the construction of lightning-rods.

1. The copper rape or rod employed as the main stem of a light-ning conductor should in no case have a diameter of less than four

tenths of an inch.

2. A rope or rod of four tenths of an inch in diameter is not large enough for the protection of buildings that are more than eighty feet high. The resistance offered by a conductor of any given diameter increases with its length. Long conductors, therefore, require to be of larger size than short ones.

3. For every additional eighty feet of height or of extent a second rope or rod, of the same transverse dimensions, must be added, or the sectional area of the single rod must be increased in a similar de-

4. It is of no practical importance whether the conductor possess the form of a rope of twisted wire or of a rod, provided it be of sufficient dimensions for the work which it has to perform.

5. If a cylinder or pipe is used instead of a rope or rod, it must be considered as furnishing the same conducting capacity that it would have if slit up along one side and opened out into the form of a flat band.

6. Galvanized iron may be used as a conductor instead of copper, but it must have considerably larger size, because from is of inferior conducting capacity to copper. Increased size can quite compensate

for inferior transmitting capacity.

7. An iron rope or rod, to be equally efficient, must be rather more than double the width of a copper rope or rod. In exact figures the proportional diameters needed are as 6.7 to 2.5. The conducting capacity of iron is five and a half times less than that of

copper, or, in more exact figures, as 14 to 77.

8. A galvanized-iron rope conductor simuld, in no circumstaneous, be less than eight tenths of an inch in diameter.

9. When a strip or tape of copper is used in place of a rope or rod, it should be in me case less than three quarters of an inch broad and one eighth of an inch thick. Such a strip contains a sectional area of a tenth of a square inch.

10. Galvanized iron, when used in the form of a strip, should be four inches wide and an eighth of an inch thick. Such a strip would contain a triffe more than half a square inch of sectional

11. A lightning-rod must be absolutely unbroken, or of continuous

length from end to end.

12. When metallic water-pipes, or other similar stretches of metal, forming part of the structure of an edifice, are made to do service as lightning conductors, all joints must be carefully made good by solder, and tosted afterwards to ascertain the sufficiency of their conducting capacity. Without this precaution, the arrangement is liable to be a source of danger, instead of a means of safety.

13. It is quite unimportant how a lightning-rnd is attached to a building. It does not need insulating fastenings; ordinary metal claups of any kind may be quite safely employed, provided the rod be of good conducting capacity, and otherwise efficient.

14. The rod must be terminated above in metal points, well projected up into the air. 12. When metallic water-pipes, or other similar stretches of metal,

jected up into the air.

15. The terminal points may be made either of copper or of iron, but they must be tapered out very gradually, and he perfectly sharp. An alloy composed of 885 parts of silver and 165 parts of copper forms an excellent material for tipping the points, because it enables these to preserve, for a long time, their sharpness under the circumstance of exposure to most air. The silver tips should be made about two inches long, and be firmly screwed into the termination of the ponductor.

16. The air-terminal of the conductor should be branched out into

16. The sir-terminal of the conductor should be urunched out misseveral points. Multiple points—or algretics, as they are termed—of this kind are now made in copper, of very good form, by all the best electrical engineers.

17. The larger the building that has to be protected, the more points or clusters of points should be used. In the ease of hubbings of any considerable extent the combinetor itself must be branched out to all parts, and each branch must end in its own projecting tuft.

of points.

18. Terminal points should project into the air at least eight feet beyond the building itself.

19. The general idea may be kept in mind that lightning conductors approximately protect a conical space around them whose base is four times as wide as the conductor is high. This principle, however, is not an infallible one, and it must not therefore, be too intaking suffed upon. Whosever, any parts of a building approach plicitly relied upon. Whenever any parts of a building approach towards the limiting surface of such a conical space, additional points should be fixed there, and be brought into connection with the general system of the conductor.

20. The bottom of the conductor must be carried down into the

earth, and he connected with it by a surface-contact of large ex-

21. About the best earth-terminal that can be contrived consists In connecting the end of the conductor with the iron main of a gas service or water service. The end of the conductor should be st-

service or water service. The eart of the conductor should be settleded to a broad piece of copper or iron, and this should be laid close along the metal surface of the main underground, or, where practicable, be even attached to it by some kind of solder.

22. Where there is not the opportunity for adopting this expedient, the lower end of the conductor should be placed in a shallow trench, opened out twenty fact in the moist ground, and be carried along in it to the ead, and he also well packed round with gas acked box in an arrell pieces, before the trench is covered un with coke, broken into small pieces, before the trench is covered up with

carth.

23. Plates of copper or from may be used as earth-terminals, if
this he preferred. The plate should not then, however, in any case, this he preferred. The plate should not then, however, in any case, furnish less than two square yards of earth-contact, reckoning both sides, and it must be carefully rivetted and soldered to the conductor, and be surrounded with broken coke, before it is boried up in the earth.

21. When the earth is unavoidably dry, the earth-contacts of the conductor must be made proportionally large. Abundant size may be so managed as to componente for the disadvantage of dryness.

25. With dry earth-contacts, lightning rods may be a source of danger instead of safety, if this precaution be not observed. The only means by which it can be ascertained whether a dry earth-contact has been made large enough is the employment of the galva-This test should never be omitted when the conductor terminates in a dry soil.

26. The danger of a lateral discharge from a lightning conductor 26. The danger of a lateral discharge from a lightning conductor diminishes with its capacity. A large, well-pointed, and well-grounded conductor will convey a very powerful discharge to the earth without the slightest tendency to strike through any object external to the rol. A small and imperfectly appointed conductor, on the other hand, is always prone, during the transmission of lightning, to dash off some portion to surroutding objects.

27. The capacity of a conductor may practically be increased in three ways to increase this elliptoney and capacity of the conductor may practically be increased in

three ways to insure this efficiency and safety: (1) by the employment of larger ropes or rads; (2) by a more abundant service of points; and (3) by amplification and improvement of the earth-con-

28. The proof that a conductor has been made capacious coords by the judicious employment of these means is furnished by the magnetic needle of a galvanometer not being materially deflected when a galvanie current is passed through the conductor to the

earth.

29. All large masses of metal contained in a building should be 29. All large masses of metal confuned in a hulding phould be metallically connected with the lightning-rod, unless when such are liable to be occupied by living people during a thunder-storm, as in the case of an iron belony fixed outside a wall in front of a easement; it is then better that such masses should not be connected with the conductor, because, under such circumstances, persons standing upon them would be in less danger of being struck. When they are connected with the conductor there is always some risk at the sersons standing more them furnishing a path for the lithuishes to persons standing upon them furnishing a path for the lightning to the conductor.

30. The best method of connecting masses of metal with a conductor is by closed circuits; that is, a connecting metallic hand should proceed to them from two different parts of the conductor.

31. Soft-metal gas-pipes must never be allowed to run anywhere near to a lightning conductor, because there is always danger when they are so placed of some part of the discharge deviating from its proper runto to avail itself of the good earth-contact furnished by the expanded mains of the gas supply, and in doing so of melting the small fusible gas-pipe and setting fire to the gas.

32. Zine or iron pipes on the tops of chimneys are always to be regarded as masses of metal that are to be brought into connection

with the conductor.

33. Lofty chinney shafts may always be satisfactorily protected by a single conductor. Care must, however, be taken that the size of the conductor is adequate for the height, and the top of the shaft

must be vatirely encompassed by a bar or parapet edge of metal, and points must radiate from it on all sides into the air.

34. In the case of manufactories where corresive vapors are

emitted from the chimneys, copper or iron terminals should be soldered into leaden tubes, and a subordinate service of points should be added at some lower level, where they would not be liable to be affected by the corresive vapors.

THE ILLUSTRATIONS.

THE PALACE OF THE TROCADERO, PARIS.

THE accompanying illustration, which we copy from the Hinstrated will serve to make our Paris correspondent's letter London News, more intelligible.

HOUSE AT MANCHESTER, MASS., FOR PROF. O. S. FOWLER. MESSES, CAROT AND CHANDLER, ARCHITECTS, BOSTON.

The site occupied by this bouse is a rocky promontory on Smith's Point. It is just finished at a cost of \$6,500. The builders were Messes. Phillips and Killam, of Manchester.

DUBIGN FOR THE MOORE MEMORIAL PREPARED BY MR. JOHN F. HENNESSY.

This design was presented in competition to the St. Patrick's So ciety of Brooklyn, who wished to erect a monument in Prospect Park on the anniversary of the post's birth. The Cultie cross was chosen as being the most appropriate form to give the memorial. It was intended to be east in bronze and to rest on a granica base. The bas-relief in the medallion was to be copied from Lawrence's portrait of Moore.

DESIGN FOR THE EMPLOYMENT OF SIX COLUMNS, MR. R. D. AN-DREWS.

This is one of the designs prepared by the members of the school of architecture attached to the Massachusetts Institute of Technol-

ory, Boston, in accordance with the following programme:

A wealthy amateur of the arts is in possession of the shafts of six columns of rich marble, which he wishes to make use of in the crection of a small building or monument. As these columns can serve equally well to form part of a great variety of structures, each state. dent is left free to choose the subject of his composition.

a fountain, well, portico, tomb, or any other structure whatever.

These columns are to be taken as twelve feet long, exclusive of base and capital, which are to be supplied. Any substructure or base that the nature of the composition may require may be solded.

Required: A Plan and Elevation, both on a scale of one fourth

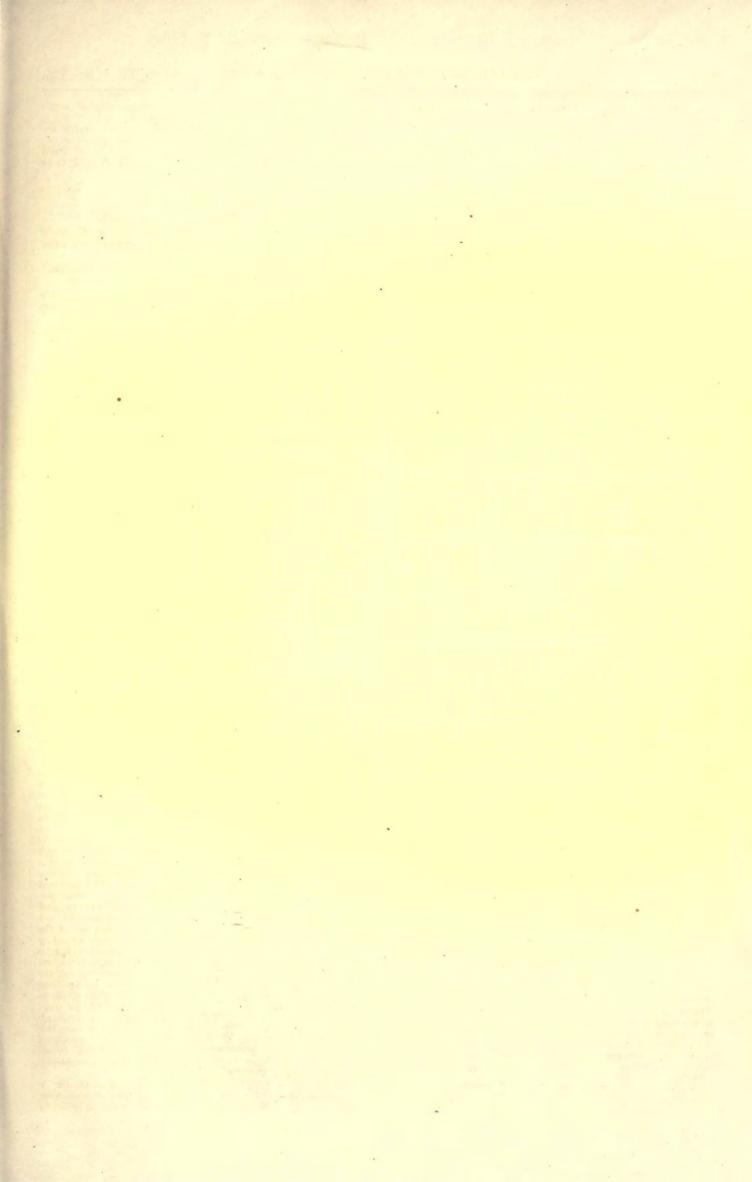
of an inch to the fact, furished in pencil, with the shadows cast, with ar without color.

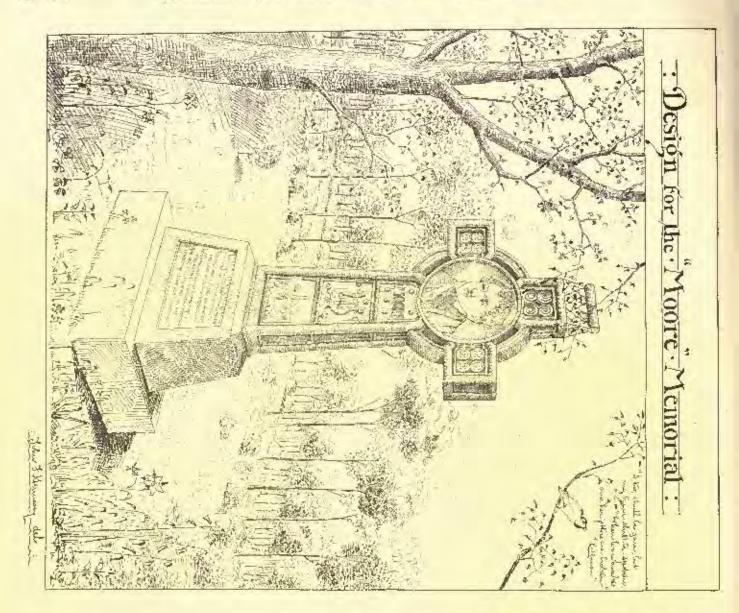
DESIGNS FOR A STONE FIRE-PLACE, - COMPETERION NO. IV.

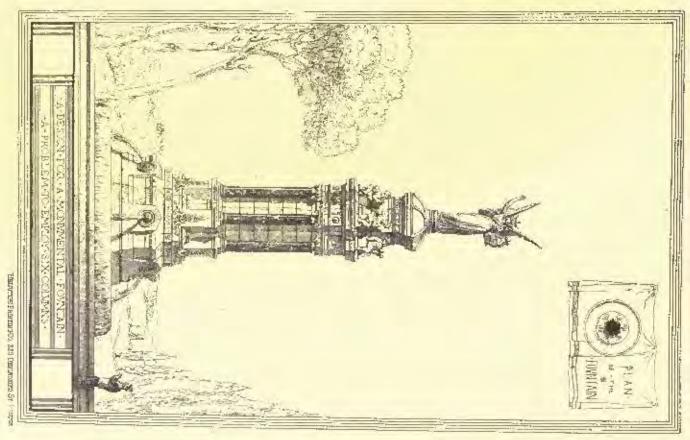
MONREALE.

Monneaux, Mons Regulis, almost tells its story in its name. It is the royal mount of William the Good, croward by the church and city which arose out of no great need of his kingdom, ecclusiastical, military, or commercial, but simply because the spot was hallowed by associations personal to himself. Our notions of ecclesiastical geography are startled when we stand at one of the gates of Palerano, and see on the hill-side at so small a distance the metropolitan church of another province. Archaistops are certainly thicker on the ground in Southern than in Northern Europe; but we are hardly prepared to find one in this way almost at the gates of another. On the spot where the church stands King William beanother. On the spot where the church stands King William hesticved himself to have been honored with a heavenly vision. That the rision should be commemorated by a church and monastery on the spot was almost in the natural order of things. That a town should grow up round the monastery was also almost in the natural order of things; a crowd of English boroughs have sprung from such an origin. But that the monastery should contain the throne of a new hishop, of a new metropolitan, that a new discase and province should be marked out for it, that the little town which gathered around it should become an ecclesiastical metropolis, is what certainly no one could have looked for. It shows how dearly the good trainly no one could have looked for. It shows how dearly the good king loved his own creation. And Englishmen will naturally ask another question. Monreale, as we have implied, was one of the very few episcopal churches out of England which were served by monks instead of secular canons. Among the exclusivation changes of the Italian kingdom the monks of Mooresh have shared the fate of other monks. But as the metropolitan of Canterbury is still in-stalled in his place as abbot of Christ Church, so the metropolitan statled in his place as athled of Christ Church, so the metropolitan of Monreale heads the pasteral in which he calls on his people to weep for Pope Pius and to rejoice for Pope Leo with the style, episcopal, monastic, and baronial, of "Arcivescove ed Abate di Monreale, della citta e dello stato signore." But how came this specially English use into the Sixilian church? Waster Thomas Brown bud, we taney, gone back to his place in King Henry's exchaquer before the church of Monreale was founded.

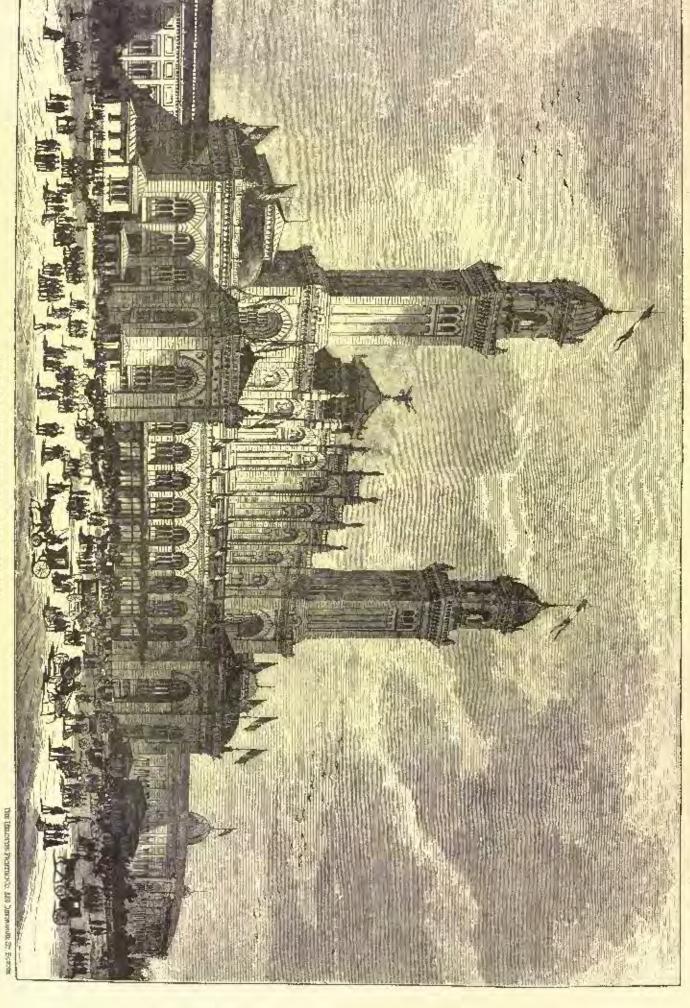
From the gate of Palermo, from any tavorable spot of the city of its neighborhood, we look up at the courch and town of good King William nestling on the mountain side, with the height crowned by

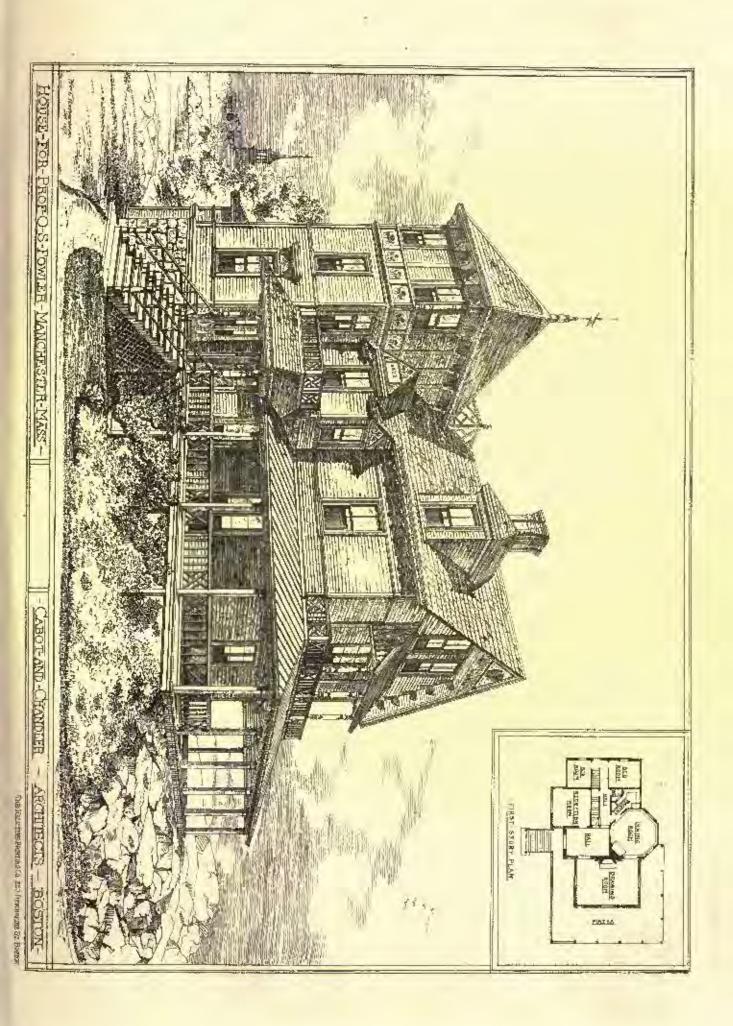




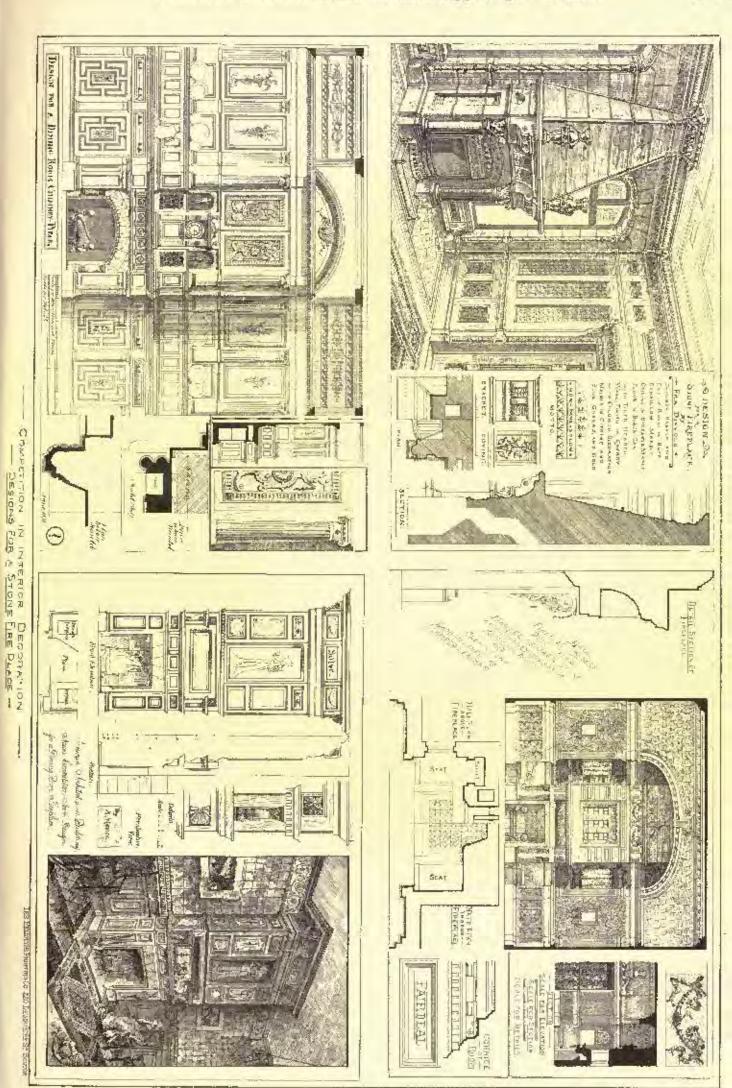


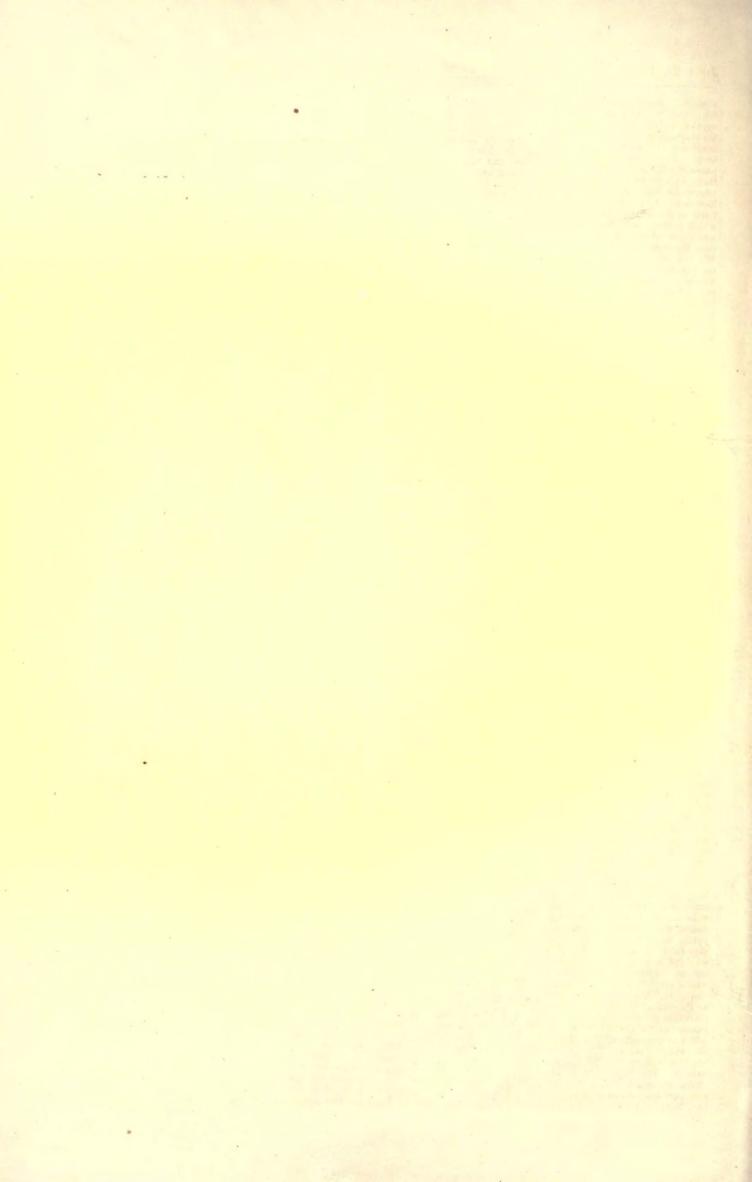












a eastle, — whose examination must be left to Alpine climbers, — roaring above it. And from the road which winds up alongside of the royal mount we do indeed took on the Golden Shell, on the bills, on the shore, on the city which lines it, on the headands which guard the inner sea, on the broad Mediterranean spreading boundlessly beyond them. The campayna, once golden with earn, has changed to an expanse of clive and crange trees, with houses and villas dotted among them, with the bare limestone mountains rising over villages and nong them, with the bare limestone mountains rising over villages and mong them, with the bare limestone mountains rising over villages and mong them, with the bare limestone for Sicily, but with one blank foreing itself on the mind, to which it is a kind of mockery to give an answer which is little more than formal. We hook down on the proud city, and count up its endless locals.—Phoenician, Roman, Gothic, Byzantine, Saracen, Norman, Angevin, Spanish, Austrian, and Savovard. We look down on the battle-field of Metellus and Hashrubal, and on the bloodier slaughter-place of the Vespers. We look on the city which in distant ages welcomed the deliverance of Belisarius and the deliverance of Garibaldi. But round no spot within our riew can we call up the memories which give their first charm to other Strilian prospects. The Golden Shell was never the territory of a free Hellenic commonwealth. We look to the right of the hay, and we may remember that the hill of Punic Soluntum once yielded to the arms of Hellenic Tyndaris; if we are disposed to be liberal of the Hellenic name, we may look to the left, and remember that the height of Heitstêre.—The we have the Playin Mount of St. Rosalie—beheld the warfare of Molossian Pyrrhus. But the scene on which we look can hardly be brought by such faint memories as these within the limits of the true Hellenic world. The land and the city on which we look are before all things the land and eity which the Home won trom the Saracen. And the spot from whi

The church of Monreale is, from its position, seen far away, and yet it is not an object which really stand, out in the landscape. It is not, like so many Sicilian churches, altogether without a tower, but it has nothing like either the tall companil of trady or the cowers and spires of northern lands. It has, in fact, or was meant to have, two western towers; but one only was ever carried up, and that one is of no great height, richness, or beauty. We need hardly say that there is no long line of roof; but there is no ortline of any There is no central cupula, only the high chair of the type of kind. There is no central cupula, only the high chair of the type of chareless to which Morreale belongs, a feature which, unlike the central tower or cupola, rather adds to shapelessness than produces outline. Yet Monreale has one external feature of extraordinary splendor which gradually opens on the traveller as in draws near. Tastes may differ as to the werits of the peculiar kind of decoration employed; but there can be no doubt that the east end of the clurch of Moureale is a perfect triumph in that kind. Mr. Fergusson says that "all the architectoral features in the building were subordinate in the eyes of the builders to the mosale decorations." There is truth in this remark; but it is a little too sweening. We may admit in the eyes of the bithlites to the mosaic decorations." There is truth in this remark; but it is a little too sweeping. We may admit it to be true with regard to the eastern part of the church. Architecture is cortainly sacrificed to mosaic when only a single unimportant window lights the central apse. And of course this has its effect on the outside also. The part of the mosaics within is played without by an elaborate system of surface decorations, blank arcsales, which is the allower of surface decorations, blank arcsales. circles, bringing in also the element of color. These unriehments have nothing to do with the construction of the building, nothing to do with any of its essential features, as doors and windows. We may well think it a triter form of prasment when, in a German or North Italian church, the apse is curiched with areades, put there doubtless for ornament, but which still are brought into with the essential features of the building, such members of the spende as are needed being pierced for windows. But the Monreale east end is a magnificent thing in its own way, and it is the more interesting as a study because it is clearly the climax of several ciforts, some of which were not very successful. In the churches of Magione and San Spirito we find the first rule beginnings of the three apses adorned with intersecting arches, the windows, if there were any at all, being at most cut through them in a kind of inci-dental way. Whether Cistercians, when the Cistercian order was young, would have run after such an ecclesiastical havery as unreales may fairly be doubted. But if they did not mean to have morales, why did they not have windows? Anyhow, it is In these two Cistureian churches that these are added east and s begin, and they go on vastly magnified in the two metropolitan churches. But the east and at Mourenic is an incomparably better design than the east end at Palermo. The east end of our English Walter is a most rich and elaliorate piece of work, and we have a further fordness for it be-cause, like the east end of San Spirito, it keeps the Saraconic billet, which is not to be seen at Moureale. But the appear, especially the stile apses, have not their full importance; they have on air of being stuck on against the high choir, which here has a very elaborate outside. The high choir at Monreale, if it ever had any artistic character outside, has atterly lost it through modern changes. This may perhaps help to give yet further importance to the apses; but they have of themselves far greater importance than those of Pa-

lermo. There are few things more striking in their own way than the three apses when looked at from a little way down the slope to the south side. And we suspect that they typify a remarkable piece of ecclesiastical history. We must remember that the use of the Greek rite prevailed during the earlier days of Norman rule in Sielly. We have spoken already of the very small apses, hardly to be called apses, in some of the smallest churches of that date. At St. John of the Hermits they are in the thickness of the wall. With the coming in of the Cistercians they grow larger, till they reach their climax at Monreale. In the Cistercian churches we may be sure that the Latin rite was always used; so it doubtless was at Palermo, at least from Walter's rebuilding; at Monreale it was of course used from the beginning. The cupola and the small side apses are in short the sign of the new Kome; the high choir and the larger apses are the sign of the new Kome;

Besides the cast and there is nothing very striking in the outside of Monreale. The west front is poor, except a single splendid door-way, which comes nearer to northern Norman work than anything in the church. But how come the two towers to project, after the manner of several examples in Scotland? Perhaps rather, we should ask why the arrangement is followed in Scotland? For at Monreale we may believe that the towers were meant to be united by a portion, which we can hardly lancy in Scotland. A portion there is at Monroule, but not at the west end; it covers the north side of the nave, a specimen of that earlier and better kind of Renaissance which practically does not differ from the more classical type of Romanosque. We pass under its arcade, through the mag-nillent wrought door with its carvings, into the renowned move of Monrocke. On what do our eyes rest first? That is a matter of tasse and habit. Some eyes will dy at once to the colored splenders of the mosales; others will light, even before the mosales, on that of which the mosales are after all but the festal dress, on that noble range of columns which makes Moureale a rival of Pisa. While Palermo was still Saracen, the men of Pisa had entried off trophies from her harbor, and with them they had carried off some germs of Soracenic skill to be pressed into the service of the mighty tempts which commemorated their victory. In the double ranges of columns at Pisa the lesser row of arches are pointed; at Monreals the pointed arch is dominant. Arches of that shape rest on the single row of coling can be less like the sprawling arches of the pseudo-Gothic of Italy than these narrow, stilled arches rising from those mighty shafts; lialy than these narrow, stilled arches rising from these mighty shafts; it is like a basilica of the noblest design, like the peristyle of Josius biaself, with the pointed arches of Thyms or Tuzculum taught to discharge an artistic function. In all this the case of Monrocale is essentially akin to the nave of the palace chapel on a greater scale. But with the nave the likeness ends. At the palace chapel exceything fits into everything else; nave, cupofa, apse, are all bound together, and form a single whole, —a whole far more perfect than I is a. At Monroale Mr. Fergusson's criticism, untone of the nave, is most true of everything cast of the nave; it is a mere display of mosales, and nothing else. Wash over atle the mosales, the have is most true of everything east of the have; it is a mere display of mosairs, and nathing else. Wash over all the mosairs, the have, like the palace chapel, would still remain one of the noblest of strictly architectural compositions; the eastern part would lose all heavily and interest, except that which it is hard in any case to take away from the bold sweep of the apse. But the high choic, with four arches of different heights and widths, with not a single column, nothing but square surfaces, is a wretched substitute indeed cither for the guards of the Next or for the specime landow of the Next or for the specime landow of the Next. for the cupols of the East or for the soaring lantern of the North. Four arches, forming a kind of crossing, make as ask for one or the other; but the prayer for either is disappointed.

It is well to insist on both the merits and the delects of this wonderful church strictly as a work of architecture, because to so many eyes it reconst to be hardly a work of architecture at all, but a mere display of color. The capitals are worth a study, though they show but lew patterns. A few of the columns keep their classical rapitals, which quite cower down below the vast overlanging quasicabacit, but most of the columns are fitted with capitals evidently made to suit the abaci, classical, but with the cornecapite to play the part of the volute, a type seen also in the church of Magione. In the extreme eastern parts we again get a few columns, smaller, and in some cases coupled. The mosaics have been discussed ever and over again. We will mention two or three points only. While there is a great field of Greek at the palace chapel, there is very little at Mourcale, and the Latin in some places runs of the strange forms which are said to belong to the local diabect. This is a most important element in the puzzling question as to the language of Sicily. Secondly, the ark distinctly rests on two Ararats, very much as they are drawn in Mr. Bryce's book. Thirdly, Abraham's run is caught in a thicket which locks very like the exectus so commonly seen in the island, and vet hotanists tell as that the exectus, like the prickly pear, came from America. It is well, though it involves fewing the nave for the high choir, to turn from such theory questions and look at the mosaic of the coronation of William the Good, placed over the throne which, here as elsewhere, marks thu saceed character of the Sicilian momarchy.

the sacred character of the Sicilian monarchy.

So, among all the verious capitals in the famous cloister—each one is a study—the one which comes home to us most is that which records the founder's offering. Remembering Arles, Moissac, Aosta, a crowd of others, the Monreale cloister mass he allowed to buck the first place in its own class. Above it on one side rises the long

range of lancets of the forsaken refectory,—the archbishop and abbot of Monreale holds his lower rank as a sincence,—and another such range marks the dormitory. From the claister garth the church rises above the endless ranges of columns and wrought capitals; the monatain with the castic rises again above the church. If one of M. Viollet-le-Duc's immortal students could drop from the clouds into the cloister of Monreale, he ought to feel at once that he was within the precincts of a Sicilian monastery, as, if he were in the like sort dropped into the cloister of Wells, he ought to know that he was within the precincts of an English secular college, King William's Benedictine house, built after true Benedictine rule, is a relief after the endless monasteries of Palermo, built mostly after no rule and no sleepe at alt. Before the traveller goes down the hill, let him once more go within the church; let him gaze on what else he will, but let him, as his forewell to Monreale, make his way to the south transcept, the resting place of the two Williams. There William the Bad sleeps in the saveophagus found for him by the filial duty of his son, while William the Good owes his tenth and epitaph to the picty of an archbishup and abbot many ages after, — Suturday Review.

CORRESPONDENCE.

THE PALACE OF THE TROCAMERO.

Panns, June 7, 1878.

Last week the completion of the root of the second of the two great towers left the Pakais du Tracadére completely finished. Naturally, a building which will be for all time one of the greatest French manuments has called forth much criticism, or rather discosion; for, apart from the architects, political birs generally asserts itself too strongly to allow fair criticism. When the republican proudly hads the new monument the sincere imperialist cannot openly agree with bins; the least he owes his party is a shrug of the shoulder. As a rule the building is pronounced by the architects a success, especially when it is remembered that the immense structure and its foundations have been completed in about eighteen months, an extraordinary feat for the deliberate French architects, who usually are allowed a deal of "pottering," as we should say, over their work. The foundations gave unexpected trouble, because of the shulaxing been quarried formerly and loosely tilled in again, and in places had to be begun twenty metres down. The architects have shown themselves men of greater energy and capacity than was expected by the profession, and their rivals honestly concede it. M. Bourdais is rather more engineer than architect, while his partner, M. Davions, is a thorough artist, with long experience, and in his deficil inspector.

rainer more engineer than are made, while his partner, all Davison, in the present case, ally assisted by M. Rullin as his chief inspector. Architecturally the real front of the building is what the public call the back, that is, not the façade facing the Champs de Mars, but the one inwants the spacious square which, adorned with a large spray fountain, crowns the hill of Chaillet, and from which avenues radiate in all directions. The entrance to the half should be by a vestibule or saile de pos perdus, sixty-one metres long, extending its shelfer by a glass marquise, and hanked by pavilions in which are iron staircases and columns supporting cupola raulting with from ribs, as at the Bibliothèque St. tieneviève. Behind this part of the building rises the great gable, divided into square-topped bays encluded with the marks un this side the roof of the amplitheatre. The gable is limited by two square believed are capital towers, whose platforms are eighty-two matres from the ground. These are provided with elevators for visitors, who can be lifted some ten metres higher than the towers of Notre Dame. At present the public pass by this advanced corps de bâtiment, and enter on each side under two long, rectally dar pavilions, whose first floor contains halfs devoted to conferences in art and science, and whose graced floor forms open vestibules. The ceilings of these halfs are supported on eight massive marble columns. Here, as throughout the building when possible, the iron beams are frankly shown, and are filled in with plaster or terra-cotta. No wood is need in the construction of the building.

From these vestibules the visitor may reach the stairs and clevator, or turn at once into one of the long elliptical galleries, thirteen metres wide, in which now are exhibited the loan collections of historical curiosities, or, passing through, may descend at once into the grounds heyond; but let him follow the throng, and he will find himself in the lower of the two circular porticoes which surround the amphiliheatre. These magnificant galleries, some six metres wide, are not idla decorative features, but are justified by the surpassing view from them. The eye sweeps from the height of Monmartre on the left over the whole of Paris, with all its dones and towers. Of all its monuments only two are hidden, the Are de Triomphe and St. Augustia, and the eye ranges far across the dwindling suborbs to the green hills on the right, and again follows the steamers up the river to the gay seems just opposite. Here the shining roots on the Champs de Mars with their countless flags, and the grounds swarming with restless figures, confuse the brain and one gladly turns to the meaner scene on the slope on this side of the river, where, half hidden by foliage, are picturesquely scattered prefty chalets and patitions of varied architecture. But especially is the tired eye soothed as it rests upon the large basin below, with its jets of spray. Into it daily iall thirty thousand cubic metres of cascades and jets. The source of the water is at one's very feet; for, taking advantage of the falling

ground, and to mask the lofty besencent, a terrace has been built out a few steps below the lower portice. Here from a projecting elliptical basin a clear sheet of water falls some nine merce, half veiling the arch of the grotto underneath. The effect on the fired sight-seer is delicious, and an eager crowd is always pressing forward to watch from above the falling waters, or below passing into the grotto to look wonderingly at the riew through the clear crystal sheet. The terrace is enriched with six colossal figures of the continents in gilt bronze, and of the same material are spirited statues of a rhinoceros, an elephant, a wild ox, and a horse, placed at the angles of the great basin below. The cascade at present looks bald, but when the vases in the original design are placed along their sides this may disappear; its chief fault is want of height for the slope. At any rate, the riew from this point will be to many the most notable thing in the Exhibition, and their most agreeable memory.

The two stories of porticous above mentioned are inclosed within twenty-nine round arched bays, and give easy access to an admirable series of corridors and stairs leading into the hall itself. On entering one is struck by the airiness of the great circular hall, which, with a diameter of forcy-five metres, and thirty-one metres high, crowned by a flat, coaical ceiling, as in the Cirque d'Hiver, gives an impressive effect. A segment is cut from one side to form a wide and shallow wiche for the orelestral platform. Ample light streams in from nine luge round-arched windows, seantily filled with the baldiest auditions, which both inside and out are fatally ugly. The hays are continued down below the window, and include tribunes cleverly ledged between the projection of the deep, square, and these are high enough to give room for covered boxes beneath. As the rows of amplitheatral seats beginning at the sides increase in number towards the middle, the parquet takes a borse-shoe form, and avoids the dryness of concentric circles. There are about 4,500 seats, exclusive of the ample accommodations for orchestra and choruses on the platform. The decoration shows haste, but in general te light and harmonious in tone. The groundwork is of a dull yellowish throne tint, much the fashion here now, though M. Garnier tailed to make it attractive in the Opéra. Here it is agreeable enough as contrasted with puncles and bands of dark red below, and with the pale preen of the ceiling above. The difficulty of arranging a vast that niche surmounted by a segmental arch in a circular balt is not satisfactorily met, but attention is divorted from this by a successful painting by Charles Lanneice in the space over the arch. It represents France calling around her the nations. Painted in pale, that time, with strongly marked outlines, it is in its simplicity a fine example of nuclibretural decoration. The half has burned out good

example of unditectural decoration. The half has turned out good in its acoustic qualities, and is well gentilated.

After this general description let us approach the building from the Champs de Mars, for which view it was aspecially designed. This incade more frankly explains its uses than the other. The romoda with its open galleries suggests a festival half, and the towers which thank it, apart from the valuable account they give, may be explained as gala features, in spice of their solidity. The long wings faced with colorances suggest museums and collections for the public. The proportions in themselves are agreeable, and so the rest edifice, essentially modern in its architecture, presents itself with grace and frankness. There is one serious criticism to be made: these porticoes, — which by the way are not semicircular, as generally turned, but halves of a flat ellipse, — in spite of their extending some four bundred and thirty metres, appear mean and insignificant. Nothing but near approach to them will convince one that they are la reality monumental in proportion, with a width of about six metres. The architect evidently expected to show the enormous size of his central feature, about fity-eight metres in diameter, by contrast with these colounades, which he was at pains to subdivide by lesser parilions. But just the opposite effect is produced; instead of purioces, really of ample size, giving a colussal scale to the central part, the latter is taken as the normal scale, and the galleries are dwarfed. It is the ever-recurring problem, perhaps the most difficult in architecture, of how to give scale. Up to a certain point subdivision will give a desired scale, but that point passed the parts before taken as units suddenty become fractions, and the scale arounds of the rotanda into only four divisions, and who multions really good-sized columns. These great bays are very conspicuous, and, entering at first the eye, give a false scale. Had they bean subdivided, as in the best Gothe windows, it would ha

Butters IN INDIA. — The native brick now used in India is five inches by three inches by one inch.

THE DULL SEASON. — THE NEW ARCHITECTURAL PROFESSOR-SHIP. — COUNTRY 10:05E AT ISLIP.

NEW YORK. AT the office of the Superintendent of Buildings it has long been noted that the fortnight between the Ise and the 15th of fully is the most laggard time of the entire year; about one plan per diem is then the average, and there have been weeks when but two plans were offered. But while matters are dull at the special headquarters they are not really so among the offices. A few of the orchitees who were fortunate enough to have commissions early in the spring

for the party and there are a few rumors of new projects afoot.

In the matter of the falling tunnel the jury's verder puts the blame upon the contractor and the inspectur, the one for loading and the other for permitting the planing of the superincumbent earth in a manner other than that eatled for in the specifications, namely, by

a manner other than that eathed for in the specifications, namely, by layers of uniform depth.

The really important thing of the past few days is the appointment of Mr. Russell Sturgis, Jr., to the post of Professor of Architecture and the Arts of Design at the College of the City of New York. This is the great free college in which the school system of the city finds a fitting culmination. It is a hard-working college, the city finds a fitting culmination. It is a hard-working college, too, with a course to accomplish which requires work on the part of the students. Mr. Sturgis is an alumnus. The subject of architecture has been curiously treated during the twenty-live years of the existence of the college. While the mathematical and classical sections of the course were attended to by able specialists, drawing and architecture were placed under the care of an old German refugee of 1848, whose opinions on all subjects were very fixed, but what those opinions were nobody either inquired or cared to know. He has gone, and in his place one graduate has been already installed as professor of drawing, and now another is chosen to the installed as professor of drawing, and now another is chosen to the new seat of architectural instruction. New York, with such a man in such a position, will rouk with Boston, Cornell, and Ann Arbor as an architectural school. The experiment—for such it is — promises to create no small amount of criticism, and with a man of such energetic enthusiasm for his art as Mr. Sturgis possesses, the matter

will be made interesting, however it may result.

Mr. Riebard M. Hunt has lately designed a country house for Mr. Wm. H. Yanderbilt, and the work is now going on near Islip, L. I., where Mr. August Belmont and Mr. Lorillard already have fine country places. In a general way the plan measures \$5 × 86 feet, but is of such an irregular form that the building appears much larger. The building is two and a bail stories high, in hill-timbered work, with broad, slated roofs, truncated, and of so many and various with broad, slated roofs, truncated, and of so many and various slopes that a wonderfully picturesque effect is secured for a building so broad and "squat," for there is nothing in the slape of a tower. The main feature of the place is a great hall 20×60 feet and 14 feet high; renning through the building, and opining from one side of this at right angles is another hall 20×20 feet. At one end of the long hall is the main entrance; beside it, to the side, is a deep window-scat, looking out upon the veranta, which extends two thirds of the distance about the house. Opposite the side or jutting hall is a grand free-place, massive with brick and stonework ten feet wide and running up to the ceiling, the fire-place lined with brick, but otherwise built of stone. At the end of the main hall, opposite the principal enbuilt of stone. At the end of the main hall, opposite the principal entrance, is the wood staircase running up a half story and then turning at a broad landing-stage. Itising from this landing-stage to the secat a broad landing-stage. Rising from this landing-stage to the second floor ceiling is a great window, almost charel-like in size, but made up of small windows closely grouped. It is about fifteen feet square and lights the halls above and below. It is glazed in eatherral glass, with the colored bull's-eyes introduced at the centre of each subdivision of the window. The stairs are to be white ash, while the hall itself is to be in mak panel-work, showing a timber roof; at the end of the side hall, facing the southwest, is another large window, completely occupying the end of the hall; three deep multions divide the space into tour separate lights, which, running from those to ceiling, give opportunity for a broad field of colored glass. The upper half has a fire-place over that on the first floor, but of more modest proportions. In one of the outer angles formed by the intersection of the two walls is a parlor nineteen feet square, and in the other a great's bedroom—the only one on the first floor — which, with a bold bay, plenty of windows, and exterior doors, is a purfer hot-weather chamber. Behind the fire-place is the dining-room, entered by two doors, one on either side of it; a conspicuous fire-place has been fixed in the dining-room, which is also finished, tike the hall, in oaken cabinet-work. hall, in oaken cahinet-work.

Window-seals are a favorite feature, and are placed here and there in hall, diving room, and bedrooms, in a most inviting fashion; at the head of the first flight of stairs the sill of the broad window above mentioned is turned into a cushioned seat.

Without, the building may provoke criticism. The windows, broad or narrow, long or short, as best suited the interior arrangements, or narrow, tong or short, as best suited the interior arrangements seem to jut out in a miscellaneous way, and over the main door-steps a bold hood answers the purposes of what is known in America as a pure-cackers, and the highest point is the creating of the main roof, above which line the chimneys rising from the lower roof do not extend. The broken roof oulline gives opportunity for some good light and shade offsets. The entire cost will reach \$50,000.

Liquistrica Dwarnings. — Lake dwellings have been discovered at Letten, Switzerland, at the junction of the rivers Limmat and Sild.

FIRES IN THEATRES.

A FEW additional statistics, taken from the list of theatres destroyed by fire, contained in the work of Herr Folsch, will teach us, if insernation were moded, how highly dangerous our modern stages arc. Nearly every theatre in London and Paris has been burnt down in its turn; in London alone, to the number of thirty-one. During the last thirty years, lifty-seven fires were officially recorded in London, and a great many fire alarms may have never come to the knowledge of the authorities. No better criterion of the combusti-ble nature of play-houses can be formed than by looking at their respective ages. The author has been able to collect exact data with that view of 252 theatres. Of these, there have been burnt

45 12 21 78 8

Total, 252 theatres.

The abnormally great number of theatres burnt down in the first five years after being opened is explained partly by the fact that most of them were evoden exections, or merely provisional build-ings, which, of course, are of the most dangerous nature. The above figures show that the average ago of those theatres destroyed by fice amounts to about twenty-two years and three quarters. Car-rying inquiry a little further, we find that the 516 theatres burnt down were distributed over the globe as follows. They included:—

cer the globe as follows. They include
176 in the United States.
63 in front Britain, excludes of the colonies.
63 in France.
49 in Germany.
45 in Italy.
26 on Austria.
21 in Russia.
17 in Spain and Portugal.
29 in the various European countries.
18 in the various excree European countries.

A comparison of these figures does not permit of forming an opinion as to the more or fewer fires in theatres in the different countries; but they are a safe index of the care hestowed there in collecting the required data.

It is further interesting to observe the time when theatres generally burn down. On the average, about thicken theatres are de-stroyed each year; the worst months being from January to March, the fewest flore taking place in July to September. Most of them have taken place in the middle of the week, the most fatal days in the month being, strangely, the 8th, 15th, and 22d. Fortunately, of the many conflagrations chronicled in the work, only thirty-rix broke out white representations were going on; but these have, on the other hand, been the most disastrons on record. Most of the fires took place in the middle of the night; taking the risk of theatres to eatch fire during the day at me, 6.8 represents the Sahility about two hours after the conclusion of the performance.

Another point, which is generally too much neglected, should not be test sight of. It is the extreme rapidity with which conflagrations generally spread in theatres, leaving no time to save anything, and involving too often great sacrifice of life. A case in point is the destruction of the Berlin Opera on August 18, 1843. On that evening the military ballet, "The Swiss Soldier," in which guns are fired and fiesworks let off, was represented. At the inspection, half an hour after the end of the purior munce, there was not the slightest sign of fire. Soon after, however, llames were seen issuing Iron them. sign of fire. Soon after, however, flames were seen issuing from the right side of the stage, and ten minutes later the whole building was one mass of flame. The old Opera, like the present one, stood completely isolated, and yet it required the atmost exertion to save the corrounding buildings from taking fire. At the destruction of the Manich Court Theatre on January 14, 1823, it was with the greatest difficulty that another theatre close by, the Royal Castle, and other important buildings were saved. In too many cases it has not been possible to arrest the conflagration, and to confine it to the theatre on fire. Among the many estastruphes of this description of older date may be mentioned the first destruction of Drury Lang. Theatre (January, 1672), when sixty other buildings were destroyed; the burning down of the provincial theatre in the court-yard of the Royal Palace of Amalienberg, near Copenhagen (April 19, 1683), when the destructive element annihilated the whole palace, the park with all its buildings, and endangered even the floot in the road-

stead.

Of the more recent free of this nature, let us only refer to that of the English Opera House (February 16, 1889), when fifteen meighboring houses were destroyed. The fire which broke out in the Olympic on March 29, 1849, either entirely destroyed or greatly damaged twenty other houses. It may be asked, confining the inquiry to London, In how many cases would a firm the 4 theatre not involve the destruction of surrounding property?

In the work nucler notice, a list is given of thirty-six fires in the work nucler notice, a list is given of thirty-six fires in

theatres which occurred during representations. It is not our intention to particularize them here; but these of our readers who take an interest in them will not regret the lime spent in perusing the part of the book dealing with them. For netwithstanding all that has been asserted to the contrary effect, namely, that fires in theatres rarely begin during representations, and that the catastrophe of Brooklyn was unexampled, they will see that experience says otherwise. Since 1770 are fewer than thirty-six were hurat down while performances were going on, and in most cases the loss of life has

been frightful.

There is no doubt that effective measures against fires in theatres are importative. While scarching for the best means for preventing them, an inquiry into the origin of those fires is of great value. But them, an inquiry into the origin of those fires is of great value. But in by far the greater number of instances it has not been possible to trace their causes. In this country the verdict of the jury is similar to that found after the destruction of Covent Garden Theatre, in March 5, 1856, namely, "That the theatre has been destroyed by fire; but that there is not sufficient evidence before the jury to say how the same originated." In other countries where no such juries exist, in most cases, after a fruitless inquiry, the subject is silently dropped. The reason why, only in race instances, the causes of the structure effect of the confluencing. The thick smake arising at once structive effect of the conflagration. The thick smake arising at once obscures all observation; the extenordinary haste and confusion rendor even subsequent evidence of eye-witnesses unreliable, and suck traces which might possibly lead to a discovery are obliterated by the rapidly spreading flames; so that there remain only assumptions

upon which to proceed.

Most certainty exists with respect to fires which break out during performances. They are caused either by hadly protected or naked lights, or by leaky gas-pipes, or by earchest handling of the gus, or by gas explosions. Other fires have neisen from the employment of by gos explosions. Other lites have arisen from the employment of petroleum for lighting, or through careless smoking, or through firing of gans, or letting of fireworks. Hires, finally, have been caused by the faulty condition of the heating apparatus. In all these cases, carelessness with respect to all those dangerous appliances has been at the lottom of the outbreak. And yet we are going on in the

same course.

same course.

It has already been remarked that the rapid inflammability of our theatres arises from the large quantity of material easily set in flames, and stored up within a narrow compass, which has been dried up by commonly applied beat, and thus prepared for combustion, but also from the extensive way in which a theatre is lighted up. This danger is considerably increased not only by the light of the more from this series which are no that account set ablave all the more of very thin stuffs, which are on that account set ablaze all the more rapidly, but also by the more or less fine or coarse threads of the canvas employed for decorations, which depend from them after fre-quent use, and which act like slow-matches for the fire. The dust quent use, and which act like slow-matches for the fire. The dust also which settles on the decorations, and which consists mostly of this fibres, favors the spreading of the flames, so that in an inerelitive phore time after they once get hold of the objects within their reach their extinction becomes a matter of impossibility. A firmacking out must consequently be promptly stifled, or the whole bouse will be in flames. Experience rells us that such a danger sets in very frequently, or more often than is generally believed in wider circles.— The Eulider.

THE SUBTERRANEAN WORKS AT WELBECK.

It pleases the Duke of Portland to penetrate his magnificant domain by a series of burrows, and to startle his dependents by unexpeered appearances from these subterranean depths. These bur-rows are no narrow tunnels, but lofty, spacious passages, lighted by costly appearans for letting in the san at intervals, and by innumer-able gas-lights. Lined with brick and stone, and perfectly water-tight, they enable their owner to be everywhere by turns, and nowhere long, unless it phase him to go into detail with any of the numerous subdirectors of the extraordinary works, complete and in course of construction, at Welbeck.

The sudden apparition of the duke among the grooms exercising his horses in the great virting-house, whose like exists nowhere else, astenishes, but does not dismay. As his pale face rises from the earth in the left-hand corner of the energous building, there is no sign of trepitation among those assembled, while their master surveys the magnificent work, raised at a cost which sets calculation at defiance. Mearly four humbred feet long, with a width of rather more than one third, this riding-bouse, carpeted with true has walls are the more than one third, the region of the party and true. of sulfil stone, and a roof of wood, glass, and iron. Two rows of columns divide it late a nave and two aisles, the latter with beautiful wooden roufs. The great central compariment is descrated with ful wooden routs. The great central compartment is descrated with a frieze of pointed brass-work, representing birds, beasts, and foliage; while the whole structure is adurated with a stone frieze of elegant design and perfect workmanship.

The Duke of Portland is a builder-up of good work, and a puller-

The Dake of Portland is a builder-up of good work, and a puller-down of bad. An architect at one time employed by him built a gateway, which when completed became abborrent to him; yet so considerate was he of the architect became abborrent to him; yet so in his heart to remonstrate with him. So he tried another way. One night he waited till the architect had driven off in his dog-cart, and then set all his men to work at overtime and double pay to pull down the hatch edifice. By merning not a vestige remained, and the architect on his arrival rubbed his eyes in amazement; but neither he nor the duke ever took the slightest notice of its disap-boarance. There was too a memorial bridge created to the memory pearance. There was, too, a memorial bridge erceted to the memory

of Lord George Bentinek, near the spot where he breathed his last, close to the wood end opposite the village of Norton. Short work was nowle of this bridge, as of numerous other odds and ends of profilecture on the domain, and the present reign of perfection was

inaugurated

The half hundred lodges for keapers and other servants on the Welbeck estates have all been built by their present proprietor, who Welbeck estates have all teen built by their present propertor, who has in their construction carried out his passion for subterranean work. The dining-rooms and bed-chambers make a handseme little house enough, solidly and perfectly built of stone. The unseemly part of the dwelling is buried in the earth; kitcheas, pantries, and other offices are plunged below. Many of the finest apartments in the Abber itself are actually under ground, and illuminated by all kinds of ingenious devices. Welbeck boasts a subterranean library of ground size, where natured choom is consistent dispolled by one kinds of Ingenious devices. Welbeck boasts a subtraraneau library of great size, whose natural gloom is completely dispelled by gas humers sampiternally aglow. Mear this strange room, but above ground, is the riding-house, built by Huntington Smithson, from the designs of the Duke of Newnasth, in 1625, now converted into a superb picture-gallery. Of course the gas used at Welbeck is made on the premises, and lofty mounds severed with rhedodendrons hide lour unsightly gasometers from the eye.

The duke is most interested in what may be called "the works" at Welbeck.—the mighty hurrowines and scomiture, the levellings.

at Welback, — the mighty hurrowings and accordings, the levellings, the widening and deepening of the lake, the building of the new subtercamean church, and the manufacture "on the premises" of the rolling stock necessary to the operations in the wood-yard and machine shops, hard by the new riding-house and covered tan-gallop. But he has yet plenty of time to care for the Alderneys with black points which furnish Welbeck with milk, and the black polled Scotch exec which supply Worksop as well as Welbeck with magnificent

These addities are viewed with mixed feelings by the inhabitants of North Nottinghamshire. On the ene hand, there is the potent incentive to tenants and dependents to exalt the rich man by whose spails they live; and on the other, a slightly rebellious feeling against territorial absolution. Dural freaks are condoned by patronage to the region known as the "dokeries." The last of the "dukeries" is Welbeck, but in nutoriety it abundantly supplies the places of all the rest. One of its chief marvels is the tunnel, or rather cowwell way, built necess the park lest any plebeian form should come betweet the light and the nobility of the Duke of Portland. It seems that a right of way exists across Welbuck Park fer foot passengers and pack-horses, - in fact, an old-fashioned bridle-path. Previous Dukes of Portland endured the misery of seeing unseemly figures pass within a quarter of a mile of their princely home, but the present incumbent long since revolted against this infliction, and declared that, as the right of way through Worksup Manor and Welheek could not be contusted, his part of it should be made as confortable as a confortable as a confortable. able as possible. To that end he constructed a covered way, which, decked with turf, rho-lodendrous, and other shrubs above, should not prove an eyescre to Welbuck, and by dint of thorough lighting and ventilation should satisfy the public. The public of Worksop and Whitewell is easily satisfied by a duke who employs a couple of thousand workpien, and this flagrant violation of public rights has taked as will be a filterable of thousand workpien. cycled no village Plaupilen to denounce it. Is it not a small reatter of passing under a road or a lawn, but a mile and a half of tunnel to be traversed by the voyager in that particular direction, and can only be avoided by a tedious detour. It is purbaps lucky for the Duke of Portland that his subterranean "Folly," as the country folk call it, is not nearer to Sheifield, or some great town rich enough to care nothing for his patronage, and strong enough to make him pull his ridiculous structure down. As the matter stands, the tunnel, although an illegal and impudent outrage, is only laughed at by the vassals who make a good thing out of Welbeck generally. — Landon World.

GERMAN JOUSES IN CINCINNATI.

CINCINNATE

To the Editor of the American Architect: To the Editor of the American Architect:

Dear Sir,— During the past few years a very noticeable feature of house hulding in this city is what is known as the German tenument house. The house is invariably of brick, generally three stories high, with a nondescript kind of freestone cap and sill to the doors and windows; it is never painted, always has a side entrance (either a side yard or else a portion of the house partitioned off, in which latter case the second story extends over the entrance), and at a distance of some thirty-five feet from the front the one stairway gives communication to the several steries. There are generally four comes on a floor (two on cach side of the stairway). In almost every case these houses are filled with six different families, one family to each suite of rooms, and they all make common use one family to each suite of rooms, and they all make common use

of the above-neutiened single stairway.

The houses cost about \$400 per room, and on an average they rent for \$50 to \$60 a room per annum, which rent yields the owner the very handsome income of twelve to fifteen per cent on his layestment. Large numbers of these bouses go up every yest, and it is

selfon that a room is vacant.

While this plan of house-building is, as shown above, a good investment for the owner, it certainly is a very bad investment for the community. This matter of from six to twolve or more families living together in one house, with soldom ever two rooms to a family.

where each does its own cooking, washing, sleeping, and living, must of necessity breed vice and corruption. And what puts a worse face on the matter is the fact that the majority live in this way from choice and not from necessity; they are industrious and could if they chose have near small houses of their own.

C.

THE RAILROADS OF PERU.

Almost every one has heard of the Inte Mr. Henry Meiggs, and knows in a general way the engineering marvels he has accomplished in Pern during the score of years just passed, notwithstanding the phstacles he had to encounter in the way of political disturbances, obstacles he had to encounter in the way or painteen disturbances, intrigue, and an impoverished government exchequer. We take from the New York Warld the following, condensed from the nurrative of Mr. W. U. Cilley, one of Mr. Meiggs's assistants:

The work originally undertaken by Mr. Meiggs for the Peruvian government comprised the building of several lines of railway that were considered military and political necessities, manely, the Cal-

lao, Lina, and Droya, and the Oroya and Cerro de Pasco railroads, crossing the Andes to the cast; the Chimbote and Huarez Railroad, extending to the north along the westerly slope of the Andes; the Mollendo and Arcquipa, and the Arcquipa and Puno roads, extending north and eastward, and penetrating the interior several hundred miles, and the Juliaea and Cazeo road, all forming a network of rail that puts Lima into direct communication with all portions of the re-The contracts were made with a liberality on the part of the government that would have done credit to more prosperous nations. The work was pushed forward with a rapidity and thoroughness unexampled in the history of engineering, when the tremendous obsta-cles met with in the formation of the country are taken into consideration. Scientific and railroad men everywhere watched the progress of the work in astonishment, as all their theories and predictions of failure were overthrown one after another. Political and physical disturbanees, revolutions, and corthquakes retarded the work at intervals, but it was never abandoned by Mr. Meiggs and his colleagues. A little over a year ago the financial depression that had affected other nations reached Peru, and a panic cusued that threatened to put a stop to the work, and the government serip issued in payment on the contracts depreciated to about 40 per cent of its face value. It was fewed by many in this country that Mr. Meiggs would be anable to withstand the shock, and that the work would necessarily be abandoned for years to come; but the panic subsided when it became evident that there was no real cause for it, and the nation began to recover slowly from its offects. Both the government and Mr. Meigrs were determined that the work should proceed, and the latter directed attention to the Cerro de Pasco mines, long since abandoned, in whose depth lay imprisoned the means for finishing the great undertaking, awaiting only the introduction of modern machinery to yield a pheir great treasures. The government authorized Mr. Meiggs, or any company that might represent him, to issue bonds to the anaount of £2,400,000 starling, bearing gold interest at 7 per cent, the principal and interest being guaranteed by the Republic of Peru, and the means for paying interest and principal were placed directly in the bands of Mc. Meiggs.

All the mineral lands belonging to the government in the Cerro de Pasco district were ceded absolutely to Mr. Meiggs, and persons owning and working claims in that district were allowed the option of continuing their work and paying Mr Meiggs 30 per cent of the ore taken out, or relinquishing their claims to him and receiving 20 per cent royalty. There were fifty-three legal claims of 100 metres per cent royalty. There were fifty three legal claims of 100 netres by 300 metres, and nearly all of the owners preferred to give them up to Mr. Mriggs and receive the 30 per cent of ore extracted. The death of Mr. Meiggs last year did not interfere with this arrangement, as the contract held good with any persons who might

sneceed him.

The huilding of the Oroya Railway, from the seacoast over the summit of the Andes, through the ruggedest country on the earth, is the most stupendous engineering leat of the age. Unlike the overland road in the United States, which reaches its greatest elevation in the Rocky Mountains by almost impercentible gradients, the Pernyian highway in the clouds begins to climb the steep sides of the Andes at grades that are startling in their boldness and procipi-tonsness. The heaviest grade on the line is 4 per cent, or 211 feet to the mile, and on some of these grades there are curves of 373 feet radius, or in the metric system, which is used exclusively in this work, 115 metres. Some of the curves on the easier grades are much sharper even than this. The road winds up the able of the moments in a zigzag and oftentimes almost circular path, and at one point there are two tunnels through the side of the peak, one directly above the other, in the same interal direction. The rarefied atmosphere at the great elevation reached on the summir presented many new features in milroading, as a locomotive had never before been worked at these beights. It was supposed by engineers genmany new rectures in railroading, as a foremetric than never been worked at these heights. It was supposed by engineers generally that it would be impossible to keep up stram above 8,000 or 10,000 feet, and many men eminent in their profession in Europe wrote to Peru, asking how this difficulty would be met. The problem solved itself in a very simple manner as soon as the test was made. Hydrogen is necessary for combustion, and of course, in a rarefied atmosphere, the amount of hydrogen is less than in the same bulk of air where the density is greater. At great elevations it was merely necessary to introduce into the furnace a greater

quantity of air in a given time than at the sea level, and the simple

operation of opening the dampers wider accomplished this result.

The world-famous Cerro de Pasen silver mines are at the intersection of two inneress mineral lodes in the Province of Junia, one running through the Cordilleras in a northeasterly direction, and the other through a spur of the same range with a northwesterly The ore body averages seven eighths of a mile wide by one uile and a half in length, is of irregular shape and unknown depth. The mining done by the Spaniards and Peruvians has all been in the surface deposit, and really amounts to nothing more than prospecting in these days. Their deepest shalt is only 360 feet below the surface, and has been suck through the decomposed rock forming the surface ore. The shafts vary in actual depth from the surface, which is irregular, but they are all sunk to the same water level. The unstable character of the formation in which these shafts were worked caused many accidents, and working in the old Spanish mines of Cerro de Pasco was a decidedly dangerous occupation. The surface to day is honey-combad with deep and extenive sinks or tajos, where the mines have fallen in, and many a miner's hones are entombed in these great sepulciers. The most terrible of these accidents occurred in 1710, when 300 persons were buried dive beneath the root of a mine, through the giving away of the supporting timbers. All of the top deposit in this district of a square mile is what miners call pay dirt, — that is, it is decomposed rock containing free-milling ove that averages \$40 to \$45 per ton. The ove remaining in this surface deposit of decomposed rock is sufficient in quantity to run all the mills in Nevada at their full ca-

pacity for 150 years.

Helow the depths to which the Spanish miners worked their shufts, the diamond drill has been used to prospect the mines. The rock is hard and uniform in character, averaging about \$165 to the ton in the assnying. Poekets are frequently struck yielding are

that contains from 30 to 80 per cent of silver.

Professor Raimondi, who has conducted scientific explorations in Peru for many years, is of the opinion that the end fields of the Harrez Valley will prove to be the most extensive in the world. The coal is principally semi-anthracite, although camel and bituminous coal have been found in considerable quantities in the inte-

A DANGEROUS LIGHTNING-ROD.

In connection with the article which we print in another part of the paper the following leaver from the late Professor Henry, concerning a lightning conductor without ground connection, is of inter-

Sautisoniax Instruction. Washington, April 27, 1878.

Washington, April 27, 1878.)

Sig. — The plan of lightning-red you describe is an extreme application of the method introduced some years up of discharging electricity by points. It was approach that a great improvement was made by placing projecting points on all shoes of the rod throughout its whole extent. Another supposed improvement was to terminate the end of the rod marthe ground in a sharp point. But both these places are at variance with the line principles of electrical protection, which amounts in drawing the electricity from all the space occupied by the root of the house to the point of a continuous rod infimmely connected with the earth by means of water-pipe, gas-pipe, or other masses of metal. The rad hould be prefectly smooth, and so constructed as to receive the electricity at the upper end and transmit it sitently up the ground.

The action of a positive cloud on the U-shaped rod, shown in the electric values and, would, by induction, render each branch of the U negatively electricity, and the horizontal part positively. In this case a discharge would tend of other asch branch at the same moment, and descend in a corrent torough the middle of the herizontal part into the root. In my opinion, a rod put up in this transmer is were than none at all. I am very truly years,

NOTES AND CLIPPINGS.

Humson River Tunner - Once more laborers are at work on the Hudson River Tunnel, the courts having removed the injunction obtained by the Delaware and Lackswama Company, and foreign capitalists having subscribed some three million delaware to begin the work. As soon as the old shaft at the foot of Fifteenth Street, Jersey City, has reached the depth of sixty-five feet, work will begin upon the tunnel proper.

Linewtone Payement.—Mr. H. G. Wilson, of St. Louis, who is said to be an expert in the matter of road-making, has evolved the theory that the heatbininess of a city is in prest measure dependent on the material used for paying. Finding that the mortality record of the year ending in April, 1878, shows that St. Louis is the healthful large city in the United States, and that the other large cities, ranged in comparative order of healthfulness, are Cincinnati, Chicago, Philadelphia, Roston, Brocklyn, Rakimore, and New York, he has been led to seek the reason for anch conditions. At first suspecting, naturally, that the classification was but an interpretation of the efficacy of the drainings systems of the respective cities, he was led to abandon the supposition by the fact that Chicago, whose natural advantages for drainings are of the worst, and whose artificial system is avowedly not of the best, ranked third on the list. The condition of the streets next fell under his notice, and here again, although outer of the payement of Chicago is of wood, rain-soaked and rotten, it is evidently a healthfur city than those cities where grante and other hard stones are used for paying. The streets of St. Louis, on the other hand, are macadamized, she purfored used being linestons, and to the filtering of ground air tir juch this material, and the giving off of line phosphates, Mr. Wilson and the filtering of the healthfulness of the citizens of St. Louis. LIMESTONE PAYEMENT. - Mr. H. G. Wilson, of St. Louis, who is said

THE RUSTING OF THE BRITARNIA BRIDGE, - At the conference of The Rusting of the Britannia Bridge, —At the conference of architects lately held at Loudon, Mr. Carroll, during the discussion that followed the reading of a paper by Professor Barff on his process for preserving iron from rust, scaled that he believed "time upon tone of rust were taken monthly from the rubes of the Britannia Bridge." This statement, which created no little excitement, as it seemed to forstell the aparedy distipation of one of the engineering marvels of Great Britain, has been emphasically denied by the engineers who have charge of the bridge. It is an record, however, that at one thorough cleaning in 1865 forty tens of rust were taken out.

CLEOFATRA'S NEEDLE. — The proparations for creeting Cleopatra's Needle, says the Atherican, are well advanced. Nearly the whole of the iron-work has been removed, and the inscription on the fourth side is at present in an excellent position for examination and comparison with the various editions which have been given of it. There are several points of interest to be abserved with regard to the palacography of the older or central line, and that of the two nearer lines with which it is flunked; the former being far especial ray remarkable in those parts which have been covered by sand, and so protected from injury by weather or design. Some of the literaphyphics are excepted in a different manner; the circle, for in-rance, of the middle column of text is slightly raised at the centre; in the side lines it takes the form of a deep and emplike depression. In a sexuacted that the work will be completed in about two months' time. The solid base of masonry and granite blocks is being built; above this the Newlie will be monthly to be balanced, and thus easity transferred from a bortzontal to a vertical position. from a horizontal to a vertical position.

A HARNONT IN YELLOW AND GOLD. — The Paris correspondent of the New York Technical gives the following account of some work at the Paris Exhibition, by the Baltimore artist, Mr. Whistler:

Not far off is a section of a rosm for the decoration of which Mr. Whistler is reasonable. Ever since Mr. Whistler did the famous peacock room for Mr. Leyland in Prince's Gate he has had a reputation as unique in uphalstery as in higher walks of act. He is building a house for himself in Landon; like no other house, of course; meant, perhaps, as a protest against the sudden pombinity of Queen Anne fronts in red brick, with their balconies and drawbridges—a popularity which might end in a new form of montony hardly less tiresome, though in firstly immensely before the state horrors of which so many square miles have roome out of the same troughs and moutds. What Mr. Whistler means, dike by his pictures, his present decuration, and this last caprice in yellow, may be that there is something good in the world of are outside of the conventional world. He calls this room a Harmony in Yellow and Gold. Against a pellow wall is he? up a chimney-piece and cabinet in one, of which the wood, like all the wood in the room, is a cariously light yellow anologony—something very different from the faming veneer known to the American for generations pase, with drank and strandiling potentia all over h. The threplace is food with the front of the cabinet, the front panelled in gill burs helew the shelf and coratice, inclosing tiles if pale sulphur; above the shelf a capinard, with clear gloss and triangular open niches at eithered has the fails in polished seed; the feurles the same of the yellow indeed in gill burs helew a harder. The pencack reappears, the eyes and the largest he rads in polished seed; the feurles the same of the yellow shades of the rost of him; but whereas in Prince's Gale it was always blue on gold on pole above. The pencack reappears to the soft he sade has a bint of the Japanese influence, which faintly, but soft family,

Gonelius Tarestur at the Patela Exhibition.—The Gobelia manufactory new cuploys only fifty-three workines, twenty-two of whom are engaged in making "la Savanaurie" carpets. The tapestry workers are very indifferently paid. But it appears there is no differently which remitting for the Gobelias, on acround of the prestige which is attached to the place; because the tapissiors are lodged, because each man has a little garden in the grounds surrounding the hotel, and because when old ago comes on, a pension of from forty to lifty pounds a year is grouted. The Gobelias, too, is a kind of family concern. The tapissions are tapissions from father to son. M. Dorny, who was minister of Public Instruction under the capita,—and a good and liberal-minded minister, too,—belongs to the family in question. His father was one of the head working at the tabelias; he himself was an apprendice, and two of his cousi is and several other relatives are to-day in the establishment. As a specimen of "In Savanaurite" work two carpets are exhibited, the price of which is enough to astonish one, even after the tapestry. One carpet, destined to cover the apactment at Formaluchlean which was inhabited by Phia VM. during his emplisive, is sinhay-the metres square and cost twelve thousand pounds. The smaller carpet, also destined for Formaluchlean, and which is not failabed, is furty-right metres square. There is a unduling on the part of the present director of the Gobelius to give up copyling pictures and to confine his tapeatry to the decreative art; and this idea has been highly approved of by critics.—Pall Mall Garette.

Bendine Wood in a Der State. — Mesers, Balse and Baendel have proposed the following method for bending hard wood when quite dry, chickly for sieve hoops: Two rollers are used, one shows the other, the upper one having less velocity, so that it acts by holding back, while the lower extends the wood fibres. When the heard, thus bent, leaves the rollers, it is fastemed in the mouth of the sieve. The upper roller is finted, the under one smooth. If two smooth rollers were used a very much greater pressure would be necessary.

Preserved Henre.—The correspondents of the Planker vites family some practical hints which are worth repeating. Thus, one plumber says that to prevent the waste-pipe of safe-paus under water-closeds from giving passage into the upper parts of the house of kitchen or cellar ancels—for these pipes usually stop over the kitchen sink, or over a sink in the cellar—the waste-pipe should be pared up at its lower cut so as to form a slight crap; then the ordice is enlarged with a through, and a light rubber ball by put in, so that if the water in the trap dries up the ball may still trap be opening. A perforated plate or wire neiting keeps the ball from being thrown out by the rush of water, while it offers no material hindrance to its passage. Another plumber mentions an empirical way of determining by inspection for what purposes the different pipes inclosed in the same casing are used. He says that after a few months' service only the last-valor pipes will show the cleanest exteriors. The circulation pipes will be less clean, while the cold-water down pipes will be inner dirties, and the pressure pipes will be the dirtiest of all.

DRAWING IN FRENCH COLLEGES - The Minister of Public Instruc-Prawing in France Colleges.—The Attack of Prince Instruc-tion has arrived intely at an important conclusion. Henceforth instruc-tion in drawing will be obligatory in the colleges in all the classes from the sixth to and including the classes in philosophy. The course will in-clude instruction in linear drawing, perspective, ornamental design, element-ary instruction in anatomy and the proportions of the human figure, and finally in drawing the human figure from the flat and from the round.

Tix Mixes. - The mines of Cornwell, for a long time thought to be Tex Mixes.—The mines of Cornwall, for a long time thought to be the only fin mines to the world, are finding serious trials in the tin deposits of Tasmania. Four years ago the value of the expurs of tin and tin ore from this island was \$35,000, while last pear it amounted to nearly \$1,500,000. One of the most productive regions is the Moort Bischolf district; but this has now been eclipsed by the discovery of a tin mountain at Mount Heemskirk, on the west const. The "wash-dist " is some twenty fort thick, and produces about 25 per cent of tin; but the existence of solid acture of the meant traversing the mountains in roles several feel is depth and width, has been demonstrated. Some "anggets," weighing several handred weight coch, have been found, yielding nearly cent, per cent, of pure metal. Mixed with the tin, too, is a small quantity of gold, about sen orders to the ton, not sufficient in itself to reader it worth seeking, but adding considerably to the fin miner's profits.

STREET SERICHMENC. — The city of Paris sprinkles not only the planted alleys, the squares, bridges, quays, but also those parts which are watered by the had tenants. The operations last from March 15th to the tober 15th for metalled reads, and from April to September for the paved ways. Water is thrown duly by means of water tanks, or hose and mozele, the latter being used on the boolevards and some of the more important streets. Tanks and bose, with their frames, belong to the sity, contractors supply liouses and drivers, — the whole being under the supervision of the city. The best tank used is the tank Soby. It is an oldoug box made of sheet-iron, has a seat for the driver, whence the tank can be worked. The tank contains 340 gallons, and works on a strip 15 feet wide at each passage. It is emptied after a run of from 1,500 to 2,000 feet, according to its capacity. The filling is done by a leather or India-cubbet hose, screwing to hydrants under the sulewalk, and so spaced that the tanks have short distances to run when emptied. One tank unffices for an area of 2½ acres of metalled surface, or 5 acres of paved streets. Hand sprinklers are used for the planted silver: the hose is screwed to hydrants placed at satisfied distances, and the apparatus, which is from 40 to 46½ feet long, can with a head of 50 feet throw a jet of an amplitude of 40 feet. One near our, with this apparatus, speinble 5 acres in 85 minutes, time cumpleyed in moving laring deduced. It is economical and convenient, and its use has been largely introduced into the interior of the city. There are farz tanks in use, which consume a daily average of 1,600,000 gallons. The cost of each tank, including driver, is 548 per mouth. Hose sprinkling, all incidentals being coursed, costs a tride over one half the expense of water tunk sprinkling. This chapter would be imperfect without an account of trials made to replace water by deliquescent salts, which trials had for their main object the delign away with the mainched water. In 1855 and 1863, M. the first used refised chloride of calcium, which was very expensive; as it could not be dissolved in water so as to be thrown from tanks, it had to be thrown by hand, in quantities of 250 grammes for each square metre; its efficiency was felt for 5 or 6 days. Later, in 1862, experiments were resumed with endo salt mixed with chloride of manganese. It was aprinkled by hand, 500 grammes to the square metre, but was efficient only three days, and if the air was not moist a light sprinkling of water was decessary. In 1864, General Inspector Homberg made some new trials. Fure and white chloride of magnesism was the salt used, and which could be completely dissolved in water. It was found that the operation had to be performed in the evening, by theoring the salts either dry and by hand or in solution in water, so as to spread 500 grammes per square metre for the metalled toads, and 400 for the parenents. For the lites 24 hours the result is good, but the following day one sprinkling has to be done, two appeared on the third day. Sprinkling the dissolved salt with the tank costs more than salt thrown by hand. An area of 2½ acres requires 5 tons of salt, lasting only three days, costing 100 frames, and 112 with the labor, acalest 36 feduce, the cost of ordinary tank sprinkling for the same area. Honce it results that the use of deliquescent salts would be very enerous. The sprinkling with water adds feedings to the air, prevents dust and epioses dryness, whilst salts, taking the little motsture left in the atomosphere, would prove far less hygicate if used, and only in case of lack of water is it allowable to use deliquescents in Paris. Street sprinkling costs the city of Paris 890,000 animally. — Engineering News.

The Cave of Grassow, Kr. — It is now said that the cave, the discosts the city of Paris 890,000 animally. — Engineering News.

THE CAVE AT GLASSOW, Kr. — It is now said that the cave, the discovery of which we mentioned a week or two ago, is far from being as remarkable as the first reports stated. The finding of any mammies is

BOSTON, AUGUST 2, 1878.

CONTENTS.

CONTINATO.
Summary :-
The Self-congratulation of the Indiana State House Commis- winners as Recorded in their Report, — Arc Architects to be superseded by Draughtsman ? — The threatened Labor
Troubles. — Report of the Society for the Protection of Ancient Buildings. — Opportunity for Architectural Mission.
ary Work in Asia and Alrica, — The Protection of Iron from Rust. — Concrete and its Effect on Iron. — A new Architec- tural Periodical.
Modern Permane. VL
The Leavetrations:-
Entrance Lodges to Greenwood Cemetery. — Cotton Exchange, Galveston, Tex. — Hotel Cluny, Boston, Mass. — Design for
a Doorway
THE ANTI-RESTORATION MOVEMENT
The Sewage Strien of Paris. I
Communication:—
Competitive Designs for Trinity Church, St. John, N. B
The Decoration of Providence City Hall
THE DRAINS AND TYPHOID FEVER
Manusa isan Crangrada

Tuz Illinois State House Commissioners, in their fourth quarterly report, congratulate themselves and the State, because in their agreement with the architect, " for the purchase of all his plans and for his services as supervising architect," they have saved twenty thousand dollars out of the maximum compensation allowed by the Sorte; which they have accomplished by reduring his commission to two per cent, in consideration of their assistance to him in employing a superintendent. Of this agreement we have already given an account (American Architect, for April 27, 1878). As a matter of business is concerns only the Commissioners and Mr. May; but as an example, which if it should be used as a precedent would be a disastrous one, it concerns the whole profession. The commissioners find reason also for self-gratulation in the fact that "every possible presention was taken during the long and tedious examina-tion of the many excellent plans presented to acrive at a de-cision that would command the approval of the most careful critic." "After such thorough and careful examination, in which all the tests known to the profession were comployed," it is but natural for thorn to trust, in spite of the "najustifiable criticisms indulged in by some, that the State Capitol of Indiana, when completed, will be a monument of grandeur as permanent in its construction, elogant in appearance, and complete in all its appointments at a less cost than any similar building in the country; " and their confidence " has been most thoroughly confirmed by subsequent developments of a highly gratifying character." A subject for gratulation about which there can be no question is letting the excavation at nine and a half conts per cubic yard, which is less than half the architect's estimate; this part of the work is to be finished by the middle of August. At the date at which the report was made up (June 30) proposals had been invited for the 945,166 cubic feet of stone required by the architect's schedule. The Commissioners report that they have visited the principal stone quarries in their State and its neighhors, and have procured and tested sample blocks of their various stones. It is to be hoped that the results of their experiments may be made known for the benefit of other people. The public is greatly in need of trustworthy statements of the qualities of our hailding stones, particularly in the West. To put on record a series of intelligent and accurate tests of them would be a service as great, if not as ambitious, as supervising the Indiana capitol.

ANOTHER sentence or two may be quoted from the report, which curiously illustrate the position of the Commissioners. They have been examining buildings as well as quarries. Their examination has "developed many highly important features of interest that the Commissioners have been utilizing," and they have "obtained many useful suggestions in regard to the beauty, utility, and economical use of improvements in style of finish, as well as material to be used." The truth is that the Indiana business is quite a new experiment in public building, though

something approximate to it has been tried before. It is an attempt to put not only the financial but the technical management of a great editice into the hands of a commission of anatteurs, controlling an architect whose functions are simply ministerial,—who is in fact virtually a head-draughtsman. This is analogous to the methods introduced into the English Department of Public Works by the late commissioner, Mr. Ayrton of blessed memory; the legitimate conclusion of it is according to the tradition which he has left behind him, to discard architects altogether, and employ only draughtsmen. Inasmuch as nobody but the disappointed arghitects seems to have tried to disturb the Indiana commissioners, we may assume that they are doing only what the Logislature which appointed them intended they should do. But we doubt if the next generation will find roason to be grateful for their experiment.

The general strike which was to have interrupted all the railread commerce of the country on the 15th of Jane has been reappointed, as the public is carefully informed, for the 15th of August. Whatever the chance of there being any serious attempt to carry it out the proposal is exciting a good deal of alarm in Pennsylvania, the natural headquarters of railroad inhorurs and miners, who are said to be united in their purpose, and to have hopes that the workmen of the large man-ufactories throughout the United States will join in the strike. The communists over the country naturally hail the story with delight, and their talk of phonder and division is louder than ever. It is not likely that the labor-unions are yet ripe for any such extended combination as the plan would require, or that if it were tried it could have anything more than sporadic success: but the fact that it has been so paraded shows an uncomfortable degree of confidence. Now that Kearney has left California and has come East, the newspapers make haste to say that the workingmen of the Atlantic States are too sensible to listen to the orator of the sand-lots. But on the other hand we find committees of workingmen proparing to receive him and at a meeting held in Lyon to invite an address from him the newspapers were "denounced" for calling him a communist, while it was declared that so long as he showed himself to be acting in good faith he would be unanimously supported.

ALTHOUGH the new English Society for the Protection of Ancient Buildings, which has just published its first annual report, cannot yet furnish any great record of actual achievement, there is no doubt that it has already accomplished something of value in giving, as the report claims, a rallying point for a good doul of feeling, which has been growing stronger of late years, but for want of combination could not make itself felt. The tirades of Mr. Stevenson against architects' restorations, to which we called attention when they were delivered, though unduly impetuous, will doubtless be of service as a wholesome warning to architects, who in the zeal of an honest attempt at restoration may easily overshadow, if they do not destroy or pervert, the old work which they should maintain. Essays published by Pro-fessor Colvin and Mr. Loftic have well seconded Mr. Stevenson. One usoful work which the Society has undertaken is to collect information about all the unchanged old buildings in the kingdom. It has printed a tabular blank form for the description of charebes, which is to be discributed among all its members, to be filled up by whorosoever may find a church to describe, churches being the most numerous and important of old buildings. Already it has information of nearly seven hundred and fifty old churches in England and Wales which are quite nurestored. Mr. Coventry Palmore proposes that the information so collected shall be published in a pamphtet, which would be much to be desired even though it should make a volume, and supports his proposal with a subscription of fifty pounds. The report says rightly that the work to be done is heavy, and that "more cynically brutal destruction, not veiling itself under any artistic pretence, is only too common." The truth is, probably, that not withstending the great angleshing of interest is not and archive withstanding the great awakening of interest in art and archæology among students and amateurs, the great mass of people in Eugland, as well as elsewhere, are, just as they always have been, indifferent to everything but what they are directly engaged in. The continual destruction of the London churches, which the report bewails, goes on unaffected by remonstrances. Concerning this Mr. Carlyle writes to the Society:—

I can have but fittle hope that any word of mine can help you in your good work of trying to save the Wren churches in the city from destruction; but my clear feeling is that it would be a sordid, my sinint, piece of burbarism in do other than religiously preserve these churches as precious heirloons; many of them specimens of noble architecture, the like of which we have no prospect of ever being able to produce in England

Tue Society does not limit its ultimate intention, though as yet it has its active effort, to the care of buildings in its own country. Its report suggests that it may lend its hand to the defence of ancient monuments in the rest of Europe, people will sympathize with this aspiration who will not be surprised to learn that " the magnitude only of this undertaking has provented the committee from taking active measures in this important matter." Missionary work of this kind is needed enough wherever rivilization is old, and if an English society should find that the foreign nations of Europe are not so open as it could wish to its influence there is still a pricty ample field in British India, where a great deal of venerable architecture is going to destruc-tion. There is in fact a still more important field, saily in need of care, to which, if England is disposed, as she seems, to extend her protectorate over the half-civilized powers, the conservators among her people might be turned, - a field in which they have ahrady done good service. The whole of Asia Minor and the Mediterranean shore of Africa are strewn with the remains of classic and Semitic architecture, where is material, if anywhere, out of which to build up the most important missing chapters of the history of art. It is porishing every day in the hands of Mahometan people, savagely contemptations of whatever does not bear the scal of Islam, but whom Englishmen seem nowadays moved to instruct in the ways of modern life, "Sometimes," said the late M. Brule, in his account of his Carthaginan explorations, "I stop before an Arab who is destroying a tomb to make lime. I tell him that those whose last resting-place be is violating were of his own race, perhaps his nucestors. looks at me doubtfully, reficets a moment, then asks me if these fathers of his fathers knew Mahomet and the true God. I answer no, he emits a guttural exclamation, resumes his pickaxe, and commons, with tranquil mind, his work of destruction." If missionary work is to be done, here is apportunity enough and to spare.

This most noticeable contribution to our knowledge developed in the Conference of Architects held in Lordon in the middle of June may be found in the discussion regarding the use of iron as a building material. Professor Parff explained his system of creating upon the surface of this meta, a preservative oxide. Various tire-proof inventors discoursed upon the protection of iron from destruction by fire; prominent maning the preferred devices were those of our countrymen Mesers. Drake & Wight, of Chicago, for encasing from columns with terra cotta, concrete, and other fire-proof materials, an invention which the Englishmen claimed to be very similar to what was done by Mr. Whichcord, some four years ago. Mr. Hyatt's volume on fire-resisting construction was also referred to as the most important contribution to the recent literature of the subject, although his main conclusion that thre-proof floors cannot be made if the bottom tlanges of the iron beams are left exposed or are too lightly covered is said to have been " abready attained by Whichcord, Horn-blower, and others." Mr. Hyan's patents for the use of timber in fire-proof construction, which are said to be assentially like those of his English contemporaries, Messrs, Evans & Swain, the systems of both parties being based upon the property possessed by solid timber of resisting fire for a long time, provided it is so disposed that the fire will attack it only on one surface and is not allowed to play around it, were also highly commended. Although American ingenuity in this department, as in all others, was not allowed to make a claim for priority of invention without an English challenge, it was evident that the activity and intelligence of Americans could not but be important elements in any advanced discussion of the subject of fire-proof huilding. Mr. E. M. Barry, Professor of Architecture in the Royal Academy, wound up the whole with an expression of his confidence that "iron is the material of the future."

Nor a little evidence, however, was gathered together that this confident prediction is not destined to receive universal acceptance; for as regards the great unbular bridge of Robert Stephenson, it was stated by high authority that "no such structure will ever be built again," and certain engineers testified that

they saw "tons upon tons" of minous red rust which had been staken from its sides. It is claimed that no costing of enamel, or axide, or concrete, or paint has been yet discovered to permanently protect from construction from this insidious agent of de-eay. In all its joints and articulations, in all its bolts and rivets. wherever there is movement by contraction or expansion or vibration, wherever the smith's hammer or wrench has forced the work together, there must sooner or later be maked metal open to the invisible and motionless vapor of the nic, which slowly and surely must disintegrate the structure in its most vital parts and render his ultimate dilapidation and fall only a question of measurable time. This fatal vesture of decay, it would seem must needle vitally affect the validity of all claims for iron as the building material of the future. On the other land, various letters have been published since the Conference, from which it would appear that in the case of the tubular bridge the armmulation of rust is to be measured rather by others than tons, and that even now the resources of science are sufficient to prolect the joints of iron structures from the adverse influence of the weather, and that constant watchfulness and frequent renewal of preservative coats in the vulnerable parts will effect the same object. It is also claimed, notwithstanding the assurance of Professor Barif that well Portland cement or concrete will set up an oxidizing author upon the iron which is embedded in it, that as the interior planings of iron ships are coated with Portkand cement, which succeeds in protecting them from the deleterious action of foul sea water, and that as a similar coaing will protect from from fire, it must, when properly applied, render any from assistraction very safe indeed from any ordimany changes of temperature.

Attraction the pamphiles before us is the sixteenth issue of a journal that has entered on its second volume, yet it seems proper for us to speak of the Building World as a new periodical, for probably but few examples of it have found their way to America. Published monthly in Landon, this pumphter of twenty-four crown octavo pages, illustrated by two full-page wood-cors, has that distinctively scholarly and attractive appearance that English printers so well know how to import to their handliverk by their choice of type and style of make-up. That the proprietors of this journal should enter it upon a field al-ready so well cultivated by the weekly journals seems to be a most promising indication of the growth of architectural education in England. That it is intended to meet any crying want, or to cover any ground not already covered, does not appear from the one number we have seen; but seemingly it is intended to have a somewhat wider literary scope than is usually the case with technical journals, for we find the first thing here treated of to be the all-absorbing subject of the late treaty at Berlin. The other articles are, with one exception, however, either men architectural or engineering and scientific matters.

MODERN PLUMBING. VI.

WASH-BASINS. - PANTRY SINKS. - FILTERS - BATH-TUES.

A CERTAL'S amount of tasse may be excreised in choosing among the different patterns of wash-bowls and the modes of litting up the slabs. The most agreeable apparatus in appearance is certainly the slabs. The most agreeable apparatos in appearance is certainly the combined bowl and slab in one piece of poreclain, which is common in England but rarely seen here. Few things can be more inviting than the white basin, with the water issuing from the month of a small libra's head modelled in the poreclain of the basin and controlled by cocks above the slab, and the spotless slab itself, with its soap-cup and brosh tray, the whole of which can be cleaned in a moment with a sponge, and will remain always free from the grease spots and stains, and the black and gaping joints, which in time overtake our marble set wash-bowls. But as they are easily broken, and not very easily replaced, although not very expensive, they are little used in this country. used in this country.

used in this country.

With our common basins it is important that the top should be of hard, company marble. The so-called blue-veloud Italian is most used, and is very suitable, both in color and bardness. The fancy colored marbles are hard, but expensive and meanistancery in appearance, and the pure white statusry marbles, though beautiful, are so open in grain that they sum get stained, beyond possibility of cleansing, by grease and colored soaps. There are some American murbus which resemble the blue-veined Italian, but they are coarser and less agreeable in color.

and less agreeable in color.

The figure considered most desirable in the marble is an evenly distributed noutling rather than lims or strenks. The appearance of the work is smell huproved by having the slab l₁ inches thick, instead of ‡, and counter-sunk, or "dished" 1% of an inch or more in depth, and the edge moulded to an ogen section, which gives more finish than a plain rounding and avoids the dirt-harboring angles of

more elaborate moddlings. The wall-plate or slob of one juch or j of an inch marble, which is placed against the wall, should be of liboral height; fifteen inches is not too much, and its edge may also have

an ogee moulding.

The stoneware basin itself is commonly streaked with a rude imitation of martile, but is often decorated with gold and colors, some-times very richly, but rarely with much artistic success. A hasin may be ornamented in some simple way for three or four dollars, or any design can be executed to order, and for the best class of

houses some decoration is desirable.

For certain purposes special varieties of bowls are made, which are sometimes useful. One of the best of these is Schweikert's folding wash-havin, which, when open, displays a small bowl, hot and cold water famets, and a little shelf for soap and brushes, all nicely com water rancers, and a little shuft for soap and brushes, all nicely enanelled and the fancets plated. The main is empiried by theming it up, when its contents run into the small sink forming the lower part of the apparatus, which is provided with a bell-crap. The whole is of tran, while enamelled inside and painted outside, and is provided with couplings for the two supply pipes and the waste. When tobled up the fancets are inclosed by the bowl, and the whole projection from the wall is only about four inches.

For use in public places and on board ship, double besins are made, which are contried by turning the inner basin upside down, thus throwing the contents into the outer basin, from which it escapes into the waste, this mode of discharge preventing sediment from being left to accomulate, as it often dues about the strainer of an ordinary bowl. Some of the Jennings bowls are made in this way,—the "tip-up" basins as they are called. But there are other kinds. One variety is supplied through the pivots on which the inner basin turns, and can be flushed while inverted, but they may have any

form of sneply.

For cheap work, busins and slabs can be had of any dealer in plumbers' materials, mode wholly of cost-iron, enamelled, galvanized, The enamelling is now very well and thoroughly done, and such apparetus may serve a good temporary purpose; and the best ones, complete with their stand, are rather ornamental. The greatest variety of this kind of work is done by the J. L. Mott from Works, in New York, but most of their patterns can be had of any dealers.

The fitting up of pantry sirks is similar to that of wash-basias. The supply and waste-pipes are of similar sizes; the sink is usually covered with a marble top, and the attachment of the littings is

similar.

For a frap a 14 inch 8-trap is very commonly used, and, if venti-For a trap a 14 inch 8-trap is very commonly used, and, if vent-lated, is perhaps the best form; if unventified, the worst. A con-siderable amount of grease and solid waste comes from the washing of the dishes, and interferes with the working of the valve traps, which alone, if unventilated, possess any power of resistance to gas under pressure, while the S-traps, in which the flow is rapid and on-obstructed, can be depended upon to keep themselves clear; but the ventilating pipe is essential to prevent siphonage and back flow of rentilating pipe is essential to prevent suphonage and back flow of gas. Many plumbers put in reservoir traps, Adec's, or home-made round or P-traps, to separate and collect the grease. If there are used they toust be opened and cleaned at intervals, as they will not keep themselves clear so well as an S-trap, but the necessity for using them will depend upon the habits of the bouse in regard to the amount of grease thrown down the sink, and on the length of waste-pipe beyond the trap. If this is of small calibre and laid nearly level, whatever passes the trap will conget before it revelues the main soilouise, and the only way to avoid this is he and fair nearly level, whatever passes the trap will congest before it reaches the main soil-pipe, and the only way to avoid this is to have it collected in the trap itself, where it can be reached and removed. Where vanishing pipes are used they must be connected at the very top of the bend, and should be cleared out necessionally through the trap serew opening, as they sometimes get clocked by greasy seum lodging in the mouth, and when this has happened the trap begins to siphon out as if unventibated.

The country sink itself is made of tipped copper, generally about

The pantry sink itself is made of tinned copper, generally about forreeen by twenty inches for private houses, and either round or flat-bottomed. The flat-bottomed sinks hold less water, but the dishes are not so likely to slide down the sides and come into collision.

are not so likely to slide down the sides and come into collision, hence they are generally preferred.

The socket, plug, and chain form the cheapest arrangement for closing the waste, but the long chain with the heavy plug at the end is very apt, in rareless hands, to overturn and orenk dishes, hence in the last class of work a "waste cock," consisting of a large brass stop-cock on the waste-pipe, worked by a long spindle and lever above the slah, is used instead of the plug and chain; or some form of valve may be employed similar to those used for wash-basins.

The supply is usually, but not always, through pantry-cocks so high as to be out of the way of the dishes. Water for drinking is resully drawn here, and for this reason, even when the other plumbing apparatus in the house is supplied from a tank in the attic, tilled by a "rising main" from the street and a ball cock, as is usually drawn here, and for this reason, even when the other plumbing apparatus in the house is supplied from a tank in the attic, tilled by a "rising main" from the street and a ball cock, as is usually specified to have a screw, so that a filter can be attached in case of need.

Filters of various kinds can be procured, ready to attach to the

Filtures of various kinds can be procured, ready to attach to the fancet, or one can be made out of simple materials by lying a bag of flaunch, with a clean spange tightly stuffed into it, to the cold water cock, which will serve a good purpose. A neater appearance is pre-

sented by the small brass nozzles, with some filtering median inclosed, which fit the screw of the samest, such as the Houghton filter, made by the Walworth Manufacturing Co., of Boston, in which the water pusses through coarsely powdered charcoal, or others which employ compressed sponge, sand, etc. The cust varies from twenty-five cents to two or three dollars, and the efficiency is about

in proportion to the price.

Ball-tells are made of a variety of materials. Occasionally one is seen in a lumnic asylum, or some other place where it is liable to rough usage, in form a hollowed block of stone, natural or artificial; and baths of marble or state slabs grooved together and comented are

still used in England.

In this country metal is preferred, and iron, zine, lead, and copper are used. Cast-iron tabs are found in ohl plembing, and are still sometimes employed for the sake of strength or cheapness. The enamelled ones are much the lest, but the expansion of the metal by the list water will in time cause the enamel to scale off. If not enameted, they must be pulitted, but the paint gives a slimy, disagreeable surface, and needs to be often renewed. Zinc-lined tabs are sometimes used for recording only about half as much as the ordinary kind, but they are not durable. Lead linings were once common, but have been supersided by tinnel copper, which

once common, but have been superseded by tinned copper, which is in this country the material most commonly used.

A wooden bux, the length of the buth desired, is blocked up inside to the required form, and fined with the copper, which may be had of any weight, from ten to twenty-foor ounces per square too. Sixteen-mace is the weight canally specified; if highter than that the copper will cockle from the expansion caused by the hot water. Near the top a perforation communicates with a short over-flow table. The regular sizes for cubs are five, five and a half, and six feet long, and the prior is the same for all these lengths. Any desired size can, however, be made to order. The rough boarding which forms the outside of the table is eased over with nancling after which forms the outside of the tub is eased over with panelling after which forms the outside of the titl is eased over with panciling after the titl is set and connected, and a cap of wood is put on top. When thus finished the whole width is about twenty-five inches, and the height about twenty-three inches. Tobs of the French patturn, which are consoled at both ends, and an inch despec and wider than the connect kind, but only four and a half feet long, are often used where the space is limited; and any kind can be bought ready cased instead of being put in rough and eased by the joiner afterward. Where hard-wood is used for finishing around plumbing work, as is now enstonance, thick walnut is to be preferred. Other hard-woods now enstonary, black waterst is to be preferred. Other hard-woods contain sup or allhamen, which the warmth and moisture affect, but black walnut seems to be free from anything of the kind.

The modes of supply and waste adapted to bathe vary necording to tasto. The common arrangement for supply consists of separate hib-cocks, plated or not, for hos and cold water, and special hath-hibs are made, projecting but little over the edge of the cub. They may be compression or ground cocks, or on the Fuller principle, and can be bad with separate levers and a common could, so that the water is mixed as it flows; but this is more expensive, and may not work perfectly where the hot and rold water enter at very

different pressures

For waste, some form of valve, operated by a lever or lifting handle above the tao, is used with the more expensive fittings; but in ordinary cases a brass socket and strainer, with plug and chain, are considered sufficient. To connect the waste to the tub, instead of using a coupling attached to the socket, a circular depression is made in the copper of the hads, some three inches in diameter, and in the middle of it is ent a hole large enough to admit both the waste-pipe and the socket. The end of the waste-pipe is put through the hole, scraped bright, and flanged out; the bress straiger set in and solder poneol in mull the circular cavity is filled up level with the bottom of the bath, uniting lead waste-pipe, cooper bath-lining,

and brass socket, all firmly together.

A better method than this is to use the Scrimgeour bath plug, which screws down through the bottom of the tub into a socket below, this socket forming the end of a brass pipe connected with the lead waste-pipe. The tub can thus be disconnected from the waste

without cutting any pipes.

It is often desirable to avoid the noise of the falling water, especially where the half is situated near a bedroom. For this purpure the tub is made to fil from the bottom, and this is effected in various ways. The usual arrangement is to put in a strainer to the various ways. waste-pipe, without socket or plug, and earry the pipe a few inches horizontally ander the tub, till it reaches a large brass waste-cock, or a valve of some kind. Into the short piece of pipe between the waste-cock and the strainer the hot and cold supply pipes are entered, with ground stop-cocks, having long spindles exceeding to the tup of the inb. the lavers being put on above the wooden capping. The lever of the waste-rock or handle of the ralve is also brought one above the cap of the tub, usually between the inchand cold levers, and under each lever is a plate, engraved "Hot," "Cold," or "Waste," as the case may be. Sometimes a large four-way cock is used, with a single lever and plate on top of the bath. The plate is engraved "Hot," "Cold," "Shut," and "Waste," at different points on the circumference, and as the index on the lever is times? to the respective points the water is admitted at the bottom, lutter or colder as the index inclines to one side or the other, is shut off, or allowed to run to waste, as desired. This is a very next arrangement, but takes up four or live inches more in length than the

common made, which may be a disadvantage in a restricted space. Blessing's patent tules, which are sold at the Jennings Sanitary depart in New York, are supplied in this manner, but four-way tooks of the same kind are made by Joel Hayden & Co., and probably by other manufacturers, and can be applied by any plumber.

Where the same pipe serves for a short distance both for supply and for waste, as usually arranged for bottom supply, the first water that is drawn in filling the tub is agr to bring with it a scapy seum, which remains in the waste-pipe from the last use of the tub; and many plumbers prefer to introduce the water by a separate inlet close to the bottom of the tub, with a fan to mix the last and cold relese to the hottom of the tub, with a fan to mix the lot and cold water, leaving the waster-pipe for its own work, and this can then be arranged with plug and chain, or valve, as desired. "Adve's Bath Supply" is an arrangement of this kind, using a near plated cap over the inlet instead of a common fan of sheet copper soldared to the lining of the tub.

It is needless to say that no both should be without an overflow, connected with the waste above the trap. The both supply-pipes are five eighths or three quarter inch, according to the pressure, and are two eights of three quarter first, according to the pressure, and for the waste one and one half inch is large enough, though two-inch lead or from pipe is often used. The waste-pipe is very often connected with the trap of a neighboring water-closet, catering it below the surface of the water in it. This is not very objectionable, —at least it is better than to use a separate trap which siphous itself out, — lint a good, independent trap is to be preferred. There is little Hast it is better than in use a separate rap when spinors fiscal that a good, independent trap is to be preferred. There is little sediment to be feared, so that a well-ventilated S-frap is quite sufficient. Where ventilation is impossible, a valve trap, Waring's or Bower's, will be necessary to resist back pressure of gas, and will be here under favorable conditions for working well.

Safes of sheet lead, turned up at the edges, should be put under leafl-tubs in upper stories, where a leak would injure the rooms below, and the wall should be lined up with two-pound sheet lead some twelve or fifteen inches above the tub, the lower edge lapped over the edge of the released to the tub. over the edge of the tab, and the wantscoting or other woodwork put on over it, to prevent water from being splashed between the

Shower-backs are erranged in many ways, for horizontal or vortical delivery, or with several horizontal jets meeting in the course, but they are not very much used now. A diminutive form of shower known as a "Shangoo coek," consisting of a small, plated rose attached to a ruther tube, and supplied with hor and cold water is generally used as a substitute for the large shower, and is often fitted up over wash-basins as well as baths,

THE ILLUSTRATIONS.

LADORS AT THE EAST EXTRANCE TO GREENWOOD CEMETERY. MR. R. M. UPJOHN, ARCHITECT, NEW YORK.

THE problem was simply to provide a portor's locker, but as a bal-The problem was simply to provide a portor's longe, but as a balancing piece on the apposite side of the road has been put up a visitors' house. The road from the other or street gate to the inner or ecentery gate proper is one hundred and fifty feet in a straight line, and two thirds of this distance from the outside the buildings are placed. To the right is the visitors' waiting-rooms, with retiring-rooms, ballton the plan of a Greek cross; the main room, 17 × 17 feet, occupying one of the same, wille two smaller antercoms lead to the toller-rooms in the most retired arm. A hexagonal outline is given to the front room by truncating the corners. The floor is tiled, and the figish and firmthore are of black walnut. the finish and furniture are of black walnut.

The ceiling is finished in bays of black walnut showing stout beams, while about the room runs a cornice of the same.

teams, while about the room runs a cornice of the same.

At either of the angles of the cross-plan fouking upon the road are purches in stone, with triple columns at the angle and engaged columns against the roll of the building. Above the four approaches thus created are stoken tympina, on which are represented allegarical sculptures of youth, infancy, manhood, and old age, carved by Mofini. The exterior is entirely in Belleville brown stone, cut in coursed rock face work, and about the cornice runs a bold sculptured coulding in foliance. The coursel point of the building in foliance. moulding in foliage. The central point of the building is an ornamental chimney-stack, while dornars light four sleeping-rooms in the upper part for laborers or others. The main waiting-room has stained-glass windows. In the central one is a figure of St. Cecilia, the saint of sacred song and praise.

the saint of sacred song and praise.

Directly across the road from this building is the keeper's indge, a much more pretentions structure, though following the same plan. The arms of the plan measure 48 × 44 feet. In the central portion is the hall, with stairs leading from the first story, which is fourtuen feet high, to the second, which is nine feet in the clear. Above his ball the building is carried up into a stout, solid-looking tower, with windows above, topped by a slated road, the whole rising nearly sixty feet. Belleville stone is used throughout, although wooden piazas are built in places corresponding to the stone powers of the visitors' building. The interior plan gives a main room about twenty feet square on one side of the main hall, and two mome on the other. These fast rooms have square bays, which are carried out in stone, with cracketed parapets. The carving is very linely done, though it is confined entirely to foliage and architectural carving. The fluich within is of black walnut.

The gate posts are also in Belleville stone, and upon these special care has been bustowed, and their massive bulk has given opportu-

The gates in iron wrought at nity for some fine scalutured work. the anvil are worth a special visit for study. The entire east of the work at this entrance aggregates some \$30,000.

GALVESTON COTTON EXCHANGE. MR. JOHN MOSER, ARCHITECT, GALVESTON.

The building is 67×125 feet. The first floor has the halls and stairways and offices for a bank, and the second floor has the Secretary's and Directors' rooms and the exchange half. The latter measures 62×84 feet and is 98 feet high. The building is built of Philadelphia pressed brick relieved with Austin stone. The cornice is of galvanized iron, and artificial stone finish is used on the breasting. All the corved descritions throughout the building are designed from the matif of the cotton-plant; the crown ornaments of the front are a cotton bale with a rrown on it, "Cotton is King." On the side of the building the main point in the cornice is accounted by two shields with a bull and a hear respectively on them. The building will cast \$80,000.

THE HOTEL CLERY, BOSTON, MASS, MR. J. P. PUTNAM, ARCHI-TECT, DOSTON.

This apartment house, which was finished last spring, faces on the triangular space which is made one of the architectural centres of the city by the contiguity of Trinity Church, the Museum of Fine Arts, the New Old South Church, and other new buildings.

A MONUMENTAL DOORWAY DESIGNED BY MR. BERNARD VONNEGUT.

This design was prepared as a part of the regular work of the architectural class at the Massachusetts Institute of Technology at Boston.

THE ANTI-RESTORATION MOVEMENT.

Bany's first tirthing is always regarded with a poculiar interest; and the presentation of the first annual report of a new society, and the presentation of the first annual report of a new society, whether learned, scutimental, or social, is an occurrence of precisely corresponding importance. The infant phenomenon has by this time got beyond mere crowing and crying. It exhibits teeth, it is large for its age. It after a fashion walks—possibly talks. It is capable at being good, or naughty—certainly dear. It has developed a likeness to its mother, or its father—perchance its grandfaller if the old gentleman is very much looked up to—or its greatment if the old lady is easting about for a legance. Terhaps the simplest idea connected with its list building is that it has sueceeded in getting through one year of this world's joys and sorrows, and may therefore be expected to go on getting through an indefinite number more. So the "Society for the Protection of Ancient Buildings" has lived one year of a society's life, and commemorates the occasion by the delivery of its first Report of the Proceedings.

It is prefly well agreed on all hands that the raison of fire of this new association is a reality of some kind. No donot it has its little protences and pretentionsnesses, like all things else in our day. The

pretences and pretentionsnesses, like all things else in our day. The time has gone by, if it ever existed, when a public movement could be sustained without a certain modicum of clap-trap. But we are accessioned to be centent if the amount of this alloy be reasonably small in comparison with the weight of real metal, and it cannot be said as yet that the new society is mixed up with nonsense (to speak plainly) in any such degree as to arouse public suspicion, far less public displeasure. Accordingly, in the Report now published, although there is perhaps a little strong language to be found, there is quite as much good sense as we could have expected. In the fol-

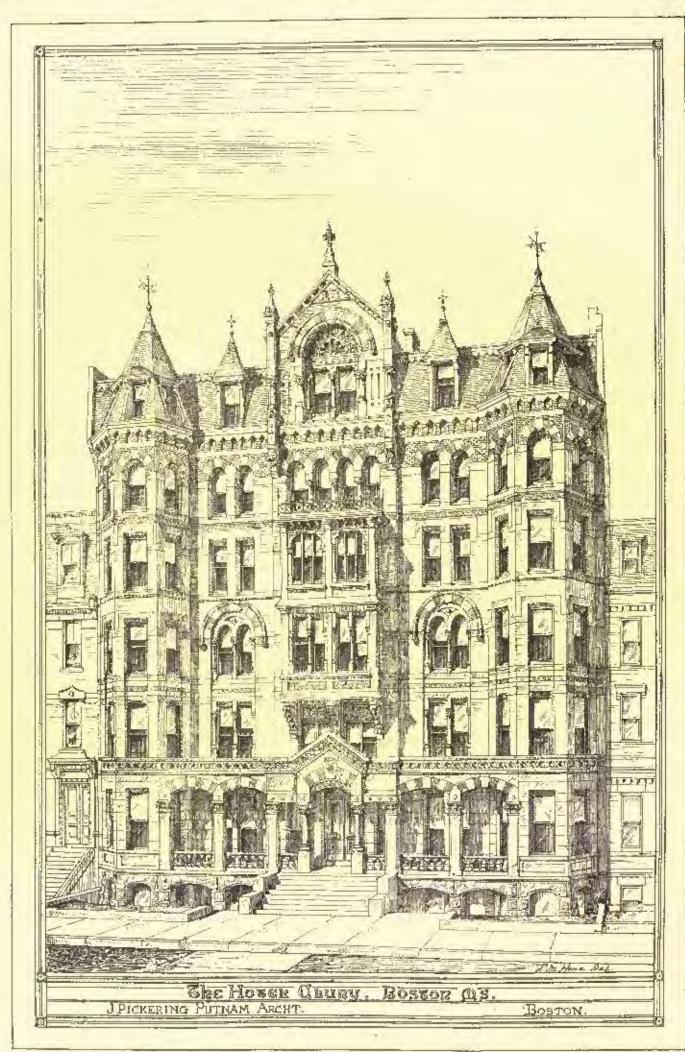
lowing years there may be more.

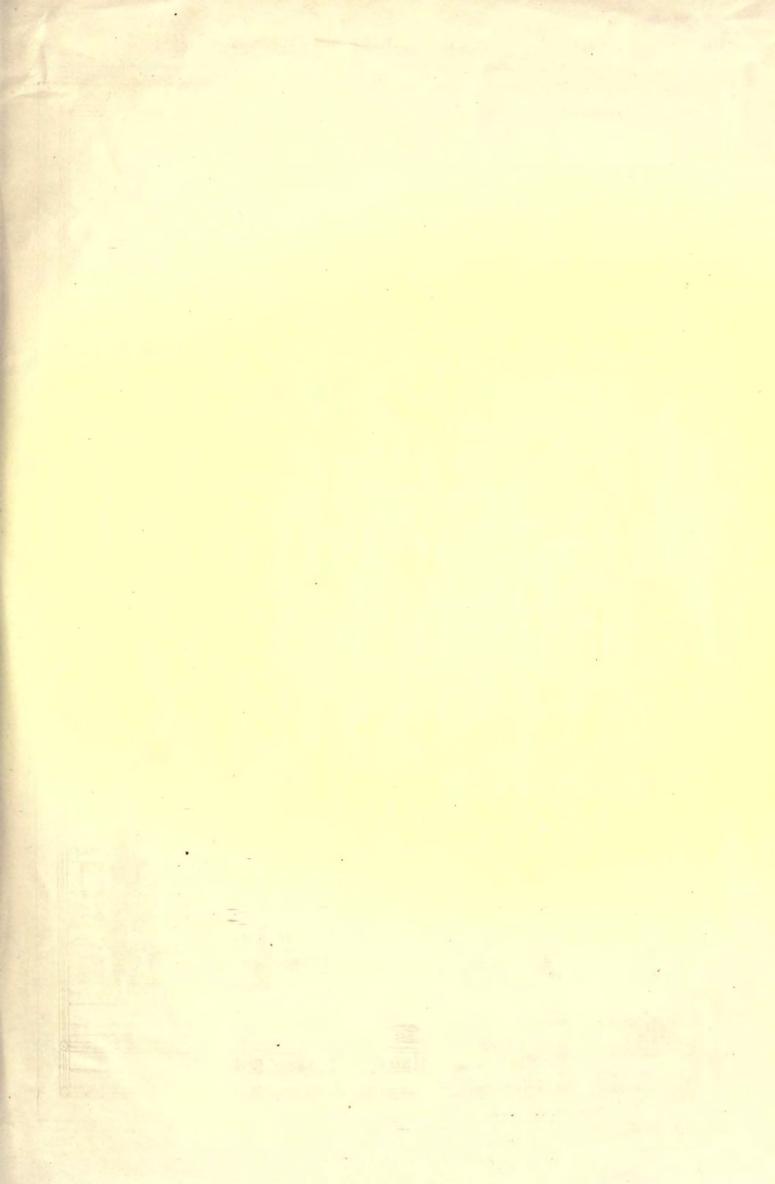
It is not to be supposed that this particular confederation — based upon cuthusiasm as its first principle — should be altogether sober-sided. Serone it may be, and even severe, but of necessity it is indignant. Anger, indeed, would not be too strong a word to signify rided. Serenc it may be, and even severe, but of necessity it is indignant. Anger, indeed, would not be too strong a word to signify the feeling which has given it birth and which still affords it surremaner. Not a few of its leading men may even be thought to sulk; some appear to go so far as to pant with suppressed wrath, as if, like the prophet of old, they did well to be angry with destiny. "The work to be done is beavy," save the Report; "mere cynically brutal destruction, not veiling itself under any satisfic presence, is only too common." From a fraternity of artisfic intellects, impelled to the protection of artisfic treasures, these words come with the true old ring of what used to be called generous rage; and not only are they entitled to public consideration, but it must be borne in mind by rooter critics that they would never receive it if they were not somewhat argent in their carnestness.

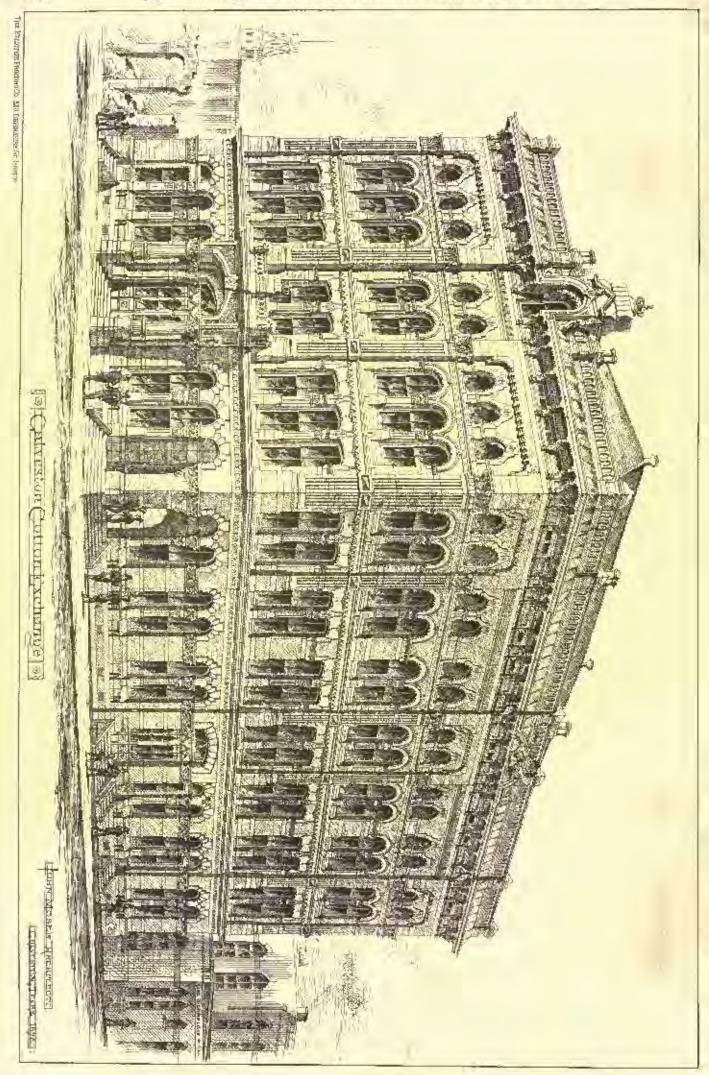
"The Society." we are further told, "has already been much noticed by the Press, always with respect, and generally with unqualified approval." This, we think, is very fairly put, and it is to the credit of public opinion, mite as much as of the Society itself, that this is so. Ancient buildings have long, if not always, been held in instinctive esteem amongst us. Since the zealous times of the Reformation, which were quite exceptional, the common people of the country at large have regarded them — whether charches, castles, houses, or even tomble-down taverns — with filial reverence everywhere. The gentry were never of any other mind. The middle classes in the bustling towns, and their busy work-people, may have been too much occupied to think of such matters; but even they, we are inclined to suppose, have never really been onlice unim-

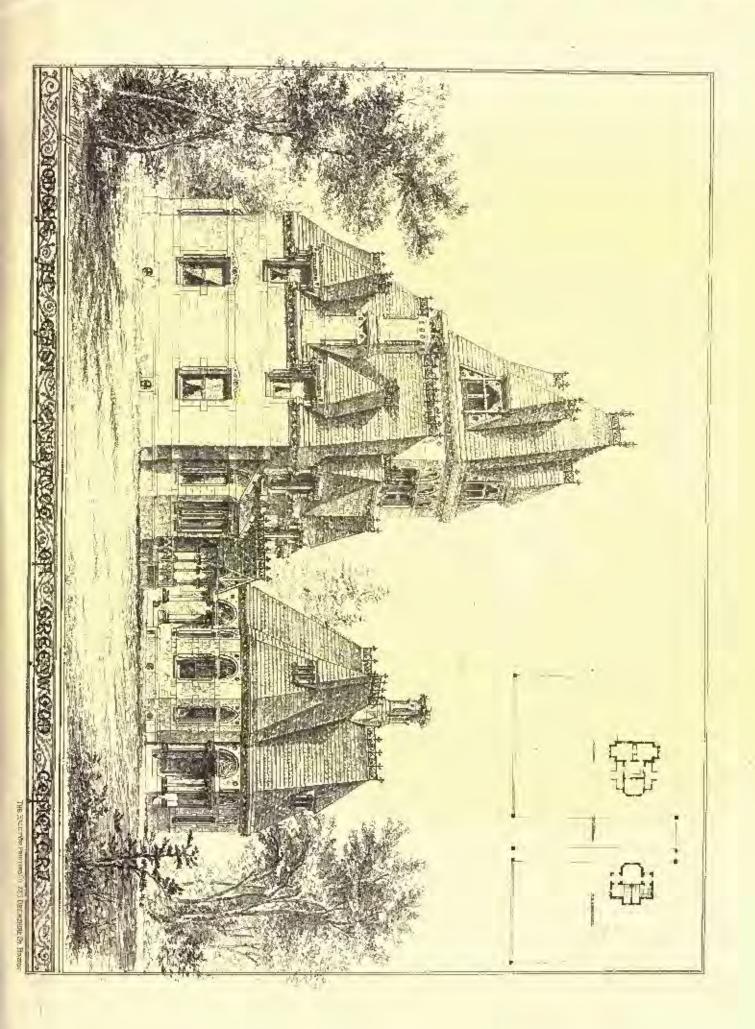
have been too much occupied to think of such unitiers; but even they, we are inclined to suppose, have never really been quite unin-



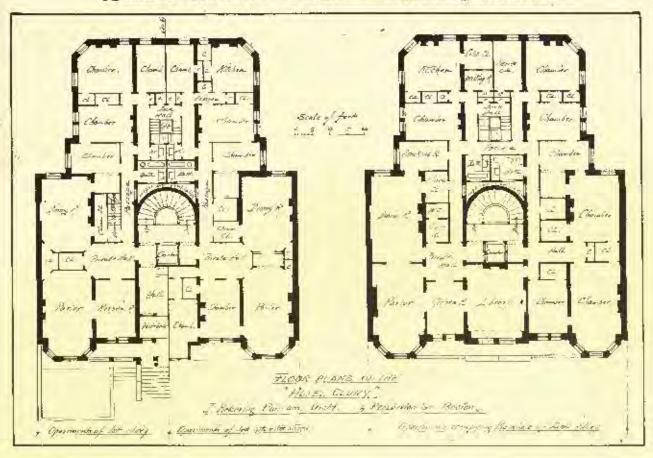


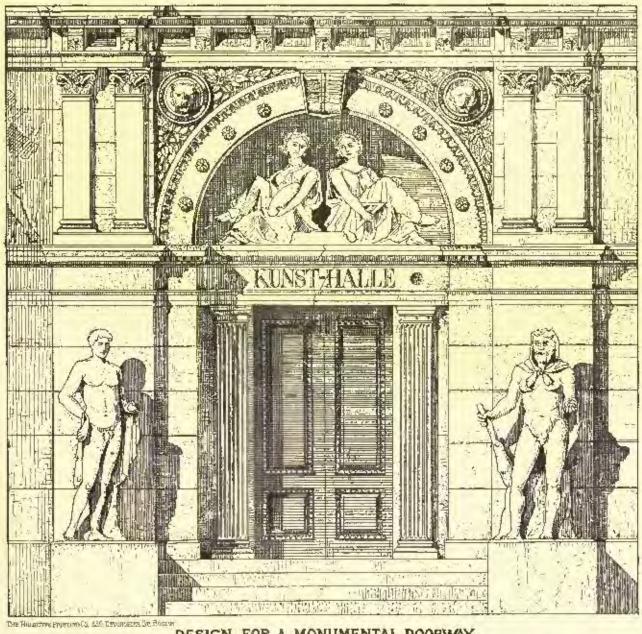






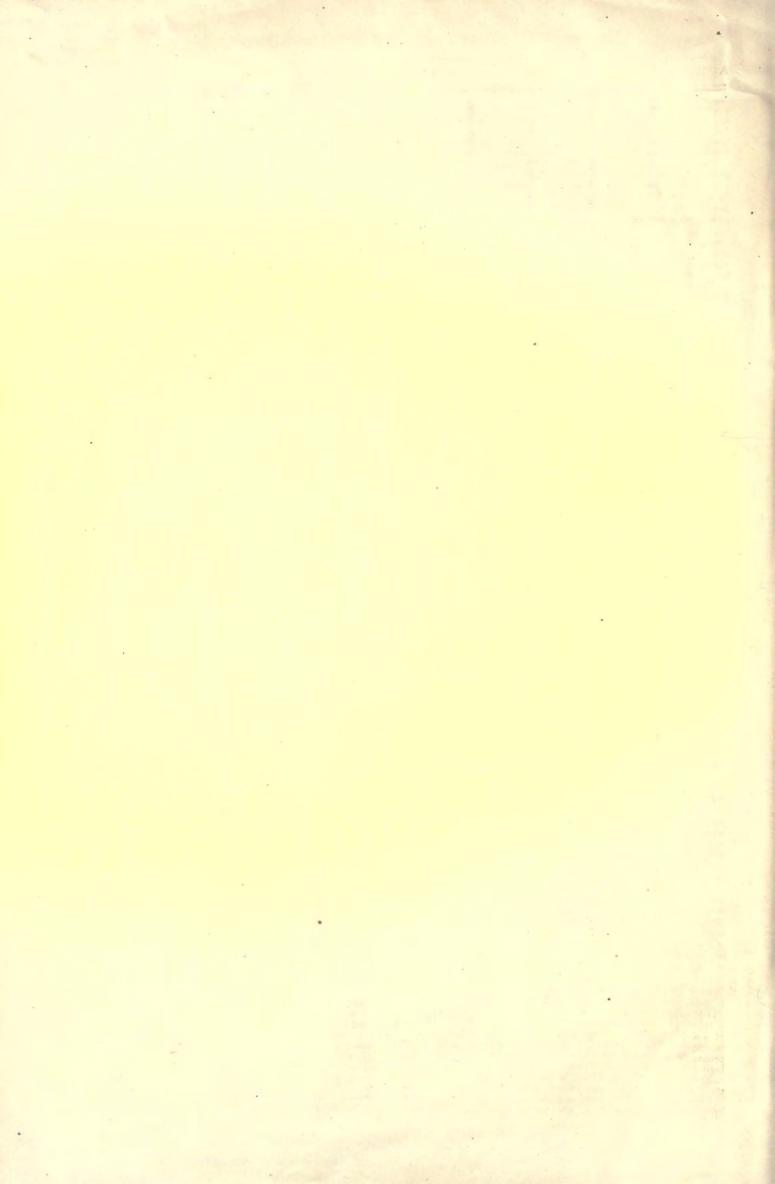






DESIGN FOR A MONUMENTAL DOORWAY

BY BERNARD VONNEGUT



pressed by the occasional sight of a ruin of the past. Who, then,

pressed by the occasional sight of a ruin of the past. Who, then, are the people of whom the Society complains as the wreekers of our old and venerated monuments of building; and do they err through ignorance or of set malice? To these questions the Report, although only the first of its kind, ought to afford an answer.

The answer, as we understand it, is that the English people of the better class are apathetic. Nobody seems to be chargeable with a positive desire to destroy. The Report speaks of "mere cynically brutal destruction," it is true; but this is a figure of speech. We have not even a class of fanatical non-conformits who regard an old church with hely aversion; all that remains of a most of granter fails. church with holy aversion; all that remains of a mosted grange fails to awaken in the breast of an advanced liberal one pang of combetween the two tends of an advances thereof one pany of com-betiveness; and the toppling gables and creaking timbers of a dilap-idated ale-house scarcely remind the assembled topers of any more practical consideration than ghosts. But people who ought to know befor are apathetic.

before are apathetic.

There are, at any rate, as many as seven hundred and forty-nine ancient churches in England and Wales which the Society has its eye upon, being happily, as yet, "quite intrustored;" and (to come to business) these are the sort of remains that the Society desires to deal with in a practical manner. Thousands of such churches have been "restored," more or less, with a reageance; hun "it is one-couraging to remark that so great was the mass of fine multiturium left up by our ancestors, that in spite of all the damage flone by restoration and destruction there is still much left quite nation-bod, besides what has been left nor interly falsified." For the Society has good reason to hope that, the seven hundred and forty-nine being situated, for the most part, in six counties named, there may be has good reason to hope that, the soven montred and forty-nine neighbor stuated, for the most part, in six counties named, there may be discovered in at least twicke others some corresponding average of aqually unsophisticated relies in England alone, leaving almost the whole of Wales, with Scotland and Ireland, to be still explored. The argument is therefore clear; the society for the protection of these ancient edifices from that destruction which is called restoration has not been set on foot a day too soon, but a good many years too late; the utmost enthusiasm which it can brure to been upon its task will not be too much for the occasion, nor the utmost alteration which it can persuade the public at large to bestoo upon its work. Postpaning for the moment, as beyond its reach, all action on foreign soil, and leaving comparatively unwatched those remains which are the property of private individuals, here we have a goodly num-ber of hundreds of old churches abone, which, it the public in general, who virtually own them, do not very emphatically take into their direct custody, will be toolishly adulterated by architects and parsons, by means of a vile process of damilfying until in effect nothing of them all will be left for the admiration of the patriotic student, or even the gratification of enclosity in the mere passer-by. Most people of intelligence will be disposed to hazard the assertion that an appeal of this kind will not be made in vain at the present day to Englishmen and indeed Englishwomen of average education. As the same time it does not follow that we can clearly see in what way the preservative or protective influence of the Society is to be actually exercised in practices.

There are two great classes of offenders against the principle for There are two great classes of offencers against the principle for which the Society is contending, namely, occlesiastical architects and parsons, that is to say, the working church designers and the working chergy. Thusu parsons are the positive descroyers; the only fault of their abettors is apathy, rather than direct encouragement. In other words, the general public are charged with the negative offence of standing by while the crime is committed. It is the architect and the parson who seemid the crime.

It interests us of course to inquire in what way the architectural profession are receiving the Society's appeal, and it is to be feared they are not receiving it well. The commonplace English architect is not to be expected to do so. Arristically, he lives from hand to mouth, waiting upon Providence. He does not proceed very much upon first principles. He is a somewhat auxious, hard-working man, who reads very lew books or even newspapers, and writes a great name letters—nearly to know his buildness wing and navely to hand many letters, — partly to keep his builders going and partly to hunt, up work. He cannot afford to be too particular; he professes artistic enthusiasm as matter of business, but he knows well that fastidiousness and five per cent might clash. He goes, therefore, for the most part, in a ring, like Dobbin at the null, and it is a misadventure for him if things do not work smoothly. Of what avail is it, then, to appeal to the patriotic soul of such a practicioner? Not

Turning, therefore, to the average parson, let us inquire what is to be done with him. It need scarcely be remarked that, professionally, he is not a very scrong man. His chief rule of life is to be the professionally, he have a harmless course unlike the manifold termine. "nice"—to steer a harmless course amidst the manifold temptations which provoke him to become unpopular. As regards his church, all he wants to do is to make that, also, as nice as he can, in order to please those people, the salt of the earth, who are nice like himself. He likes archæology, because it is popular with nice people. It is not to be doubted for an instant that the broad maxim of a society for the protection of imaginary ancient buildings from imaginary destruction by restoration will meet with his various to imaginary destruction by restoration will meet with his warmest approbation, and he will be found to make himself, as usual, exceedingly agreeable over the subject to the very nice old lady he takes in to dinner. But, by the time he has become better acquainted with the Society's actual purpose, and has listened, perhaps, to an impassioned speech delivered by some one of its principal enthusiasts.

to a gaping addience of his villagers, he probably comes to doubt the alceness of a doctrine which requires so much heat for its development, and will heatlate very considerably before he commits himself openly to the abandonment of a long-cherished purpose to restore his church, simply because a new-tangled notion has spring up for the preservation of ruin as the expense of both that comfort and that significant which are so dear to all the nice people be known.

It is said, however, that the new Society has certainly begun to make its influence felt, and that, in fact, there are cases to be quoted in which destructive restoration has been averted through judicious representations. This of course is practical business, and nothing else is so. But the Begunt may well say this reach to be denoted by is so. But the Report may well say "the work to be done is heavy," for the work in reality is nothing less than to keep a watch over the whole of England, so as to anticipate disaster before it has taken thu whole of congrains, so as to accompany disserter before it has taken the actual form and substance of a nice restoration and an architect's free. To natack the enterprise after it is matured will always be most ungracious. Even when successful—as it frequently may be—it most give rise to popular commotion, which will be regarded as a correction is worse than the disease; and if popular architecture, and still more require always are to be delegated to the alternative as a one that is worse than the disease; and if popular aremteets, and still more popular elegymen, and to be driven to the alternative of titler defending their schemes of restoration or submitting to be subbed and even vilified, the work of the Sessety will be indeed heavy. Nevertheless, we wish it success heartily, and will only add heavy. Nevertheless, we wish it meeess hearily, and will only add that it will do well to perform its function discreedy. To put an saure stop to destructive restoration by intellectual violence may be impossible, but to scenar an equivalent result in a great measure by coaseless persuasion of the public mind is what may be accomplished, purhaps, more effectually and more quickly than is expected. — The Architect.

THE SEWAGE SYSTEM OF PARIS. - I.

The area unclosed within the fortifications of the city may be put the area unclosed within the formleanous of the city may be put down at 19,000 meres. The quantity of water distributed for miscellaneous service over this area per day is about 10,000,000 gallons, and the average daily rainfall is some 22,000,000 gallons. About twenty per cent of this quantity is absorbed by evaluation, leaving 54,400,000 gallons to be death with. This water is leaded with the dibbit from the streets and the impositive frames are seen as the impositive frames. 54.400,000 gallons to be dead with. This water is loaded with the dishers from the streets, and the impurities from manufactures, house teluse, stables, etc. The sewage, properly so salied, does not enter the sewers, as it is dead with separately. Roughly speaking, there are about 100,000 water-closets in Paris, or which a small proportion is provided with separators that retain the solid excreta, while permitting the liquid portions to pass into the sewers; the remainder are chiefly captied into cesspacis. The present system is of very recent data, but partial drainage works for conveying the sewage into the Seine were constructed at a very early period. In 1831 the remains of severs dating from the time of Philippe le Bel were found underneath the Palais de Justice; but the condexits them formed were only for the service of a few palaces or other important buildings. In early times the nity discharged its sawage into the Seine, the university quarter on the left bank into the Bilivre, and she town, properly so called, into the Ménilmontant brook. As for the neighboring slopes of Charonne, Ménilmontant, Bedeville, and Montmartre, the permis surface soil absorbed a large proportion of the sewage, which—partially filtered—found its way into the Seine. The brook of Ménilmontant was through several centuries known as the main sewer of Paris, and many roughly constructed channels is provided with separators that retain the solid excrem, while perthe main sewer of Paris, and many roughly constructed channels were made from time to time to converge into it. About 1550, un-ale, and the Faubourg Montmartre as far as the present boulevards. In the course of this work he made the sewers navigable from the Arasmal to the Porte de la Conférence, and constructed near the walls of the city a large sewer twelve feet in width. At this time there were about 12,000 yards of sewers of all kinds in and around there were about 12,000 yards of sewers of all kinds in and around Paris, the greater portion in so bad a condition that many workmen employed in repairing them were killed. It may be worth noticing that the physicians of the period, on impicing into the cause of these deaths; so far from recognizing the real reason, reported that the men in question were killed by the stars of a basilisk which they asserted inhabited the sewers. In 1667 the service of police was created, and shortly after a municipal ordinance enjoined an annual inspection of the sawers by the various prévots, who were to take steps for their maintenance. But in spite of this, matters went from bad to worse, the sewers became chaked and absolutely useless, even to convey the seware into the Seine, where it had so long been even to convey the sewage lute the Seine, where it had so long been a grievance to the water-side population; and on the 24th of April, 1681, a decree was issued for the formation of a commission to study

the whole subject and devise a remedy. In a map of Paris flated 1592, the brook of Ménilmontant as it then existed is shown. The banks were sloped and planted with trees, and its principal tributa-ries were the rewer from the Rue des Egouts, between Rue St. Martion and Rue St. Denis, the Montmartre sewer, and the Gaillon sewer, which afterwards was converted into the Rue de h. Chaussée-d'Antin. The land in its vicinity was deserted, for no houses could be occupied near it. But it was not till about 1736 that extensive operations were undertaken to ameliorate the condition of the city. Michel-Etienne Turgot, father of the great ministur, un-gaged seriously in the work; he constructed an open channel in stonework, and provided means for its easy cleansing, and be formed also a reservoir at the end of this causal to receive the contents of the Belleville sewers, which then formal through the good. Belleville sewers, which then flowed through the canal. A map, dated 1765, shows the extent of the works carried out by Turgut. The canal followed the Rue des Passes-du-Tunplu, where for part The canal followed the Rue des Passes-du-Temple, where for part of its length it was arched over, but was left open between the Porte du Temple and the Porte St. Martin to receive the Sawor du Temple and the Sewer de la Craix; it then passed through the faubourgs of St. Martin, St. Denis, Montmartre, and Poissoniere, and was there partially covered over and planted with tree. It was left open again to receive the sewer of the Rue St. Lazare, and passing beneath fine de la Chaussde-d'Antin, it penetrated through the Pairbourg St. Homors, and the middle of the Champs Elysées, to fall into the Seine. Gradually the work of extending and improving the sewers was carried on, and in 1806 there existed about 72,700 feet covered, with the execution of 5,200 feet. During the ing the sewers was carried on, and in 1500 there existed about 22,700 feet covered, with the exception of 5,200 feet. During the reign of Louis Philippe about 80,000 yards of additional sovers were made; but their usefulness was only partial, and the satisfacy condition of the streets was bad in the extreme.

In 1855 the works which were to transform the whole system of sewage collection were communed, the projects having been previously elaborated by the late the Religious Linguistics of Sewage.

Chaussess. At that time there were about 115,000 yaeds of sewers for 425,000 yards of streets, while at present there exist some 175,000 yards of streets. About 148,000 yards is the length of the service drains of the dwelling-houses. The system as now corried out is divided into two classes, the sew-The system as now carried out is divided into two classes, the sewers and the collectors; the former receive the street and house water, and conduct it to the collectors. The latter are constructed along the lower levels of the city to receive the natural drainage, as well as the contents of the sewers. They are three in number. The first is on the right bank of the Scine, and is known as the Departmental collector; it commences as the point of intersection between the Rus Oborksmipt and the Rue Meinlimontant, and passes under the old be devords. Its course is broken by those heads, by which is crosses the latin of La Villette, the fortifications, and the Grande Rome St. Penis, and it falls into the Scine near the He St. Oren. The sewage dealt with by this collector is of the worst kind, containing as it does the impurities from the abuttors, the east works. taining as it does the impurities from the abutions, the was works taining as it does the impurities from the aluttuirs, the cas works, the factories of La Villette, Montmagne, etc., and even the overflow from the limity dipole. The second collector on the right bank of the river commences at the Arsenal basin, following the quays, and ranning under the Rue Royale, the Boulevard, and line Malecherbes, it traverses the Route d'Asnières and falls into the Seine above the railway bridge. At the Place du Châtelet it is increased to receive the contents of the collector of the Roulevard Senastopol; at the Place de la Concorde the sewer of the Rue de Riveli joins it; at the Place de la Madekaine it absorbs the sewer of the Petits Champs, and at the increased the Rue de la Madekaine it absorbs the sewer of the Recherbes and the Rue de la and at the junction of the Boulevard Malesherhes and the Rue de la Pépinière, a sewer following the course of the brook of Menilmontant flows into it. On the left leank there is only one collector, which at its communication also be the river Bievre, that at one time used to flow into the Seine above the Pont d'Austerlitz. The collector taking this stream caus behind the Jardin des Plantes, towards the baking this stream runs behind the Jardin sies Plantes, towards the Boulevard St. Michel, when it passes along the quays as far as the Pont d'Alaux; here a double siphon takes it across the river, when the gallery passing under the height of Chaillot and the Avenue Wagram, crosses the village of Levallois-Perret, and joins the collector on the right bank last described, about 550 yards from the point of discharge. Near the Pont d'Alaux on the left bank, it reectives the Montparnasse sewer, and the Grenelle collector; on the right bank the Amentl collector falls into it.

right hank the Amend concerns thus the distance of the galleries, we as an indication of the form and arrangement of the galleries, we may give a few particulars of the great collector on the right bank, the course of which has been already indicated. The section is a gradually increasing one to accommodate the discharge from the vagrantady meterating one to accommodate the discharge from the various tributaries flowing into it. The sewage water flows in a channel, on each side of which is a paved sidewalk, the whole being enclosed within a semicircular arch. The collector is composed of four different types, Nos. 6, 5, 3, and 1. The total length is 27,207 feet, and the lengths of the different sections are respectively 2,295 feet, 2,855 feet, 7,019 feet, and 15,039 feet. Type No. 6 extends from the canal St. Martin to the Rue St. Paul; type No. 5 from that noint to the Buthward Schastoral: type No. 8 from the feet and from the canal St. Martin to the Ruc St. Paul; type No. 5 from that point to the Boldevard Sebastopol; type No. 3 from the Boldevard Sebastopol to the Place de la Concorde; and type No. 1 from this point to the discharge at Ashieres. Type No. 6 is 8 feet 25 inches wide at the point of springing of the arch, the height from the side galleries to the point of springing is 4 feet 11½ inches, and the side walls are curved with a radius of 18 feet 9½ inches; the width of the side galleries is 80½ inches on one side, and 15½ inches on the other,

and the width of the channel is 31½ inches. The depth of the channel in the middle is 15½ inches, the invert being curved. The thickness of masonry is 10½ inches inside the invert, the bottom of the structure being flat, 7 feet 6½ inches wide. The thickness of the side walls and areh is 13 inches, and the interior of the sever is covered throughout with a lining of rement 1½ inches thick. The outside of the arch is also protected with cement. Type No. ō is 9 feet 10 ½ inches wide at the springing of the arch, the height of the side walls to springing is 4 feet 11½ inches, and the radius to which they are curved is 12 feet 9½ inches. The widths of the sidewalks are 27½ inches and 19½ inches respectively, and that of the channel is 4½ inches. The depth of the latter is 31½ inches in the centre and 27½ inches at the sides; the thickness of walls and arch is 13 inches, and the thickness underneath channel is 11½ inches. The nuderside of the structure is flar and about 6 feet wide; and the width of the channel is 311 inches. The depth of the The nuderside of the structure is flar and about 6 feet wide; inches. The nuderside of the structure is flar and about 6 feet wide; this, like all the other sections, is flued throughout with compact. Type No. 3 is 13 feet 1½ inches wide at springing; the height from sidewalks to springing is 35½ inches, and the side walks are curved with the same carins as the arch, so that the section of this type is more than a semicircle. The sidewalks are both 27½ inches wide, and the channel is 7 feet 2½ inches wide. The depth of the latter is 33½ inches in the middle and 31½ inches at the sides, the thickness of mesonry under the channel is 17½ inches and at the sides it is 23½ inches. The under side of this section is our ret on the exterior. Type No. 1 is 18 feet 7 inches wide at nuthering, and 23 feet 7 inches Type No. 1 is 18 feet 3 inches wide at springing, and 23 feet 7 inches wide on the outside of the masonry, the and is elliptical and the height from springing to centre is 6 feet 4 inches; the side walls are convert and are 3 feet 5 inches high from the calewalks to the point of springing. The walks themselves are 2 feet 11½ inches wide, and the width of the channel is 11 feet 5 inches. The depth of the latter is 6 feet 11 inches. - Engineering.

THE COMPETITIVE DISIGNS FOR TRINITY CHURCH, ST. JOHN, N. B.

The readers of the American Architecture aware that, as the result of a close competition, Messes Parter and Robertson, of N York, were appointed architects for the new Triaity Cherch. T work was advertised for tenders, and the excavations for the foundations were liegun, but for some reason or other (report line it on ac-count of the tenders received being considerably higher than the estimates of the architects) the work has been taken out of their hands. Some time ago circulars were received by several architects in town, inviting them to send in drawings in competition; and in reply to this, notwitheranding there was no inducement held one in the form of premiums, ten rets of drawings have been received, all representing a certain amount of labor and time, if not thought, in their preparation. If we fix the moderate sum of one hundred dollars as the value of each, the whole would represent one thousand dollars worth of work. It is humiliating to the architectural fraternity, that in order to get work they have often to give so much for nothing; but computation here is somewhat keen, and the profession is not held in the highest respect.

With few exceptions the designs exhibited are of a very mediocre description. As a general rule the architects on this side of the Atlancie fail to get the true spirit and feeling of English Gothie in any work of this kind they attempt. The lack of study and the absence of examples of old work in a great measure account for it. There is a constant tendency to run off into vagaries and inventions that

For instance, in the set of drawings marked No. 2 there is some trocery of the most funtastic form; it is original, but no improvement upon anything seen is old work. The roof in this design is formed in very rigid lines, which would not look well in execution. Much tabor has been bestowed on the plan, even to indicating the position of the gas fixtures. One good leature it curtainly has: the wooden posts, in the position where have columns or piers would come, are placed close to the side walls of the phurch, and form no obstruction io sight.

In No. 9 we have a carefully drawn design in a late period of fiorbic, perhaps too cluborate. The height from the ground line to the apex of the spire is 250 feet, by scale; and how such a church and spire can be built for the money appropriated is past all com-

prehension.

No. 4 exhibits a very weak-looking design. It does not evr like No. 9 in being too costly, for the windows are devoid of tracery, being simply oblong openings with pointed arches pierced through the wall. The tower and spire are badly proportioned.

Design No. 10 is represented by highly colored drawings. Though the proportions are somewhat good the style is not very pure. In the tower and west end there are some openings 20 feet long and a inchas wide.

6 inches wide.

No. 8 is on the whole superior to the other designs; the proportions are good, and there is a better conception of what Gathie art is. Some of the detail has not been studied; the buttresses to the tower look thin, and the clock has the appearance of an adjunct to the de-

The design marked No. 1 is the only one represented by slevations finished in peneil, and does not attract much attention. It is in the Early English style, and shows a thorough acquaintance with The school and lecture room are particularly well designed, but it is probable that this design is not florid enough for

the public taste.

It will be somewhat curious to watch the result of this competition. So far, no sign of calling in professional assistance has been shown. Will the building committee consider themselves the bost judges, or will the work be given to the competitor who can bring the most influence to bear on the committee, irrespective of artistic merit in his design?

THE DECORATION OF THE PROVIDENCE CUTY HALL.

TO THE EDITOR OF THE AMERICAN ARCHITECTS

Dear Sir, - There has recently been held in our neighborhood an nousual and extremely interesting competition, namely, that for the interior decoration of the Providence City Hall,

Having had the pleasure of seeing some of the drawings offered. I can say that they were of a high order of merin. The fact of the competition having been entered into by Messrs. McPherson, La Farge, Rinn, Frank Hill Smith, and others, is a sufficient guarantee of the varied character and treatment of the subject.

Now, sir, as such an opportunity solding occurs, and as the competitors would doubtless be willing to loan their sets of drawings, why could they not be hung for a few days in, say the gallery of the Art Club, for inspection? I am aware that it is now the "dead sea-Art Club, for inspection? I am aware may new now to some sear-son," but before the autumn the drawings may have become sear-tered, interest lost, and the matter forgotton. Can we not see them W. G. P.

THE DRAINS AND TYPHOID FEVER!

THERE is no longer any dispute concerning the chief vehicles by which the specific contagion of typhoid fever is conveyed. These are the air that we breathe and the lightly that we drink. Probaps we may narrow the question still more, and ascribe to the action of the air only the indicest conveyance of the contagion to the sconnel; for there are indications that as the contagions of typhoid fever proeceds from disorders of the alimentary canal, so it is only the sur-

The poison of the almentary canal which are susceptible to its attack.

The poison of the air may be direct or indirect. That is, it may be due to the exhalations of decomposing matters in dang-heaps, pig-sties, privy violes, rellars, cosspools, drains, and sewers; or it may be due (according to Pettenkofer) to the development of the poison deep in the ground, and its escape in an active ground exhalations. The water, milk, e.g., which we drink may be concerning ted by the absorption of four odors from an with which they are in contact, or by the direct admixture of organic matters bearing the elements of infection. There is such a multirule of possible sources and channels by which the infection may be brought to us that it is often almost impossible, in first cases, to determine which has been actually in operation; but the original case being established, it becomes comparatively easy to trace the channel of its influence in the production of further cases.

All the fearning of the ages has laught as no better formula to express a perfect sanitary environment than the old one of Hippacrates: "Pure air, pure water, and a pure soil."

If we would turn typhoid from our doors, and literally stamp in out as an epitlomic, we need only to insure this condition in its integrity. We may still import single eases from loss cleanly neighborhoods, but it will be our hault if we permit it to attack even one

of our own community.

I have previously cited the case of the outbreak at Over Darwen,

in England, us follows:

"There has recently been an investigation into the origin of an outbreak of fifth fever" in Over Darwen, England, the origin of which for a long time eluded the careful search of the authorities. It was finally worked out by a sanitary officer sent from Landon. The first case was an imported one, occurring in a house at a non-siderable distance from the town. The patient had contracted the disease, came home, and died with it. On first inquiry it was stated that the town derived its water supply iron a distance, and that the water was brought by covered channels, and could not possibly have been polluted by the excreta from this case. Further examination showed that the drain of the closet into which the excreta of this policy was proved counted itself themselved the proved for this patient were passed countried itself through channels used for the irrigation of a neighboring field. The water-main of the town passed through this field, and, although special precautions had been taken to provent any infiltration of sewage into the main, it was found that the concrete had spring a leak and allowed the contents of the drain to be sucked ircely into the water-pipe. The poison was regularly thrown down the drain, and as regularly passed into the water-main of the town. This outbreak had a fermity that attracted universal attention; within a very short period two thousand and thirty-five people were attacked, and one hundred and four died? died.

Liebermeister says that typhnid dejections, conveyed in night-soil

spread as manure upon the gathering ground of an aqueduct, so concommuted the water supply as to produce an epidemic of typhoid fever among the population using the water. Similar instances might be cited almost without number. Indeed, there is among inrestigators no difference of opinion as to the communication of the disease by means of drinking-water thus polluted. There are many instances recorded of the contamination of the water of wells by the transmission of freed matters through the soil from adjacent privy vaults and cesspools.

Nut only does the infection follow the course of water to which it has gained secoss, or find its means of discomination in the exhalations of decomposing filth, and thus contaminate the sir which we brembe, but these exhalations are readily absorbed by water, which is espable of holding the poison, to the detrinent of those who may think it, and of transmitting it again to air with which it may be in On the contract. Many cases have been reported similar to that cited by Dr. Carpenter, lealth officer of Conydon, who traces the origin of an authorstk to the drinking of water from a house cistern, to which air from the public sewer had been led by the pipe serving as an overflow for the cistern.

Especial danger attaches to the use of water-leaps, or water hold in the bends of waste pipes, soil-pipes, etc., when these are the only barrier between the interior of the bouse and a sewer or cesspool containing lyphoid dejections. The retained water absorbs the posson as its outer or sewer end, becomes surerated with it, and gives

it off to the air in the house and of the pipe.

There is reason to suppose — reason almost sufficient to scoure re-lability — that the poisonous element is developed and made efforfive only when the decomposition of the faces containing it takes place in the absence of a supply of fresh air sufficient to carry it on in the most rapid and healthy way. In other words, active uxidation, whether produced by oxidizing disinfectants, by the operation of atmospheric oxygen, or by the islensified oxidizing power of the of almospheric exygen, or by the beleasibed oxidizing power of the contained gases of porces material, seems to prevent decomposing laters from assuming a condition favorable to the development of infection. The evidence in support of this theory is of course of a negative character, but it is extensive, and, so for as the writer knows, it is accepted by leading physiologists.

Typicold fever is not produced by exhabitions from the surface of lands integrated with the discharge of such sowers as have a rapid and continuous flats and the discharge of such sowers as have a rapid

and continuous flaw, and thereby deliver all they receive before it has had time to undergo decomposition. There is no evidence that typhoid fever is caused by the contained air of thoroughly ventilated system have never additional an instance where typhoid fever, or any other cognitio disease, has followed its well-regulated use. In The Lanced of March 6, 1869, Professor Rolleston, serling forth his objerrions to the earth cluser, said: "If I are told that the earth closet is inollousive, and that the privy is foold. I answer that a rantesnake is none the less dangerous because its rattle is removed; and that, for anything shown or known to the contrary, odor is to infection, deadorization to disinfection, what the noise of the serpent is to its bite." It is nine years since this was written, and amid all the voluminous reports upon the dry-earth system there is no word to sustain Dr. Holleston's fears. On the other hand, together with much else of similar purport, the evidence of Dr. Monat reports that in those jails of India whose the earth system is used even at the time of the most serious cholera epidemics, this disease, which is so like typhoid in its mode of transmission, never gains a footbold One would almost be justified in replying to Professor Rolleston that it is not a question of removing the rattle, but of killing the snake. Investigations made to determine the momerial value of closet earth used many times over indicate a total and absolute de-struction, not only of the other but of the whole continutible material of the added faces. The result has shown as complete destruction as would attend burning in a furnace.

The physician in considering the treatment of the uniterial in question has one of two sets of conditions to deal with. The feetal wastes of the household which he is attending are either removed by water carriage, or thrown into prive vants. If by water-carriage, they are delivered into a public sewer or into a resspect. Sewers, as they namely exist, and corspools always and invariably, are so gircumstanced as to favor the thorough development and multipliestion of the morbille nesterial under consideration. Unfortunately, sewers and cesspools are so connected with the interiors of houses, with others as well as with that where the disease originated, as to make them too often the means for conversing a sporadic case into a centre of infection. Even the house drains and sail-pipes through which the excrement passes on its way to the cesspool or sewer are very generally as bad as these final receptacles themselves.

Where water barriers are supplemented with one of the many mechanical check valves recently introduced, this means for the return of the infection is shut off. Where the soil-pipe and drain are iscely open at both ends for the transmission of a current of at-mospheric air, the danger of the development of the poison is greatly reduced. If not entirely removed. But even here, although we may feel scenre so far as the immediate household in question is coucerned, it is to be remembered that, at least in the case of a priolic sewer and of a desepool continue to several bounds, the matter disposited may produce its injurious effect in other families which are loss well protected against it. Even where the cesspool is con-

¹ From a Paper on "The Causation of Trybold Pever," by O. R. Waring, Jr., C. E., published in the Boston Medical and Surgicul Journal, to which was awarded the prim of the Rhede Island Medical Society

nected with one house only, to permit the specific poison of typhoid fover to enter it and to spread itself through its accumulated fifth is to incur a dauger akin to that of establishing a gaupowder vault in

one's hack yard.

It may be advisable to refer beiefly to the manner in which, and the degree to which, the general health is influenced by exhalations from decomposing organic matters in sewers, house-drains, vaults, casspools, and cellars. It must have been the frequent experience of all physicians that every question as to the lainting of the air of a house from these sources is met by the assertion that no bad smell has ever been perceived. In the first place, the accustomed nostriis doll to dietect a constant odor, and in the next it is hard to make people believe that where they can smell no offence there still may be We corrected know that the juices of the cadaver are most fatally dangerous before offensive decomposition has set in. Those who have given attention to the influence of drain-air in causing disease know very well that the action of this upon the health hears up

The only safety is to be suggest that is drank from every species of contamination due either directly or indirectly to organic decomposition. A little rift in the waste-pipe of a wash-basin, so slight as to be distreted only by the application of tissue-paper, has kept a whole family inscrable and complaining, and ensceptible to every species of contagion, for years together. Decaying sugetaints in a cellar, and decaying fifth in the waste-pipe of a kitchen rink, may be regarded as the bane of the existence of half the women in America. Those more serious defects which come of ignorantly ar-America. Those more serious denots which come or teatorantly articled plainbing work — by no means of good plumbing work, which is the sanitarian's best aid — are responsible not only for most of the zymotic diseases appearing in the letter class of houses, but in like degree for the generally alling condition of so many of those who pass most of their days and nights in these houses.

The fundamental principle should always be home in mind that

neither in a sewer, our in a cosspool, nor in a house-drain, nor in a soil-pipe, nor in the smallest waste-pipe should decomposition be allowed to proceed without such an alumdant presence of fresh air as will scenre its most rapid and complete progress. The same condition of observered decomposition which fosters the development of infecting agencies is precisely that which leads to a generally until the condition of the conditi wholesome and debilitating atmosphere. All investigation of this subject, and all discussion of the modus operands by which unwholesome influences hard to the spread of epidemic discusses and to the lowering of the general health, bring us at the end to a firm belief in the principle covered by Hippocrates's prescription; pure air,

pure water, and a pure soil.

NOTES AND CLIPPINGS.

NOTES AND CLIPPINGS.

The "Broes" Corying Process. — Some time ago we were shown by Mr. P. Barnes (who afterwards read a paper on the subject before the Aucrican Ineviate of Mining Engineers) a paper so if displicating drawings, which are bitects may find of great use in these cases where it is necessary to supply seceral contractors with copies of the same drawing. The process is essentially a phonographic process, in which an ordinary tracing on tracing cloth takes the place of the negative, and the result is shown in while lines on a background of deep Prussian blue. The process is essentially a plant of the negative, and the result is shown in while lines on a background of deep Prussian blue. The process is so simple that the prints may be casely made by almost any office-toy. It also saves one step in the ordinary process of making drawings, for the inited teacing may be tould cover the first peucil drawing on paper, and so obviate the necessity of inking in the original drawing. The only apparatus needed are a drawing-board, a piece of clear place place, say three eightens of an inch thick, of the same size, and a piece of felt or blanker. The puper on which is to be printed the cupy may be of any kind that will endure a thorough wetting at the time when it is prepared with the sensitizing colution. This solution is made by dissolving in separate results of poursh in a similar quantity of clean water, and 14 or, of ted prussiate of poursh in a similar quantity of clean water, and 14 or, of ted prussiate of poursh in a similar quantity of clean water, and 15 or, of ted prussiate of poursh in a similar quantity of clean water, when dissolved, the two solutions are mixed and must be kept protected from the light, if possible in a yellow glass bottle. To prepare the paper, wet it thoroughly or one side with the solution, applying the first coal will in full were pronge, and the second with a synage almost day. The paper wit thoroughly or one side with one or two chicknesses of blanket under it placed upon th

POLITICAL CARRESTERS IN ARCHITECTURE. — It is said that the stone-masons have gauged themselves with cutting on some of the new work of the Cathedral of Cotogue a groresque figure representing Florici, the wouldbe assessin of the Emperor William. The caricature has the body of an animal, is one of whose fore paws is grasped a revolver, while the other flames a measurement. other flaunts a newspaper.

Free-Proof Doors.— The incombustibility of wood, in itself a poor conductor of heat, under certain circumstances is the basis of several methods of firs-proof building, as for instance in those floors which are build of joists closely belted together, so that there can be no circulation of air, and consequently no drought for fire between them. There are other modes of using it which show that when properly protected wood is one of the most fire-resisting of materials. Perhaps the best example of this property is found in outton-nails, where wood is often used to making the doors which separate the picker-rooms, which are particularly likely to take fire, from the rest of the nail. These doors, built of solid plank, are with their jumbs simply covered with sheet fin, and, as the following letters show, are much better able to resist fire than iron doors in the same situation. The action of the fire may slowly carbonize the wood and context it to charcoal, a poorer conductor even thus wood; but as the worping or shrinking of the tim's not enough to affect the form of the door, it meintains its shape and effectually excludes the farms. The letters mentioned form part of a circular issued by the Manadouters' Material Fire

meintains its rhape and effectually excludes the flame. The letters mentioned form part of a circular issued by the Manufacturers' Mateal Fire Insurance Company, of Baston;—

"Boston, April 9, 1878. The undersigned has usually visited the scene of all fires reported to this effice, in which we are interested as underwriters, whether the damage were much or listle; and one principal object of the visit was to study the fire as to cause, progress, and results, and J may say that I have never yet seen a well-made whoden timed door which gave to the five; and I have no recollection of any case in which as from door of ordinary construction, subjected to a heavy fire, has proved reliable. Among the many picker fires which have happened in mills instrued by this company since 1862, only one has proved destructive to the mill, and the door in this case, dividing the picking muon from the mill, was of iros, and did not hold the tire at all, but immediately saftened and warped out of shape, allowing the fire free passage to the null.

irce, and did not hold the fire at all, but immediately softened and warped out of shape, allowing the fire free passage to the mill.

"Wa. B. Williams, Secretary,"

"Hostos, Mass. April 8, 1878. Upon examination of the burned portion of the Pacific Mills, in company with Mr. Rideout, the overseer of the watch, I learned the following respecting the efficiency of iron and timed wood doors in resisting the interfer?—

"I. At the west and of the stranding-room, where the fire originated, is an eightoen inch brick fire-wait, in which are double doors made of two first pinuk and finated on both sides, put in, as I am informed, at the instance of Mr. Whiling, within five years. The flames were in direct contact with one door during an hour or an hour and a half, in which time the halding on fire was destroyed; but no flames entered the other room, and only a portion of the paint on the other door, eighteen inches distant, was blistered. Upon renoving the fin from the door which restreed the fire it was found that the wood had been charred to the depth of three eighths of an inch.

"A rinned wood door on the same floor, at the entrance to the packing within

A rinned wood door on the same fleer, as the entrance to the packing heilding, subjected to a somewhat loss degree of heat, resisted all action

bishing, subjected to a somewhat loss degree of heat, researm an acromof the free.

"In the second story, at the east end of the folding-room, are a pair of wrongh-from doors, constructed of 5.32 from with a frame made of three eighths inch band from three and one bull farches wide. One of these doors wrighed about six inches; the other was held by boils at top and hortoon. "In the opinion of Mr. Ridrout the iron doors were not exposed to as severe had as the timed wood doors referred to.

"On the northerly side of the pressing room (the sorner room) is a siding from door, constructed of one fourth inch from and heavily backed by seven sixteenths inch from. The panels are about six inches in width, so that most of the door is cloven inches in thickness.

"This door is hung on tracks, and, when shat, three sides are in iron grooves; the fire department of the Athoric Mills threw a large amount of water into this room soon after the alarm was given, and only a portion of the door was burned; set this door is so badly warped that it can be moved only with great didically.

"If The appoarance of the doors and the statement of the experienced persons present at the fire are to the effect that wood doors covered with

persons present at the fire are to the effect that wood doors envered with an successfully resisted intense heat for a long time, and that fron doors, of exceptionally good construction, warped under a comparatively slight degree of heat. Respectfully, C. J. IL WOODBERT, Impector.

A STEETLE-JACK'S FRAT. — The Sassex Duily Poet says that the vans on the sceeple of Hurst Church being one of order, the reater offered ten pounds to any one who would climb up in height of 150 feet) and send it down for repoir. The offer was accreted by John Histop, formerly a sailor, who, having got into the clock tower, leasured the pinnacles of the windows at the base of the steeple, and, having by this mesus passed a rope round the building, actually walked up the steeple. The feat was accomplished by a method well known to sailors, the alimber holding the free ends of the rope, and planting his feet firmly against the object to be climbed, keeping the rope at a safe tension. As the climber advanced he jaked the tope upwards, and so progressed to the top. He safely reached the top and sat there four hours while the rope was being repaired. He then replaced it, and came down in safety. then replaced it, and came down in safety.

CLIMIANG WASHINGTON MONUMENT. - A feat of during equal to that Cathinus Washington Monutent. — A feat of daring equal to that above mentioned was done a short time ago by the rigger who volunteered to climb to the top of Washington Monunem by the rope which, at the time work on the shaft was abundoned a score of years ago, was left hanging down from the summit on the inside of the shaft, so that when work was reamed it would be possible to reach the top without rebuilding the scaffold. The adventurous rigger reached the top in safety, although be was weighted by the ever-increasing weight of the new rope, to attach which was the object of his climb. The new rope scented he cast off the appear and of the old rope, which fell to the bottom of the shaft and was broken into immerable languients, so rotted was it by expessive to the action of the weather. action of the weather.

The Lornov Opera House.—It is once more reported that work upon the new National Opera House on the Victoria Embankment is to begin again. Those reports, however, seem to lack confirmation. It is also reported that an apartment house, in design smaller to the adjoining St. Seephen's Club, is to be built on the already finished foundations.

BOSTON, AUGUST 10, 1878.

CONTENTS.	
SUMMARY: —	
The New York Building Department Investigation.—Commu- nism at Home and Abroad.—Proposed Convention to Con- sider the Mississippi Floods.—Details of Captain Cowdon's Scheme.—The Experimental Decoration of the Dome of St. Fanl's Cathedral, London.—Discussion of the Decora- tive Treatment Appropriate to the Building.—Domestic Architectural Style in England and its Effect on Domestic Life.—Relations of Archieology with English and Amer-	
ienn Architecture The New Eddystone Lighthouse	43
APERS ON PERSPECTIVE, XII	1
THE PANATHUMAIC FRIEZE	46
Pre Laustrations; -	
The Hull of the Vase, of the Riga, and of the Rotondo in the Various at Rome. — Perspective Diagram. — House in Phila-	
delphia Longitudinal Section of St. Papl's, London	40
Fine Sewage System of Paris. IL	50
Congression Dievor :-	
Letter from Rosion	51
INSING ACCIDENT IN NEVADA	51
Comple Lieb (Secondarios	

In the American Architect of June 29th we had occasion to express the hope that, in the interest of good building, the management of the Department of Buildings in the city of New York would continue to be an object of public criticism, to the end that its vigilance might be kept alive and its abuses, if any, abolished. Since then an attempt has been made in the Board of Aldermen to institute a thorough investigation into the alleged neglects and delinquencies of the Department; the failure of this attempt encourages the idea that this important office is really under the protection of politicians, that it may serve as an easy and comfortable asylum for their relatives and friends at the public expense. Happily, however, a provision has been discovered in the city charter under which, on application of any five citizens who are tax-payers, a judge of the supreme court of the district may order an inquiry into the conduct of any officer of the corporation, so far as relates to misapplication of funds, violations of law, incompetence, neglects, or misdemeanors. In accordance with this wise provision we now learn that the matters of the Department are at last to undergo an exhaustive legal examination, in which the instigators of the inquiry expect to prove numerous wilful violations of the city charter and the building laws: a reckless and dishonest management; the employment of large numbers of incompetent men in sinecures with far salaries; the concealment of such delinquencies and neglects under talse and deceptive reports, through which unnecessary and extravagant appropriations have been granted; and the diversion of a large part of these ap-propriations to illogal uses. The expenses of the department, since Mr. Adams took charge of it, have aggregated, it is said, more than \$550,000; the citizens who are interested in pro-curing this investigation expect to show that the work for the same period could have been honestly done for less than \$100,-We understand, also, that the abolition of the department and the transfer of its duties to the fire-department is advocated as a measure of public economy and safety.

SIXCE the advent of Kearney in New England, where he is naturally an object of noisy curiosity, and where he obtains an enthusiastic following among those workingmen who are more interested in blasphemous demanciations of society than in logical arguments, the question of communism has again been revived, and again this foreign scarecrow has been set up to affright the frugal, the industrious, and the prudent. We naturally turn to the Old World to learn what is the present attitude and aspect of the modern Guy Fawkes on his own ground. Two great congresses of workmen have lately been held, at Lyons and at Gotha. While at the German congress it appeared that the foundations of society must be uprooted before the German agitators will be satisfied, in the French congress the communistic element failed to show itself in any form. In a notable article in the last Fortnightly Review, Mr. Frederic Harrison draws attention to the remarkable fact, proved by this

gathering of French malcontents, that communism in France no longer exists; that in the twelve days' discussion at Lyons, no systematic socialism was discussed, and the great majority of the meeting maintained the usefulness of property as an institution, made no attack upon capital, brought forward no crazy scheme for the regeneration of society by legislative or revolutionary means, and in short gave utterance to no such rubbish as may be heard in the agitators' meetings in this country, where the talk is much wilder and much more unreasonable than among the older children of discontent. Of course the French workmen claimed that the condition of labor is radically wrong, that the economic relations of society are inconsistent with the advance of true civilization, and that no confidence is to be placed in any party or in any person now in public life. Unlike the English workingmen's party, which accepts the representation of their interests in Parliament by such capitalists and gentlemen as Messrs. Brassey, Mundella, Forster, Thomas Hughes, and Lord Litebiled, the French artisans accept as leader no one in the legislative chambers. They propose in some way to work out their own salvation, but not by revolution or other political crime. The intelligent mechanics and laborers of New England who attend to their business, vote according to their conscience, go to church, and invest their earnings in savings banks and in United States' bonds, as thousands of them do, form a class in which the valgar Jack Cade of the republic will find no recruits, a class which will redress what grievances it may have after no imported fashious of violent subversion, and according to no theories of communism. They will not be behind the best of their French and English brethren as members of a civilized community, and will not put themselves in the hands of dreamers, doctringires, or demagogues, whether from America, Germany, or Ireland.

AT a public meeting in Memphis on July 26th, it was resolved that a convention should be held in that city on the 12th day of November mext, for the purpose of considering what can be done to relieve the Mississippi in times of flood, and to provide means of constructing the Bacataria Canal, with locks at the upper end and sea-walls at the lower, and of such a size as to admit the passage of the largest occan steamers. The attractive resolution that the convention should proceed bodily down the river in steamers, for the purpose of arriving at a better understanding of the situation, was also passed. The Sceretary of War was invited to cause a survey of the proposed conte, and an estimate of the cost of its construction, to be made. The mosting furthermore indorsed the scheme of Captain John Cowdon, to the detailed explanation of which it had just given attention. As far as we can make out from the account that has reached us, Captain Cowdon thinks that what has been done, as well as what is doing, are not the means that will be most likely to achieve the desired results. He believes rather in rehaving the river by providing it with more outlets, and by the shortest possible routes, arguing that the effect of thus increasing the discharge will be to diminish the volume of water, while at the same time it increases the velocity of the current, and consequently the scouring capacity of the stream; so that in course of time the river will wear for itself a permanent channel, to which it will return after a flood, and being thus confined to a narrower space the formation of the ever-changing sand-bars, which are due to the sluggishness of the stream in the broad parts, will no longer be possible. This theory is supported by the facts that since the establishment of the Bonnet-Carre Crevasse, by which it is estimated one twelfth of the volume of water escapes through Lake Ponchartrain into the Gulf, distant less than eighty miles, while the mouth of the river is distant one hundred and sixty miles, the high-water mark at New Orleans, where the usual rise is seventeen feet, has fallen three or four feet, while at Natchez, where the rise is nearly fifty feet, a decrease of eight feet has been recorded, a similar proportionate subsidence having been observed at other places farther up stream.

THE practical utility of such artificial outlets having been proved by observations taken during five years, Captain Cowdon proposes that other outlets shall be built, and notably an opening shall be made into Lake Borgne, a little farther down steam than Lake Ponchartrain, which shall be ten or twelve feet deep, one mile wite, and about six miles long. This, it is

calculated, will draw off another twelfth part of the river water, and cause a corresponding lowering of high-water level; so that even as far up stream as Memphis, where the present level is about thirty-five feet, a fall of four or five feet will be established. Besides this outlet, he proposes to open the Pass Man-chae and the Plaquetnine, the Coule, the False River, and the Latanche Bayous, just below Baton Rouge, which will aid in carrying off the waters of the lesser floods. A still more impor-tant factor of his scheme is the diversion of the course of the Red River, which now empties into the Mississippi about balfway between Baton Rouge and Natchez. To office this the river is to be made to pass through the Boeuff, which is about twenty miles in length, and into the Calcasien River, by which, after a course of some handred miles, it will reach the Gulf. In this distance the river will have a full of about eighty fact, which is as much as the Mississippi has between its junction with the Red River and its mouth although the distance is about five hundred miles. If these projects are ever carried into execution they can hardly fail to be of the greatest benefit to the States through which this river flows, and particularly to Louisiana, whose lowlands, now annualty exposed to destructive floods, the proposed operations will allow to be reclaimed and cultivated.

Tue interesting question of the decoration of the interior of St. Paul's Cathedral, London, has again been brought up by the action of the Dean an Chapter on the 6th of July in auhorizing the preparation dof full-sized curtoons of two of the ribs of the dome, and of all the architectural features between thom, comprising one sixth of the whole domical area; these cartains to be colored and gift in instation of real moraic, and temporarily fixed in place, so that the effect of the actual work may be realized. The design of the law Mr. Alfred Stevens, the architect of the Wellington Monument, lately completed and erected in the cathedral, is to be followed substantially according to the model prepared by him. Mr. Stannus, a favorite pupil of Mr. Stevens, is to prepare the cartoons for the ribs; Mr. Leighton is to make the design to occupy the proposed great circle between the ribs (probably just above the springing of the done); and Mr. Poynter will compose the other figure-subjects of the composition. It is proposed to decorate the dome with subjects from the visions of the Apocalypse, reserving the piotorial and dramatic scenes from the Old and New Testaments for the lower ports of the building. The general disposition the emotional and poetic above, the historical and diaactic below
— is one which must emmend itself as singularly appropriate to the place and occasion. Although by the use of bright colors upon a gold ground in the Byzantine manuer, as proposed, the serious defect of the extreme darkness of the dome will doubtless he partially obviated, the mysterions and solemn splendors of the mosaics in the Italian domes enjoy reflections from far brighter skies than can ever prevail in gloomy London; the subcommittee therefore ingeniously recommend the introduction of metallic reflectors, so placed within the external peristyle of the dome as to be invisible from any point of sight outside or inside of the building. By this means Mr. Penrose, the architect of the Chapter, calculates that the amount of light at present introduced through the twenty-four windows in the drum of the dome will be doubled. The committee estimate the total cost of the decoration of the dome according to this scheme to be about fifty thousand pounds sterling, the Messrs. Powell, of Whitefriars, having offered to do the sixteen thousand square feet of mosaic in the dome at the rate of from thirty to thirty-five shillings per foot. The estimate of the Murano company was forty shillings.

Mn. Edmund Oldfield, a momber of the executive committee for the completion of St. Paul's, it may be remembered, in his book, "St. Peter's and St. Paul's," published two years ago, entered into a careful investigation of the color decorations of certain typical Italian buildings of the sixteenth and early part of the seventeenth contaries, with a view of ascertaining what features of them were capable of application to the English Metropolitan Cathedral. In this interesting work of comparison, the description of the decoration of St. Peter's is probably the most complete that has been published in England. The lesson drawn from this great example by Mr. Oldfield has been very intelligently applied in the development of the new scheme for the decoration of the English dome, the main points being the adoption of a formal or geometrical distribution, keeping the

most important subjects in the lower parts - both domes being prolate hemispheroids; the multiplication of figures, to give an idoa of great space; the adjustment of their scale, so that they shall be large enough to secure distinctness, but small enough not to dwarf the vault or to be so spread over the apherical sarface as to distort their drawing; a severe and statuosque but not archaic treatment of the figures, and their execution in coarse tesserse, without the minute elaboration of the Vatioan mosaicists; and, finally, the use of gold backgrounds, contrary to the common cinque ceuto practice, thus securing flatness, like the vault surface itself, and reflections which most effectually and beautifully illustrate the constantly changing surface of the hemisphere. Mr. Oldfield also obtained from the church of St. Vittore at Milan an idea as to the treatment of panels in piers, which he recommends for adoption in St. Paul's. The portion of Mr. Burgess's remarkable scheme for the decoration of the English cathedral which elicited the most vigorous and probably the most justifiable remonstrances, a few years ago, was his proposition to cover entirely the Portland-stone piers of the nave with a reneering of fine marbles. In this regard the hints derived from St. Victore are interesting for their adaptability not only to the case of St. Paul's, but to other and less monumental examples. In the Italian work in question white street figures appear in very low relief apon the flat tinted ground of the panel, without interference with the structural character of the pier, the natural material of which is properly exhibited in the styles. This use of stucco admits of great freedom of treatment, and holongs strictly to the most approved period of Re-naissance decoration, having been adopted not only by Raphael at the beginning but by Alessi at the end of the sixteenth cen-As a reminder of the conditions which must guide the English designers in their work we reproduce in this number a sectional view of the interior of St. Paul's.

The Architectuf July 6th contains a noticeable article on the question of Domestic Architectural Style as it now prevails in England, and, with a natural but uncertain reflection, in our own Accuracy of reproduction of old forms has never been so faithfully pursued as by the English architects of the present day. Archæological correctness in every detail, from the architeetural outlines outside to the fashion of tables and chairs and the color of walls and fabrics within doors, must be carried to such an extent that the, occupant of the house may well imagine himself "somebody else somewhere else," and by no means an Englishman of the nineteenth century at home. The tendency of domestic style is therefore, as the Architect cleverly puts it, to be histrionic, with all the appointments in keeping; so that, naturally, the dwellers in the new Queen Anne houses of Toroham Green, or St. John's Wood, as we remember reading not long ago, may be seen in the lanes thereabout seriously masquerading in Addisonian bag-wigs, cocked bats, and smallclothes, in order to keep up the pleasing illusion; and we are credibly informed that the fairer sex, with that exquisite power of adaptation for which they are noted, are not slow to follow suit with brocades, hoods, hoops, and farthingales, and the decorative patch upon their faces. English life seems therefore ready to meet English architects haif-way, and were it not for the autocratic decrees of the nudistes of Paris, which constitute an element hard for the female mind to go counter to, we might see the court of the good Queen Anne refuscted in high life, and not confinal to narrower fields among the families of artists and litteratsurs. In like manner, in the days of the Gothic revival we might have seen in cortain select English circles a reproduction of the costumes and attitudes of modiarval saints, more or less grotesque, often graceful, but always highly significant of the power of histrianic architecture. Mr. Norman Shaw and his followers nearly make us believe that

And all the men and women merely players."

This is a now function for architecture. Perhaps it needs only a little more poshing of the "Old Colonial" derivative in this country, on the part of our clever young architects, to bring about some corresponding form of revival bere. Who knows what stately virtues of the Province may follow on the reintroduction of alcoher orders and broken pediments, arms and festions, heavy sushes, small panes, and delicate mouldings; what fine manners may come back in front of tiled chimney-pieces, and panelled wainscots, and under the wooden modillions and dentils of the parlor cornice!

Doubtless the logical result of designing accurately according to precedent must be literal imitation, carried to extremes sooner or later, and in England there seems at present to be small chance of setting aside this unwholesome subservience to archaeology. "Granting all this," the Architect proceeds to

archaeology. "Granting all this," the Architect proceeds to say:—

"We" (Englishmen) "must perhaps be permitted to advance in the direction of histricoric accuracy until some other principle comes to assert itself. Such a form of art is not by any means to be despised, inasmede as that which preceded it may be affirmed with no little reason to have been no form of art at all. It is obviously better to copy thoroughly well and enjoy the success of it than to go into chaos and have nothing at all to enjoy. In other words, if we cannot achieve southing in the nature of characteristic style, except by accepting a histrionic—or any historic—mode, this is at least better than being content to sacrifice the enjoyment of style altogether."

Our own conditions are more favorable for the achievement of characteristic style, as the fashious which come to us from Europe are not powerful enough to overthrow the practical influences which our architects must obey; influences which come from local habits, materials, climate, and usages, from the new life of the New World; influences which have grown with our growth, and must have expression in our art in spice of all our efforts to play parts in borrowed costumes. We are not permitted to forget that we are Americans and not Englishmen, and that our comparative freedom from the tyranny of archeology is a national privilege, master us. It is too far off. We may master it, but it cannot

As the downfall of Eddystone Lighthouse, if not imminent, is at least inevitable, and a matter of measurable time, owing to the disastrous effect which the leverage of the slightly swaying shaft has had on the House Rock upon which it is built, Trinity House has occupied itself with the question of what must be done to replace it. A survey showed that the rock was ut once too small and too decayed to allow of huilding a second shaft upon it, - for it is a sine qua non that the present lighthouse shall stand until the lamp is lighted in its successor, - and that a light at this particular point was a better protection against the rocks and reefs lying inshore of it than a light placed in any other position would be. It was suggested that the necessity of any lighthouse could be done away with by removing the rocks, and so great has been the progress in submarine engineering that, although the survey which was made in pursnance of this suggestion showed that many million cubic feet of stone would have to be removed, the enterprise would doubtless have been undertaken, had it not been that the abelition of the light would necessitate a considerable and costly revision of charts, and the determining of new "ranges" for the guidance of ship-masters, to say nothing of the temporarily increased danger to the lives and property of those to whom for many years the Eddystone Light has been so great a reliance, marking, as it does, an important landfult to incoming vessels from the Atlantic. view of this necessity of maintaining a light, it has been determined to build a new lighthouse on the South Reef, one hundred feet distant from Smenton's decaying masterpieco; and as the lowest tender amounted to \$525,000. Trinity House has decided not to do the work by contract, but to have it done by the day, under charge of its own engineer, Mr. J. N. Douglass. whose estimate was only \$450,000.

THE natural difficulties presented by the new site are about as great as those encountered by Smeaton; for though the South Reef is not uncovered until half-tide, and some of the foundation courses must be laid under water, while the site on House Rock was always above half-ride level, and a portion of it above high-water level, yet the new site is in a more protected position. In the actual construction of the fighthouse, bothing novel is to be attempted. The now common practice of dovetailing each stone into those above, below, and by the sides of itself, as well as, in the case of the lowest course, into the living rock, is to be followed. The lowest twelve courses, which will rise twenty-two fect, and will carry the shaft three feet above high-water level, are to be forty-four feet in diameter, and are to have no diminution from bottom to top. At this level the shaft proper will begin with a diameter of thirtysix feet; thus there will be formed at this lovel a circular landing stage four feet wide. In form the new shaft is to be a concave elliptic frustom, its least diameter, eighteen and a half feet, being about one hundred and twelve feet above the landing stage, from which level it increases again, until at the top it measures twonty-three feet. The lantern level is one hundred

and twenty-two and a half feet above high-water level; that is, the new light will shine at a height fifty-five feet above the present light. Up to twenty-two feet alove high water, the shaft will be built of solid granito; above this the walls will vary in thickness from eight and one half feet to two feet and three inches, which will allow of rooms varying from eleven to fourteen beet in diameter.

PAPERS ON PERSPECTIVE.

NO. THE PERSPECTIVE OF CINCLES CONCLUDED. CONCENTRIC CINCI, EH.

243. When a portion of a circle is to be put into perspective it is generally best to construct the ellipse which represents the whole circle, and then to use so much of it as may be required. This is especially the case in sketching from nature or from the imagination, where it is difficult to determine the character of the perspective curve without aid from geometrical considerations. In drawing pointed arches, for instance, the character of the intersecting arcs is best ascertained by completing the circles of which they form a parc, as in Fig. 52. An inspection of the figure shows that when the aprel is above the eye the nearer half is represented by the part of an ellipse at which the curvature is the most rapid, near the extremity of the major axis; and the further half by the flattest portion, near the extremity of the minor axis. When the circle is below the eye the nearer part is the flattest.

This figure also shows that when a row of circles are put into per-spective their major axes are not parallel, their inclination to the truce of the plane in which the circles lie diminishing as they recede

from the eye

244. Fig. 53 illustrates more fully the sub-contrary section spoken in the previous paper and shown in Fig. 44. A' A' shows the cirof in the previous paper and shown in Fig. 44. cle in its own plane, with its centre beyond the axis of the cone; B' B' shows its perspective to the plane of the picture p p, with the centre of the cone of rays below its centre, and the pole a, representing the centre of the original circle, lower stiff; B' B' shows the real shape of the cross-section E E. laken at right angles with the axis of the cone. This is an ellipse, whose centre coincides with the axis of the cone of visual rays, the centres of both circles appearing as poles of the ellipse, one on one side and one on the other. The projustions of the respective centres are shown in each case at a, b,

The line D D, parallel to A A, shows that a herizontal section of the cone taken at this place must be a circle like A' A'; and since the sub-contrary section at B B is symmetrical with it, about the axis of the cone, it follows that B' B' also must be a circle.

245. It is to be noticed that the ellipse E IV is the appearance 245. It is to be noticed that the efficient if it is the appearance that the circle would present from the station point S. It would not appear as a circle. Though its purspective is a circle. But neither does this perspective circle appearas a circle. It, too, is foreshortened into an ellipse in the sight of a spectator at S.

216. In fact, notess a circle is situated just at the centre of the

picture, the ellipse which represents it in perspective is of a differparture, the ellipse which represents it in perspective is of a different shape from the clipse which it presents to the eye. Horizontal circles, for instance, always prevent to the eye horizontal ellipses; ellipses, that is to say, whose major axes are horizontal. But in perspective such circles, unless just above or below the centre C. have their axes inclined, as we have seen in Fig. 47. Yet these oblique ellipses when seen from the proper position, the station point in front of C, are themselves apparently changed by the effect of perspective, and foreshortened into horizontal clipses.

This apparent distortion in the presentive, which makes the out-

This apparent distortion in the perspective, which makes the outline of the drawing of a different shape from the apparent outline of the thing drawn, will, as has been said, form the subject of the next

247. Figs. 54, 53, and 56 show three different ways of drawing concentric circles. Since concentric circles have the same contre, the ellipses which constitute their perspectives have of course the same pole and polar line; but the ellipses have not the same centre, nor are their axes parallel.

248. The first method is shown in Fig. 54; it is applicable to the case where the perspective of a circle is obtained by means of a circumscribed square or polygon. A second circle, concentric with the first, is easily obtained by means of a concentric polygon, as shown, 249. Fig. 55 shows how the second ellipse can be found when the

249. Fig. 55 shows how the second ellipse can be found when the first has been already determined in any way. Let a line of measures he drawn through the pole which is the perspective of the centre of the circle, parallel to the polar line or trace of the plane in which the circle lies. If now any chord a a, representing a diameter of the circle, he drawn through this pole, and lines he drawn from its extremities to any point V upon this trace or horizon, it will on the line of measures at two points, a and a, whose distance from the pole is the same. If now two other points, b and b, be taken, also equidistant from the pole, and lines be drawn through them, the points b and b, in which they intercept the same chord, will be points of an ellipse which represents a circle concentric with the given circle, and as much smaller as b b' is smaller than a, a. In the figure the radius of the smaller circle concentric with the given circle, and as much smaller circle is one half the radius of the larger the radius of the smaller circle is one half the radius of the larger one, b' being one half of a' a'. It is obvious that since the lines

meeting at V are parallel in space, the lines an and of of me divided proportionally. Any number of points can be obtained in the same

proportionally. Any homoer of pitting concentric circles into perspective is shown in Fig. 55,—a figure which, like Fig. 47 in Plate X, shows three equal circles, A A, B B, and D D, lying in parallel planes and equally distant from the picture, the last of which stands edgewine to the speciator, so that it coincides with a portion of T B Z, the trace of the parallel planes. In the figure it is supposed that A A is the given circle, concentric with which it is required to draw another circle E E.

another circle E E. To effect this the circle D D is first found by cutting off from To effect this the circle D D is first found by cutting off from T R Z a portion equal in height to A A, this height being measured above and below a line passing through the centres of the three circles. Parallel to this line let a second line be drawn through any point, 1, of the circle A A, to the corresponding point, 3, of the circle B D I and upon this line let any convenient point, as 2, he taken as the corresponding point of a third circle B B. If now a fourth point, 4, be taken upon the line through the centres, the line 4-2,5 will be an element of a cone whose vertex is at 4 and whose base in the plane of the circle A A is a circle concentre with that circle. The intersection of the line 4-2, prolunged, with a radius of A A drawn through the point 1, fixes the point 5, in the circumfrance of the circle F E. By drawing other lines, parallel to the line 1-2 3, through other points of A A, any number of other points in B B and E E may now easily be obtained.

E E may now easily be obtained.

The radii of the circles E E and A A (or B B) are obviously proportional to the distance of the point a from the centres of E E and B B, and also to the clouds drawn through the common centre of A A and E E purallel to the trace T B Z, that is, to D D.

A and E E puralle to the trace I it I, that is, to I D.

251. It will be noticed, Ist, that this method not only gives the means of finding a larger circle concentric with A A, and I lying in the same plane, but also of finding an equal circle, B B, lying in a parallel plane; 2d, that it makes no difference in what direction the axis of the cone passing through the three centers is originally drawn, provided it is parallel to the plane of the picture; and 3d, that this method is as serviceable in drawing a concentric circle smaller than the given circle as in drawing a larger one; for it E E were the given circle as in drawing a larger one; were the given circle a reversed process would give A A.

252. As to the figures 45, 50, and 51, the publication of which in connection with the paper which they illustrate was satisficately prewented, it is unnecessary to add anything to what was said in that paper. But it is pertrupt worth white to say that the excessive distortion apparent in them is due simply to the fact that the station point, or proper position of the spectator, is in each of them within two or three inches of the page. This is within the limits of distinct vision. Such by looking through a pin-bale in a card the prints can be distinctly seen when held even at the end of one's nose; and when so viewed it will be seen that not only the ellipses in Fig. 45, but the parabolas and hyperbolas in Figs. 50 and 51, look like circles, as they should. The apparent distortion entirely disappears.

253. Fig. 57, a, b, v, shows three different ways of obtaining certain points in a circle by drawing intersecting lines from the sides of a circumscribing square, and d shows that either of these methods may be used for finding the perspective of a circle.

THE PANATHENAIC PRIEZES

As our concern is now rather with the technical sculpture than its As our cone cen is now rather with the teenment sempents than his subject, it is sufficient to mention, as is well known, that this band of low-relial represents the procession which with people conducted a peplus or tobe dedicated to Athene, the goddess of the people and city. As the enclosure of the Aeropolis was entered, the subordinate or west front of the Parthenon was first approached, and the sculption was front of the Parthenon was first approached, and the sculption of the Parthenon was first approached. ures represent the divided procession advancing along the north and south flanks of the temple towards the eastern entrance. Un the south fishes of the temple towards the eastern entrance. On the frieze over the eastern entrance are represented two groups of ditinities, heroic ancestors, male and female, seated, of larger scale, and apparently watching or waiting for the procession. Between them, and central over the doorway, is seen a priest, who delivers the folded peptus to a yunth, and a priestess, who is completing a charge to mailens. The procession consists of men ordering its charge to mailens. course, others bringing along the oxen and sheep for sacrifice, ranks of girls, musicians, water-hearers, then chariots, and, above all, a lung train of the mounted youth of Athens. It is in the treatment of this part of the procession that the sculptor has displayed the

of this part of the procession that the sculptor has displayed the utmost indifference to difficulty, the most consummate judgment and skill and daring and invention, and has successfully evoked the most engaging beauty from under the very ribs of difficulty and confusion. The helpht of the frieze itself, as of its position above the eye was limited by architectural proportion, and a limit was thus impured on the sculptor for the height of an erect figure; he availed himself of what space was given to blin to the utmost, and there is but moderate room to spare above the heads of the lew young men who are standing erect. The height at which the frieze was elevated, and the oblique view from the narrow ambulatory below which alone commanded it, made this imperative if a diminutiveness was to be avoided which would preclude finish and recognizable features and

expression. Another consequence of these conditions was that a liberty had to be taken with nature in respect of the scale of the horses of the mounted cavaliers, which was disproportionately resulted. The riding figures are in some degree reduced, as compared with those on foot, and quite without returned to perspective, but this difference is triding, and although something more is gained for the size of the horses within the limit of height by their extended action in most cases, the horses are still ununturally small. They have the characteristics doubtless of a small and sturdy breed, but it is clear that the artist deliberately ventured the incommits. but it is clear that the artist deliberately ventured the incongruity. The alternative to reduce the statute of the men was inadmissible, and he had just confidence that even if the spectator noticed the disproportion, which many do not, he would, if a worthy spectator, willingly compound for it by a sense of the energy of the composition, which would be adequate expression of any amount of vigor. An over-sized rider in nature scens to oppress his steed, but such lightness and spirit are thrown into the animals of the frieze that not even where disproportion might be feared as salient is there any suggestion that the load is not carried with abundance of strength to

space.

The costume of the riders is varied for the sake of variety, of contrast, and of composition, but for such reasons stone, with no intention to snatch appliance for naturalism. Some are made but for the rest on began backed bursen: s flying cloak, and are seated like the rest on bare-backed horses; others have tunies, which, if it is thought instructive, may be called chitons, as the cloak a chiamys. Here and there irregularly is a entrary different in every case. Heads are usually bare, but sometimes covered by cap or belinet, in one or two cases by the broad-briomed Thessalian hat. Such spareness in equipments might scum to throw back the representation to the traditional heroic, or even to still carrier method above the traditional heroic, or even to still earlier mechical epochs; but there is no reason to think that beroic habits were atherwise interpreted than as subserving the idealization of a familiar contemporary celebration.

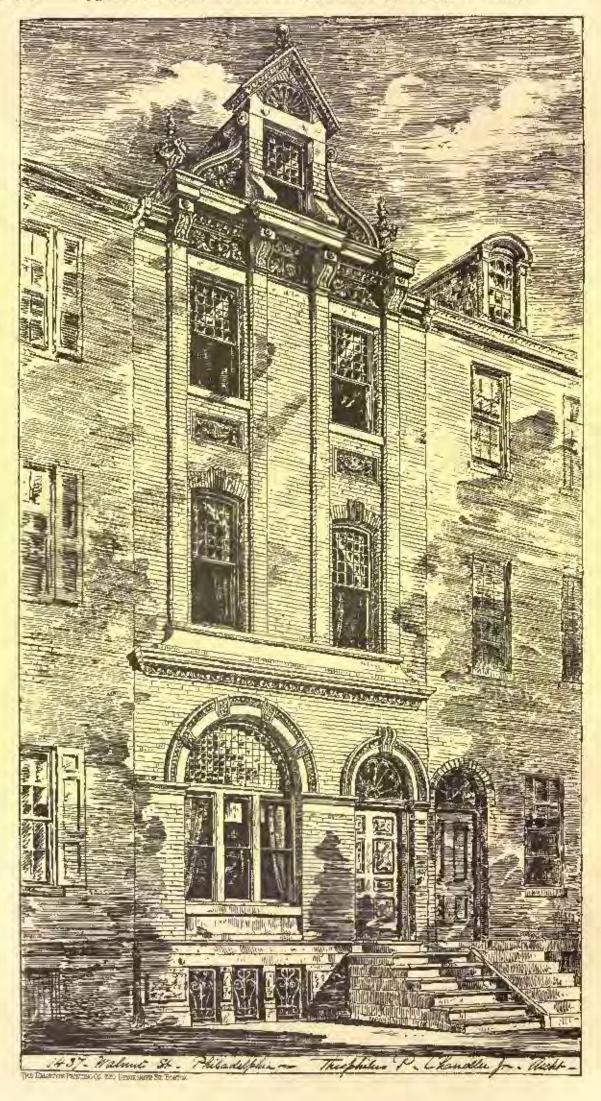
idealization of a familiar contemporary celebration.

The style of relief is not without a certain analogy to that of some of the Assyrian representations of houts and battles by the king in his chariot. The Assyrians set an example of moderation in prominence or projection, but the very despuir of clouwiness is displayed by them in their management of figures moving in two planes, and of which some are partly covered by others to their from. The majesty of Assyria bends his how as he stands in a cut drawn rapidly by three horses yoked abreast, like those of so many flomeric heroes. The lursest heads are seen advanced one beyond another, but the twelve less of the animals are left to be assisted on Homeric becoes. The lurrers' heads are seen advanced one beyond another, but the twelve legs of the animals are left to be assumed on the insufficient evidence of three fore and three hind legs in like parallel presentation. The Assyrian, it may be thought, has as much right to conventionalize as the Greek; but a convention for the advantage of expression is one thing, and resort to it as a clock for a difficulty not beyond the reach of skilfulness to overcome is something very different. The Greek challenged and vindicated his right to another license in disregarding perspective diminution, even when he represented so many figures retiring one beyond the other that the remotest must needs be at considerably greater distance. By the manner in which the knees of the four seated female divinities or heroines on the eastern frieze advance in succession beyond each or becomes on the eastern triaze advance in succession beyond each other they are dealared as occupying receding planes, but the actual proportions of all are identical, and the legs of the seats rest on the same ground line. It is the same with the cavalcade, where the tanks are repeatedly composed of as many as seven horsemen advancing abreast; the same ground line receives the hoofs that touch ground of the near and the remote alike. Chiefly from the obstructed view of the marbles, but not slightly in consequence of the disintegration of surfaces confusing outlines even where slahs of the disintegration of survices confusing outlines even where takes are complete, it is not easy to appreciate the marvellous skill of these combinations at the museum' without the bestowal of steadily attentive consideration. It is worth while for those who are interested to take a preliminary view of the restored groups, as they may be seen in Pall Mall, below the cornies of the Athenmum Club-liere it is salient how the full flank of the near horse of rank after rank accentuates the series, and gives the key which makes simple the relative positions and newements of all those beyond it.

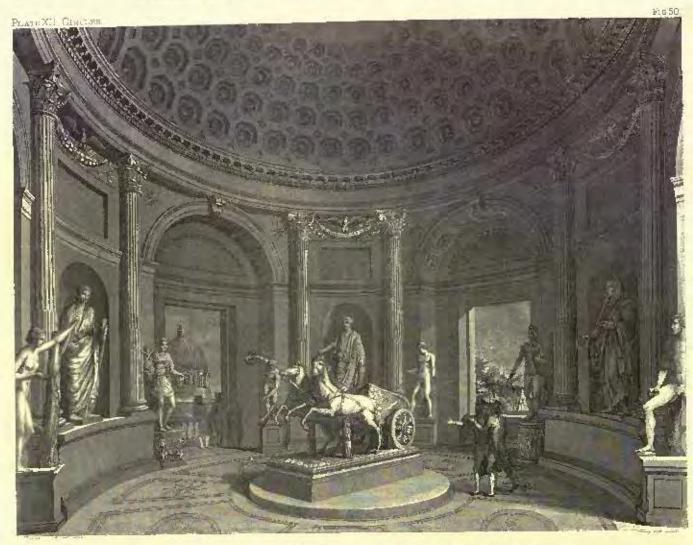
It will be observed that in the foregoing brief note of a part of the action the exposition followed from the west castward, as if following on with the procession. There are several circumstances which render this important and imperative. Whatever may be the reason, moving objects are more easily and comfortably observed as they are moving past or away from us than as directly advancing upon us; the action of the horses as seen from the rear is explained best—and is espenially required to be so, when only observable under so oblique an aspect as was available—by the broad flank of the near horse, the seat of the rider and his bearing on the roin, and the posture of the hind-quarters of the animals, the fulroun of propulsion. Certainly as we follow on with the irieze in this direction we seem to be in harmonious sympathy with the general movement of the celebra-

But there is something more in the matter, - something that may ascape observation generally, but will be palpable when pointed out It we pass along in the reverse direction, as if meeting the presentation we are sensible not only of confusion, but of a certain harshness which is easily explained. We find that we are making, so to say,





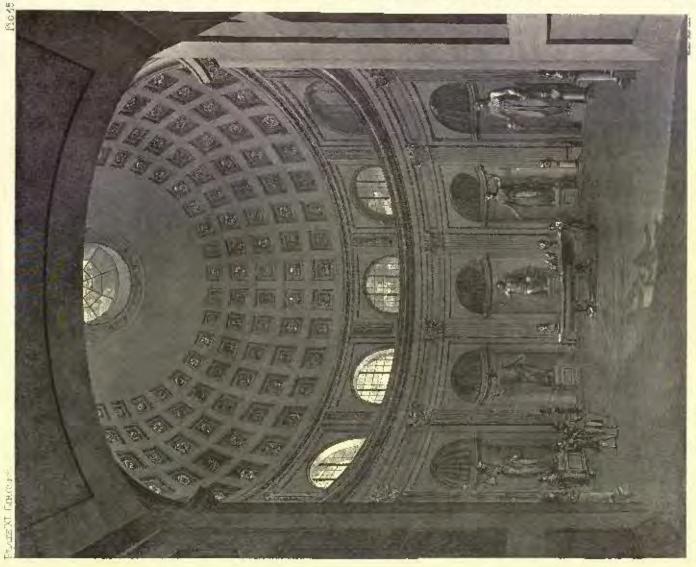




THE HALL OF THE BODA IN THE VATIGAN VIUNEUM



THE HALL OF THE VASE IN THE VATION MUSEUM.



Pic. 52

Fig. 53

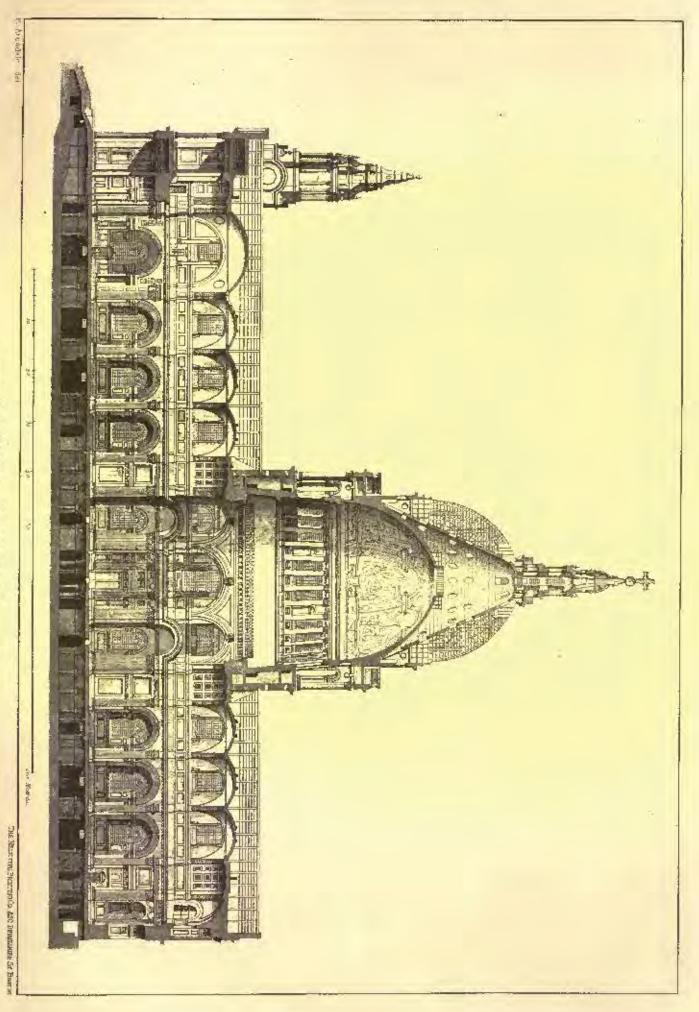
Fig. 55

Fig. 55

Fig. 55

Fig. 56







"against the hair," or rather upon rough edges. In fact, the rear outlines of the horses and groups generally fall in most exces towards the plain slab at a blunt angle, or are gradually rounded towards it. But with the front outlines the rule is in contrast; a quicker descent is given to the contours, - they meet the slab very constantly at a right angle, and in very important parts are even notably underent. The forward outlines in consequence are relatively strengthened by shadow, and so far an element of decision and definition is introduced. like that given by thickened strokes expressive of shade in an outline drawing. But one consequence of this is serious, and the result is manifest, and nothing less than that the effect of the frieze as followed in one direction was deliberately sacrificed by the sculptor for the sake of subancing it when contemplated in order from another.

He could, indeed, scarcely have adopted so elaborate a scheme of composition under any other conditions. Low-relief demands that the heads of the figures should be usually in profile, but they could not be set with outlines flattened on the plain slab consistently with relation to the space which had to be indicated for horses and ranks, Hence the profiles of the riders are constantly undercut; then cases occur in which the lower half of a face is in front of a horse's mane and neek, and the upper part above them, and free. The manageand neek, and the upper part above them, and free. The management, then, of the relation of both to the background is peculiarly awkward; and into all these unbandsome recesses we have to look it we persist, against the first warning incongruity, in meeting the course of the cavaleade. This is a great aggravation of the confusion which is presented when we come first upon the sight of the crossing legs of prancing horses, of which we do not know the distinct action till we pass farther on; but the sculptur was manifestly indifferent to the aggravation which would do him good service by warning the spects. tor away from a Talse aspect, as well as by supplying a contrast to the aspect which he was chiefly concerned about. In the groups at sither end of the mass, which were naturally seen directly in front, and, indeed, from a wider pavement, the soler of the figures is open, and the requirement for this special adjustment is avoided and income. ignored.

The development of the ranks of horsemen, by spreading them fan-like, so that the seven eavaliers successively are shown in advance of each other, most certainly simplifies the arrangement to the specproblem. The planes which are required to account for the semi-nor's problem. The planes which are required to account for the overlapping limbs are still most numerons. A near fore-leg of a horse will be relieved directly upon the leg of a rider beyond, as that upon the fore-quarter of the borse he rides, which is relieved again upon the limbs of more than one herse beyond before we arrive at the plain

The general system on which the composition was designed and executed appears to have been this. We are led to infer that the design was drawn carefully in outline on the still smooth slabs, it must be supposed after a more invided drawing, which expressed by shading the refined surface depressions and undulations; it must then have been understood that the nearest portion to the front of every figure was to be expressed by the closel with as little depression below this enriace as possible; these highest and least rounded parts of each figure are in consequence maintained at a high uniform level, so that an applied flat surface would touch them all. level, so that an applied flat surface would touch them all. There is a certain limit, scarcely two inches at most, to which the slats are cut into below this plane, a distance which has to be economized and distributed among the superposed members — economized where necessary, and, where not, apportioned freely. It was thus imperative that the knee of a rider by a horse's flank should have very slight relief, in fact be almost flat, but where his leg extends in front of the hanneh of a horse beyond and the open harkground it takes more rounded relief inwards. Where many surfaces have to be accounted for, as must be the case with the crossing limbs of man and counted for, as must be the case with the crossing limbs of men and horses in ranks, even the strictest economy in graduated distribution calls for help, and then considerable liberty is taken of sinking the background beyond the average depth; but this is chiefly in recesses and small bounded spaces, where the stratagent escapes notice among the shadows.

Although the faces are usually in profile, other presentations occur, and even that of the full face; this variety is a relief of the greatest value, and seems to oring the speciator into more immediate and sympathetic relation to the gailant parade. It may also be remarked that the frieze preserves evidence sufficient in a number of completely preserved heads, male and female, to correct a hasty inference from the simple cherelure of the Dionysus (Theseus) of the pediment, that the claborate treatment of the hair was posterior to Phidias. There are sufficient examples here to give indication of a mastery of an easy detail indeed, but of one which has its value in the expression of age especially, and even character. Indeed, the record of the ambrosial locks of his Olympian Zeus should settle the

question.

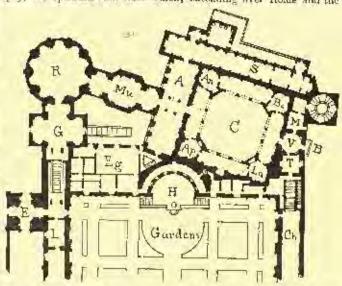
surface.

THE BLUSTRATIONS.

ILLUSTRATIONS OF PAPER ON PERSPECTIVE, PLATES XI. AND XIL.

Fromker 45, 50, and 51 are reproductions of some old engravings representing that portion of the Vatican Palace called the Masso Pio-Clementino. It was erected about a bundred years ago by Pope Pius VI., during his long pontificate of twenty-four years, to contain the collections formed by Julius II., Leo X., Clement VII., Paul

III., and his own immediate preference. Clement XIV., —collections to which Pins himself added more than two thousand pieces. This irregular mass of buildings occupies the summit of the Valican Hill. irregular mass of buildings occupies the summit of the Vatican Hill, at the northern and of the gardens which separate it from the papal apartments, the Sisline Chapel, and the galleries and chambers decorated by Kaphael. The rooms and passages shown upon the plan are the end of the long gallery of the Museo-Chiaramonti (Ch) arranged by Canova for Pins VII.; the Hall of the Torso (T), formerly a chapel, in which stands the famous Torso of the Belredere; the Hall of the Vase (V), from which opens to the south the Belcony (B), the splendid view from which, extending over Rome and the



Campagne, from the Apontines to the Alban hills, has given the trame of Belvesiere to this portion of the palace; the Hall of the Melager (M); the Hall of Statues (S), at one end of which is the celebrated Ariadne; the Hall of Animals (A); the Hall of the Muses (Mu); the Rotombe (R); the Hall of the Greek Cross (G); the Egyptian Museum (L'g); and the entrance to the outer gardens (E), which brings us to the long gallery of the Library (L), enclosing the inner garden on the north as the Chiaramonti gallery encloses it on the south. Above this entrance half is the Half of the Biga; at the end of the garden is the Hemicycle of the Figua (II), built by Bramante for Julius II. In this stands the great pine cone, eleven feet high, supposed to have formed the summit of Half and Sussoleans. The quadranche half of the Half and quadrangle behind, between the Hemicycle and the Hall of Statues, is the Cortile of the Belvodera (C), also from the designs of litamante, in the four corners of which stand the Belvedere Apollo (Ap),

the Antinous (An), now generally admitted to be a Mercury, the Laordon (La), and Canova's Buxers (Bo).

The Ratondo, Fig. 45, is sixty-one feet in diameter, and was built by Pius VI., from the designs of Michael Angelo Simonetti. The floor is formed of a mosaic parament, found at Otricoli in 1780, representing Centairs and Lapithic in the border, with a load of Medusa in the centre. Around the whole are black and white mossics found at Scrotane, representing some of the adventures of Ulysses, and others of marine monsters found near the Baths of Caracults. and others of marine monsters round near the mans of Canacana. This kall was built to contain the great vase of red perphyry, more than lifteen feet across, found in the Baths of Tites, which stands in the centre. On either side of the entrance are the well-known colors busts of Tragedy and Couredy, which stood at the entrance to the theatre in Hadrian's Tustulan Villa. Opposite is a scated status of Nerva, eroward with a bronze wreath of ask leaves. Of the other statues the first on the left is a Juno Lanuvinu, armed and wearing the segis; the second, the famous Barberini Juno; the third, beyond the Nerva, a Ceres, from the Theatre of Pourpey; and the fourth, a Muse, in place of which now stands the bronze Hercules, discovered in Rome in 1864, and purchased by the late Pope for \$50,000. The five niches shown in the plate occupy half the circumference, the other half being taken up with three similar niches and two door-

Fig. 50 shows the Hall of the Bigs, built after the designs of Camporesi. The two-horse charlot from which it takes its name formerly stoud in the Temple of the Sub. The wheels and pole are modern,

eloud in the Temple of the Sub. The wheels and pole are modern, the body of the vehicle having long becaused in the church of St. Mark at Rome, as an episcopal throne. The horses also are modern, except the body of the right one.

The statue in the niche on the right is of Greek marble, and represents a Pontifex Maximus, or high priest, veiled, with a vessel in his hand, in the act of offering a sacrifice; on his right is an Apollo Cytharedus, playing upon a harp. It has for a pedestal an altar adorned with female figures, sacrificing; on the other side is a statue of Alcibiades, found upon the Celian. In the niche on the left is the figure of a philosopher holding a seroll, supposed to represent Sextes of Cheronea, the nucle of Flutarch; on his left is an Auriga, or chariotucer, in costume, with the palm of victory in his right hand, and in his left the fragment of the reins, which he has already cut with the curved knile that hangs at his built. Nearcr the front of the

picture is the Apollo Sanrocconns, or Lizard Slaver, now in the Hall of Statues, a marble copy of the celebrated bronze of Frantisles. In the niche at the back of the room is a statue sometimes called Phoeion, sometimes Epaminondas; on either side are ancient copies

of the well-known Discululi, or Quait Players, of Myron and Nau-cycles. Through the window is seen the dome of St. Peter's. Fig. 51 shows the Hall of the Vase, with the Hall of the Meleager beyond, and on the left the Cortile of the Belveders. In the course of the room is the large basin of Pavonazzetto marble, nearly six feet across, from which it takes its name. The three square niches on the sides of the room are filled with fragments of sculpture, apparently The drapicy of the one on the right was much admired and studied by Raffaelle. Above the further niche is a bus-relief representing Capid and Psyche before Pluro and Proverpine.

The Hall of the Bigs is about thirty feet across, and that of the

Vase about twenty.

DOUBLE NO. 1497 WALNUT STREET, PHILADELPHIA, PENN. MIL T. P. CHANDLER, ARCHITECT.

LONGITUDINAL SECTION THROUGH ST. PAUL'S CATHEDRAL, LONDON.

In order that our readers may appreciate the importance of the decorations of the dome, of which we speak elsewhere, we here reproduce from Gailly-baud's "Ancient and Modern Architecture" a section of the cathedral taken longitudinally. The decorations here shown so sketchily represent the scenes from the life of St. Pault, painted by Sir James Thombill, which have been destroyed by the moke and damp of the London atmosphere. The inner dome is of brick-work, two bricks in thickness, and having in every five feet of rice a course of headers sighteen inches long, which bond the work together. The outer dome is, as is well known, supported on a brick cone, whose wall is eighteen inches thick, and which, nurreover, is the direct support of the lantarn, said to weigh seven and one half tons. The inner dome was built on a centering which rested upon In order that our residers may appreciate the importance of the The inner dome was built on a centering which rested upon the projecting cornice at its springing, and was left in position for the use of the painter, who was paid only forty shillings per pard for his work. The difficulty and cost of creeting the necessary scatfolding for any new decoration has been no inconsiderable deterrent to the undertaking.

THE SEWAGE SYSTEM OF PARIS. IL.

The normal distances between the underside of the masonry and the street levels are as follows for the different types, except No. 1:

						Fr. In.
Type No. 3	4.0	4	2 .	- 4	12	16 65
Type No. 3 No. 5	4		- 12	4 1		10 103
n No. 6		 		- 4		13 6 va

The gallery under the Boulevard Schastopol may be taken as a type of one of the branch collectors. It was constructed between 1855 and 1958 under one of the side avenues of the bodlevard from the Bodlevard St. Denis to the Quai de la Mérisserie; from this point it extends with type section No. 6 miles the Bodlevard de Strasbourg, as far as the Rue du Château d'Eau. In ordinary work this gallery serves as a collector for the flat district known as the Marais; during heavy rains it discharges the overflow direct into the Seine, and renders impossible the floods which used to be common in the Fanbourgs St. Martin, St. Denis, Montmartre, etc. In this gallery are fall the two great water mains which receive their rapply from the Oureq. The following are the principal dimensions of the mallure: the gallery: -

No. of the contract of the con					Ft.	In.
Length			16		5074	0
Width at springing of arch	4	10			. 16	014
Height from sidewalks to top of	and	1			11	115"
Width of side walks					. 2	71
Width of channel					3	114
Depth " "	1	4			. 4	3.4
Height of side walls		1			3	tt."
Thickness of arch at crown .				·	. 1	711
is a mespringing			16	4	2	11 7
Thickness of cement lining		1			. 0	1.3
Distance apart of ventilators .	ъ.				164	110
Distance of street connections				6	328	0
Height of branch to struct traps			-		46	6
Width a a a a a			13		. 2	-1
					-	. 3

inches, which is sufficient to produce the desired effect. The deposits accomplating below would quickly form a bank that would stop the progress of the boat, if the water in escaping through the spaces between the sides of the dam and the channel, and by small openings made in the former, did not drive the sand and mud constantly in advance of the hoat. The rate of progress is very slow, as it takes from eight to ten days to traverse the five miles of the grand adlactor. In returning to a present movelle days are placed in In returning up scream movable dams are placed in grand callector. grand collector. In returning up stream movable dams are placed in the channel about every 600 yards, to reduce the speed of the current. Safety chambers for the workmen are placed at intervals of 650 feet. This precaution is very necessary, since in periods of heavy rains the collectors are quickly flooded, as, for instance, on the 27th of July, 1872, when in five minutes the Schastopol collector was filled to the root, and several workmen were decorated. There are about 7,000 points of egress for the workmen in case of accessity.

The number of men employed in elemning the sewers is about 700.

By means of the collectors hearly all the sewage water is discharged into the Scine far beyond the limits of the city. But this is done at the expense of the river lower down, chiefly on account of the great deposits of material held in suspension, since, as we have seen, the house service proper is not admitted into the collectors, but is removed from the cospools by parts. Dredging operations are constantly necessary, and about 120,000 tons of debrie are removed annually from the Scine, at a cost of some £6,000. To obviate this ovil, sewage utilization works have been established for some years on a comparatively small scale at Gennevilliers, and

A commission was lately appointed by the Prefective of the Seine to examine into a project for the construction of irrigation canals which should take the sewage water from the collectors and distribute it upon suitable land in the vicinity of Paris, with the object of the it upon suitable land in the vieintly of Faris, with the object of improving the soil airl also to convert the impure waters inch an efficient that might filter gradually into the Seine. It will be observed that this project is an extension of the sewage utilization scheme already carried on at Gennevilliers. The new project includes the construction of a main irrigation canal extending from Clicky to the Forest of St. Germain, of six secondary branches, and of a large number of channels which collectively should irrigate a series of 10 000 course. gate an area of 10,000 acres.

The total length of the principal channel would be about 18,000 yards. It would be sircular in section, 6 feet 6 inches in diameter, and would traverse the Scine three times by cast-iron siphons. The pumping station would comprise five engines, collectively of 1,200 horse power, of which two are already at work in pumping the sewage for the Gronevillers irrigation. The estimated cost for these works is £160,000 for the pumping station and irrigation canal, etc., £40,000 for the secondary branches, or £200,000 for all, not including the outlay made at Gennevilliers, which has reached about

265,000.

The sewage utilization works at Gennevilliers were commenced in 1869 upon 14) seres of ground, and have gradually developed until at the present time about 600 acres are under treatment. This land This land receives about 500,000 cubic feet of water per same per year. The use of this water is quite optional, no cultivator is obliged to take it, and each may use what quantity he wishes, and apply it in whatever way he judges best. There are no data indicating the quantity taken by each farmer, so that only the arerage results are

The irrigated soil is generally laid in ridges separated by trenches; the tranches receive the water, and the ridges are reserved for Muplants. The vegetable crops are here in advance of all others, but a number of fields are occupied by pointoes, beet-root, cereals, lucerne, etc. When it is desired to have the soil less broken, it is intersected by small trenshus unity, generally parallel, and placed about 9 feet apart. The general appearance of the crops is most satisfactory. The vegetables, the quality of which has been much criticised, are excellent. The Horticultural Society of Paris, which satisfactory. The regetables, the quanty of which has been made in this followed with the greatest interest the development of the sewage farm at Gennevilliers, has spoken of the success ultained in numerous reports. At the bottom of the open channels by which the sewage is distributed there is a blackish deposit, formed by substances held in suspension, mineral and organic. At the moment of its formation this deposit seems impermeable; but after having been exposed some time to the air it has the appearance of a falt composed of hairs and vegetables and other debris. This deposit is left at the bottom of the trenches during one crop, and is afterwards worked into the ground. Stony ground, of which there is a considerable quantity in Gennevilliers, is much improved by the deposits of insoluble matters, mineral and organic, which the sewage waters leave on its surface, and the amount of fertile soil is thus gradually increasing from year to year.

The scheme for the extension of the sewage utilization as claborated by the late M. Belgrand is as follows:

At present two 400 horse power engines raise part of the sewage water from the collector at Assières. Two other engines, established near the first pair, would be sufficient to pump the rest of the sewage. The invert of the St. Denis is at a much higher level, and could be discharged in the plain of Gennevilliers by gravity. From

could be discharged in the plain of Gernevilliers by gravity. From the pumping station at Cheby to the forest of St. Germain, for a length of 15 kilometers, the water would be pumped through a main; this conduit would pass by the plain of Colombes, across the Scine,

in a siphon, at the Island of Marante, would go through Bezons, Houilles, Sartrouville, then a second time over the Seine, and would outer the northern portion of the forest of St. Germain, where there are 3,750 acres of sterile ground, which irrigation would ferdilize; afterwards the water may be sent in a channel to Achères, where the irrigation would be extended over 1,000 acres. The irrigable surfaces are approximately as follows:—

. 2,500 to 3,000 District of Gannevilliers District of Nanterre, Colombes, Renil . 2,500 to 3,500 Districts of Carrières, Bezons, Argentenil, 3,500 -3,700 -1,75 Sartronville Sartrouville
Foresa of St. Germain
District of Achères

The largest of these territories, that of the fureer, would be at the disposal of the monicipal service, and would constitute an immense regulator; over which the waters would run, and by which irrigation of the other districts might be controlled. For this reason this large area constitutes one of the chief advantages of the scheme. -Engineering.

CORRESPONDENCE.

THE NARROWNESS OF CITY HOUSE FRONTS AND THE ABUSES THAT HAVE ARISEN IN THEIR TREATMENT.

RETURNING to town after some weeks spent in a New England country lown of the best class where the bouses are all mansions. country town it the nest class where the courses are an manager square, broad, and generous, befitting the broad valley in which they lie, I am struck, as often before, with the narrowness and petty subdivision of the street architecture of the city, where, with tenfold east and ambition, the result is so much less in respect of dignity, repu e, and refinement. The complaint is perhaps a foolish one, but it seems to me there is a needless smallness and fussiness in our city dwellings. We cannot, it is true, expect to plant the country mansion in city streets, and we cannot, with our inevaluable taste for individual homes, enculate, except here and there, the broad façades of Continental cities. The subdivision is, I fear, mayordable. But there are certain respects in which the American cities to meddlessly belittle themselves, and east behind them the opportunities which are offered for good building, and one respect at least in which this is especially true of Boston. Here the admirable but preposterously over-worked bay-window is responsible for much of the narrowness of which I complain. The bey-windowed front is the natural outgrowth of the "swell front," so called, of the last generation, a featare long characteristic of Boston houses, and almost unknown else-where. The modern development of it is no improvement. A trans of twenty-five feet, more or less, has live vertical divisions, crowded with four rows of windows. Repose is impossible in such a composition, but as if to express our contempt for a quality so an American we commonly load these windows with the attributes which belong to Italian architecture in the broad, unbroken walls of Rome or Florence. Heavy projecting comises are jerked round these frequent angles, only to be brought up hard and fast at either end against angles, only to be brought up hard and tast at either end against that new feature,—the most feightful, perhaps, over invented by modern utility.—the corbel of the fire-wall. Modern style requires the entrance door to this little from to be as wide and high as the doorway of a palace, and to be approached by a flight of imposing and massive steps, which generally occupy a third of the wilth of the lot. Enough more is consumed by the passage to the basement door to take up a full half of the frontage by the entrances alone, leaving the other half for a scanty pinch of green curf, which is commonly fenced by a stone balustrade massive enough for a park wall. Taken altogeth-er, I aminclined to think this type of city dwelling the most protentions and the least respectable which has ever appeared. Repeated as it is once in every twenty-five feet, or oftener, through nearly all the newer streets of the city, each house differing from its neighbor on either side in material, design, and heigh of stories, and agreeing only in the perpetual squirm of its front line, so that in the perspective of the long streets we can rarely find a borizontal line more than six or eight feet long, the complacency with which we regard this surprising creation, the steadiness with which we go on reproducing it, and the fordness with which we lavieh upon if every decoration known to ancient or modern art make it one of the architectural wonders of the day.

Such as it is invever, it has made good its title to supremary. I am not foolish enough to suppose that the belief of the resident of the Back Bay in his hay-window could be shaken by any argument which the united profession (if it ever could be imagined united) could address to him. It will continue to increase and multiply, and the only rumark I am moved to make further concerning it is this: Let us learn to treat it simply, — seeing that to lead its miserable little faces with architectural features which require space and elbow-room for their due affect is wasteful and ridiculous excess. Let us gradually reduce the projection of the hay, and thus mitigate the violence of the frequent changes in the direction of the lines. Let us try, by all means, to induce our clients to consent to stop the bay below the main cornice, so that the cornice itself and the roof may be straight, and that there may be so much at least to reduem the general uneasiness of the dusign. One thing more. We know not whether it is reasonable to expect

that neary more houses will be built in Boston. Dismal prophecies begin to be heard of the end of the good things which in past days have fallen to our share. But there are sangaine persons who be-lieve that the present hard times will have an end, and that there shall yet again be takes and ale. We know, at least, that there is a bundred-acre park proparing among the outlying awamps, and that miles of new streets will be laid out to surround this pleasure-ground, upon which the prosperous citizens of inture generations, and per-haps even of this generation of which we are, will be asked to pur-chase house-lots and build themselves houses. Must these new streets all be divided up into the everlasting events-live foot lots, and sold at two to live dollars the foot? Is there my warrant in the rate of increase in the population or wealth of Boston for centiating in these subarban regions the condition of things which prevails in the It seems to me that not only from the pleturesque and city streets? city streets? It seems to me that not only trom the picturesque and greistic, but also from the linancial and speculative point of view is would be for the advantage of bayer and seller alike that the broad avenues which are to surround the new park should be made properly suburhan avenues, and should be divided into lots of say a hundred feet frontage, and sold at reasonable prices which would encourage the limiting of generously planned houses with gardens also at them. We can all remember such streets, generally it is true in the smaller cities, — Portland, Springfield, Providence, Syraense, Cleveland, — where, though the houses may not be particularly surractive architecturally, yet they are made eminently so by their surroundings of green grass and frees and flowers. Such streets afford opportunities, which the close-built streets of the city deny, to the architect, the passer-by, and most of all to the fortunate dwellers, and they contribnic, perhaps more than we are aware, to the encouragement of an elevated and refined taste among all classes of people.

A MINING ACCIDENT IN NEVADA.

Time Virginia City Enterprise of July 18th gives the following interesting description of an accident at the Ward Mine :

The Ward Mine was yesterday the scene of a given deal of exforture almost equal to that of the rack. About eleven o'clock, as the track which is used in bailing water from the shaft was being hoisted to the surface, the engineer on daty, by some mischance, allowed it to be van up into the sheave. The tank, which is of six hundred gallons capacity, was full of water, and when it struck the sheave the clevis by means of which it was fastened to the sizel wire cable was broken. The tank was of would and ran on guides, the same as a case. It was a big, clumey, water soaked maair, and very heavy, to say nothing of the water it contained. When it parted from the cable it went down the shuft like a leaden planamet, a distance of thirteen hundred and fifty feet to the water at the bot-

When he saw what had happened the engineer was almost wild with excitement, as he knew that seven men were somewhere at the bottom of the shaft, and could not hope that all had escaped with their lives. He can out of the works and shouted for assistance till

his voice was heard at a great distance.

The heisting tank fell down the south comparament. The next compartment north is the one in which the cage is used. The cage was down at the time the tank fell. The first move was the attempt to hoist this cage to the surface. A move was made to do this, but no sooner had the eage been started than a signal came up from leno sconer had the enge been started than a signal came up from below to stop. This showed those on the surface that there were some men below who were alive. The men below then struck twenty bells. No one above know what this meant, though it is now said that this is the Cornish death signal. Not knowing what to do those above again tried to hoist the eage, when sharp and annistakable came the signal to stop. Again come up the twenty hells. These were followed by other signals that could not be understood. Several starts and the signal to stop the signals that could not be understood. eral times it was thought that those below might be ready to have the cage hoisted, and careful attempts were made to move it up, but each time came up from below the percumptory. Stop!" All this was exceedingly perplexing and ominous. It was finally concluded that some one was wedged in between the cage and the timbers of the compartment, and no further attempt at hoisting was

As the news of the accident spread, people came from all directions and crowded into the works. Among these were the wives and children of some of the men who were in the shaft, and the friends and relatives of others. How many men were killed, and who they were, were questions that were torturing all present.

As the cage could not be moved, an attempt was made to communicate with the men and learn something of the signation as the bottom of the shaft. By direction of Superintendent Thayer a rope was lowered, to which were attached two lanterns, a bit of board, and a peneil, so that those uninjured below might make their wants known. After allowing it to remain a few moments it was hadled up. One lantern was gone, the other extingui-hed, and it was clear that it had failed to reach its destination. This failure greatly incrossed the discress of those above. Although this effort at communication failed, repeated signals on the bell were struck by those below, but sould not be understood,

What now seemed necessary to be done was to make a descent into the shaft. In order to allow this the cable attached to the cage

in the depths had to be anchored to the surface so securely that its entire weight would be sustained, and then decached from the rect. This was done and the cage put is place. As soon as all was ready—and it took hours of preparation to complete everything—Juhn Oswell, foreman of the Julia and Ward, took two companious, took, lanteras, etc., and started for the dipths. The guildes and timbers in the shaft had been so hally damaged by the descent of the tank that it took force minutes for this came to mould the bettern of the that it took forty minutes for this cage to reach the bottom of the shaft

shaft.

It had been agreed upon between Superintendent Thayer and the foreman that if any men were dead he should, as soon as the cage reached the bottom, riag six belts, and then one for each death. When at last the cage stopped and no signal came up, the suspense of all at the surface was terrible. What to make of this silence of the bell no one knew. At last the bell began to strike and all present began to count. No death signal was sounded, but instead, clear and unmiscakable, the signal to hoist.

As the cage came to the surface five men were seen on it,—the three who were slown and two others, one of whom was supported.

three who went down and two others, one of whom was supported by his comrades. The joy of all present was great when it was an-

by his comrades. The joy of all present was great when it was anmoraced that the two men on the case were the only ones hart, not
dangerously; that all left below were sound and well.

It was soon ascertained from the men that the backy escape was
owing to the fact that all the men in the hottom of the shaft were
in the north compartment, out of the way of harm, except two.
They were in the tank compartment, and must have been instantly
killed had they not heard the tank coming down the shaft. They
instantly dashed into the middle compartment, in which was the
case with a car upon it. They tumbled into and over the car and
above just in time to escape the falling tank, but were injured as
above stated either by striking their heads against the timbers or the above stated either by scriking their heads against the timbers or the car, or by fragments of the tank.

When the case struck the concussion was terrific. Every light was instantly extinguished. Mr. Rochford says the concussion deaf-ened has for a time. The reason the mon below would not allow the cage to be hoisted was that they supposed it upheld a mass of timbers, or in some way protected them. They wanted their situation made no worse than it was.

NOTES AND CLIPPINGS.

Accident, - On August Ed the smoke stack of Slufflin and Miller's quilt factory, Brooklyn, fell through the roof of the building, and caused such a panic amongst the female operatives that four of them jumped from the second story windows, fortunately receiving but slight injuries.

Fall of a Piazza. — One of those naforescen building accidents for which no one can be held responsible happened lately at Silver bake, in Wyoning Commy, N. Y. The County Pioneer Association, numbering some twenty thousand persons, was hobling its annual festival at the lake on Thursday, Angust Ist, and when during the afternoon a thunder-storm came up, the crowd rushed to the latel and adjuncing houses and sought sheller there. The plazza, which extends along the whole front of the building, was quickly enowded to its fullest expactly, and then, after a short resistance to the unexpected weight, about hall the floor gave way, and dropped the strangeling crowd to the ground, some twelve feet below. The panic cansed by the accident was such that the crowd in madjoining building, by its excited movements, caused the floor there to give way; but a billiara-table in the room below received the ends of the broken joists, and so formed an inclined plane over which the crowd slid in comparative safety. Other floore were strained, and partially gave way, and inlighted the buildings appear to have been as hadly wereked as the crowd was rudely numbled about.

The Canny Factory Explosion. — The remarkable statement is now made that one Junes Gresham had an office in Greenfield's factory on Barciay Streat, New York, where he had specimens at a powerful explosive which he was maintacturing by a secret process for the exclusive use of the Ression government. The explosive, more powerful in its action than dynamic, is said to be made by breating poydered asphalum with electricity. If there is any truth in the report, it is singular that the fact that there was such a destructive substance in the behinding has not transpired

BRICK-MAKING BY STEAR. — Evidently there are in this country those who do not share Mr. Barry's belief that "from is the building-material of the fatore," but have greater high in the qualities of harned clay, and show their faith by their works. There has been established tately in Baltimure the second factory in the country for making bricks by clean, — the other establishment being in Washington, — which is said to be able to make two hundred thousand bricks each day. The clay, to be able to make two hundred thousand bricks each day. The clay, after it has been passed through from rollers which pulverize the small stones and reject the large ones, is carried to the top of the building and theore falls into the disintegrator which makes four hundred and fifty revolutions per mionte. Here it is reduced to a fine powder and passes off into a pipe where by the addition of steam it is moistened enough to give to its particles the proper cohesiveness. This pipe feeds a wheel farnished with moulds which, in the two revolutions it makes each minute, turn out two hundred and thirty-two bricks. As the wheel revolves the bricks deep out on to an endisse belt which carries them to a sited some lifty feet away, where they are loaded by hand upon small cars, which are rolled into drying overs and allowed to dry there during five hours, the dampness in these ovens being constantly withdrawn by an exhaust fan. After this they are macked in kilns and fired.

HERCULANCE AND PORTER: — Preparations are now making to col-obtain at Pompeii next year the eighteen hundredth anniversary of the destruction of Pompeii and Renculaneum.

The Explosiveness of Flour Pour. — Professors Perk and Peckham, of the University of Minnesota, have been making an extensive series of experiments to determine the cause of the recent flour-mill explosion at Minnespolis. The substances tested were course and fize bran, material from stone ground whent; whent dust, from wheat dust-louse; middings, general mill dust, dust from middings machines, dust from their dust-house (from stones), and flour. When thrown in a body on a light, all these substances put the light out. Blown by a bellows into the air surrounding a gas flame, the following results were obtained: Coarse bran does not burn. Plue bran and thour dust burn quickly, with considerable blaze. Middings burn quicker, but with less flame. All the other substances born very quickly, very mach like gunpowder. In all these cases there was a space around the flesh where the dust was not thick enough to ignite from particle to particle; hence it remained in the air after the explosion. Flour dust, flour middlings, etc., when mixed with air, thick enough to ignite from particle to particle, and separated so that each particle is surrounded by air, will muite with the oxygen in the air, producing a gas at high temperature, which requires an additional space; hence the bursting. There is no gas which comes from flour or middlings that is an explosion; it is the direct combination with the air that produce gas, requiring additional space. Powerful electric sparks from the electric machine and from the Leyden jar were plasted through the air filled with dust of the different kinds, but without an explosion in any case. A platinum wire kept at a white heat by a galvanic barrey would not produce an explosion. The dust would collect upon it and clair to black coals, but when fanned into a blaze the explosion followed. A common kelosene lanters, when aurrounded by dust of all degrees of density, would not produce an axplosion, but when the dost was blown into the hortom, through the globe and out of the top, it would ig THE EXPLOSIVENESS OF FLOUR DUST .- Professors Pork and Pock-

The Sanitary Condition of Boston Horses — During the cast year the Massachusetts State Board of Health has caused to be investigated blocks of buildings in the following sections of the city of Boston: —

iteris of bandrings in the following sections of the city
Section 1 — Rescon Hill, near the State House.
Section 2 — Back Bar, near the Cublic Garden,
Section 3 — West End, near the Lawell Ispot.
Section 5 — West End, near the Lawell Ispot.
Section 5 — South Roston, between Sighth and Ninch streets.
Section 6 — Between Horrison Avenue and Albany Siret.
Section 7 — South Roston, near independence Square.
Section 8 — Montherly Hill, Charleslova.
Section 8 — Northerly Hill, Charleslova.
The Lawe Calls in many internation was to determine the

The object of the investigation was to determine their sanitary condition as regards (1) drains, (2) soil pipes, (8) maps, (4) sir-boxes, (5) cellurs, (6) yards, and the result is shown in the following table: —

				8	ertin	9			
	1,	2,	a,,	i,	Б,	ű,	7,	9,	8.
Source in the block	28 25	50 45	49	72 12	28 26	38 84	29 94	48	46
Touses with defective dealer	4 22	14 34	28 12	47 25	23 4	20 14	27	26 28	14 14
tourse with soil-pipe wentilated	24	19 20	31	10	2n	- 20	점	38 11	2 13
ILouses with traps. Itonies effectively supplied Courses without effective traps	26 14 12	48 22 20	7 25	14 2 70	33	50 20 202 202	0 a 19	28 21 28	4
Amminosay. Minuber with passable location Similar with had location Locate without a harmen Californ	18	新二	201	72	26	81	18	17 19 26	-
Cellars found paesably hight, including base- mouts, which are used as cellars and kitches found quits dark. Found dauly or wat	24	45	34	67 5 27 62 27 62	29 8 18	80 4 23 24	13	40 40 40	- 8
TABLE Number of passably cleam Number of passably dey Like others were wet, or nucleam	24 25	45 45	35 35	61 71	24 26	29	24	47 48	3 4

The Gilbert Scott Menorial.—It has been decided that the pet-sonal memorial, which it was roted should be placed in Westminster Abbey, shall take the form of a brass, which is to be placed over the grave in the Abbey nave. The task of designing the brass has been assigned to Mr. G. E. Street.

A Covennes Bridge, - The Polytrobnic Review says that there is A Covernment Brings. — The Polyhelmin Remote says that there is spanning an open curting, through which passes one of the London railways, a bridge which is form is a flat arch of seventy-five feet span, and seven feet six inches rise in the centre, where the concrete is three and one half feet in thickness, increasing toward the hameless, which shur upon the concrete skew-backs. The material of which the bridge is made is formed of gravel and Portland concept, salved in the proportions of six to one, carefully taid in mass upon close boarding set upon the centering and inclosed at the sides.

BOSTON, AUGUST 17, 1878.

CONTENTS.

Control of the Contro	
Sunsary:-	
The Committee's Award in the Patent Office Competition	
The Congressional Investigation of the Lahor Question, -	
The Difficulties in the Way of the Committee Dissolifac-	
tion of the Real Workingmen The Labor Troubles at	
Washington The St. Louis Architectural Dranghamen's	
Association The Effect of Urban Steam Heating on Trees.	
- The Wishington Monument	5
ARCHITECTS AND ENGINEERS, J	5.
THE DETERMINATION OF OUT-PAINTINGS.	5
The Interpretions:-	
Wood's Building, Wilkesbarre, Penn Country House near	
Cleveland, O Country House, - House on Brooklyn	
Heights, N. Y Dosign for a Chowb	5
CORRESPONDENCE:	
Letter from Paris	41
COMMUNICATIONS 1-	-
A Courribution to Popular Ignorance on the Subject of Smoky	
Chimneys An Explanation in Regard to the Competi-	
	45
THE STORY OF AN CHAIR BRIDGE	55
Norms and Clienteds	61

The expert committee of architects, chosen by the Scoretary of the Interior to examine the competitive plans submitted for the restoration and reconstruction of the Patent Office Building at Washington, made their required report on the 9th instant. Thirteen competitors submitted 110 sheets, containing more than 254 drawings. The committee have decided that the contribution submitted, as afterwards discovered, by Mr. J. A. Vrydagh, of Terre Haute, Indiana, contained "the most intelligent embodiment of the requirements and suggestions" of the programme. This design proposed the erection of an additional story or "attic" upon the walls of the present building, so as to form an essential part of the architectural composition of the exterior, giving an entire new story of offices, seventy-two in number. All attempts made by the competitors to contrive, as suggested by the circulars of the Department, a new story which should be practically invisible from the streets, were found to result in such obvious imperfections of distribution in the plan, and to involve such serious inconveniences in respect to light, air. space, and circulation, that the alternative of a new story, as allowed by the Department, was considered the only practicable scheme. The committee also approved the arrangement of a central connecting passage across the contr-yard of the building, as proposed by the successful competitor, or, instead of this, a rectangular building, seventy by seventy-five feet, in three stories, connected with the opposite wings by passageways, and containing eighteen offices. The committee recommended certain modifications of the scheme for the interior arrangements of the new Model Room, and approved the proposition of one competitor (S. C. in monogram) for "the restoration of the building substantially as it stood before the fire," but explained in detail its objections. The report seems to be exhaustive impartial, and workmanlike. We hope to be able to present it in full in our next issue.

The Congressional Committee appointed to collect evidence respecting the present depression in business and the consequent distress among laborers, with a view to ascertain causes and to suggest remedies, closed its first session on the 6th inst. and adjourned to the 20th. Up to this time the committee has had no reason to complain of paucity of testimony or of reficence on the part of its witnesses. Employers and employed, labor reformers, representatives of Workingmen's Unions, of Congresses of Humanity, of the Socialist Labor Party, of Associations of National Reform, have availed themselves of the ample opportunity of the occasion, and have been patiently heard. In the midst of the engrmous mass of undigested theory and rubbish presented, most of which is familiar amongst the curiosities of political economy, the committee will have much ado, we imagine, to find the precious mustard-seed of knowledge. Up to this date, Daniel has not come to judgment. The notes of the committee are full of denunciations of the present order of civilization in every detail, and of complete and ready rem-

edies for all the present avils. Among these remedies, socialistic and cooperative nestrums were abundant in every form: the establishment of government schools of mechanics, of elaborate systems of internal improvement for the employment of labor, the taxing of government lands, an unlimited inflation of the currency, restriction of the rights of patentees, systems of public loans to all applicants, compulsory curtailment of hours of labor, the abrogation of the contract system, direct employment of labor by government, the distribution of the public lands, the redstablishment of the income tax, — out of such contradictory propositions as these, the committee can hardly hope to develop a rational and symmetrical system of reform. But having gathered such wisdom as it could from volunteer and promisenous advisers, it now proposes, an reassembling, to hear only such persons as it specially invites to present their views concerning the variations in the prices of labor and of manufactured products, of the necessaries of life and rents, and the profits of manufacturers, during the past eighteen years. These witnesses are to be selected from among all classes of hankers, merchants, and manufacturers, from tradesmen and workingmen, and from all grades of employers and employed.

Whereign the committee will find as ready response when it comes to the serious part of their work, the collection of trustworthy information as to "the causes of general business depression, especially of labor," and the scambing out of measures of relief, remains to be seen. Experience shows that manufacturers are not foud of the trouble of furnishing statistical infermention as to the course of their business, still less as to their profits, and even statistics are solden enough in themselves to explain causes or prescribe remedies. The means of relief suggested on the popular side of the question, it will be seen, all come in the and to some way of increasing taxation, or distributing other people's money by the aid of legislation. It is not our business to discuss questions in their purely political aspects; but we may be allowed to notice that these schemes are a preity natural extension of the habit of special and class logislation, of which we have seen and heard much; and that, the principle being once fully recognized, it is only logical to carry it out and make like provision for the aid of ministers, lawyers, bank clerks, widows orphans, architects, and what not. When this is fairly done, we shall not be far from the consummation desired by socialists,—a general distribution or "divvy," based on a hypothecation of all the immovable wealth of the country.

We understand that the real workingmen complain that the committee is endeavoring to make the cause of labor ridiculous by permitting and perhaps encouraging all sorts of crazy thenrists to appear before it and offer contradictory testimony. Apparently, however, the workingmen have no case against the committee, for they have had equal opportunity with the rest to detail their wants and explain their remodies; indeed, the records of the committee are not without a very small amount of honest and sensible evidence from the dissatisfied class. In Philadelphia it is proposed to hold workingmen's meetings, so that, by the cumulative force of many voices and by unanimity of complaint, the true state of the case may be more effectually set before the committee than by isolated statements. Una roce poco fa. Doubtless such gatherings will have their value; the committee can hardly shut its eyes and close its ears to them But, unless they choose representatives to present their case to the committee of Congress in the appointed manner, to be questioned like other witnesses, we do not see how much good can be got out of them. Truth can be elicited only by such imparprocesses as the committee seems disposed to make use of. If Kearney and his like have real grievances, but them ask for a hearing and state their case plainly, without the embellishments of electoric which befogs, or of blasphenry which betrays, the cause of truth. But the California phenomenon has already publicly denounced the committee. The new theory of the "pooling of issues" is not of a nature to bear cross-questioning before any committee, and will make no formal appearance in Mr. Hewitt's inquisition.

The representative of the socialistic Guy Fawkes in Washington seems to be one Cohen, who, on the 5th inst., visited the District Commission at the head of a body of men claiming to be a

delegation from a mass-meeting of laboring men, and submitted a series of resolutions said to have been adopted at that meeting; these called upon the officers of the Government to fix eight hours for a day's work and \$1.50 for the lowest payment therefor, and to require all contractors on public works to be placed under similar obligations with respect to their laborers. laborers' demonstrations have been active enough to elicit from the Supervising Architect a card stating that no officer in the Treasury Dopartment has power to fix in any way the prices of labor; that the contractors on public works in Washington find no difficulty in obtaining all the labor needed for \$1.00 to \$1.25 per day; that men who prefer to work for this price rather than lie idle and starve have a perfect right to do so, and should not be interfered with; and that delays in the work occasioned by violence and riot do more harm to the workmen than to the Government. These are fundamental principles in the employ-ment of labor, but we hardly believe that Cohen and his fellows will take them to heart, or that they will lay their troubles before the Congressional Committee. Their methods are different, and their aim is not to discuss, but to compel acquiescence; not to adjust thomsolves to natural and inevitable conditions of living, but to create political parties, to have a larger share in the spoils, to overturn society and build up a new fabrie in accordance with theories which are impracticable and ideas which are dreams. There will be agitation and more or less of disturbance, until labor shall have learned that its true leaders are not noisy demagogues, but men of virtue and temperance, as well as of power, - true citizens of the republic.

Ir is some months since we mentioned the formation of an Architectural Draughtsmen's Association in New York, of whose aims and purposes we knew little, but of whose successful organization and work we would gladly hear more. must be in New York ample material for the formation of a good working society, whose proceedings can be of incalculable benefit to its members, and which may become, after the manner of the Architectural Association in Lordon, of no inconsiderable weight in the profession, and may gather to itself, as has been done by its prototype, those members of the profossion who are repelled from the existing organizations by personal or other considerations. It is one thing, however, to found such a society in a large metropolitan city, where all the combitions are favorable, and whither the peripatetic draughtsman so often turns his steps, thus bringing ever fresh recruits; while it is quite another to enter upon such an enterprise in an inland city, as has just been done at St. Lanis, where we imagine the ranks of draughtsmen receive but few recruits in the course of the year, and these chiefly of indigenous growth and home training. The St. Louis Architectural Draughtsmen's Association will have, however, the whole field to itself, for as yet no chapter of the American Institute of Architects has been established there, so the new society may hope to acquire, in the course of time, the support and cooperation of those older members of the profession who are already members of the Institute, or who would become so if a chapter were established in the city. Unless too great reliance is placed on the activity and enthusiasm of a few members, Western pluck and enterprise will probably bring this, as other enterprises, into successful and well-ordered opera-

BEFORE either the proposition of General Spinola or that of the New York Steam Heating Company has been accepted by the government of New York, it would be well to wait a little longer, in order that the results of the system of steam heating at Lockport may declare themselves a little more clearly. Unquestionably much may be said in favor of the economy, convenience, and adaptability of the system, but before leave is granted to introduce the Holly system into cities, and more purticularly into such rural cities as Auburn, N. Y., and Springfield, Mass., which, we understand, have already voted to adopt this latest of modern improvements, it should be definitely known what effect it will have on trees and vegetation, whose hygicuic and indeed civilizing influence on the dwellers in cities can hardly be overestimated. At the best, trees have small encouragement in cities, If they border a thoroughfare the air and water are effectually excluded from their roots by the pavenient, the surrounding buildings cut them off from the sunlight, city foresters think it their duty to teim and amputate their limbs, and their development is stunted by the continual exposure and mutilation of their roots during the laying and repairing of gas pipes, water

mains, and sowers, even if a leaky gas main does not so pollute the soil as to make vegetable life an impossibility. If they beautify a park their condition is bettered only in that they have more light and air, advantages which are offset by the chances of baying impermeable asphalt pavement run over their roots, or street sweepings so lusped about them as to cause their death, as lately in Boston. If to these unfavorable conditions is to be added the warmth of even carefully protected steam pipes, which will cause the sap to start at every winter thaw, and will superize the last atom of moisture left by an Angust drought, our cities may flustly be compelled to content themselves with such pastoral suggestions as may be furnished by tip patm-trees and tinsel vines, such as form the numeragoous retreats of the Jardin Mabille at Paris.

We learn from a despatch to the World that Colonel Casey of the Engineer Corps, Superintendent of Public Buildings and Grounds, has laid before the Washington Monument Commission a detailed report upon the condition of the structure. He proposes so to strengthen the foundations that they will be able to hear, not only a total height of four hundred and eightyfive feet, as heretoforn contemplated, but an increase of height to five hundred and twenty-five feet, which, as we understand, is now favored by the Commission, in order that the obelisk may far outreach the loftiest structure yet creeted by the hand of man. If the chelisk is to be continued at all, we trust that it may be stretched to the utmost, so that there may be no question on the point of its procuincace in respect to height. Under the act we nuderstand that work upon the superstructure cannot be resumed without direct authority of Congress. The interests of art, which we endeavor to represent, are concerned to prevent the completion of this work in the manner indicated, as we have many times taken occasion to say: we trust, therefore, that no proper effort may be spared to inspire Congress with a due sense of the responsibility which it has a-sumed, and although the strongthening of the foundation, which is now to be begun, will furnish to the friends of the abelisk an additional argument for the completion of it, let us not cease to hope that civifization may yet have its effect upon this blank and meaningless pile, and give to it a new grace, an expression more appropriate to the great occasion, a significance more in accordance with our intelligence and culture.

ARCHITECTS AND ENGINEERS, L.

The separation of architects and engineers into two professions is quite a modern device. The engineer's profession is in fact a young and strong-minded daughter of the architect's, begotten of the modero tendency to the mechanical development of science and to the division of labor. Needlessly divided sympathies separate those whom the family relation and common interests ought to keep in close union. In older ages of the world the works of architecture and engineering were always the same. The engineer's duty was only a part of the architect's. It was not till the time of the Renaissance that the seeds of a future family separation were sown, when, as we have often been told of late, architecture began to be outwardly independent of construction. Then first architects were amateurs and dilettanti, artists merely, who looked at the art of building from without. This divorce between architecture and construction, which thoughtful architects have learned to regret, and over which writers on art here lately spent so much eloquence, was the type, itself unnecessary, of the division of work which had to come. Even then the two daties were united in one person. The great architects of the Ronaissance were the great engineers and constructors, as well as the great painters and sculptors. But the two offices having once come to be distinct, everything was ready for the establishment of two independent practitioners, as soon as the increased complexity of modern requirements and the rough of modern science called for it, and it was easy for them to full rapidly into disunion. The gap between the professions has widened, till in our day we have some architects who are either innocently ignorant or superciliously disdandul of the whole theory of construction, and engineers who attempt the most imposing monuments without any con-cern for architectural teaching. Visconti, the architect of Na-poleon's tomb in the Invalides, and the projector of the new Louvre, looked upon construction as a study beneath the attention of an architect. Sir Joseph Paxton and Captain Fowke built the Crystal Palace and the great hall at South Kensington with no idea of calling an architect into council.

The separation of duties has nevertheless become necessary, because nowadays there are constructions which call for greater scientific skill than architects have commonly time to acquire; while the transformation of architecture from an art of close traditions to one of historical and eclectic study has greatly increased the amount of special acquirement it demands; because there is a vast amount of constructive work going on which gives but the smallest occasion for architectural care; and, in a word, because the tendency of civilization sets irresistibly in the direction of a division of labor. But if the separation is necessary, the dissociation is not. It is purely gratuitous; we might almost call it factitious and perverse. There are no two classes of practitioners, except physicians and surgeons, architects and scalptors. - whose work should bring them more constantly into consultation than architects and engineers. This is especially true of them in England and the United States, where the dissociation is greater than elsewhere; where architects are too ready to underrate constructive training, and engineers to look upon art as vanity and vexation of spirit. Apart from the loss of the benefits that might follow from association, the visible results of divergence are unfortunate on both hands. Each profession has lost something in quality by their disunion, which a reassociation might help it to recover. Architects bungle in their construction, and engineers make a mess of their designs. The architect, too, is apt to fail of the straightforward manliness which a clear constructive sense would give to his designing. The work of the one becomes fantastic or effemi-nate, and that of the other coarse, ugly, and brutal. In the good time when architecture and engineering were associated, as they had to be when they were mixed in the same practitioner, an important work was at once the lest in construction and in act that it could be made. The domes of the Pantheon and St. Sophia, the vault and clerestory of Amicus, the enpulas of Florence and of St. Peter's, were triumphs alike in both respects. But now we find the United States strown with bridges. lighthouses, and other structures that need not have been hideous, and with the debeis of buildings that need not have tumbled down, if their designers had been both engineers and architects; or if the members of each profession would have taken good counsel from the other.

As things stand the engineers have rather the advantage before the public in our country at least; not because they do the architectural part of their work any better than architects do their constructing, but because their successes in their own field are more easily recognized, and their failures in their neighbors' less so; because, perhaps, they set a higher value on training than architects; because they are better united as a profession; because, in fine, the age they live in is more a scientific and mochanical age than an artistic one. On the other hand, inasmucli as architects depend more on construction than engineers on design, there are many architects who are trained constructors, while there are perhaps no engineers who are trained designers. There are architects - we can call to mind several in the United States-who have added to their studies a regular schooling in engineering, and these, other things being equal, should be the best equipped of their profession, but this is naturally the exception rather than the rule. The architect is under heavier penalties to guard his weakness, for his building, however well designed, may tomble down, bringing its beauty to naught and its author to disgrace; whereas the engineer's may still be useful, if it turns out hopelessly ugly. Neither profession can get along without the knowledge that belongs to the other. No one would trust, in these days, the architect who openly rejected constructive skill; and it is probably safe to say that the engineer does not exist who does not always, howover utilitarian he may be, do something to make his constructions look well. There is, in truth, no sharp line to be drawn between the works of engineering and those of architecture. There are many buildings which may be classed with either, and are given to the practitioners of either, as convenience may re-There are others, such as mills, elevators, lighthouses, which are usually given to engineers, that, if they are to be given to one profession exclusively, might with advantage in some respects be turned over to architects. There are others which, by their monumental character, and by their difficulty of construction, call for the best powers of both professions. There are indeed persons who assume to practice both, calling themselves architects and engineers, which on the debatable ground is not anageral; but it is safe to infer that they do not stand, or even aspire to stand, in the front rank of both professions, if of either.

Practising as they do the two branches of constructive art which ought to be at one, and can never be wholly separated, but which modern usage has necessarily and irrevocably assigned to different professions, architects and engineers, one would say, were natural allies. They ought to profit by constant consulting over common interests and analogous occupations. Each profersion ought to be the most appreciative spectator of other's work, to study to understand it, and to be first in leading the public to a sympathetic comprehension of it. Each should recognize the benefit of an appeal to the other for advice, in those parts of its work which trench on the ground of the other. Their professional relations, their legal standing and liabilities, are analogous. There is, therefore, much that they might do in common to establish reasonable and orderly rules of practice, and to strengthen the position of both before the publie. Not that there is no recognition of brotherhood between the professions, with more or less consultation, and occasionally some concert of action; but there might with benefit be a good deal more, especially in our own country, where the two goolds have but lately succeeded in defining their own personality, as it wore, and where whatever union there may be is perhaps as much in a confused identity as in the helpful intercourse of two well-distinguished professions.

Many ways naturally suggest themselves in which concert of action between the two bodies of men would be valuable. Of some of them, and of some means by which it might be furthered, we shall speak in another article. That any single class of men can in these days be thoroughly skilled both as architects and as engineers is not to be booked for. Since engineers exist, architects will do well to recognize and take advantage of their superiority in their own province. Engineers may remember that a skilful designer can add a grace to their most conspicuous works, which the public will value, if they do not. If there had been a habit of cooperation between them we might have escaped some such disasters as that of the Rockford Court-House; nor need we, in case the Brooklyn bridge remains unfinished, have seen its huge piers stand prodominating over two cities in unnecessary ugliness, white uncodeemed by any useful office.

THE DETERIORATION OF OIL-PAINTINGS.

Out-paintings are subject to various kinds of changes, which may Oil-paintings are subject to various kinds of changes, which may be considered as diseases, requiring different treatment according to thair different nature. A science needs to be formed, a pathology and therapeuties of oil-paintings. The pathology would have to describe and explain those diseases and their progress, and to develop the methods by which a correct diagnosis could be arrived at in each individual case. The therapeuties would teach the consider which might be applied either to care or to alleviate the disease, or at least to starting progress. A beginning would fellow which would at least to stop its progress. A hygiene would fellow, which would have to teach how to avoid perulaious influences, and which, besides, while giving precepts for the technical process of painting, would have to forestall those constitutional diseases, which, even in cases where no noxious influences can be traced, are the causes of decay, after a comparatively short period of existence. As medical science is above all things based on anatomy and physiology, so the exact knowledge of the structure of a picture would have to be acquired previously to any surdy of its disease. Unfortunately, direct investigation alone can procure no such exact knowledge; on the contrary, we are obliged to enter upon a minute historical investiga-tion of the material as well as of the technical methods adopted by

The excellent works of Comino Cennini, Mérimée, Sir Charles Eastlake, Mrs. Merrifield, and others have already furnished most yalnable material; but still the field for investigation remains unlimited; for, in order to enable us to secure the conservation of each valuable painting, we ought to know exactly how it was made. The arrists of the present time would spare infinite trouble to the investigators of future times, if, along with their works, they would leave the account of their practice in the case of each picture. A treatment without exact knowledge of the normal condition, as well as of the nature of the disease, is, as we shall sue, as dangerous for the

picture as it would be in the case of living beings.

Professional restorers of pictures admit this danger in a general way; each of them, however, is convinced that he himself, by his personal knowledge, skill, and care, knows how to avoid it. The public pays too little attention to the subject, and therefore it necurred to me that it might be useful to give a short account of what we know about this question, of the changes to which oil-paintings are expressed, as well as of the means either to avoid or to cure

We have to consider, first, the material on which the artist has painted; that is, as far as oil painting is conserned, principally would

A paper by Dr. R. Liebteich, read at the Royal Institution of Great Britain, and published in the Architect.

Secondly, the priming: that is, the subscance with and canvas. which the surface was prepared in order to be made fit for painting. Thirdly, the painting itself; that is, the pigments and vehicles used for it, and the liquids that were added during the painting, the mediums, megilp, siccative, varnish, essential oils, etc. Fourthly, diams, megilp, siccative, varnish, casential oils, etc.

the coat or costs of varnish spread over the picture.

The wood on which a picture has been painted may either warp or get chinks in it, or become worm-eaten or even altogether rotten. or get chinks in its of become worm-eaten or over an agenter rome. Against warping the romedy usually applied is moisture. If the panel is very thick it is first made somewhat thinner; then the back is maistured, and the picture is left to be on its back for twelve to twenty-four hours, after which time it will be found to have bent straight. Of course this must not be continued longer than nessessary, otherwise the convex surface, instead of becoming plane, would become concave. When straight, the picture is kept so by would become concave. When strangue, the picture is kept to by beads, which have to be adapted in a particular way, a certain degree of shifting being allowed for the expansion and contraction of the wood. Cracks in the wood are drawn together by inserting pieces of wood of a special shape. Sublimate solutions are employed to destroy worms.

Trifling lesses of substance are replaced by coment. tions of rotten wood, not extending too near the pointing, are out and replaced by wedge-shaped pieces. If, however, the greater part, or the whole substance of the panel, is rotten, the picture much be separated from it and transferred to now wood, or rather must be separated from it and transferred to new wood, or rather to canvas. This was first tried by Hospidu, in Faris, and was purformed successfully upon many pictures, and, among others, upon one of Raphael's Madonnas, in the Galerie du Louvre, and unon Sebastian del Piombo's Resurrection of Lazarras, now in the National Gallery. The process an longer appears so very norrellous; it is generally executed in the following way:—

First of all the surface of the picture is pasted over with grazze and the part of the picture is pasted over with grazze.

and paper; after that the wood is much straight by moistening, or, if necessary, by making heisions with the saw, into which conciform pieces of wood are driven. By means of a benon-saw the panel is to be sawn into little squares, which must be removed by a chisel, and in this way the chickness of the wood is reduced to half an inch: it is then planed until it becomes no thicker than paper, and the rest is removed by means of a knife and with the fingers. The painting being thus several from its basis, it can be fixed on canyon printing its sufficiently preserved. In the opposite case, a mixture made of chalk and alne, or something of the kind, agast be put on first, and very evenly smoothed after being day. This done, the new canvas has to be fixed upon it by means of a mixture of glue, varnish, and tarponine, and the samstance of the picture pressed tightly and evenly against it by means of warm irons

In order to avoid deterioration, the most minute precepts have been given for preparing the panel. It has to be taken from the best oak, or not trues, or cedars. The wood is to be on into boards during winter-time, and kept till autuum before being dried; it can then be prepared only in the following spring, e.g., It would conthen be prepared only in the following spring care. It would cer-tainly be preferable to give up wood panels alterether for large pictures, and only to think of means to make the canvas stronger. For small pictures, panels ofter secrain advantages, and can be more

easily preserved from decay.

In the canyons we toost with the results of injuries or spontaneous decay. A rent may be mereled by rags of linear stuck at the back of the picture. Even a hole may be filled up by pieces taken from other decayed paintings. If the picture is considerably damaged, it will be best to line it. But it the whole cauvas is rotten and rattered, it will be preferable to sacrifice it by pulling off the threads one by one, after having secured the painting itself by pasting paper on the front of it. This done, the painting is transferred to another canvas in the same way as those removed from wood

There are different modes of priming, which may be brought under two principal heads, — the distemper and the oil priming.

(1.) The canvas is distempered by a mixture of chark or plaster and paste, or glue, which may be labe on raw, unbleached canvas; and paste, or gillo, which may be said on raw, unineached canvas; or this latter may be beforehand prepared with glue or pasts. Several coats of this mixture must be put on in succession, one being perfectly dry before the next can be applied. Many of the older oil paintings are painted on such ground. It has the advantage of being quicker prepared, of absorbing the excess of oil, of permitting the color to enter into the priming and to dry quicker, and, moreover, of containing a white absolutely innocuous to the other colors. The inconveniences, on the other hand, are that it more easily breaks, and under the influence of humidity separates from the canvas.

(2.) The oil priming consists of several coats of oil colors. As each of these must be perfectly dry before the next is laid on, and as, moreover, time must be given to the whole to dry completely before painting upon, in order to avoid the sinking in of the colors, the whole preparation is much slower than the distemper. Neverthe-less, it is now generally adopted.

Rey, in France, has pointed out a process which is a compromise between the two methods; he begins by distempering and after several coats of distemper, having dried one after the other, he puts on a coat of oil which, as it were, changes the distempered ground into an oil-color ground.

With oil priming it is of importance that the principal color be white lead, to which are added comparatively small quantities of

yellow, black, or other colors. For a whole century a school - that yellow, black, or other colors. For a whole century a school — that of Bologna — prodominated in Italy which absultoned this principle. During the second half of the seventeenth and the first half of the eighteenth century, most of the Italian masters of other schools followed its example. Probably for the purpose of obtaining more easily the desired effect of the chiarc-occure, they painted on a brown-ish-red priming, which consisted of bolus mixed with maker. Not one of those pictures has kept its original coloring. Not only has the priming caused all the dark parts to grow much darker, but it has destroyed, or nearly so, all the glazing, so that only those colors can be recognized which either contain white or are glazed on white. I can show you numerous instances of this, for, or account I can show you numerous instances of this, for, on account of the extreme fertility of this school, there is little difficulty in procaring pictures of masters of that time, or of their pupils.

Wood printing does not require the same elasticity as that of the cauvas, which might to be expable of being rolled. Therefore the printing of the wood shows less variations. It is generally composed of chalk or plaster, tempered with stands, paste, size, or glue, and more or less thickly hild on. In some pictures of different centuries we find, either between the wood and the priming or between the

we had, error herween the wood and the joining or between the priming and the painting, canvar, and, exceptionally, even paper.

The diseases of the priming are not of a very complicated nature. They manifest themselves principally in three different ways: (1) by cracks in the priming itself; (2) by the severance of the priming from the priming from the priming; (3) by the severance of the priming from the wood or the entry as. The third disease is by far the most frequent, especially among pictures on canvas disterniered with paste. If small pieces only are scaling off or blistering, they are fixed again to the ground by letting a solution of size cass between the detached the ground by letting a solution of size pass between the detached part and the carras, and pressing both goodly together. If the deterioration extends over a considerable surface, the picture has to be lived. While this is being done, and while the gluing substance penetrares into the ricure, the detached parts are pressed on again with slightly-heared irons. If the whole priming threatens to come cli, it will be better to take the pinture entirely from the panel or can cas, and to transfer it to a new canyas.

I shall show you examples illustrating the before-mentioned points. and among them two phetures, — one in oil, taken off from cauvas, the other in tempera, taken oil from wood. Both of them, strange to say, have escaped destruction without having been transferred to a new canvas, and without being covered with paper, as is usually done, before taking them off. They show you the painting by itself from both sides. I have of course used every precaution in bring-ing them safely over from Florence, where I happened to discover

them excefully stored away among heaps of old pictures.

We come new to the most important part of the picture, - the painting itself. We must very often with the lifes that the old meters had been in possession of colors, that is, pigments, the knowledge of which has been lost, and that this accounts principally for the dufference between the oil painting of the lifteenth and sixteenth conturies, on the one hand, and that of the eighteenth and nineteenth, on the other. But this is a great mistake. We know perfectly well on the other. But this is a great mistake. We know perfectly well the pigments used by the old masters; we possess the same, and a considerable number of new ones, good, as well as bod, in addition. In using the expression of good and bath I am principally thinking of their durability. From this point of view the pigments can be always to the better than benefit east. placed under three healings: —

(1.) These that are durable in themselves, and also agree well with

the other pigments with which they have to be mixedwhen sufficiently isolated remain analtered; but when in contact with creation other pigments change color, or after the others, or produce a reciprocal modification. (3.) Those which are so little durable that, even when isolated from other pigments, the more contact of the vehicle, the air, or the light makes them in time fade, darken,

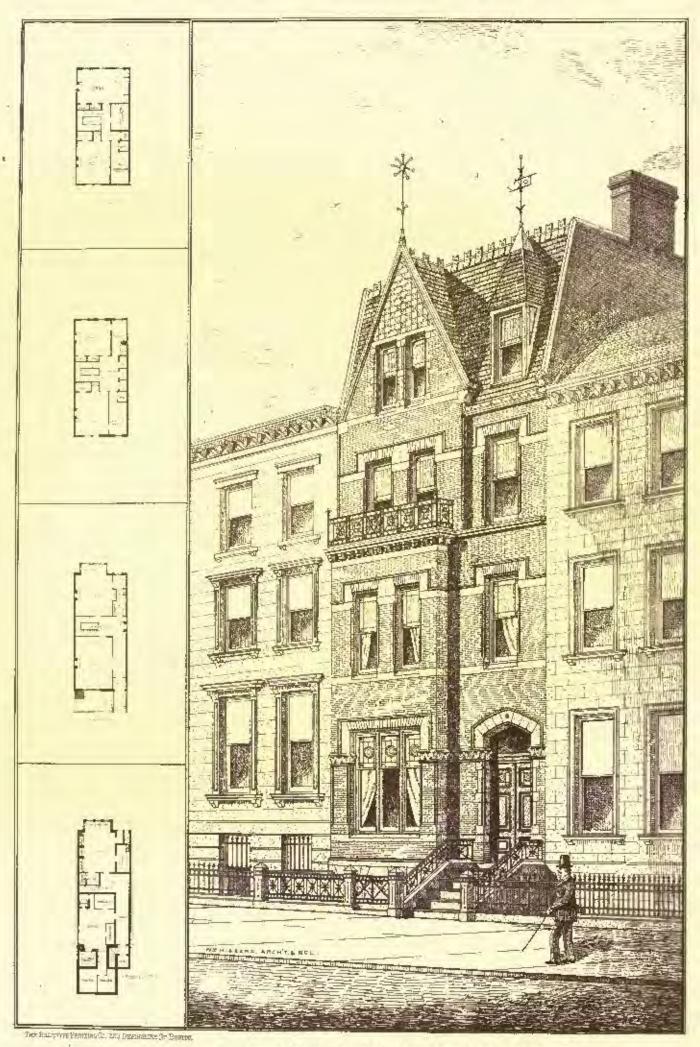
or disappear altogether.

all masters used, without reserve, only those belonging to the first of these three enterories. For those belonging to the second they imposed on themselves certain linds; and precautious.

belonging to the third they did not use at all.

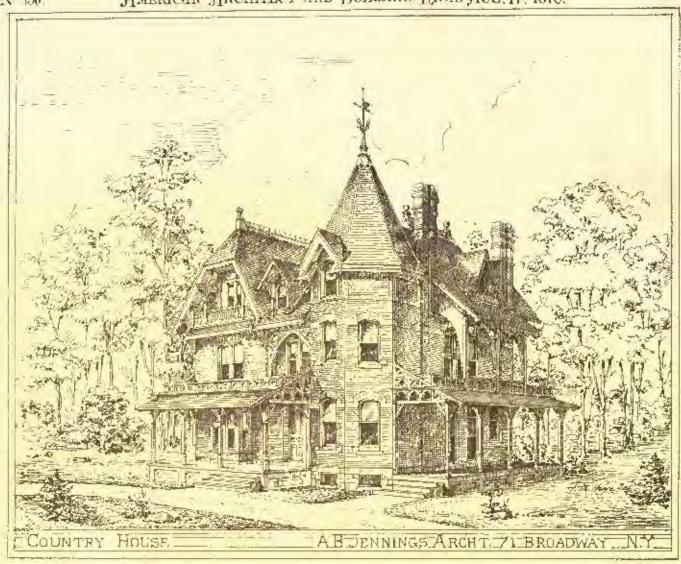
That some of the modern masters have not followed these principles is not owing to a lost secret, but to the fact that they disregarded pass is not owing to a fost secret, but to the fact that they disregarded those well-known principles, and even consciously acted against them. In Sir Joshua Reynolds's diary, for instance, we read that in order to produce certain that of flex's he mixed repinnent, earmine-lake, and blue-black together. Now, orpinent is one of the colors of the second category, carmine-lake one of the third. That is to say, orpinent, as long as it remains isolated, keeps its brilliant yellow or reddish-orange color; but when mixed with white lead it emposes, because it consists of sulphur and arsenic, and it, moreover, blackens the white lead, because the sulphur combines with it. Carmine-lake, even if left isolated, does not stand as an oll color, and therefore has been superseded by madder-lake.

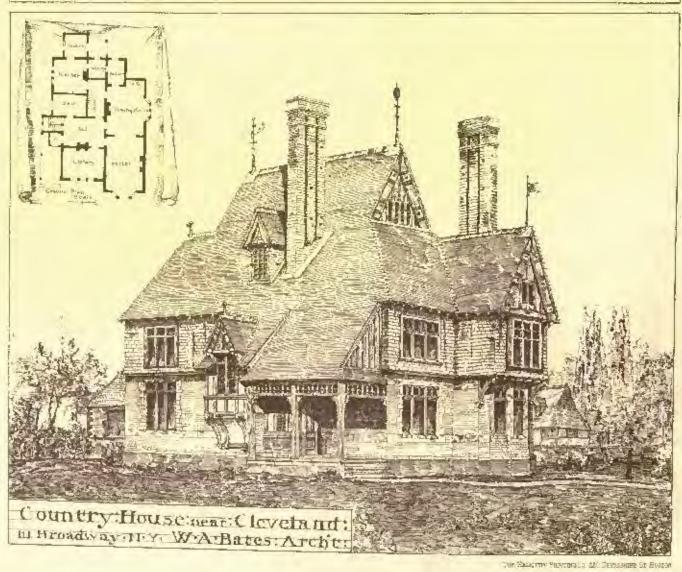
Unfortunately, some of the most brilliant colors are perishable to such a degree that they ought never to be used; yet it seems to me that just in one branch of art, in which of late remarkable progress has been made, -1 mean landscape painting, -the artists, in order to obtain certain effects of color not easily to be realized, do not always resist the temptation to make use of a number of pigments, the non-durability of which is proved beyond doubt. However that may be, I think it pretty certain that the pigments in themselves play only a subordinate part in the deterioration of oil paintings, and that the

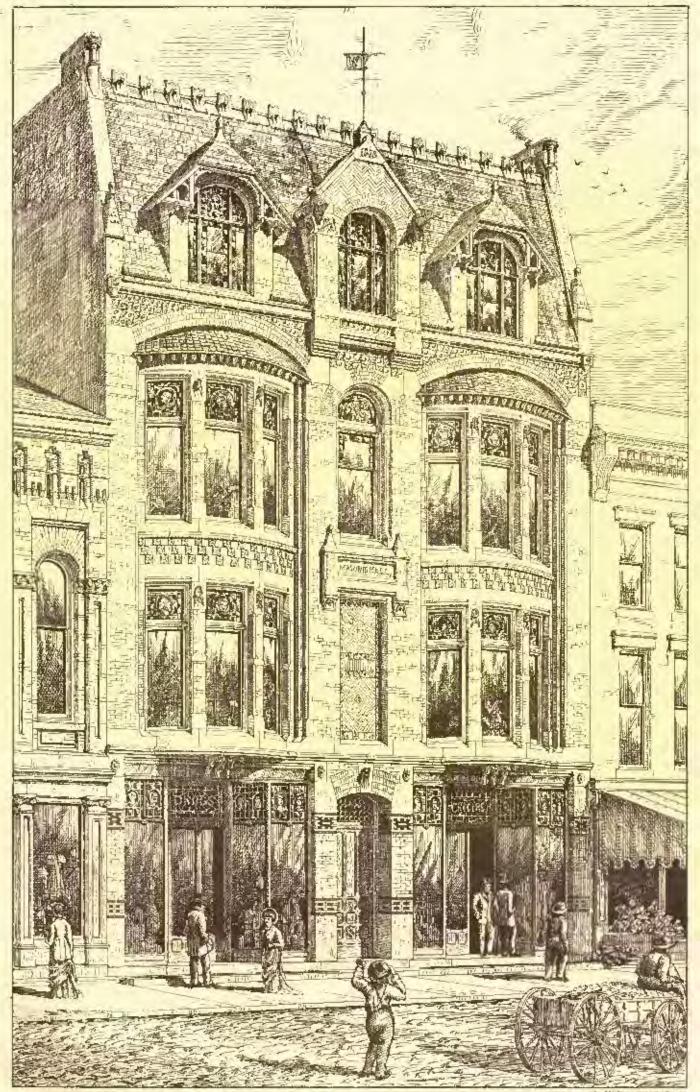


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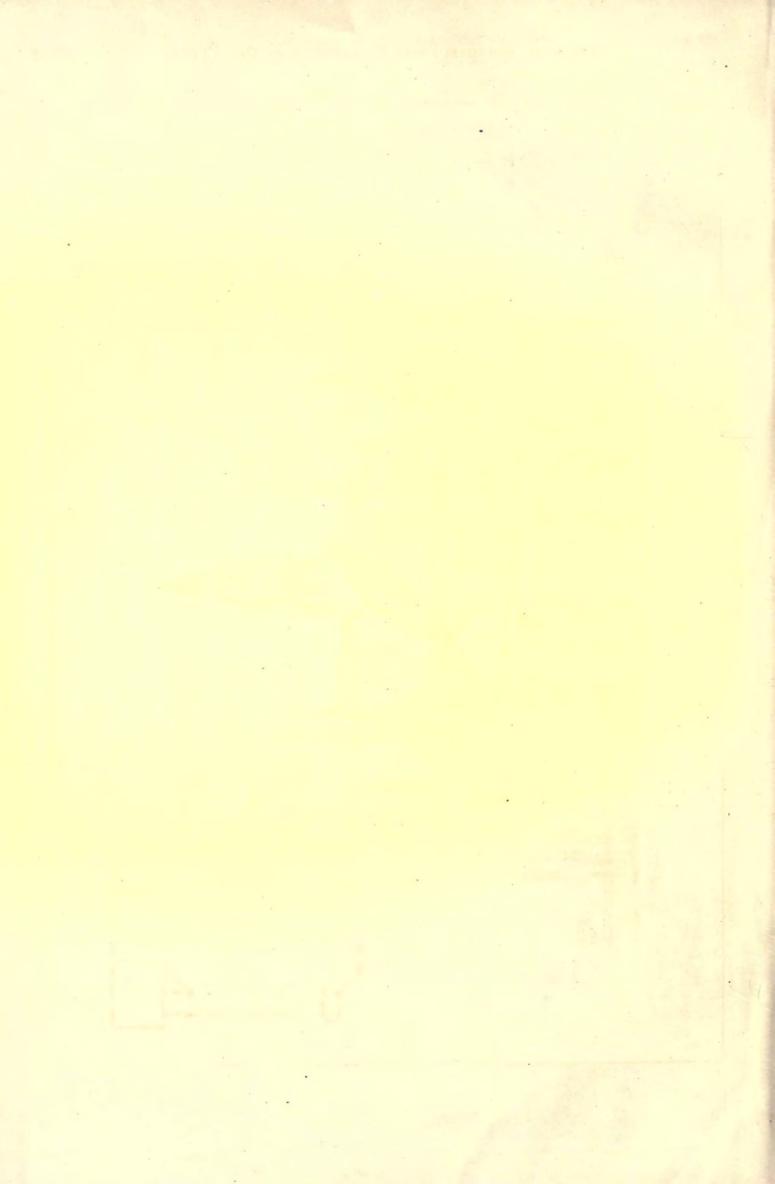


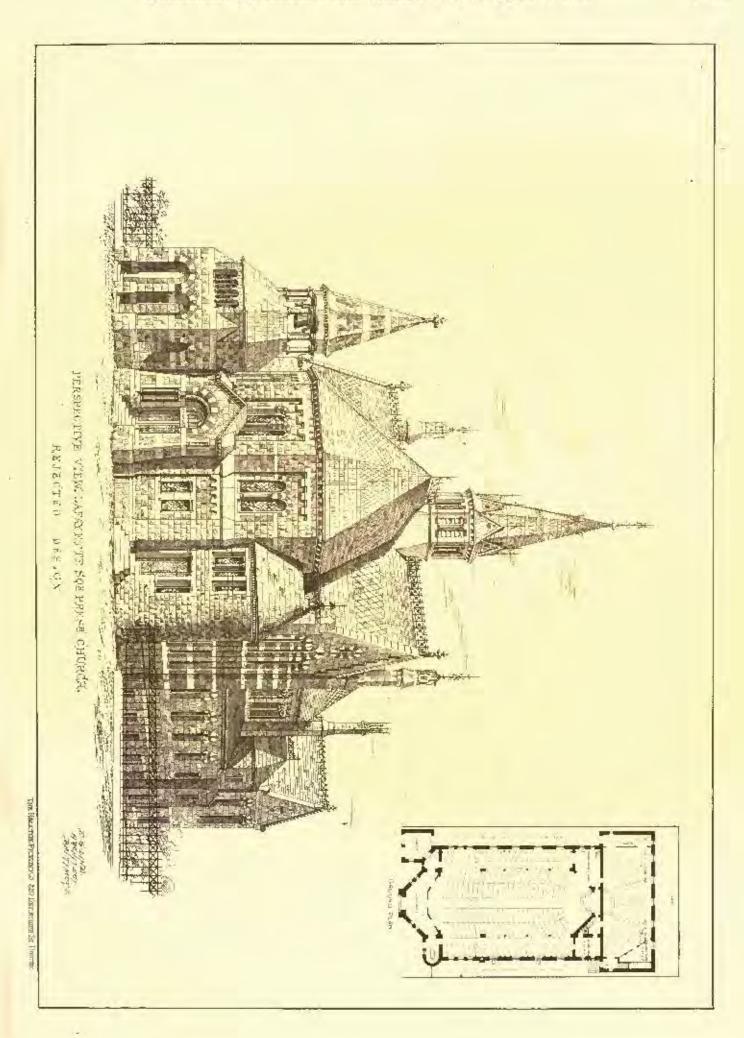






WOODS BILDS WILKES HARRE PA.
HHUGE THICK BACKET.







principal part belongs to the vehicle with which the colors are ground and to the liquids which are added during the painting. Those, therefore, you will excuse my making some elementary explanations

about these liquids.

about these liquids.

Oil and fat are bodies consisting of carbon, hydrogen, and oxygen. They may be considered as saits in which glycerine, as a basis, is combined with different acids,—stearic acid, palmic acid, oleic acid. If oil is exposed to the air, it changes: certain kinds of oil remain liquid; o hers become thicker and darker, and are gradually transformed into hard and opaque bodies. The drying of oils is based upon a chemical process, curing which the oil oxidizes by absorbing oxygen from the air, and combining a part of it with carbon to form carbonic acid, and another part with hydrogen to form water. The different oils dry with different rapidity, but this rapidity may be modified by the presence of certain substances, or by certain treatment. Linsecd oil, for instance, according to the way in which it has been pressed out of the seed, cuntains more or less mucilaginous has been pressed out of the send, contains more or less unreliaginous substances. These latter impede the drying of the oil, and bare, therefore, to be removed by a refining process. If linsted oil in a shallow vessel is exposed to the air and light, especially to a green shallow vessel is exposed to the six and light, especially to a green light, it soon begins to dry, and is transformed first into a kind of varnish, and gradually into a solid opaque substance. The drying may be quickened by boiling, and more particularly by the addition of lead, tine, or manganese. In this way a quick drying oil varnish may be prepared and used as a slecative. It follows that there are certain substances which impode the drying of oils, and others which facilitate it. Amongst the pigments are some which belong to this category of bodies, — white lead, tine-white, minimum, remilion, for instance, facilitate the drying; others, such as irror-black, bitmen, madder-lake, will impede it. Supposing, now, we should add to each of the different pigments the same quantity of oil, the drying of it would progress at different rates. But in reality this difference is very greatly increased by the fact that the different pigments require very different quantities of oil, in order to be ground to the consistency requisite for maintage.

Pettenkoler quotes the following figures, given to him by one of the color manufacturers: —

the color manufacturers:

d garets	(weight)	dYhire had					-	5	+	require	155	payes of oil.
15	4-	Ziere-walke	1 4	4	5	1			1	16	14	44
4.1	14	Green cleront							-	24	15	34
(1)	14	Chrisma Sella	77		4.	-				- 41	15	14
44	11	Vermillon								7.5	25	
14.1	60	Light red :							60	17	31	14
19	4.0	Modder-lake							00	11	1.2	100
14	#1	Vellaw ochre							i.	41	201	
-01.	11	Light neuro							1	16	13	
96	No.	Camel's brow	r .	9	1		-	ď.		11	10	44
24	44	Brown mang								31	87),ı
26	40	Terro Perro								41	300	
40.	164	Parishte Una								17	104	
24	41	Harest berre						1	-	14	112	
41	16	Berne Line						7	. 6	44	112	
49	194	Avory diluck							10	76	112	
111	101	Cobair									125	
dv.	24	Florentine br					-				150	
14	44	Jurus teren e						-	1	. 0	ist	
26	10	How terms well						7	-	44	1.413	

According to this table 199 parts of the quick-drying white lead are ground with 12 parts of oil; and, on the other hand, the slow-drying ivory-black requires 112 parts of oil.

It is very impressed that artists should have an exact knowledge of these natures. But it seems to me that they are insufficiently known to most of them. All of course know perfectly how different the drying quality of different colors is. But that these different colors introduce into the picture so different a quantity of oil, and how large this quantity is in the colors they buy; and, further, that the oil, as well as the mediums or signatives they add to dry the colors, is gradually transformed into a caoutchout-like opaque substance, which envelops and darkens the pigments; and moreover that the oil undergues, not in the beginning, but much later on, when it is already completely dry, changes of volume, and so impairs the continuity of the picture, all this is not sufficiently known. Otherwise, the anstom of painting with the ordinary oil colors to be bought at any colorman's would not have been going on for nearly a hundred years in spite of all the clearly shown ovil results, — results due, chiefly, to the principal enemy of oil-painting, that is to say, the oil.

That the measure of the fiferenth and alexages he cannot be supported in the colors of the fiferenth and alexages he cannot be supported in the colors.

the oil.

That the masters of the fifteenth and sixteenth centuries did not use colors prepared in this way you may consider as absolutely certain; and it we hear the lost secret spoken of, and if we read that the pupils of the old masters had to pledge themselves to keep the secret, we may be sure that it is neither the method of painting nor the pigment used for it which is concerned in that seemet, but exclusively the way of preparing the colors. The preparation was a very complicated one, varying with the different pigments; and we know that the pupils passed six years — that is, half of the apprenticeship — in grinding the colors for the master.

And therefore it is to this very point that every one who wishes to study the method of the old masters must first of all direct his attention. I, too, was led, by the study of this question, to analyze and restore old pictures. The possibility of making such analysis we owe to the relation between the old masters and their pupils. Of course we could not dissuct or chemically analyze works of Titian or Raphael: But, furturately, the pupils painted with the same material and by the same method as the masters, and thousands of pictures by the pupils, well preserved or in different stages of decay, may be easily produced.

I have myself, from among a very great number of such pictures, selected about one hundred specimens, part of which I have brought before you. As their artistic value is not, as you perceive, of the highest description, we need nut feel any semple in experimenting upon or even destroying them if we can thereby gain any valuable information.

THE ILLUSTRATIONS.

WOOD'S BUILDING, WILKESBARRY, PENN. MR. BRUCK PRICE, AR-CHITECT, NEW YORK.

Philadelputa pressed and moulded brick are used in the front of the building, which is relieved with finish of Wyoming blue stone and terra-cotta tiles. The roof is covered with red Vermont slats, and finished with terra-cotta cresting. The window heads and spaus drels are filled with rolled outhedral quarrels.

DESIGN FOR A COUNTRY HOUSE ARAR CLEVELAND, ORIO. MR. W. A. BATES, ACCRITECT, NEW YORK.

COUNTRY HOUSE. MR. A B. JENNINGS, ARCHITECT, NEW YORK. HOUSE ON BROOKLYN BEIGHTS. MR. WILLIAM H. BRURS, ARCHI-TROT, NEW YORK

This house will be commenced in September; the front will be built of Philadelphia face-brick, with movided bricks on the angles of window jumbs, etc.; the lower story to the height of water puble, and all stone work, are to be of Connectiont sandstone.

REJECTED DESIGN FOR THE LAPAYETTE SQUARE PRESBYTERIAN CHURCH AT BALTIMORE, ND. MR. E. G. LIND, ARCHITECT.

This building, which was to be of green surpention and deah Ohio stone, was intended to seat seven hundred persons. Its estimated cost, including school and betwee rooms at the rear, was \$42,700.

CORRESPONDENCE.

THE EXHIBITION BUILDING IN THE CHAMP DE MARS. - GLASS AND DRON. - BUILDE AND DRON.

Nowe of the former great exhibitions have been of so direct an interest to the architect as the present one in Paris. The Palais the Trocaders is unusually interesting, from its designer's colecticism in bobbly choosing from different styles the character which could be st express his construction; yet a still deeper coriosity arges the visitor across the river. At the English Exhibition at Splenting 1869, the architecture and the course of the parisher architecture and the contraction of the contracti han, in 1862, the architects watched to see what the engineers would do with their new building materials, glass and from. It is now the turn of the engineers to examine what the architects have done towards appropriating a material they at first despaired of making printie. Until now art has falled to overtake science in building; but the economy of mechanics is inexorable, and the designer must keep up or give up the struggle. The Champ de Mars will probably be the field of many a battle of this kind, but this year is seems as if art, by the aid of new ailies, had regained her lead.

In the different annexes from is employed with other materials in nearly every proportion: from the Cavilion of Public Works, which is of brack, with iron only at the angles, and for the gutter,

roof, etc., used rather as a decorative material, to the main Exhibition building, which is essentially an iron structure. It is in the figures of the latter that terra-cotta and tiles, the affies of which I spoke, have been so judiciously introduced as to cluthe agreeably with warmth and color the gaunt iron skeleton. These are used merely to fill the spaces between the iron beams; they are partly decorative, and there is no uncertainty, as too often happens with brick and iron, as to the functions of each material. The outlines of the building are probably well known from the Unstrated journals, but the iron façade in reality gains from the skill with which the gardens in front are laid out. The Champile Mars could not admit of a conspicuous terrace, yet the ground in front is sunk so that a low one is formed, which, broken hose and there with steps and fountains, gives picturesque dignity to the vast structure behind. This matter of terraces, by the way, is hardly appreciated with us. In Europe—in Italy especially—they are at pains to form terroces both for the grandent of public buildings and for the picturesqueness of deadline. of dwellings, as a halustrade with statues or vases is decorative even when raised but a few steps. The central feature of the façade is a when raised but a few steps. The central feature of the façade is a vast, projecting, yet deeply recessed arch, rising to twice the height of the adjoining galleries, and buttressed by two low corner staircase towers, which give access to a wide baleony within the arch, one third of its height up. These stairs and the halcony supports, as well as the great corner pavilions up to the springing of their domes, are of stone, — or rather artificial stone in rement, — and give solidity in appearance. The corner pavilions rise higher than the central one, and are crowned by four-sided domes, so largely penetrated by four huge semicircular windows as to be very light and airy.

In the galleries connecting these partitions fies the chief artistic merit of the whole design. They have ten bays on each side, and are crowned by a high gutter broadened of deeply moulded from relieved with red and gold. This harmonizes well with the brilliant color and hold design of the tiles encased in the square pillars which separate the bays, and are crowned with bronze bigures supporting col-

arate the bays, and are crowned with bronze ligures supporting colored shields and flag-staffs. Against these pillars, under the shelter of a broad marquise, are colossal statues of the nations. They are

buildly designed by entirent scalptors, and look none the worse for being roughly done in plaster. The hays are filled with glass stamped in pate blue patterns, which looks well. In the interior of the vostibule there is little to praise beyond its airness; the decoration is pretentions and coarse. The flat central dome and the segmental archef the galleries are firmed of slight from ribs, filled in with volgar plaster easistons painted in gold and metallic tints, so that the iron skeleton is quite lost sight of, and the whole becomes one heavy mass,—far too heavy for the slight side supports. A good commentary on this vestibule is found in its pendant at the rear. There, heing less important, less was attempted, and the effect of the natural color of the plaster caissons eneased in the iron web and painted a pade blue is good. An unfortunate idea of the architect, M. Hardy, was to make two flat niche heads to correspond with the great entrance arches in two flat niche heads to correspond with the great entrance arches in supporting the flat dome. In his hurry he was utterly unable to arrange the former, and they are left hanging over the entrance to the gatheries like half samers, white from willout they hok like the elbow-joints to a hydrant. The interiors of the end pavilions, with their vast semicircular windows forming simple penetrations in the dome, look testur because nothing has been done; simply painted the roof explains itself, and is light and appropriate. Under these pathe roof explains itself, and is light and appropriate. Under these partitions are, respectively, a colossal licenze status of Charlemagne and a lofty wonder tower for the Canadian exhibition. The galleries are further filled with a fine display of the presents received by the Prince of Wales during his Indian tour, and now arranged in the prince of Wales during his Indian tour, and now arranged in the prince of Wales during his Indian tour, and now arranged in the prince of Wales during his Indian tour, and now arranged in the prince of Wales during his Indian tour, and now arranged in the prince of the prince Prince of Wales during his Indian tour, and now arranged in cases and Indian pagedas. Opposite these the government Sevres and tapestry exhibition is bully shown off in a prefections structure of wood initiating a stone portice. The entrance to these pavilions is under a mostly as only as it is inexplicable. Imagine a niche head placed facing outwards, its corners resting on two iron pillars, while its back tamelies the building. The interior is brilliantly gilded, and I can imagine it used with some success to reflect an immense swinging bump; but I fear alis was not the original idea in view. To use a French expression, much in vogue in the medicar, "It was an idea, — only it was a bad one." M. Ibrely bas done credit to bis manch by his audacious energy, which leads hun to dare and do anything, and in the short time he has accomplished wonders, — sometimes of agliness. It would be difficult to corecive anything more ugly than the two It would be difficult to conceive anything more ugly than the two immense loggias which terminate the series of semi-detached fine art immense loggias which terminate the series of semi-detached fine art galleries in the middle. Three gigantic round arches with dones are supposed to recall—but by what an effort of imagination!—the Loggia del Lanzi at Florence. They look like some inner structure of masumy which is waiting to be treated architecturally; but there they stand quite completed. Their walls are covered with landscapes and colossal figures in tiles, principally from the manafactories of M. Deck and of M. Lochuitz. No art industry seems to be so much appreciated as fakence in its various forms, and many commerces have superb exhibitions, which it would require volumes to discuss.

discuss.

Separated from these unfortunate logglas by gardens, in the centre of the whole plan, stands the Pavilion of the City of Paris. From its size and character much was expected of it, as the last word in from building. It has disappointed expectation, as perhaps managed. Although originality was to be its charm, its very morelty disconcerts the public, and they have not given it what praise it really meetrs. It consists of a large restangular hall flanked by iron portices; its end façades are of brick, rising over the entrance into a pediment, or, as the mondlings are almost without relief, I should rather say a gable crowned with a terra-cotta ornament. The entrance closed at the top by a window, is surrounded by a brilliant band of terra-cotta (plaster painted in initiation), with send foliage, is corried up and around the gable. Only the edges of the T-planed iron uprights show as they rise to support the tron cornice. The iron is painted gray, picked out with deep blue. The whole is brilliant and original, but not altogether satisfactory; perhaps because the bricks are too pale in tone for the other colors, and, I think, because sufficient iron does not show to explain itself, as there is so much sufficient from does not show to explain itself, as there is so much brick-work it seems seperfluous. At least the square fron piers filled with terra-cotta work seem sensoless at the corner of a folid brick wall. This same gable is repeated at the sides to receive the javeral wall. This same gatie is repeated at the sides to receive the lateral porticoes. In designing the latter M. Bouvard has been entirely successful. They are charming. Delicate from columns support a metal entablature and gutter. The high frieze is of plaster east in graceful designs; the background delicately tinted, and dashed here and there with gilding. Painted canvas forms the ceiling, and contrasts well with the deep blue and green of the iron-work. The intention also is fine. Nothing could be some light and contrasts well with the deep blue and green of the fron-work. The interior also is line. Nothing could be more light and airy than the graceful fron columns, which rise some two metres from the wall to support delicate latticed trusses, such as M. Coquart designed for the covered court of the Ecole des Beaux-Arts. Almost the whole ceiling is occupied by five that lights filled with ground glass in patterns. The coved surfaces are painted in buff and pale blue, and with the deep red of the walls produce a charming effect of color. The building exhibits admirably the artistic and scientific works lately carried out by the out. out by the city.

I have already kinted at the Annex devoted to the Department of Public Works. It is also of from and brick, or rather, I might say, of brick with fron finish. It is crowned by a revolving electric fight, and its front is really covered by tiles in disper patterns. In short, the building is a good example of the exaggerations to be

avoided in using these three materials. Within are models of heidges, tunnels, harbors, and other public works of the government. There are also specimens of stones and building materials, with cata-logues and much concise information for engineers. No less than seven hundred kinds of stones, one hundred and forey-one coments, and twenty-seven varieties of brick are catalogued. R.

A CONTRIBUTION TO POPULAR IGNORANCE ON THE SUBJECT OF SMORY CHIMNEYS.

TO THE EDITOR OF THE AMERICAN ARCUITECT:

Dear Sir. — Some four years since 1 made an addition to my house, containing two chimneys. About one of these I felt great doubt. It had one fire-place on the first floor, and directly above that were two rooms, the partition between them standing over the fire place below, and each room having a fire-place diagonally across the corner. Each fire-place has a dump five. In order to support these diagonal fire-places it became necessary to corlect the brickwork very sharply through the one foot space afforded by the floor, to twist the dumps through this space, to work the flue in by the side of them and bring it up back of the diagonal fire-places, and then connect them with it, dividing the flues again above to let in a truss heam just under the third story fire-placer, as a support for the partition above named. In shore, it made a very erooked piece of brickwork, and I was hardly more pleased than surprised when, on trying the various fire-places, I found that they all worked finely, which they still continue to do.

The other chimney is, with one exception, the tallest in the house. It comes out on a gable of one wing, and is higher than any part of the house near it. Its height above the ground is fully forty feet. It contains on the west side a flue for het air, supplied from a furnace in the cellar, and opening into chambers by registers just above the floors of the second and third stories; at which latter point it stops. thors of the second and third stories; at which latter point it stops. Next this, eastward, is a flue rounting atmost perpendicularly from the cellar to the top of the chimney. It is about 8 ins. × 8 ins. except in the upper part above where the hot air line reaches, where it is nearly 8 ins. × 12 ins. It is used to the snoke flue of the furnaes and description. nearly 8 ins. X 12 ins. It is used for the smoke that of the random and draws fairly. Into this flue, at a height of eight or nine feet above the flows respectively, the flues of the first and second story freplaces open. The third story frep-place has an independent flue running to the top of the chimney. There are dump flues running down from all the first-places to the back and east side of the chimney stack, but in no way interfering with the other flues.

Neither the first are the second story first-place has ever drawn well.

The claiming seems to have an aversion to smoke. The air lies dead in the smoke puffs out in clouds as soon as a firm is lighted, and is ready after the fire is fairly started to do so on the stightest provocation, such as the opening of a door or the sweep of a lady's dress before the fire. The fue, used is wood.

Sametimes when a fire is built on the first floor the smoke pours can through the fire-place on the second floor. This led me to be-lieve that there was some stoppage of the main flue above the point where the second story flue enters it. I therefore had a hole cut in the chiancey, and by letting down a candle I was able to examine every part of the inside of the flue. I found everything clear, the main flue uniform in size except for the enlargement before me-tional, the concept where the select flue area is really sended. tioned, the curves where the other flues came in well rounded, and, so far as I could see, everything in good order. There are rather large openings over the fire-places. I have narrowed the throats of

targe openings over the me-places. I have narrowed the threats of these temporatily by putting in pieces of sheet-iron and briek. I have put on a revolving turiet. I have extended the chimney six feet or so by a piece of pipe. My mason cheerfully suggests that I wick up the live-places and use stoves. As my shief object is ventilation, I decline this. My neighbor across the road suggests that I change ends with the chiancy. There is murit in this, but I dislike the expense, and my wife objects to the dirt. What shall I do next? Can you help no? Can you help me?

The freaks of chimneys are curious, and we should be hold to claim to be able to account for them all. But there is no doubt that our correspondent has required of his smoky chinney a great deal more than it ought to be expected to perform. He has carried the smoke from his furnace and two open fire-places into a single flue eight inches square. The expansion at the top does not kelp matters, for it is above the upper fire-place, so that all the smoke must first pass through the narrower part; it probably unkes things worse by diminishing the relieity of the down above. Most experienced architects and constructors will agree that either of the three daties imposed is emough for his flue. A furnace or an open fire-place rught to have one as large as this to itself, — the numest that it is assally thought safe to add is a hole for a close store in another story; and excepting persons prefer to provide for every open fire-place a clear flue of eight by treative inches. It is not surprising then that entreorrespondent's fire-places will not draw, but l'ather that even his furnace should be found to draw toltrably. The real puzzle is that the fire-places in the other chimney which he describes should succeed, if, as he seems to imply, they are all carried into one flue; although ho does not say that the the area is equally small, or that he has ever tried to burn all three first at once. Things sometimes specied that are done against all probability; we remember the saying of a clever physician that a haby might like if it were hung out of a window. As for a remedy, the only possible one, we should say, since our correspondent does not want surves, is to build or to appropriate new flues for the smoking fire places. — Eng. Am. Areattrace.]

AN EXPLANATION IN REGARD TO THE COMPETITIONS IN INTERIOR DECORATIONS.

TO THE EDITOR OF THE AMERICAN ARCHITECT :

Sir. — As a disinterested, though not uninterested, spectatur of the "Fourth Competition," I write for information. I cannot reconcile the "report" with the award of prizes.

e the "report" with the award of prizes.

The first prize (if I read aright) is given to a design of which the The first prize (if I read aright) is given to a design of which the report speaks in no very flattering terms, to say the least; while the design placed first in the report—thus "roughly indicating its relative rank," and which is spoken of in the highest terms—gets the second prize. The design next mentioned, as equal (or nearly so) to the first in merit, gets no prize at all; while the design receiving "honorable mention" is not very honorably mentioned in the re-

Of course, there may be disqualifications, of which I am unaware, which have changed the order of merit from that (apparently) indicated in the report. If so, should they not be stated?

Respectfully,

M.

[The discrepancy which our correspondent notices is due to the fact that the award and the discussion are independent of each other, the one being the work of the committee of architects invited to decide the competition, and the other of the regular contributor who analyzes the designs for one paper. That there should be occasional discrepancies, under such circumstances is probably inevitable. It may be remembered, however, that different and unities may see the same merits and the same faults in designs, and yet assign them different rank according to the various degrees of importance which they attach to this or that special quality. The value of any criticism is less in the degree of its communication than in the qualifies it can point out. — Eds. Am. Accurrence.

THE SIZE OF AMERICAN BRICKS.

TO THE EDITOR OF THE AMERICAN ARCHITECT:

Six — I wish to call the attention of your readers to the present shape of our cummon hard burned brick. A brick should, with a reasonable joint of mortar, say \(\frac{1}{2} \) of our inch, more or less, in thickness, measure 8 in. \times 4 in. \times 2 in. With these dimensions the headers would, however, not serve to produce an eight-inch wall, but one \(\frac{1}{2} \) in. thick. Let the actual brick be 8 in lung, then its width should be about \$\frac{2}{5}\$ in, leaving in an eight inch wall a joint of \$\frac{1}{5}\$ in between stretchers. I have made many measurements of the best hard burned brick manufactured about New York, and find the average dimensions to be, length \$7\frac{1}{2}\$ in, width from \$3\frac{1}{2}\$ in to \$3\frac{1}{2}\$ in. These bricks, placed in a so-called eight-inch wall, leave a joint in extreme cases of an inch and a quarter between stretchers; in a foot wall we have header 14 in., stretcher, say, 34 ins., joint nearly an inch; with three stretches we have 4 times 34 or 10 in., and two joints of an inch each. To this great mass of weak morne I artifute the fathere of many walls. Why should not the brick be \(\frac{3}{2} \) in, wider or \(\frac{3}{2} \) in, shorter?

THE STORY OF AN OLD BRIDGE. FRANKFORT-ON-THE MAINE.

Tue Old Bridge over the Maine at Frankfort is one of the most emionely interesting structures of its kind in Germany, and though not the oldest of its class, nor so rich in statues as the famous one over the Moldan at Prague, its known history, together with that of its predecessors on the same spot, takes us back to the days of Charhis proceessors on the same spot, takes us mark to the days at Charlemagne. In peneral appearance it is not so satisfuncted as it really is, and many of its old and distinguishing characteristics have long since disappeared. Yet there is much left of ancient date to interest us. There are curious and rule sculptures over the duorways leading down to the mills; and on the opposite side, a crucilis surmounted by a gilled rooster, whose joint history leads us back some five hundred years, and about which legend delightfully clings. Then there is the red sandstone monument of Charlemagne, looking Rhinewards, holding in one hand the innerial anale, and in the other Helinewards, holding in one hand the imperial apple, and in the other the imperial sword; a recent creation, indeed, erected in the year 1848, in commenceration of the thousand years' existence of the German capite. Goethe called this bridge the only ancient structure of importance in Frankfort.

The bridge has many legendary memories. The gibbed rooster on the crucifix could tell us much of history if so it chose. Indeed, it is rather a mysterious bird. The boxtnern think it was placed, it is rather a mysterious bird.

to point out the deep current for their vessels; but the antiquary thinks it was perched there on purpose to defy him in his researches as to lla why and wherefore. But legend has given the hird immertality, and a certain importance in the history of the bridge which

we cannot overlook.

The story goes that the contractor found that he was mable to complete the atractors within the specified time, and, learning the consequences, he prayed to the devil for aid in his emergency; for in sequences, he prayed to the devil for aid in his emergency; for in the good old times of which we speak, Satanus was a personage of authority, and much sought after in times of need. The devil, as we know, seldom leaves his friends in the lurch, and he promised to help the bridgemaker out of his difficulties on one condition. He would aid in finishing the bridge by the appointed time, and as his reward he simply claimed that the first living creature which should pass over the completed structure should belong to him. The devil pass over the completed structure should belong to him. The devil drew up the contract, and the contractor signed it with his own

blood, as was customary in such contracts. On the appointed day blood, as was customary in such contracts. On the appointed day the bridge was completed, and the devil wanted his pay. But this time the 'cold familiar gentleman' found that the contractor had proved too many for him, for, instead of permitting any good Frankfort citizen to pass first over the bridge and lose his life and soul, he caused to be driven over before him a live reaster, and thus cheated the devil out of his pay. The devil was, of course, very angry at having made a contract so indistinctly worded, — so angry, indeed, that after tearing the innocent bird to shreds, he partly destroyed the completed work, shaking the central arch till it gave way; and it is just possible he would have destroyed the bridge entirely had not the eleray taken the precaution to institute a solema procession.

not the clergy taken the procession to institute a solemn procession and consecrate the structure on the following day.

The present bridge dates only so far back as the year 1342, although it had predecessors of stone and wood dating some continues earlier. Button says that Charlemagne built a wooden bridge here. earlier. Button says that Charlemagne built a wooden bridge bere. In 1842 a violent flood fore down the tower on the Suchsenhausen side, and nearly destroyed the bridge. The present structure dates from this period, though it was not finished until the year 1419. In the middle there were two places left manched, and simply covered up with boards that could be easily removed in case of hostile approach. The two places were walled over only in 1840. Thus the devil's weath towns out to be after all simply lumina strategy.

The bridge was an interesting structure in those days. Resides the towers at either end, on which were on the one a cranifix and an insulting presend directed against the devs. and on the other an image.

insulting fresen directed against the Jews, and on the other an image of the Madonna and a box for the reception of donations towards of the Madonna and a box for the reception of danations towards keeping the bridge in repair, there were two mills, built about 1410, which may be seen to this day in never shape. There were also a small chapel or sanctuary, and a little structure styled the Rat house; and somewhere there were two secret chambers, the one for men, the other for women, — probably condemned criminals, who were here cast into the Maine; and, finally, there was, and is still, the crucifix with the glided roneter. The Rat-house on the bridge was used for a very curious purpose. It was built in 1493, and in it, from this year to 1557, every afternoon a converted Jew stood and doled out a belier (farthing) for every itead rat brought to him by the city youth. After cutting off the tails, to keep as a voucher for the money employed in this warfare against the rats was taken out of the fines paid by the Jews. In 1569 the Rat house was transformed into a place for the steering of puwiler.

We have just mentioned the presence of two secret chambers for the purpose of leiding criminals. The empiris and the rooster

We have just mentioned the presence of two secret chambers for the purpose of holding criminals. The crucian and the rooster were erected on the bridge at a time when the most inhuman punishments were inflicted on criminals. False play, the wanton cutting of forest trees, the smallest offences, could be punished with death. Tortures of all kinds were in vogue, — pieroing with redshot iron, cutting off the ears, burning, drawning, and toiling in oil. Merian tells us that in the sinteenth century are hundred and thirtyone persons were hanged, fifty-three beheaded, forty-one drowned, one persons were danged, nery-three oppeared, forty-one drowned, sixteen torn on the wheel, seven burnt, and one buried alive, — all together, over two hundred persons in Frankfort alone, which city was a model of moderation. Dr. Kriegh is of the opinion that the crucifix and the rooster stand on the spot where the execution by drowning took place on the bridge; for under this arch the river was originally strongest and deepest. Here, too, the bodies of suf-

cides were east into the river.

But it is with the executions by drowning that we must explain the existence of the crucilix and the rooster. It was customary during the Middle Ages to area a chapel or a crucilix near the place of execution, as was the case at Frankfort at places where executions of ecution, as was the case at Frankfort at places where executions of other kinds took place; and the crucitix and roaster were, doubtless, placed here, the former to call to mind the Redeemer, the latter to recall the denial and penitence of the Apostle Peter. To as now the rooster errors to uttach those gloomy measuries of old. The last execution by drowning in the Maine took place in the year 1643. These occasions were celebrated by the city quible with great festivities. Possibly animals suffered at Frankfort as well as at other places. In an execution the great the site sort of the country of the city of the city of the country of the country of the country of the city of the city of the city of the city of the country of the city of the places. In an age when the authorities sent out criers to warm the May-chafers to get cut of the land, and grasshoppers were threat-ened with ecclesiastical excommunication if they did not stay their ravages, it was not unusual to hear of animals being sentenced to death for their transgressions. To animals, birds, and insects were death for their transgressions. To saimals, birds, and insects were attributed a high degree of intelligence, which may account for the tradition that this rooster had formerly the faculty of distinguishing whenever a Jew passed over the bridge, when he was supposed to crow in mockery. People of the city have an old saying that every time this remarkable hird hears the clock of the cathelral church strike twelve, it crows three times. All we can say is that the ruester, besides reminding us of ancient burbarism, brings up in the legend connected with it relies of heathen worship. When the primitive faith was abolished, the devil had to fill out in his one person the places previously occupied by Odin, or Thor, or Loki, and to perform the labors which the giants had been accustomed to perform in the mythological era. The devil cast blocks of stone at the Christian churches like the giants did at cities. Like the giants, the devil tian churches like the giants did at cities. Like the giants, the devil appears as a master-builder. As the former are betrayed by gods and heroes in the building of Walhalla, so is the devil befould by men in the building of the Frankfort Bridge. — The Builder.

NOTES AND CLIPPINGS.

The Savett or the New York Assar Office. — An anomaly in building is presented just now in the case of the Assar Office on Walt Sireet, New York, where may be seen an iron building owing its safety to wooden shores and girders. It is seated that General Steinmett, formerly wooden shores and girders. It is stated that General Steinmetz, formerly Superintendent of Repairs on Public Buildings, discovered when in olifes that the columns and girders of this building—one of the oldest from buildings in the city—had become so affected by the vapors and furnes of the acids used in assaying as to be presentably anti-astworthy. It is reports made to the department on the instearity of the building were accompanied by scales of iron two or more feet in langth, which were easily detached from the from columns. On the strongth of these representations the doors of the building were strengthened by yellow pine girtiers and posts, which were put in about a year ago, which are thought to be able to support the fluors should all the iron door beams and columns give way. Mr. Mason, the assayer, does not befree that the reports of my acids used are the cause of the moulde, but thinks that a leakage from the acid tanks in the upper story of the building has been the cause of the corresion.

Fall, DF A Wall. — The sight of a laborer at work in a gravel-pit, andermining at its foot the bank which rises so threateningly above him, and which the often accomplishes its threat, is so common that few can wonder at the suicidal tenerity with which laborers of the same class dip under the foundation of adjoining party-walls when excavating for a cellar. This every day folly brought about the death of a laborer at Elgin, Ill., on the 8th inst., who persisted in andermining the brick wall of an adjoining building, although the work had been nonsidered dangerous for some days, and on the day in question his fellow laborers had refused to work.

Accinent. — (In Friday afternoon, August 9th, the fourth floor of a wave-house, 141 McEldetry's Whatf, Bultimore, gave way and in its fall carried with it the two floors below. All the floors were stored with wheat, and the cause of the accident was simply overloading. Sufficient warning was given by the breaking of the upper floor to enable those in the building to escape unbort, with one exception.

The Warm let in Excendence. The service allows of the water-jet in engineering operations had a new illustration at Chicago not long ago, where it was necessary to lay live handred feet of water-pipe and into Calumer Lake, for the purpose of obtaining water to supply the locomotives on the Michigan Central Radirond. The material through which the pipe was to be laid was a stiff blue clay, so had that pickaxes made little impression upon it. As the pipe was to be hid some six feet below the level of the water, hand-labor was out of the question, and an attempt was made to excavate the treach by exploding one-pound cartridges of dynamide, but as the result of each explosion was to make a jacgod hole only about six feet in diameter, this method was abundoned as being not only too expensive, but also too ansatisfactory. The next step was to try the effect of a water-jet. By means of a special surtion-pipe, water was drawn from the lake to the pumping-station and then was forced through that portion of the pipe that was already hid, to the outer and of which was attached a hose with a one-inch nozzio. This was secured in position by heavy weights and anchors, so that it night not be thrown out of its position by the recoil caused by the resistance offered by the supernatant water. The pressure of water in the pipes was aloud sixty-live pounds, and before the jet the risk specifical had a chance to estile to the bottom. The trench out in this way was unusually straight and perfect.

The Centus of Connecticut.—A latter has been received from Mr. Rogers in Rome, annuancing that the crowning figure for the new capitol at flartford, "The Gennes of Connecticut," had been successfully cost in bronze, at Manich, and that it would be shipped in a few days.

The mineral Cromes. — Her Reiniger, of Stategart, has suggested that small towns may seem at small cost the advantages of an illuminated clock by making the same use of the powers of the maps lanters that and ern advertisers have beened to appreciate so well. The image of a clock face and of the moving hands can be tashly thrown upon a prepared suffuce, so as to be distinguishable at a considerable distance in spic of the grayness of the images of hands and figures. To produce such up illuminated dait it would probably be necessary to make use of one of those clocks called by the French pendides mystericises, which are to all serming number that a glass dial and a pair of bands, and the accuracy of whose movement flore is much reason to doubt. meta fliere is much reason to doubt.

Conductivity of Huat. — Some recent investigations concerning the coefficient of conduction for beat of various building materials — excluding the influence of radiation, and making measurements by means of the thorms-electric multiplier—show that slowes are much better conductors of heat when wet than when dry, and that various classes of them, such as murble, sandstone, granite, u.e., have approximately the same coefficients of conductors, while bricks of all kinds are much worse conductors. than the onnual stones.

A SCHMARINE LAMP.—In order to facilitate the work of divers by supplying them with a submarine lump, Barost and Foster compress oxygen to thirty atmospheras in a cylindrical iron reservoir, iron which the combustion of an alcohol lamp is sustained. The escape of the gases generated is provided for.

Enignation an Massa.— Possibly a new light may be thrown on the histories of the many deserted cities that are discovered in both bemispheres from time to time, by the statement that the walls of Mursala, Sirily, have been placed with an aunouncement that its 35,000 inhabitants, in view of their inability any longer to bear the hurden of exaction placed upon them, wish to sell their city. "They hope," the placerd says, to find buyers who can satisfy the origidity of the vultures who lay waste the fair regions of Sielly, and that by emigrating or masse to Australia they may except forever the telous of the harpies."

JAPANESE EARTHQUARDS, — A very interesting historical paper upon Destructive Earthquakes in Japan was read before the Asiatic Society of Japan, March 23, 1878, by l. Z. Hattori, Esq. (Rungers College), of the University of Tokio. It includes notices, drawn from native sources, of one hundred and forty-sine destructive sawbquakes, distributed as follows: one in the fifth century; one in the sixth century; seven in the eighth century; twenty-eight in the ninth century; deven in the thirteenth century; eight in the fourceasth century; the tent in the lifteenth century; eight in the fourceasth century; the seventeenth century; thirteen in the eightheenth century; these in the seventeenth century; thirteen in the alghaenth century; filteen in the nineteenth century; thirteen in the alghaenth century; saxeen in the nineteenth century; thirteen in the alghaenth century; saxeen in the seasons the author says; "If we take the 11th, 12th, and 1st mounths of the Japanese old calendar as cold mouths, 5th, 6th, and 7th as lot, and all the others as mild, then during the fifteen centure, everty-right great earthseasons the author says: "If we take the 11th, 12th, and Is a nonths of the Japanese old calendar as noted months, 5th, 4th, and 7th as but, and all the others as mild, then during the fifteen contries, twenty-right great earthquakes have neserted in the celd months, forly-seven in the hot, and seventy-two in the mild, or is other words, seventy-five in the extreme sensors, and seventy-two in the mild, the difference being only three. He also gives a carious description of an early (thinese scismograph, "invented by Chako in the first year of Yoka (132 4, n.)." It is quoted from the Life of Cheko in Gokwanja (History of Kwanj, and is as follows: "The scismograph consisted of a capper ressel, whose diameter was eight shake or feet, and whose convex enver was arramented with thereters, mountain turtles, birds, and beasts. In this ressel there was one main piston in the middle, with its eight branches, where and springs. On the outside of this vessel were eight dragon heads, each of them having a copper ball in the full-opened mouth. Under each of their having a copper ball in the full-opened mouth. Under each of the dragon heads there was as a freg looking appends with its mouth fully opened. The wire works and springs were very skilfully arranged in the vessel, but the cover was very closely litted, and they could not be seen. Whenever the earth shook, one of the dragons drapped the ball, the freq moderneath received it in its mouth, and produced a sound. By this means the direction of the checks was avertained. Once one of the dragons dropped its ball, but no person near it perceived any shock, and all the learned men of the capital doubted the trustworthiness of the machine; but after a few days a mail arrived from Rosei and reported the occurrence of an earthquake there." — The American Journal of Sciences and Arts.

The Sr. Gornand Tennel.—The Swiss National Council has voted \$1,300,000 as the contribution of Switzerhald roward completing the St. Gothard Tunnel

Anchronocical Beseauches is the Great American Colons," lying on the const side of the Missisteps, in Himos, between Alon on the accts and Chester on the south, and having an average width of eight or nine miles, is a region of conderful fertility now, and the remains of unclear comparison the agreementally found prove that the amond-builders were not blind no the agricultural value of this remarkatic tract. It was indeed "one of their greatest saxes of ampire," in the language of Mr. Il R. Howland, who has published, in the Builtin of the Builtin Scorety of Natural Sciences, an account of certain notation archaeological researches made in the "American Buttom". The mounds in this tract seem to have been divided into three principal groups; one lying within the limits of East St. Louis, another on the banks of Long Lake, backer miles northward, and the third—one of the most extraordinary groups in this country—between Indian Lake and Calekia Creak, some six miles from the Mississippi, and eight miles to the northest of East St. Louis. In this last group is the great Calekia Mound, by Ear the most important measurement left by the mound-builders. The saveral groups are connected by lines of mounds at irregular interests, and the total munder is, at least two lundred. Some two or direc sears ago Mr. Howland, having learned that one of the mounds in the serond group was being removed to precure materials for road-making, repaired to the spot and total the work of destruction already well advanced. In the mean time some interesting discoveries Lad been made. At the height of four or fire feet above the base of the mounds in the serond group was being removed to precure materials for road-making, repaired to the spot and total the work may be feet above the hase of the mounds in the same upon a considerable deposit of human hours, and on the same level were discovered a number of valuable relies, many of them wrapped in even of mathing. This was made of a coarse, cane-like fibre, simply woren with a property to the

The Bussnus Tunatus. — The new opera-house at Dresden is insured for \$1,000,000, at an expense of \$10,000 per annum.

A Currous Errarn.— In one of the churches of London is said to be an epitaph quite as stilliandan as that famous one in a Paris conneces which states that the widow of the late Monsivur X. "will carry on the business at the old stand." The Londones is even more business-like in his grief, announcing to the world his loss in the following words: "Here lies Scrift Smithers, the loved wife of Thomas Smithers, marble enter. This monament was creeted by her husband as a tribute in her memory and a specimen of his art. Monaments of the same style £25 each."

AN IRISH MONUMENT

BOSTON, AUGUST 24, 1878.

CONTENTS. SUMMARY:-The Death of Mr. Richard Upjobn.—The Patent Office Competition.—Newspaper Criticism on the Competition.—The St Louis Custom House Building Frands.—The Supervising Architect and his Subordinates.—The Results of Hydranlic Mining in California.—The Action of the Farmers.—The Fire Record of Boston THE ILLUSTRATIONS :-Hudson River Hospital for the Insane at Poughkeepsie, N. V. CORRESPONDENCE !-COMMUNICATIONS :-The Present Condition of Cincinnati's three large New Buildings.—The State House at Albany.—The Indiana State House Bids.

WE regret to record the death, on the 17th inst., of Mr. Richard Upjohn, of New York, the first president of the American Institute of Architects, in his seventy-seventh year. Addressed as this journal mainly is to a class which has been accustomed affectionately to regard him as the father of American architecture, it is almost needless here to recall the circumstances of his career. His first easays in architecture in this country were made at a time when the art most needed examples of good style expressed with that soberness and reserve which are the natural results of thorough training and sound, manly common sense. These qualities, which have eminently distinguished his alumdant work, were the good seed sown in the midst of the wild and exoberant growth of fancy in which the young art of the nation first endeavored to express itself. We are indebted to Mr. Upjohn for Trinity Church and St. Thomas's of New York, Grace Church and Christ Church of Brooklyn, Grace Church of Providence, St. Paul's of Buffalo, St. Peter's of Albany, the Cathedral at Bangor, St. Paul's of Baltimore, and numerous other churches, besides secutar buildings of every kind in all parts of the country. These were to the American public of the second quarter of the contary the first monuments of pure atyle known to their experience; and notwithstanding our notable advance in historical knowledge and asthetics, and in the experience of art during the third quarter of the century, many of these structures have not lost their power to teach, and none of them have lost that expression of dignity and propriety which belongs to all true and honest work in art. His personal memory will itself "stand like a tower" to those of as who in youth have had occasion to apply to him for counsel or encouragement, or who have associated with him in professional relations. Wise and slow in speech, sound in judgment, kindly and generous in sympathy, of ripe experience and fine instincts, he did more in his day than any other one man to awaken a fraternal feeling in the profession, and to break through the isolation of conventional jealousy and unreasoning distrust in which twenty years ago, every architect found himself involved. In the earlier days of the Institute, his interest in the cause of professional featernity was constant and active, and although, towards the date of his resignation from the office of president in 1876, the burden of years so pressed upon him that his official functions became at last little more than nominal, his honorable name alone, with its long train of professional associations, was a standard and a defence. It is not well that a life so full, an experience so com-plete and symmetrical, should be suffered to pass away without a testimouy of respect and affection. The Board of Trustees of the American Institute of Architecture will take immediate action on his death.

In our next number we propose to present the report of the expert committee of architects, Messrs. J. K. Wilson of Cincinnati, R. M. Upjohn of New York, and H. W. Hartwell of Boston, regarding the competitive drawings submitted for the

Washington, together with a reproduction of the successful design. The Secretary of the Interior has recognized the services of the committee in a letter of thanks, and by the saloption of their award, through which Mr. J. A. Vrydagh, of Terre Houte, has been appointed architect of the new works. This transaction appears to be a very gratifying indication of the satisfactory results which may be obtained from the honest and intelligent use of architectural competition in public works. There are points open to criticism, of course, in this trial case, but under the circumstances we do not see how a fairer and more auspi-cious beginning of a better state of things could be made. If the final result justifies the means, the other branches of Government, and Congress itself, may learn from this example how the professional resources of the country may be made available in all such national undertakings, thus relieving the Supervising Architect from a kind of labor which it is impossible for him to perform in a manner satisfactory to himself or to the country, and enabling him to prosecute his natural and proper functions as a general supervisor and auditor of building accounts without the distractions and anxioties incident to such an accumulation of purely professional and artistic work as hitherto has embarrassed the operations of this office,

Some newspapers in opposition to the Government have not failed to take exception to this new departure in the national architectural work, and to criticise it as unnecessary, wasteful, and absurd, quoting the opinion of "several leading architects" of Washington that, while the idea of the design is very good, the design itself is "execrable," and that the proper person to furnish the design and do the work is Mr. Edward Clarke, the Capitol Architect, who is a regularly salaried officer appointed by the Secretary of the Interior, and subject to his orders. The professional character of the board of exports is sufficient to justify us in the belief that, of the designs submitted, the one chosen is on the whole the one bast suited to meet the requirements of the programme. Of its intrinsic (not relative) qualthics our readers shall presently be able to judge for thomselves; for that reason we publish it. The national architecture is a proper subject for free and intelligent criticism. Nothing can be more indicative of a high state of civilization, nothing can more directly serve to raise and maintain a higher standard of excellence, than a tendency to discuss works of art, "The Athenians," we are told by very high authority, "spent their time in nothing else but either to tell or to hear some new thing;" and we may well believe that the architecture about Mars' Hill owed no small part of its perfection to the atmosphere of criticism in which it had developed. As the act of the Secretary of the Interior is, as he says, an experiment to ascertain whether the bighest professional ability of the country may not in some way be made available for the national architecture, the charge that, for the sake of a mere sentiment, he has taken a step adverse to the public interests by thus neglecting to make use of the official architect, who may be supposed, of course, to be familiar with this especial building, virtually falls to the ground. If he shall succeed in illustrating by example that there is a better method than the old one, the true interests of the public and of civilization will have been distinctly advauced. The profession cannot remain uninterested speciators of this process of transition,

THE dark cloud of fraud and malfeasance which has lowered around the construction of the St. Louis Custom House is a phenomenon which is not in any degree cleared away by further developments. We had occasion in our issues for December 15, 1877, and January 12, 1878, to draw attention to cortain investigations as to the quality of the work supplied under the superintendence of Thomas Walsh, the result of which was that three indietments were found against him and his assistant, Patrick, for conspiracy to defraud the Government, and against Lydden and Runyan, contractors, for perjury in testifying that certain piers built by them and paid for as solid were in reality hollow shams filled with rubbish and grouting. For technical reasons, or for want of what was decraed sufficient evidence, those indictments failed, and at the request of the U.S. District Attorney the cases were transferred to another judge, to be tried in January. This new trial has not taken place, but meanwhile the cyinences of fraud against Walsh and his subordinate contractors have so restoration and enlargement of the Patent Office Building at accumulated and have become such a public scandal that, not-

withstanding the alleged unwillingness of the Supervising Architect, who, it is stated, has steadily sustained his subordinate officer while "noder fire," the President, noder information furnished by the District Attorney, has removed the offending apperintendent, and appointed Henry G. Isaacs in his place. The building, we are informed, is only three fifths completed, yet the original estimate of total cost, four millions and a quartor, made at a time when the values of labor and materials were much higher than have since prevailed, has already been largely exceeded. Meanwhile Walsh has been getting rich on his modest stipend of \$10 per day, and of course is not inconvenienced by his cuforced retirement. The courts have for some reason refused to allow the appointment of another grand juty to farther investigate the case, and it seems probable at present that the ring will go unponished. Unfortunately, moreover, the origi-nal books in which the quantities of material were recorded as received at the building, and the daily records of laborers and mechanics, as kept by the time keepers, have disappeared, and the prosecution, if any occurs, must rest largely upon Walsh's own papers, which doubtless have been duly prepared for any emergency-

Trus journal has repeatedly called attention to the difficulty of maintaining a sufficient and bonest system of supervision over work which is carried on at great distances from the office of the Supervising Architect. The multiplication of contracts in every department of labor and supply, the complication of accounts, the temptation to fraud, the ease with which conspiracies against the treasury may be contrived and maintained, in the execution of great public works of construction, notwithstanding the most accurate system of checks and balances, - all these things show that the duties devolving upon the central office cannot be properly discharged without the most suspicious, exacting, and in-dustrious scrutiny; and even with this, the Supervising Architect must be liable to error and charges of collusion with distant rings. Doubtless the official reports and accounts regularly presented to him are prepared according to form, and arranged to meet and satisfy a usual and methodical system of auditing ; he must be in receipt of constant complaints and charges against his subordinate superintendents from dissatisfied contractors, but he has probably learned from experience that these must needs come in the ordinary course of events, and must be duly allowed for. He is bound, as every administrator must be, to custain his representatives until these charges are proved and these complaints justified. It is not our business to apologize for the Supervising Architect, or to extenuate, palliate, or deny the charges constantly brought against the office by our contemporaries of the press, as in this case of the St. Louis Custom House. We only desire to demand for an underpaid official with large and complicated responsibilities a suspension of judgment in such cases, until incapacity or collusion is made for clearer than is possible with the ordinary facilities of irresponsible observers.

The condition of some of the California valleys would furnish the moralist with a very pretty image of the sterilizing effect upon the heart of man of the headlong pursuit of lucre. Our first generation of colonists, going there for gold, naturally disregarded all the other advantages of the country, and fell to work to get out the gold in the easiest way, without concern for what the secondary results of their procedure might be. The mining interest, being the first in the community, was allowed its own way, and for a long time nobody thought of providing any defence for other interests which it might hart. The namral means of separating the gold from the sand was washing, and the easiest way was to carry the auriferous soil to the mountain streams, and let these wash the sand away. This system, developed by machinery, is the hydraulic method of mining practised in California to this day. The first miners, washing away in their diggings among the hills, paid no beed to what went on below them. But now that California is become a rich agricultural State, it is found that her river bottoms, the most fertile part of her lands, are being rained by the minera. débris from the mines chokes the rivers, raises their beds, diverts their currents, and is spread by the freshets over the alluvial valleys in layers of mud and sand that destroy fillage and cover the fruitful land with barronness. Says the Sacramento Record Union: -

The most fertile area of the northern region is menaced with destruction. It will, it is preventive measures are adopted, be gradually buried noder several feet of a barron sand, inespable of cultivation. Navigation of the Sacramento will be stopped, and the river will be transformed into a mere ditch.

THE trouble has reached such a point that the farmers are beginning to unite for self-protection. The land-owners on Bear River, a small tributary of the Sacramento, have formed the Bear River Farmers' Protective Society, and have brought a suit against the company whose mines the river washes, in behalf of one of their number whose lands have suffered. The miners are naturally unwilling to give up a long exercised privilege, even though it is dostructive to their neighbors' property. and the suit has roused great interest as the first hattle in a struggle of moment. If we may trust the evidence given at the trial, the issue is by no means too soon opened. It was tos-tified that in 1857 Bear River was a clear stream, running through an alluvial bottom between banks ton or twelve feet high; that since then its bed had risen from ten to fourteen feet, so that it had overflowed its banks, in one place leaving its old channel and forming a new one; in others straggling all over the bottom; that the water had become so middy as to be useless for drinking, for cattle, or even for irrigation; that the land of the plaintiff, Keyes, had been submerged with "slickens" (soft mud) and sand, so that hardly any crops could be raised on it, reducing its value from fifty dollars an acre to ten or fifteen; that his house had been surrounded by a sea of mud, and his orchard of five or six hundred trees destroyed; and that the agricultural population of the valley had been reduced one half. All this injury is ascribed to the infinence of the mining; directly, in filling the river with sediment and debris, and indirectly in laying bare the rock of the hills, by which the suddenness and violence of the floods after heavy rains is much increased.

WE have received the Fifth Annual Report of the Board of Fire Commissioners of the City of Boston, which, among other things, illustrates in a most mustorly way how it is possible to waste public money in printing more than double the amount of information strictly necessary. From it we learn that during the year of which the report takes cognizance there were \$14 alarms which called out the fire department; 185 of those were what are known as "still" alarms, and only 278 were fires for which a public alarm was rung. The total loss on buildings and their contents was \$435,780, which is nearly fifty thousand dollars less than in any one of the preceding five years. The report shows that the Piro Department is equipped with thirty-two steam engines, eight chemical engines, one hand engine, sixteen independent lose carriages, and fourteen Jook and ladder carriages of various kinds. These are managed by 264 permanent men, who can, on occasion, he reinforced by 349 reserve or "call" men. From the statistics of the fires actually occurring, which are given with much particularity, we learn that the police gave more than half of the public alarms, the members of the department gave about half of the others, while the remainder were given by citizens. One alarm, unfortunately a false one, was given by an automatic alarm, thus showing that, although these apparatus are of extreme delicacy and will be eventually of the greatest use, they require much niceness of adjustment to render them reliable. The damage to goods and buildings which is due to flooding of the building with streams of water, especially since the introduction of the steam fire-engine, has been in fifty-two cases entirely avoided. In these instances the fire-extinguisher and the chemical engine proved able to put out the fire. During the year the department, besides assisting at fires in five neighboring towns, has sent detachments to Marblehead, Mass., Providence, R. I., and Putnam, Conn.

ARCHITECTS AND ENGINEERS, IL

WE took occasion, last week, to deprecate the dissociation which there has been of late years between architects and engineers, and to point out some of the ways in which greater concert between them would be of advantage to each profession in itself. When we consider not merely how the specific work of each has its points of contact with that of the other, but how many matters of general interest are, or should be, the common care and study of the two professions, we see the same reason for concert of action between them that there is for community among the members of each. The same interchange of ideas and the same atinulus of common interest that make valuable the associations of architects or engineers among themselves ought to be as efficient between the two.

Their common subjects of study are very many; some of

them very important, and at this moment very prominent. We may instance the employment of new materials and methods of construction, and the testing of all sorts of appliances for building and of innumerable substances whose uses and properties are as yet undetermined. The problem of the use of metals, especially of iron, the pressing constructive problem of our day, is their joint problem. The fact that the use of iron depends directly on its economy of space and cost makes its design depend more imperatively on its properties than in the case of any other material. It is therefore especially necessary that constructors and designers shall study its employment together. Engineers have inquired cumningly into some of its properties; but there are others yet to be determined. Architects have groped about for suitable forms for its use, without having yet invented any which are satisfactorily characteristic. Questions of heating and ventilation, moreover, even of planning and distribution, as well as of construction in building, require the study of both. The whole of what for want of a better name people have called "sanitation" is common ground. Architects cannot, engineers should not and do not, let it alone. Ventilation and heating, the arrangement of house plumbing and drains, town drainage and sewerage, foundations and grading, are intimately connected among themselves, and constantly bring the engineer and the architect - or at least their works - into contact. The general planning or the physical improvement of towns, a most important, and neglected subject, cries out for attention from both of them in consultation. It would be disheartening to say, if it were possible, how many towns have been laid out with mere machine-like formality, or built piecemeal and patched into hopeless confusion of plan, how many natural advantages have been thrown away on them, all for want of some capable authority to look out at once for their convenience, health, and comeliness.

To a certain extent experience and endeavor in all these things are made common by the ordinary means of communication, by technical periodicals and books, by common observation of cach other's work, and by the annoted transmission which makes ideas common property. But, obviously, nothing is so efficient as personal intercourse between mon who are engaged in the same pursuits. Since there is so much to be done in common, it is worth the while of engineers and architects to consider seriously bow they can holp each other, and increase their useful-

ness to the public, by joining their forces.

A good deal might be accomplished in this respect, if we would bend the twigs in the direction in which we would have the trees incline, by beginning in the schools, and educating en-glocers and architects more in common. It may be objected that this would be likely to confuse the bounds of the professions, but we doubt if that would be its tendency. Something of the other's skill is necessary, in fact, to qualify each for his ordinary work, in which it is not, and eaght not to be worth while to call in the assistance of the other. Not only do the two provinces overlap enough to make it desirable, but some study of the other's special work ought also to make each at once more sure of his own footing, quicker to see when he has gone far coough in the direction of the other, and more respectfut of the other's power to go further. We have more than once spoken argently in behalf of training architects in the theory of construction; a closer fellowship between the professions should emphasize this need rather than supersede it. The architect who is well taught in construction will build more skilfully, and will see more clearly when it is well to call on the engineer, than his less trained fellow.

In like manner it would be well if engineers were given some training in design, for a certain amount of designing they will, in the nature of things, do. The mechanical draughtsmanship that they are actually taught amounts to nothing more than a training of hand. It would do the young engineer no harm to be taught early that beauty of form is a real good, quite apart from ornament, which be may abjure if he will; that the interval between beauty and deformity, measured in inches, may be much smaller than is commonly suspected; that there is usually a considerable "margin" within which, consistently with the most sovere and logical construction, proportions and adjustments may be raried to the sule of beauty or agliness, and a wider one within which variation is possible in the interest of beauty without a sacrifice of essentials or of cost worth noting. To this end it is desirable that he should be rought enough of free-hand drawing to clear his perception of form. Then he could be given elementary problems in design, and instructed to

some degree, not in knowledge of styles and of ornament, nor in the historical and ecleraic knowledge which architects must acquire, but in the use of outline, proportion, and distribution,

the essentials of all design.

It would be well, we think, if architectural and engineering pupils were even required, in the schools, to associate in certain parts of each other's studies, and made to work in common. The architectural student who habitually saw the engineer calculating his strains and dimensions with precision might have the less patience with the careless ways in which many of his fel-lows use their material. The engineer who had been in the habit of watching the careful study of an architect's work might learn to distrust his own attempts at serious designing. It would even be an advantage if complex problems, involving work of both kinds, could be made a part of their course, and given out to them in common, an architectural and an engineering student working together, each contributing his special skill to the joint solution. Such exercises would teach both early in their career to respect each other's province, and would prepare them for officient cooperation in actual work, showing them how their ideas might, without injury, he accommodated to each other's requirements, — a thing which it is not so easy to learn after one's habits have hardened in practice.

The actual professional work of architects and engineers gives many occasions, not so freely used as they might be, for personal consultation and cooperation. Now and then there are buildings which are important enough and difficult enough to lead to the employment of both an architect and an engineer. There are many problems in which it would be well if the architect would take an engineer into consultation, or the engineer an architect. There is, to be sure, a pride, natural enough but easily overstrained, in being entirely sufficient for one's own work, which may incline each to look upon resert to the other as a confession of weakness. — a feeling, perhaps, that to do so is to forfeit something of his claim to the plenary confidence which each expects from his client. In this respect the architect will have to make greater concession than his neighbor, for the capable architect must have and is expected to have constructive skill, while the engineer need lay no claim to power of design. But often the architect may reasonably spare himself the sole responsibility of a difficult construction or may guard against error in his judgment or his computations, by consulting a specialist in construction; and as often the engineer might save his work from needless deformity by taking a lesson from his brother professional. In the way of general repute, each profession would gain more, we are convinced, by the other's tribute than it would give up, while the public would get

better work from both.

In most of the German cities, architects and engineers are united in the same professional societies, and all their chief professional journals cover both specialties. In England and France there is less fellowship, but there have been and are journals devoted alike to both together. Indeed, several French engineers have written valuable architectural treatises. The "Traité d'Architecture" of M. Léonce Reynaud and M. F. de Dartein's "Etude sur l'Architecture lombarde" are known to many of our readers. There is in the United States at least one city. Baltimore, where the local professional society unites both engineers and architects; much to the advantage of both, its members maintain. There are nevertheless many subjects for common consultation poculiar to each profession, over which it would be a waste of time for the other to linger. It is probable, therefore, that in the long run it will be found better that their technical associations shall be separately organized; but we have no doubt that some sort of affiliation, which should lead to their meeting occasionally to consider together the subjects that interest both, would always be found helpful to both. Social societies might wisely arrange for occasional joint meetings, and the annual conventions in which architects and engineers come together from all parts of the country might find it for their advantage occasionally to meet in one for the discussion of topics of common concern.

There are probably few countries in which there is more to be gained by union between these two professions than in ours. There is none, perhaps, in which both are growing so fast in acquirement as well as in organization, and none in which people at large need so much to be taught the value of their special training. Mutual support may be made to advance both their acquirements — therefore their usefulness — and the confidence

of the public in thom.

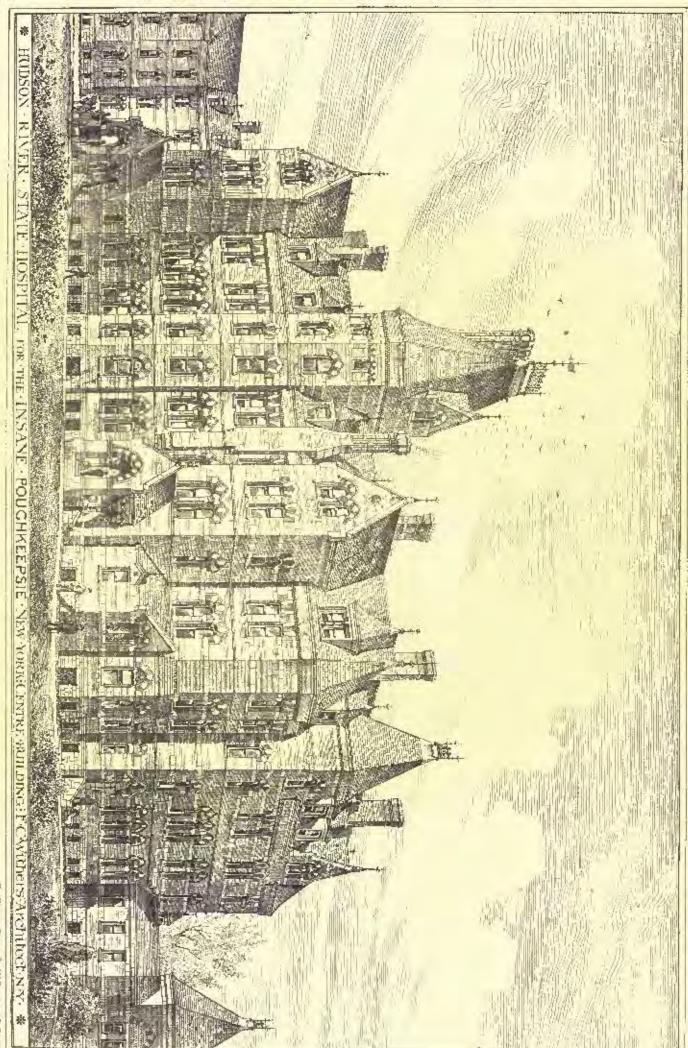
THE ESCONIAL.

DISMAY unexampled has been created throughout Spain by the official announcement that this unique palace and temple of Spanish pride is to be, in a manner, dismantled, and converted into a gallery of art rather than a tomb. A tochnical objection to the burial of the young Queen Mercedes may have influenced the royal decision, but it is none the less peremptory on that account; and, in fact, the list corial is a structure of whose traditions, as they stand, any Spanish sovereign might well wish to be rid, more especially one to whose dead wife it roiused a grave. It may, possibly, he in consequence of this that a royal decree has gone forth, transforming the gloomy edifice into a centre of holiday resort and home of pictures and sculpture. From a solitable of out indeed, but one which was little union. ture, from a solitude, of art indeed, yet one which was little more than a melancholy reminiscence for Spain. The guide-books. — even the best of them. — give but an insufficient idea of that lonely, magnificent, long-walled, and high-roofed editice, which seems like a part of the mountains amid which it stands. The Spanish architects, of the mountains amid which it stands. with all their love of tradition, can scarcely keep it intact: rain drops through the Saracan roof, and wet disfigures the Arabian doors. Yet this was the eighth wonder of the world. Thirty-eight drops through the Saracen voor, and wet disrigures the Arabian floors. Yet this was the eighth wonder of the world. Thirty-eight years ago the entire edifice was in danger of perishing entirely out of sight, when a public subscription saved it; but, even since then, revolutions have stripped it of many treasures, and now, except for the intervention of the government at Madrid, with a reasonable purpose, it would be condemned to final rain. As to the traditions, they are, like most traditions, their in the extreme. The structure is not a palace, or convent, or a tomb, but all three combined, and its name may as well be derived from a group of rocks, a cluster of scrub oaks, or a weed, as from the traditional gridien of the ultra-Cathelic saint. Moreover, the history is altogether uncertain which ascribes the building of the edifice to the second Philip, after the victory of St. Quentin. Modern investigations have demonstrated monastic relies of a far earlier date. The brolling work had been done, if legends may be believed, long before the architectural grid-fron was constructed. But, as its history is coming now into question, and may rise into importance before long, as substituting a grand picture gallery of Spain for a repulchre, some little notice may be worth bestowing upon the great strine of the dead, built over the worth bestowing upon the great surme of the dead, built over the site of a Pagan temple. Its first atone was laid, it is said. April 23, A. D. 1563, by Juan Baptista de Toledo, "whose great pupil," says the controversial authority, "Juan de Herrem, finished the pile September 13, 1584," though for neither of these statements have we any absolute warrant whatever. It is not even certain that the Escorial was either designed or creeted by Spanish architects - or, Escorial was either designed or creeted by Spanish archiberts — or, still tess, by French archifects, — at all, while the Moorish genius was still in the enjoyment of its full glory throughout Southern Enrope. The Escorial, it is true, has not the Saracenic character; it is not a multipude of green-painted copper-walked domes; but it is a tomb, though it was intended to be a palace. Nobody knows who created it. The King of Spain himself could not tell. A French hodman Louis Forz, once chained the credit as his own. Columnat Moreri, and Voltaire, all asserted the design as having originated To whom, however, the design is due, it was not happy one; and the man, half king, half monk, who inhabited the nighty convent during fourteen years, could have felt little more glutious beneath its root than if he had been an Indian fakir. Still, the Escorial, associated as it has been, through mearly the last three hundred years, with the arts of Spain, is, under all circumstances, a centre of European interest, though not, like the Albambra, celebrated on account of its architectural and artistic wonders. who sen it from the neighboring hills are, at a first glance, undoubt-edly disappointed. They have come, probably, from the ruins of the Agropolis, or the relies even of Dax, in Southern France, and they find little in the hoge Spanish structure which satisfies any antiquerian or artistic semiiment. The building is a vest oprearing of cool, gray granite; its roof is blue-slated, with leaden pipes and gutters; it might be a manufactory, a prison, or an asylum for lunatics, for all that the outward appearances show. But the whole configuration of the place is a denial of its vulgar traditions. There are no cleven There are no cleven the place is a definite the value of the value of the three are eleven thousand chambers at the Vatican, or were Virgius at Cologne; what oriliers exist in the heavy walls "resemble a ship's port-holes, and might be real embrasures for cannon," — unplanned for the gigantic structure they were intended to illuminate, — " bits of bigotry," as the writer of the

Imperial Philip declared, and altogether degrading to an architect.
There is no such other building in the world, and we doubt
whether it can ever, even as a picture-gallery, be made humanly enjoyable. Viewed from a distance, it looks, as it has been de-scribed, like a palace of death. The interior is even more gloomy. Seven hundred and forty-four feet from south to north; five hundred and eighty from east to west, partially Dorie in style; gridicon, with a little addition of fancy, in shape; howeved at the four corners, plat-formed in front, and turnsced, with fishponds on the upper and under slopes; three thousand square feet in area, and, as the guides are never fired of reiterating, within the centre, the chapel surmounted by a dome; sixty-three fountains, twelve cloisters, eighty staircases, sixteen countryards, and three thousand feet of painted fresco, "ex-ceedingly magnifical of func and glory through all countries." So far, the guides. We are left to better instructors when the grand interior is reached. There is nothing to view, except corruption and hideousness, in the Hall of Dead Kings, and little better in the Ves-

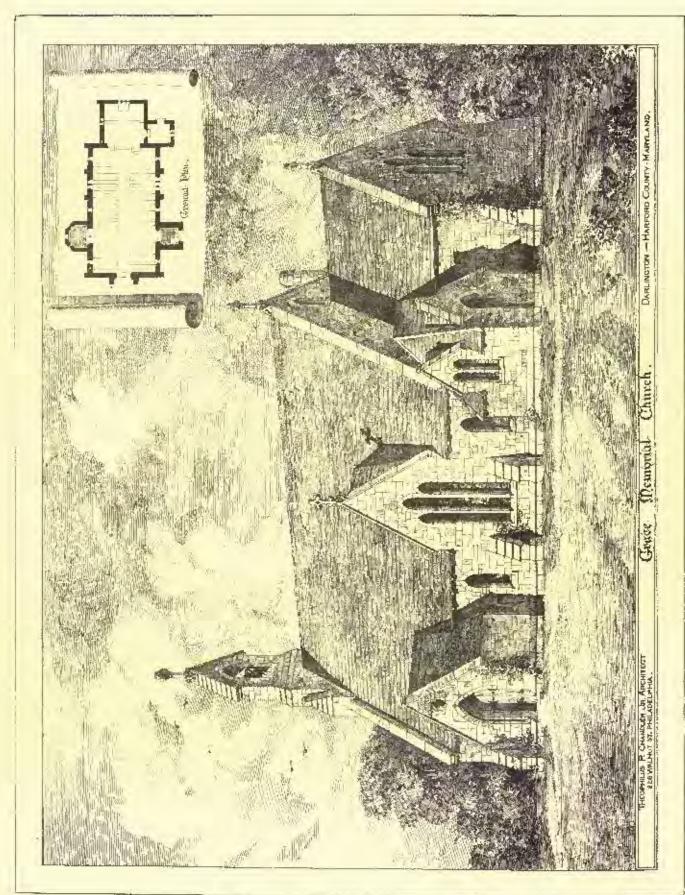
tibule of Sovereigns, with its statues of the Kings of Judah, each seventeen feet high, all cut up, the keepers of the triple structure say, from a single grante block, with hands and heads of marble, crowns of gilled bronze, and figures resembling, in all except their crowns of games bringe, and agures resembling, in an except their humness, those of the Caryathles. In the great court the stranger is confronted, and, it may be said, confronded, by a vastness and magnificence nowhere else to be exemplified in the world, not even in the palace regions of Agra, Benares, and Delhi. For, a parallelogram opens upon him three bundred and twenty feet long, by one hundred and twenty feet long of it delices to the long of its parallelogram. partly white, partly colored, some of it cloistered, some of it mosairized, all intensified in the highest sense and meaning of architectural beauty. There are, in this open space, no fewer than two hundred and seventy-five windows, a harbarie waste of adornment, not giving a proportionate degree of light, because the whole design of the edifice is one of shadow. Nevertheless, something like a splendor is thrown upon the entire group of palaces, or temples, or monasteries, or whatever they may have been intended to represent by the grand Arabic dat roof, the half-hidden choir, the cavern-like arches, and the perfect distinction of the mighty edifice from all other monoments approaching it in glory between the West and the East, the North and the South, of Europe. The eye is first attracted, not by orusment, but by the absence of it. — no gold and purple virgins, no blue and gilded infants, — all simple and solemn; but so far away from the present life of Spain that little wonder is left when its reigning king determines that the Escorial shall be, not tomb, or convent, or oratorio, but a bright and monumental gallery of art. Alresdy it is so, in a particular and special sense. The chapel, in itself, is of more than Roman magnitude, three hundred and twenty feet long, two hundred and fifty feet wide, and three hundred and twenty feet up to the top of the cupola, the warning and the stigma over-crowning all, that "God alone is great!" Unlike the Albambra, the Esing all, that "God alone is great!" Unlike the Albambra, the Especial was never devoted to other than a Christian purpose. For in it there was no "last of the Abencerrages;" it has been, from its foundation, a Christian pulace, temple, and sepulchre, and is now to be the Vatican of Spain. Yet, long ago, and since its existence, it has inclosed a world of art, with the red-veined steps of its high altar, its jasper columns, gold and bronzed based; its Cangiaqui altar, its jasper columns, gold and bronzed based. Never was frescoes, and its senseless San Lorenzo on the gridiron. so lofty a Christian shrine thus wantonly degraded, with its gigantic saints and its marryrs; its brass medallions and pasteboard rood; its wooden tahernacle and its gilded elligics of kings. The reigning monarch of Spain, according to the decree, intends, however, to respect the ancient art conserved in the chambers and corridors of the Escorial, while dedicating them to a more exact and distinctive purpose in connection with the arts for which the Spanish genius has so long and so superbly been celebrated. The bronze-gilt figures in the crateries will not be removed, or in any way disturbed; the painted oratories will not be removed, or in any way distinced; the paralled efficies will still kneed at their grotosque altars, and the paralled epitaphs of former Spanish monarchs are to remain mashaned of the dust by which they are rebuked; while, again, "the statues which are portraits," will not be displaced; but there is abundance of room for the royal pleasure, even though the works of Giacomo Trazzo, Lucca Giordano, and the Pelegrino Tibaldi are superserted with those, the branze modallions, the holy rood, and the fifteen gilt statues of Pompio Leone, not to mention the Saviene on the column, and bearing the Cross, and the Ascension of the Virgin, by Z. We have here the nuclous of a magnificent Spanish National Gallery, glowing with Spanish art from the days when Spanish art was in its zenith, at its climax, and, indeed, in its perfec-tion. Already, as we have said, those who have visited the Escorial must have recognized on its walls the masterpieces of historical portrain painting. Assuredly, we have never admired, in the much-boseted Bavarian galleries, portraits equal to those of Philip H., the mother of Philip IIL, and Don Carlos, comparatively modern though mother of France III., and Don Carlos, comparatively modern though they are. There are fifty inferior altars in the Escorial, each surmounted by a picture, which is not invariably a portrait, and are baselogically interesting as illustrations of armor and costume. Besides these, we have reckoned over the campies of Nuvarette the Dumb, who "spoke with his pencil." the Spanish Rubens, the Zuccarol, the Sanchez, and the Tibaldji. It is to be marvefled at, however, how the young King of Spain can imagine himself as possessing a power to contradict all the traditions of his ancestors by transfiguring, as it were, this triple shrine into a sort of commonplace nicture and semipture gallery, when its principal traditions are so kingly, historical, or sacred. The Relicario itself must be removed singly, distorical, or sacred. The Kelicario itself must be removed before the building can be scenlarized; eleven whole bodies, three bundred beads, "Hunter," says Murray, "never founded a finer anatomical museum." A thousand other points might be polished in this light, but they are searcely worth keeping in sight. The interest, for the living generation, consists in the future destination of the Eace-rial, as decread, in his hereavement, by the young King of Spain. and, as decreed, in his thereavement, by the young Ring of Spain. We have to remember that the Spain's monarchs possess absolute authority in these matters. Philip II. "kept these precious relies in five hundred and lifteen shrines of Callini-like plate, some wrought by Juan D'Arië, but La Houssaye took all the bullion, and left the relies on the floor. These, when he departed, the monks collected in backets, but, in the confusion, many of the labels got undocketed, so that," utc. But, in all this sploudid pillage, there were sacred to be a supported to the result of the special with a labels postured. images and versels of silver and of gold, with other wonderful works in the precious metals; yet with these the world of to-day has little



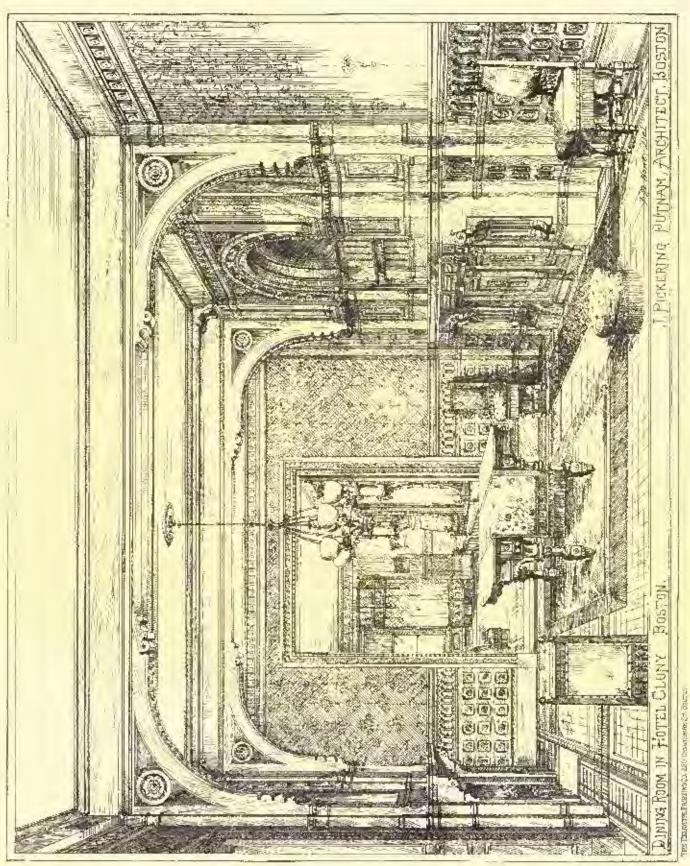


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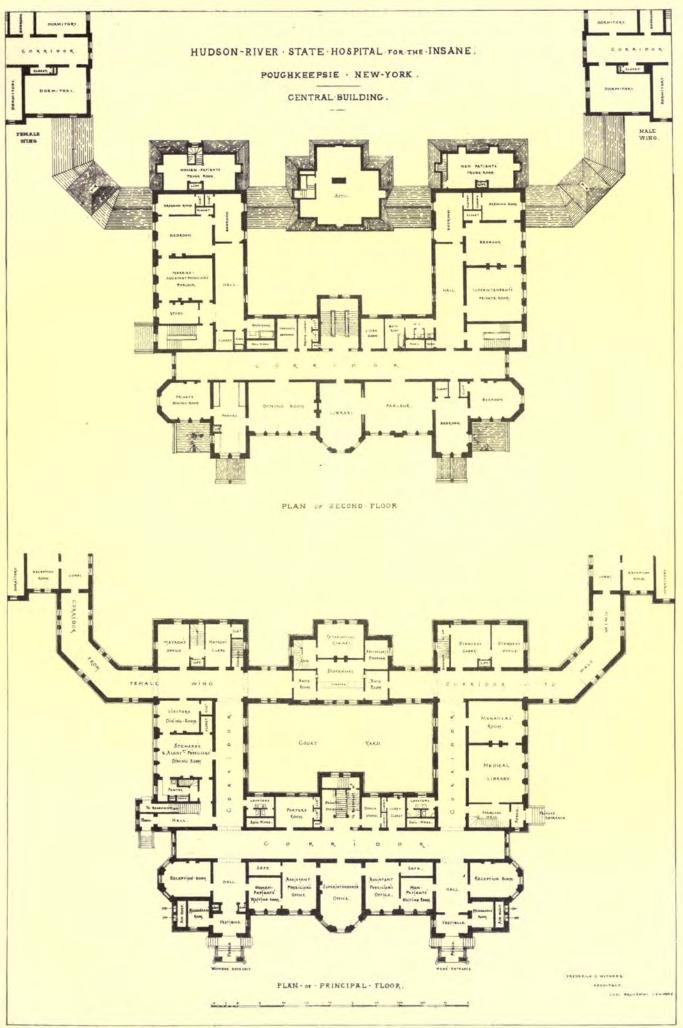




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architecture.

enough to do; it descends, indeed, into the royal tomb, and finds nothing there beyond royal tombs, chamber-houses of death, gorgeous and ghastly with Spanish marble, gill, and the customary Golgotha decorations. Then, a deep vault, with a land-spring, irrepressible, heard trickling behind its masoney. Afterwards, as an Italian author, copied by an English gazetteer, writes, "descending again by a green and yellow-colored jasper-lined statease, at the bottom of the Panteone," there is an octagon, so many feet high and wide, with erneifixes, nickes, and figures, sculptured by all manner of Italian artists, though not claimed as belonging to any especial type of modern, mediatval, or ancient art. The resolution of the young king, however, is rather an unsatisfactory one at the best. The Hscorial is one enormous grave. It is a place of royal tumbs, although, not withstanding the terrible legends related concerning old kings and queens of Castile, the Pantheon, the Sacrista, the Cameria, the palenough to do; it descends, indeed, into the royal tomb, and finds queens of Castile, the Pautheon, the Sacrista, the Cameria, the pal-uces, and the many churches, are full of Christian history and inspi-rations, with the rich, dark stalls of the chapels, the low and the high stall, the Titian choisters, and the Corinthian illustration, wrought in several varieties of wood, of the victory of San Lepanto, with its overshading blues and yellows, colossal books, and Syriac emblems of silence. The Escorial is, to some extent, an epitome mend, a history of the modern world, on a small scale, with all its chronicles of guilt and misery; but we have nothing to do with that, -only, indeed, with the guide-maker's information, - "Walk through the royal suite of rooms, which are not very royally fur-Ribers, but s ily and a models are most pointed out. There is some nished. Firstwist Don Carlos's, with some pictures, a stray piece by Ribera, but a fly and a poodle are most pointed out. There is some good Madrid tapestry of hunting subjects; some china, some fine marqueterie panelling and steel hinges inluid with gold." Amid all this wealth of art, we find the Escorial so singularly rich as to become a wonder that its treasures were never approximated before. It was the Christian Athambra.—The Building News.

THE ILLUSTRATIONS.

RUDSON RIVER STATE ROSPITAL, POUGEKEEPSIE, N. Y. ME. WREDERICK C. WITHERS, ARCIUTECT, NEW YORK.

In our issue for March 30, of this year, we gave an illustration of a portion of one of the wings of this asylum which had lately been completed. We now give a view with plans of the Central or Administrative Building, which is nearly finished, and will be ready for occupancy some time this year. The plan provides for distinct en-trances for the different sexes, with waiting and recoption rooms for the patients and their friends, all of which will be under the immediare control of the superintendent, whose offices will be in the centre of the building. The Dispensary Building, one story in height, is placed in the rear, so as to be accessible from either of the wings. In the second floor will be accommodations for the managers, the superintendent, and the married assistant physician; and in the floor above for the other officers of the establishment, with rooms for the survants in the atties. The walls are of brick with finish of Bigelow blue stone and Ohio stone.

MAING-ROOM IN THE HOTEL CLUNY, BOSTON, MASS. MR. J. PICK-ERING PUTNAM, ARCHITECT, BOSTON.

This room is one of a seite of apartments occupied by Mr. W. H. H. Newman, the owner of the hotel. It is finished in oak with a parquetry floor of imple and cherry. The walls are treated with a pargnetry floor of maple and cherry. The walls are treated with a paper of Pompeian red with a rich gold figure, and the coiling in buff with a few lines of color. The general tone of the wall surface, not-with a few lines of color. The general tone of the wall surface, not-with anding its color, is quiet, and the rich carvings of the wood-work are well relieved against it. Adjoining this room, as shown, is the parlor, finished in cherry very viebly carved, chonized, and gilded. All the carvings of these rooms and of the suite were done by the contractors for the building Mesers Morton and Chesley, of Boston. The plans and façade of this building were reproduced in our issue for Angust 3.

GRACE MEMORIAL CHURCH, DARLINGTON, MD. MR. T. P. CHAND-LEU, JE., ARCHITECT, PHILADELPHIA.

CORRESPONDENCE.

THE FACABES IN "THE STREET OF THE NATIONS."

A sojourn in Paris is often said to be worth a journey round the world, since members of so many nationalities frequent it; especially is it so now, when at the Exhibition one may see a knot of Norwegian students in white caps and evening dress clothes ethowing aside a band of Algerians or Persians in white flowing robes, or a group of Brittany peasants, unconscious of their contames of three hundred years ago, laughing at the pig-tail of a Chinaman. Above all are these costumes interesting as one strolls down "The Street of the This is the right-hand of the two avenues which divide the semi-detached Pavilious of the Fine Arts from the other Exhibition galleries. It was a happy idea of M. Berger, director of the foreign sections, that the different countries should decorate the fronts of their sections upon this avenue such with its national style of acchitecture. The idea has in general been well carried out, and adds a decided interest to the Champ de Mars.

First comes England, with a far larger area than any other country, France of course excepted. She has divided her frontage

The first a small city house, of brick I into five detached façades. was about to say, but which is in fact built of a patented invention which imitates brickwork, by serewing on to a wooden frame sheets half an inch thick of some painted plaster preparation. What lofty national aspirations are thus symbolized by sham brickwork, I cannot imagine, but as it was erected before Lord Beaconsheld resuscitated English prestige, possibly now that nation may find it unworthy of her new dignity. The second building, especially set apart and furnished for the Prince and Princess of Wales, is no less unworthy of their national architecture, for it is almost a burlesque in brick and stone of an Elizabethan facade, so poorly does it represent that fine old style. After this comes a front in terra-cotta, a florid advertisement of the Lambeth pottery works. Then follow two neat and pretty cottages, showing appainted timber framing in the old English style.

The next huilding is that of the United States. I am tempted to pass it by unnoticed, as I have tried to do for very shame, when walking by with foreigners; but one must be more frank with one's countrymen, who at least know of what we are capable. Frankly then, one façade is a disgrace to our country and to our art. Disgraceful to the former because it is sheap and paltry, and to the latter for its tawdry vulgarity. The French critics have said little about it, as coming from a land from which they expect only machinery and raw products. In the best guide to the Exhibition there is, however, an ingenious explanation, perfectly sincere, prompted avidently by kind feelings towards us and be rendered as of the evidently by kind feelings towards us and by reminiscences of the play of "Uncle Sam." It says that the United States with characteristic originality wished probably to show, as a type of national architecture, with what rapidity a temporary bar-room (guinguette) is put up in one of those wonderful cities of the far West! National pride can blind us to much, but all the gaudy shields of the various States which bedeck it cannot hide the fact that this is a perfect description of what we put forward as our contribution in the way of

architecture.

From this point the façades improve. Sweden and Norway appear hand in hand, with two well-designed chalets of unpainted wood, the two joined by a gallery. The Italians have a loggia of five bays, the central one raised into the ahlof feature. Italy's best art industries are expressed in the building. Columns of a composition called martnaridea wonderfully imitate real marble. Delicately moulded terra-cotta pilasters, as well as mosaics and sgraffiti, — arabesques in monochrome, — are representative features of their work. The Japanese, with their worted sober appreciation of artistic contrasts, have chosen that only a massive wooden door should eive actrusts, have chosen that only a massive modilen door should give acstamped with fine white squares and pieced by a characteristic pertal, announces the fanta-sie and ingenious Chinaman. Spain clothes herself gayly in the style of the Albambra, with many colors and stalactives. Austria, not caring perhaps to oftend its many jealous stalactives. nationalities by a preference, has taken refuge in a most non-committal portico of coupled columns and round arches, the whole decorated with black arabesques on a light ground. Even at some distance from it the visitor is aware of something unusual before him; but it is not until he stands in front of Rossia's laçade that he realizes what a gallant effort she has made, in spite of the rainous war upon her hands. She certainly has the second best of all the façades. It is of wood, and consists of a central building with steep roof connected by gatheries with a large and a small pavilion, the latter resched from without by an open stairway such as is common in the churches in Moscow. It produces a carious effect to see high, steep roofs combined with dormers and turrets capped by Oriental bulbous shapes, while a heavy basement of logs contrasts with the fantastic Eastern designs in the carved window caps. But this mingling is characteristic of the "Colossus of the North," whose feet are planted on the Asintic sands. The ornamented parts alone are painted, and in simple primary colors. The designs were sent from St. Petersburg and are said to have been suggested by the palace of Kolomna, near Moscow, where Peter the Great was born. Switzerland is fired of her chalit and appears in a more original garls. One enters under a huge portal surmounted by a gable over an open arched baleony. We are now before the finest of the fronts. Not only did little Belgium give six hundred thousand france for this building, but her elever architect, Jandet, has produced a real work of art in combining a historic Flanish with a modern style. A fine central pavilion, with fantastic sixteenth century Remaissance gables and dormers, is joined by modern galleries on one side with a quaint bell-tower, and on the other with a dwelling and school-house. The whole, of brick and stone, is most intelligently designed. Without estentation many marbles and exhibits are introduced and quietly labelled, making it as useful as might be. It was, I believe, creeted first in Belgium and then taken down to be rebuilt here, and will return to take a permanent place somewhere as a national manument. It has, in conjunction with the very fine exhibition of Belgium, added greatly to the prestige of that busy little state. and appears in a more original garb. One enters under a huge por-

busy little state.

After these dark northern stones and bricks a blaze of light heralds something southern, and introduces us to Greece, represented by a house of the time of Pericles. Two stories with a slightly projecting loggia from the second suggest Greece more in the details than in the general aspect, which seems just to miss the real Hellenie character. The effect of dazzling white relieved with judicious polychromy in delicate lines, not in the brutal masses of some enthusiasis,

is at least one of studied refinement. Denmark's front would, but for the interposition of the Greeian one, have been mistaken for a con-tinuation of the Belgian, as it is also Flemish Renaissance; but imagtimeation of the Belgian, as it is also Flemish Reneissance; but imagine one's surprise when the same style appears markedly, though with other influences, in the façade of Central and South America! A senthere climate has transformed the steep, high roofs into terraces with balustrades; but here are the same little clongated pyramids rising from all the angles, the same quirks and quirls in broken perliments. A moment's reflection explains this resemblance. Central America draws its traditions from Spain, who in her turn has been in times past much nuder Flemish influence. This influence, bowever, almost disappears in the second part of the building, which consists of three open arches supporting a second story, from which projects a light covered balcony closed in with glass. The whole is compluted by a rather ugly square tower. Partnerships continue the fashion here, for next come Presis, Siam, Tunis, and Morocca. Each has a narrow silve of the front, and all are thoroughly Oriental. The most curious is the bit over which the White Elephant of Siam floats. It is of dark brown wood ornamented at the angles by what looks at first like lorged iron work, but torus out to be the wood polfloats. It is of dark brown wood ornamented at the angles by what looks at first like forged iron work, but turns out to be the couplished and rubbed with something which gives it a metallic lustre add to this a Chinese-looking roof with turned-up angles, and the effect is most original. With the Grand Duchy of faxembourg and the Principality of Monaco are associated two tiny republics of which the world seldom hears; the first, San Marino, in the northwastern part of Italy, is one of the smallest and oldest states of Europe, with

part of Italy, is one of the smallest and oldest states of Europe, with an area of twenty-one square miles and an army of eighty men; thu second, Andorra, on the couth side of the Pyrenees, received its independence for aiding Charlemanne to defeat the Moors in 100. With its area of one hundred and miety-one square miles it may lord it over its microscopic associate republic; but I fear neither are usually cited on the "Glaricon Fourth," as hoary ancestors of our own republic. Its administration is directed by twenty-four consuls, elected from the population, I believe.

After this geographical excursion, —did I not say a visit here was like travelling round the world? —we stop before the imposing front of Portogal. The sepert old monestery at Below near Lishon has furnished a magnificent recessed portal, filled with elaborate and funtastic carying, reproduced in plaster from the designs of M. Pascal, taken on the spot. Window tracery from the same hillding, of most outloss sunthern Gothic design, divides the sections in the interior. As if to make up for their small frontage, most of these last countries have continued their style in the interior, while the first ones have left the interiors entirely to the exhibitors themselves. The Low Countries have a fine monumental structure in brick and stone, Low Countries have a fine monumental structure in brick and stone, with lofty fower; and this brings us back to France and the rear vestibule, whose vast proportions make the avenue and its ordinary-sized houses seem like buby-houses as one looks back. R.

THE CONNECTICUT THEOLOGICAL INSTITUTE. — STATISTS FOR THE STATE HOUSE. - REPSCOVAL CHURCH AT NEW BEDFORD.

HARTFORD, CONN.

The most recent architectural work of marked importance in Hart-The most recent architectural work of marked importance in Hartford is the Connecticut Theological Institute, soon to be built from
designs by Mr. F. H. Kimball of this city. The site upon Broad
Street is an exceptionally good one, the lot baving a frontage of two
handred and twenty-five feet and a depth of nearly three hundred.
From the partially perfected plans, it is learned that the Broad Street
façade will measure about one hundred and ninety-five feet, juclusive
of the library which is connected with the main building by a covered way four-less feet long. The main building is fanked by this
fibrary and by the chapel, running from which, and at right angles, is
a long wing, terminating at its forther extremity by a dining ball, beyoud which again, in a partially detached building, are the kitchen. a long wing, berminating at its inviner extremity by a drining hall, be-joind which again, in a partially detached building, are the kitchen, kitchen offices, etc., with servants' quarters above. A wing parallel with that connecting the chapel and dining hall, will be built on the opposite (or south) side of the lot, thus forming three sides of a quadrangle, the fourth side will in time be completed by a block joining the dining hall, and provision for future dormizery accommodations is made by the extension of the south line of buildings. The materials used in construction will be brick and light-colored stone. terials used in construction will be brick and light-relored stone. It is designed to make the library lire-proof. The chapel, located at the innetion of the two principal lines of uniddings, will form a prominent feature of the general design, and will have hold projections which serve to break up the lines of the adjoining blocks. The principal approach to the Institute will be from Broad Street, while the chapel has an extrance on the north side. The main building will be three has an entrance on the north side. The main building will be three stories in height, and besides a reception room, president's room, etc., will contain become-rooms, which with a corridor on the rear side occupy the width of the block. The north and south wings contain, upon this floor, respectively, becture-rooms (with janitor's quarters near the dining hall) and a professor's study, reading-room, etc. The expacity of the chapal can be increased by the use of the adjoining lecture-rooms both to the main building and the north wing, these rooms having large folding doors upon the chapal side. A covered way extends along the south side of the north wing, from the main building to the dining hall, which interiorly will measure about twenty-eight by sixty feet. Communicating with the wide corridor in the main by staty feet. Communicating with the wide corridor in the main building, at either end, are the principal staircases built in the square Communicating with the wide corridor in the main rowers at the intersection of the main building and the wings.

Above the lecture rooms, etc., the first floor, on either side of a cen-Above the lecture rooms, etc., the first floor, on either side of a central corridor, will be accupied by the students, whose quarters consist of a study and a separate bedroom, both well lighted and ventilated. Each study being also furnished with a fire-place. A few rooms are arranged for two men, but the unsjority offer single accommodation. In the wings the corridor is on the north side, thus giving to the apartments the proper southern exposure. The south wing contains an intermediate floor occupied by students' rooms, and the upper portion of the dining ball building will also furnish additional quarters. The sucond floor throughout will be occupied by students' rooms. A gymnasine will be built in connection with the Institute. Excavations are now being made, and the foundations will be put in at an early are now being made, and the foundations will be put in at an early date. When completed the buildings will have cost in the neighbor-

date. When completed the pantings will have cost in the neighborhood of seventy-five or eighty thousand dollars.

The State of Connecticut may regard with pride the embellishment of her Capitol with statuary. As mantioned in a former letter, two of the many canopied corbels, provided in the architect's design for the reception of statues, have already been occupied by the figures of Connecticut worthies, and recently large blocks of Carrara marble have been received at the works of the contractor for the building, I. C. Batterson, from which statues to crown the pedecials about have been received at the works of the contractor for the building, J. G. Batterson, from which statues to crown the pedestals about the capitol dome are to be cot. The statues, twelve in number, will be at the large of the cone, and standing out in bold relief will produce an unquestionably fine architectural effect. They will be entafrom models which have been made by Mr. J. Q. A. Ward of New York, and by May 1, 1879, they will be set in place according to the terms of the contract. The price of the statues will be \$1,200 apiece. The commissioners have also ordered one of the medallions upon the eastern façade of the building over the cuttauce, to be cut. This medalern facate of the huilding over the cutranec, to be cut. This medalion, one of many on the front, will be enviched by a sculptured head of Dr. Horace Bushnell, a prominent theologian and a man to whom Which the capitol has been built. The head of Nonh Webster will form the subject of the second medallion. The crowning figure of the dome will be of brouze. It is a lotty statue symbolizing the "Gonius of Connections," and is by Rogers, the American sculptor at Rome. The figure, which was cast in Munich, weight six thousand county and is present in the second sculptor.

at Rome. The figure, which was cast in Migneh, weight six thousend pounds, and is now on its way to this country.

Mr. F. L. Olmsted of New York has furnished surveys and plans for laying out the grounds about the building, and already work has begon. The two remaining buildings furnerly occupied by Trinity College will be removed this season, and under skilful treatment a handsome park will be laid out. A prominent feature of this plan is the preservation, as far as practicable, of the fine old trees which adorned the college campus.

Mr. W. C. Brocklesby of this city has in hand an Episcopal church now building at New Bedford, Mass. The church will be built of brick laid in red mortar, and will have fuish of Longmendow stone, the walls up to the water table being laid in courses of local stone.

the walls up to the water table being hild in courses of local stone, it is to be thirty-night feet wide by about seventy long, exclusive of the chancel, which is recessed to a depth of sixteen feet; the chancel is flanked by the vestry room and the organ chamber, the former being carried ant beyond the face line of the church and treated with a gable. The length of the church is divided into five bays, buttressed to the height of the main walls. Upon the side nearest to the street a tower accordes the width of the last bay, and is carried up to a beight of forty-five feet. At the ground floor level the tower serves as a restilable, the softeness being through a pointed accorder. as a restitute, the entrance being through a pointed archway whose jambs are laid up in beaded brick. The walls above are pierced by large windows with loaver openings, and above is a gable. The walls are carried out on corbels to receive the kneelers of the coping, a richly carried finial in atone surmonuting the gable, and the angle face of the gable will be enriched by disper work in brick. The main walls in the side bays of the nhurch are pierced by a segmental-arched opening having triple windows with trefoil heads, the arches being zurned with beatled brick, and the label-mond formed of bevelled brick projecting from the face of the wall. The frant of the church is characterized by a gable pierced by a rose-window. A large segmental arch inclosing a series of mullion windows is a prominent feature of this façade. The central windows beneath the arch have transom-lights, the corresponding spaces of the side windows being filled with brick laid in patterns. A wrought iron cross surmounts the gable. main walls in the side bays of the church are pierced by a segmental-

Internally the church will be finished in unpainted pine. Idernally the church will be finished in unpainted pine. The roof will be marked by the linus of the trusses which correspond with the exterior buttresses. Above the fu-beam a semicircle is formed, the sheathing following this online and that of the curved braces below. Oak posts beneath each truss, and at a short distance from the wall, support an upright stud morticed into the truss, and a horizontal plate extends from post to post, the posts being sted to the wall by a projecting timber carried over the plate, and farnishing support for the first of the curved brace.

the feet of the curved brace.

A pointed arch with projecting brick-work supported on stone cor-bels, divides the chancel from the church. The chancel is spsidal in form. Light will be admitted at the roof. The windows of the church will be of rich cathedral glass, the large one in the front to be put in as a memorial and illustrative of Biblical subjects. Provision has been made in the plan for more ample Sunday-school accommodstions in the future.

The erection of a portion of the large steam chimney which flanks the gateway at the new Trinity College buildings is now under con-

tract, and will soon be completed. This chimney is an important fractir, and will soon be competed. This ammney is an important feature of the design for the gateway, and is treated with most excellent effect. It is circular in form, being some twelve freet in diameter at the base and tapering as it ascends. It is constructed exteriorly of rock-face ashiber and light stone, in conformity with the adjoining blocks. Within this shell the requisite flues are laid up with brick. An ornate cap of light stone is to crown the chimneys.

THE PRESENT CONDITION OF CINCINNATI'S THREE LARGE NEW BUILDINGS.

WE see by a late number of the American Architect that all the "public (United States) buildings are under full progress." This is certainly news to the citizens of Ciucianati, who have listened for months past for some sound of hander or trowel from behind the high board fence surrounding the Custom-House, as indicative that this work is under full progress. To be sure, the first story, with its forest of girdled columns, is completed, and the second story seems ready and auxious to receive the weight it must inevitably hear. The seven immense derricks, high up in the air, throw out their large arms, ready to grauple with any stone coming within process, but the arms, ready to grapple with any stone coming within reach; but that is all. A few brick marons are all that are employed; and in order that these masons may do their work properly it takes an equal numher of bosses and superintendents to look after them, whose high pay runs on all the same, work or no work.

The Shillito Building has been under roof for some time; the plastering is finished, and carpenters are now busy completing the im-mense interior. The exterior of this brilding, with its five handred and rixty-seven feet of street front, and its twenty-three bays, is very and sixty-seven feet of street front, and its twenty-three bays, is very monotonous. Each hay is just like its next neighbor, and the whole may be likened to a street parade of well-drilled soldiers, so miform, straight, and severe are the windows and piers. The whole array, so to speak, is capped at a height of one hundred and thirteen free above the pavement by an insufficient galactized-iron cornice. The settlement of this building, which was noticed in a former number of this journal, seems to have stopped, the spalled bricks have been taken out and replaced by new and good ones, and the cracked stone has been duly patched up. What would we do without pulty in some shape or other?

The Music Hall is finished, accepted, dedicated, and is now in use At a cost of about \$200,000, Cincinnati has one of the largest halls and the largest organ in the country. Architects are familiar with the exterior of this building, as a perspective view was published in No. 123 of the American Architect. We feel called upon to state however, in this connection and in the cause of truth and honesty, for which we laber, that that perspective was somewhat overdrawn. There are no such reveals around the large central window as that drawing would have us believe; on the contrary, the central gable, with its large series of windows combined as one, has a rather flat appearance, and the two towers flanking it have from their lowness a tendency to make the whole building squat; and from any good point from which the building may be viewed they hide more than half the main gable.

The inside of the main hall is finished entirely in poplar, or as they term it out here "talip wood," varnished, and it has a very barren and unfinished appearance, a great deal of inch thick stoll being used to help out the uncheerful effect. The rading is some-what too beavy, and the graining might have been better. The acoustic properties of the hall, however, are good.

As for the exposition buildings, they are not built and probably never will be, so it is hard to tell how they would look.

C.

THE STATE HOUSE AT ALBANY.

ALBANY, N. T.

The new capitol, while promising much beauty of interior, is forever marked architecturally on its exterior with non-affiliation with original design. Highly decorated but disproportioned dormers imoriginal design. Highly decorated but dispreportioned dormers impose their heavy stone flanks on massive how girders, despoiling the symmetry of attic rooms, and the acroterial finials and tympanums are composed of scriptured "blazes," of funereal significance; and coats of arms and crosts of some of the commissioners, with such mottoes as "JOVI-PRESTAT-FIREE-QUAM-HOMINI," and "SI-JR-PRES". Certainly strangely odd, and of questionable tasts in free America, and on a public building.

D.

THE INDIANA STATE HOUSE BIDS.

INDIANAPOLIS, IND.

The proposals for the work of building the new State House were opened on the 15th inst., according to advertisement. The lowest and highest proposals for the whole work were \$1,611,675.65, and \$2,114,714.13, respectively, and about as great a difference appears in the sub-bids, which goes to show that some one has made a mistake in taking out his bill of quantities, as their judgments as to the value of the work are so much at variance. The commission has taken the proposals under advisement; no contract has been awarded except that for the steam-heating, to Walworth & Co., of

Buston, for \$45,803.35. It is thought the work will be awarded in The commission and architect seem much claiml over the detail. The commission and architect seem much elated over the result, as the bide are much below their estimate. As far as business ability is concerned, the commission is to be commended, but it is transmelling the architect by dictation, which is nawise and unpleasant for him. It has even good so far as to dictate what should be the style of decoration and the different design of the work. It began by fixing the per cent of his commission and, it seems, has carried its appraisons to controlling the design, so the commissioners are the architects in chief, with Mr. May as chief draughtsmap. It is beped he will assert his right and authority, and let them know who should control. who should control.

AN IRISH MONUMENT.

ONE of the most interesting of the snoient monuments of Iroland, the Grinian of Alleach, in the county Donegal, which stands on the top of a hill eight hundred feet high, on the property of Lord Templetown, has just been rescued from destruction by the efforts of Dr. W. Bernard, of Derry. It is a circular fort, which was originally huilt in pagan thmes, and formed part, at a latur period, of a regal residence rivaling the famous palace of "Tara of the Kings," It commands an extensive prospect, extending on one side over Lough Foyle and over Lough Swilley on the other. In the year 1101 Martongh O'Brien demolished it and ordered his men to take away one stone of the building in every empty suck which they had, and with them to head a parapet built at the top of his palace, which occupied the site of the present Cathedral of Limerick. Some other stones were taken away in recent times to build the parapet of a bridge in the vicinity of the rain; but Dr. Bernard believes that no other stones were taken away in the fallen stones were used, except seven or eight hundred which were picked up about the full, and a coping of masonry. It is perfectly circular and stands about twenty feet high, of conical shape, with massive walls built without mortar by wedging the larger stones together with small ones. Inside it is about seventy feet wide, having three platforms rising above each other, approached by steps, and is covered by a paramet. There is but one entrance, which having three platforms rising above each other, approached by steps, and is crowned by a parapet. There is but one cutrance, which looks eastward, and there are doorways inside, which seem to lead to subterranean passages, but they have not been explored. The to subterraneau passages, but they have not been explored. The idea of preserving the ruin, which was in a very neglected state, and likely soon to lose all trace of its original character, occurred to Dr. Bernard about four years ago, and it is a remarkable fact that the people, when appealed to for help to restore it, and informed of the antiquarian interest attached to it, absorbinly responded and gave their time and labor to promote the work without receiving any payment. The Baracral was a high tribute to their west and entirence observed. their time and latter to promote the work without receiving any payment. Dr. Bernard pays a high tribute to their zeal and patience, observing that if they had been hired workmen they would hardly have shown as much obtained to their employers. He could not, in fact, have obtained such services for hire, for labor was not to be lad. In the course of the excavations which were carried on a number of relative course of the excavations which were carried on a number of relative to the course of the excavations which were carried on a number of relative to the course of the excavations which the course of the excavations which were carried on a number of relative to the course of the excavations which were carried on a number of the course of the excavations which were carried on a number of the course of the excavations which were carried on a number of the course of the excavations which were carried on a number of the course of the excavations which were carried on a number of the course of the excavations which were carried on a number of the course of the excavations which were carried on a number of the course of the excavations which were carried on a number of the course of the excavations which were carried on the course of the excavations which were carried on the course of the ics were turned up, which raise the antiquity of the place beyond question. It is recorded that the Grinian existed seventeen hundred years before the Christian era, and it is marked on Ptolemy's map in years before the Christian era, and it is marked on Ptolemy's map in the second century, which was a copy of a much older map found in Alexandria. Among the relies were bones and teeth, defaced coins, the button and the socket of a plough, round stones with holes in the centre, war clubs, sling stones, a stone found in ashes marked into squares, another of dark color shaped like a heart, another with fluted columns, and a polished cone with flat hase. Working under the defaces were the additional to the statement of the additional transfer. squares, another of dark color shaped like a heart, another with fluted columns, and a polished cone with flat base. Working under a heap of rubbish, the laborers came upon one of the platforms, thirty feer long, six feer wide, and five feet from the ground, and in the wall, which had almost exambled away, four steps were found, which it was inferred led to another platform. There is a fort in the county Kerry, called Staigue Fort, which differs only in the platforms being a little longer. The completion of the work of restoration was calcbrated by an entertainment given at the spot by Br. Bernard. — The London Times.

NOTES AND CLIPPINGS.

NOTES AND CLIPPINGS.

A FAYORITE MODE OF REPLACED .— We once sold the story of the quartels between two property holders in Cincinumi, caused by the traspass of one neighbor in building on a few inches of the land of the other, which lead to aggressions on the one hand and on the other until it resulted in one of them building a semicircular tower on his own land from whose windows he could say out what transpired in the house of his arighbor. A course similar to this is about to be taken by a well-to-do San Francisco andertsker whose small property had been surrounded on three sides by a fonce, said to be the highest in this country, which a millionaire side he be built, when he found that the undertaker was unwilling to sell his land, necessity to the integrity of the large garden which the millionaire was laying out. The modertaker endured the fence for a year of two, and made it useful and ornamental by training viace and trees upon it. At length string of passive resistance he has removed his old bouse to another part of the city, and is about to build in its place a tower, the lower five stories of which are to be plain and substantial, while in the upper stories in a said to be his intention to indulge in a mixture of Remaissance, Gothic, Babylonian, and Chiness architecture, — which we interpret to mean authing other than our own versacular architecture. The peculiar virtues of this fautastic mixture of styles as a means of tormont are not very evident, and the propriety of this form of annoyance can only be explained by the possibility that the fence-building millionaire is an architectural pariet.

Scarpold Accident.—We have noticed during the present month at least a dozen accidents, caused by the giring way of scathling, which often brought death to one or more persons. The lasest accident of this nature took place at Newport, Ky., on August 14, where four men were scriously injured by the giving way of a temporary scaffold, which they were using while putting on a new roof at the Gaylord from Foundry. These accidents may be expected to occur until builders learn that the proper designing of a scaffold is a matter for scrious study, and should be intrusted only to those who have made a study of framing and bracing,

The Quence Improvements.—Queen Victoria has lately transmitted to the Governor General of Canada ten thousand pounds to be used in building one of the gateways in the city walls, which, in hence of the Queen's father, the Duke of Kent, is to be known as Kent Gate. The building of this gateway is one of the features of the scheme for hopporting Quebec which has been carried on under Lord Dufferin. It is said that the Governor General thinks that the Marquis of Lorne will build the Château St. Louis, views of which were published in the American Architect for April 14, 1877.

The Manuelster Johnna' Strike. — The committee of the Manchester joiners, who conducted the affairs of the trade during the recent strike, which lasted fifty-three works, has made its final report. From this it appears that the strikers gained nothing, and that in addition to the \$225,000 of their own funds which they expended during the contest, they also spent \$40,000 contributed by other trade associations.

The Ponpeian Sentinal.—The disclifest speaks in high praise of the model of Miss Hosmer's colossal statue of the Sentinel of Pangeti new on exhibition in London, and particularly notices the thoroughly measurable claracter which has been given to it by the sculpress, the favorite pupil of the late sculpter (libson. Miss Hosmer has chosen as has subject one of those legionaries who, common repute has it, refused to describe posts, although they could see the late thed descending on them. Whether the story is true or not there is in the Museum of Nucles a suit of armor still inclosing the skeleton of its former wearer, and though it is in the style of a later day, it is pointed out as the confirmation of the legend, which is referred to by General Ambert, as follows: "Within the armor of the Musee Bourbon still remains the skeleton of a soldier, who was on guard before the harracks in the seventy-ninth year of the Christian era. For eighteen contains has this man been inclosed in this envelope of from. At the slightest blow the bones of the skeleton are shaken and strike against their metallic covering; hence the dry sound that brought us to a sand. The quarters of the saktiers alone were not descried; the sentinel remained immovable resting on his spear. We took an interest in visiting this post of the soldiers of days long gone by, who gave so grand an example to the seldiers of our own days. The sentinel was on guard where he was stationed, and there he remained from Kovember 23, x, p, 79, to April 20, 1794."

CHIMNEY-Cowte. — It is said that the test of chimney-cowls lately made at Leonington, England, under the auspices of the Sanitary Institute of Great Britain, was not fairly conducted, inasmuch as the building used for testing was an isolated one, so that winds and currents of air came in a way wholly unlike the baffling and eddying currents that swond down from surrounding houses upon the chimneys of a city, causing back draughts and other defects which it is the design of all cowls to remedy.

SEA-WATER RATHS IN LONDON,— A project for supplying Lundon with sea-water is talked of, and though no actual company has been furned, an estimate of the east of the undertaking has been prepared. As this rough estimate shows the probable cost to be between seven and eight millions, and as the consumers must necessarily be few in numbers, the undertaking probably will never be anything more than a project.

The Window-Tax and Regronation. — The anti-restorationists can hardly find finds with what is now duing at a place known, addly enough, as the "Restoration Hon-r," at Rochester. The building, which derives its title from the fact that Charles II, slept there on his way from Dover to London, is a genuine Elizabethan house huils of rest brick, and having in plan the form of the letter E, a form which was common so buildings of thus date. The present owner is opening out fifty-two windows on the front, which in the times of leaying the window-tax had been stopped up with plaster to avoid the payment of it.

Le Parv Bonnix.—L'Académic des Beaux-Arts has just awarded the prix flordin for the year 1878. The prize is awarded to the writer of an essay on some topic suggested by the Academy. This year the programme was, "Discover the Theoretical and Practical Differences which exist between Engineers and Architecta. Taking into account the advantages and the inconveniences of the division between the two professions, deduce from this study whether in the interest of art an absolutely determined division should be made, or whether there should be a complete fusion of the two professions." Seven essays were submitted, and the one hearing the motto, "Brought up in the seraglio I know its ins and onts," was chosen with uranimity. M. Davioud, one of the architects of the Falace of the Trocadéro, proved to be its author.

A SIMPLE FIRE DETECTION. — The Secremento Record Union says:

"A device for indicating fire in any one of a series or sortia of rooms has been made by drawing a long from wire through all the rooms near the ceiling. One end is fixed to the wall, and the other is second to a common house bell hung on a spring. In each room the wire is broken and the gap is closed by a small strip of gotta-percha, Under each piece of gotta-percha is a short slack piece of clade, so that when it melts the ends of the wire will slift be held secore. In case of a fire in any room the gotta-percha melts (at one hundred degrees Falsrenheit), and the wire is drawn apart by a weight at the end where the hell is placed. This freez the spring, and the bell rings. The bit of chain prevents the weight from hilling, and, as each room is provided with a different length of chain, the distance the weight has Isleen records the room where the wire partest."

The Effect of Dynamity.—According to the Revne Industriells Herr Fuchs, superintendent of the works of Alfred Kobel & Co., at Kroemmel, has recently made a number of experiments with dynamite, the results of which deserve to be more extensively known. The object of the series was to show that dynamite is not exploded by such shocks as it may suffer during transportation. The tests were made as follows: (1.) A keg holding about five pounds of dynamite, when dropped repeatedly from a height of twenty feet upon the pavement, did not explode, even when it was thrown down viciently by saveral of those present. (2.) A weight of twenty pounds fulling from a height of twenty feet on a cartridge of dynamile lying on the pavement completely flattened the latter, but did not explode it. This same flattened cartridge, fired with the aid of a cap, tore a board into shreds. (3.) A keg holding fitten pounds of dynamits was fired with a cigar. Its contents burned quietly without explosion or damage to the keg. (4.) A closed keg containing twenty-five pounds of dynamite was thrown into a fire, where it berned quietly. (5.) A tim box with his attached, helding four pounds of dynamice, was similarly thrown into a fire and burned without explosion, while a similar hox was lit by means of a lase without a cap and was found to burn quietly.

An Electrico Lamp. — The New York Times says that M. Royner's new electric lamp scents to be as easily managed as an ordinary oil lamp. A rod of earlien, from twenty to thirty centimeters long and from one to two millimeters thick is held at one end by a metal red which tends to descend by its own weight, and at the other by a carbon wheel in a vertical position. The earlien is pressed strongly against the wheel, which is made to revolve slowly. A current of electricity from a buttary of from four to six Brusen elements raises the carbon to a white heat at the point of contact of the rod with the whitel. A aplendid light is produced. If a high degree of luminosity is required, the heated portion of the carbon may be increased at pleasure. Freak the current, and the lamp is extinguished. Reservo the connection by turning a knob, and the light dashes forth. The buttery may be stowed away anywhere, and any one can use this illuminating contrivence in a house or work-shop without being annoved with the steam-engine.

The Otempian Excavations.—During the past three winters German explorers have brought to light at Olympia c 429 inscriptions, 901 marble objects, and the same number of termeetra objects, 1270 coins, and 3734 bronzes. Photographs of the important ruins have been made, and many casts taken. The third volume of the official report will be published shortly.

Anomite that. Missionary Work. — The chances for architectural missionary work which, as we lately said, are continually offering in Africa and Asia, are very markedly exemplified in what is at present going on at the site of Habylon. Here, as a correspondent of the Times of India says, antiquarian remains are destroyed continually by the Arah workmen, with the cognizance if not with the expressed consent of the Turkish Government, who are sufficiently aware of the value of the remains discovered so interdiet strictly all researches by Europeans at Nineveh. The correspondent says that the modern town of Hillah is hold, though poorty, of bricks of Habylonian make; for instance, he says: "The court-vard of the house in which I stepped was prived with large square bricks, every one of which have the honored name of Nebuchaduczzar." Native brick increlants save themselves the treable of making bricks, by repairing to the site of the ancient eity where they can obtain bricks already made — and nearly every one of them stamped with the name of some Babylonian king — by digging trenches more or less large and doen, until some of the accient walls are reached. No record is kept of the remains discovered, nor are any plans and drawings made, and it is only too probable that when the time consistency will come, when it is possible to undersake the disinterring of this perished city, there will be humentably many needless gaps in the archivological record then developed. It is just possible that as England has lately assumed the projectorate of Turkey the grateful Mussaltons may be willing to concede to English hands the interesting task of determining so far as may be the fale of Babylon. We hear, too, that Dr. Schliemant will resource his researches in the Troad if he can obtain the necessary firman, and a Turkish guard strong enough for his protection.

Nixt.co. — According to the Berliner Taylott, the firm of F. Zacher & Co., in Berlin, have discovered the method of manufacturing the Russian tula or Niello silver, the real composition of which has been guarded hitherto as a secret, and have made it in large quantities. It consists of nine parts wilver, one part copper, one part lead, and one part bismuth, which are melted together and saturated with sulphur. This mixture produces a gorgeous blue which has often been erroneously spoken of as steel blue.

Nover, Lighteniero-Rous. —It is said that the peasants in the village of Tarbes, in the Hautes-Pyreness, discovered that a bundle of stray fastened to a stick and placed apright on the roots of their cottages formed an effectual protection from highering during the thunder-storms common to the district. It is further said that the knowledge of the custom spreading, there are now some eighteen or more communes in which all the cottages are protected in this way.

In sir Archivecture. — Miss Margaret Stokes is republishing her essay on "Early Christian Architecture in Ireland," which was originally prefixed to Lord Dunrayen's "Notes on Irish Architecture,"

A Love Exercacers.— The following amounteement has been circulated lately at Pompeii: "After a lapse of more than 1300 years the theatre of this city will be opened with 'La Figlia del Reggimento.' I solicit a continuance of the favor bestowed on my predecessor, Marcus Quintus Martius, and beg to assure the public that I shall make every effect to equal the rare qualities displayed during his management."

BOSTON, AUGUST 31, 1878.

CONTENTS.

100					
150	CEA	C.M	A.T	T	_

The International Congress of Architects at Paris. — Discussion on the Desirability of Establishing Aschitectural Diplomas. — The Action of the Congress in the Matter of Architects' Fees. — Appointment of an International Committee to consider Public Competitions. — The Lusanitary Condition of Baltimore and same other Southern Cities. — The Cause of the Yellow Feren at Grenada, Miss. — The Chance that the East River Bridge will remain uncompleted or be removed. — General Opposition to the New Scheme for Decorating St. Paul's, London. — The Discoloration of some London Baildings caused by Lichens. — The Introduction of the Metric System Discoluremented by the Government departments.

Papers on Perspective. XII.

THE most important event of the day, so for as the general interests of architecture are concerned, is doubtless the assembling of the International Congress of Architects at Paris. The business of the Congress seems to have been managed in a manner very different from the more demonstratic and parliamentary methods to which we are accustomed. There was no form of electing officers, no delay in effecting an organization, no appointing of committees, no visible machinery, excepting that ushibited in the indefatigable energy of M. Charles Lucas, the secretary of the Societé Contrale, who was the impelling force, and in the dignity of M. Lefuel, president of the Société Centrale, who was the decorative head and front of the proceedings. The programme of the Congress embraced two daily sessions, one in the morning at the Tuileries, devoted to the reading of papers, and one in the afternoon at the Palace of the Procalero, devoted to discussions. The proceedings occupied six days. On the first day (July 29th), after a brief introductory address by the president, the Congress was opened by the delivery of an essay by M. Hermant, vice-president of the Société Centrale, en "Natural Æstheries," in which he endeavored to prove that, as 'the comprehension of the beautiful is a faculty common in a greater or less degree to all mankind, the ideal civilization requires a system of common education which shall be devoted more directly than hitherto to the development and cultivation of this faculty. The second day was given up mainly to speeches and discussions by members of various nationalities on the position of the architect as a professional man; the third to the consideration of the subjects of "Architects' Charges" and "Workmen and their Organization;" the fourth to a visit to Rheims; and the fifth to discussions on Public Competitions. The sixth and last day was occupied by the distribution of medals of honor awarded by the Société Centrale, these being in four classes : the first given to architects for the best series of works for five years, the second to students for the best series of designs, the third to contractors and skilled workmen for conspicuous qualities in their departments, and the fourth to manufacturers of special decorative materials for architectural purposes. The Congress tetrainated in the evening with a grand banquet and concert. The attendance was very large, and architects were present from every civilized nation of the world excepting the United States. The poculiar interest of the occasion was of course in the participation by avchitects of many nations in discussions of important professional topics, rather than in the resolutions which were passed by the Congress, which, from the nature of the case, were on the whole

rather colorless and conventional in character. It is to be hoped that on the next similar occasion American architects will not again be conspicuous by their absence.

The discussion on the professional position of the architect turned mainly on the question as to the practicability of creating and maintaining a higher professional standard by the establishment of some system of diplomes. The testimony of the French architects upon this point was apparently without exception favorable to the compulsory exclusion of all who should full to earn and hold such a diploma; at the same time architects from Deamark and Russia maintained that the establishment of a system of exclusion by diplomas, as practised in those countries, had not been productive of any especial advantage to the profession. On the part of England, Mr. R. P. Spiers explained that the present development of architecture in that country had been practically accomplished without the assistance of schools or diplomas, tuition being obtained by a system of apprenticeship in offices, imperfectly supplemented by evening classes, lectures, and schools, established mainly by the Royal Academy and by the Architectural Association, but a very small proportion — not more than twenty or thirty per cent. - of the students availing themselves of such means of completing their education. In the absence of academic discipling fertified by examinations and certificates of proficiency, as on the Continent. English art had been particularly sensitive to influence from literature; and the works of Scatt and Thackeray, Pagin and Ruskin, Stuart and Revett, had largely assisted in creating a succession of historical revivals. But this freedom from conventional restraint had developed such marked architectural individualities as Barry, Scott, Cockerell, Street, Burges, and others too numerous to mention, each being the leader of a school contrasting with the rest in many essential particulars. Mr. Spiers then endeavared to explain the cause of the contemporary " Queen Anne" revival, and neatly expressed his conviction that a parter style would seen prevail, and that the works of Duc, Duban, Labronste, and Vandoyer would be accepted as models by the English architects. The resolutions following upon this discussion called upon the French societies to units as far as possible with foreign societies in studying and deciding the question relating to the giving of liplomas to architects.

The most interesting point developed in the discussion of the third day, on architects' charges, was the fact that the five per cent commission in France includes not only the items usually accepted in English and American practice, but also the computation of quantities; and it further appeared that the French architect, malike the English, but like the American, is accustomed by preference to employ different contractors for the different departments of the building. The French percentage, according to the scale of charges fixed by the Council of Public Buildings, is divided us follows: "Drawings of every kind, 14 per cent; superintendence of work, 14 per cent; quantities and specifications, two per cent; making a total of five per cent? The German scale of charges, as set before the meeting, varies. according to the nature of the building to be executed, from three per cent to seven per cent. This scale has been adopted by the Relgian Architectural Society and by that of Marseilles. This arrangement, however, was condemned as dangerous, and as leading eventually to legal complications, a result which the establishment of a scale of charges is intended to avoid. After an animated discussion, carried by adjournments through three sittings, the Congress, not unanimously bewever, arrived at the following extraordinary resolution: "This Congress, recognizing the principle of the liberty of artistic work and its free remuneration, of which the foundation should be based on the economical principle of supply and demand, considers that each architect has the right to adjust the value of his services according to his own estimate of what would be a just recompanse for his talent, taking inte account the special difficulties which may arise in each case." This resolution is doubtless based upon abstract justice, but, owing to the imperfection of human nature, it would obviously remove from the practice of the profession its only protection against the worst evils of a competition of prices. It is true that this protection, as at present devised, is clumsy and apt to work gross injustice in especial cases, but it is the lest we have, and, under the circumstances, should have been amended in its details rather than entirely abelished. This view of the

case, it seems, was practically recognized in a supplementary resolution, suggesting that in the absence of any preliminary arrangement the French scale of charges as above quoted "might be taken as a minimum, steps being taken meanwhile to ameliorate this document and augment the scale in consequence of diminution in the value of money."

On the fifth day of the International Congress the regular husiness related to public competitions, and the debate was on the following resolutions: "First. That the Minister of Public Works he requested to recognize the system of public competitions throughout France, and to place them on a basis which would give satisfaction to the interests of artists, the common welfare, and the requirements of state administration. That the basis should consist of a series of rules defining the establishment of a programme and the nomination of a jury consisting of architects, instead of leaving the selection and judgment to the prefects and mayors." The English delegate considered the last provision inexpedient, and laid before the meeting the programmed of the Royal Justitute of British Architects, in which the nimest demanded is the appointment of an architectural assessor to draw up the programme in each case and advise as to the choice. The Russian delegate advocated the resolutions, and contended that the competitors should be allowed to appear before the architectural jury to "explain their own designs and criticise the others." The delegates from Madrid and Copenhagen complained of the irregularities in public competitions in their own countries and of the usual incompetence of the judges. The resolution was passed, and a committee, one third of which is to consist of four foreign delegates,—Russian, Spanish, Danish, and English,—was appointed to consider the subject. The American delegate, if present and well posted in the picture-sque incidents of competitions in our own country, might have supplemented the evidence of his brethren from Madrid and Copen-hagen, and added a chapter of experience undreamt of even in their philosophies.

Nor many years back the fever-plague that is now desoluting parts of the South would have been accepted as an inevitable occurrence; but now, when the laws of hygiene are better understood, it is easy to see that yellow fever, heing probably a filth disease, is a preventable one. That it is a filth disease is shown by the circumstance which, we believe, gave rise to the yellow fever at New Berne during our late civil war. Certain officers there oucamped, desiring to have a flower-garden in front of their quarters, had the soil turned up and seeds planted. fortunately the soil had been polluted by the slops from a regimental camp kitchen which formerly had been established there, and no sooner was the soil disturbed than yellow fever declared itself. This being the case, there are cities and towns in the South which are rapidly preparing themselves to be hospitable entertainers of the dread disease. The citizens of Baltimore for instance, in many cases still drink water from unclosed wells, no one of which, say the sanitary authorities, is free from sewaye contamination. How could they be otherwise in a city where, until within a few years, there was but a half mile of sewer; and this only for rain-water; where all sewage was stored in cesspools, a large proportion of them made only of wood, so large, too, as rarely to cry for emptying; and where all the kitchen slops and bath waste are discharged over the sidewalks into open gutters, through which they sluggishly flow until they discharge thouselves into the Basin, a pool almost in the heart of the city, where the tidal variation is but slight, and whence arises, as we remember it, a most neisome stench, even in the winter time? Up to this time Baltimore owes its exemption not to sanitary precaution, but to the tremen-dons thunder-storms, which occur so frequently during hot weather as to keep streets and gotters fairly clean. Com-plaints are heard, even now, from Philadelphia, where the odor arising through the openings into the sewers at the curbstone level is making itself a dreaded nuisance. Charleston, on the other hand, of all Southern cities, is said to be least afflicted during yellow fever epidemics, thanks to a system of sowcrage said to be exceptionally good.

The story of the sorely stricken little town of Grenada in Mississippi is just what one would expect, and the deaths, plandering, and negro license and violence are but the just results of culpable neglect of the common laws of hygiene. It is sought to account for the first case of the fever in this town of twenty-

two bundred inhabitants by the fact that the lady who was the first victim had just received and were a new dress made in New Orleans, where the disease was already developed. As the manner in which the disease is propagated is not yet understood with absolute certainty, we cannot say that this was not the case, but circumstances were such that fever may easily have had its inception in the town itself. The sewer of the town, such as it is, is said to be merely a ditch sunk a few feet below the surface and covered estensibly with planks, which are overspread more or less thinly with earth. Luto this practically open drain is discharged the overflow of most of the cesspools and privies of the town, including those of several botels and a female seminary, as well as the drainage from barns and from a large livery stable. The existence of the drain is ever usserted by the odors which arise from it, and these do not lose in strength whenever a pig, the only scaveager of some Southern towns, chancing in search of food to wander into it through some opening, gets wedged in and thus perishes miserably. Early in July the antell from the sewer had become such a missasse that it was opened, and it is said that the careasses of several bogs were found in it. The dress from New Orleans may have introduced the fever, but it should be noted that the lady who died on the 25th of July, while the sewer was still open, lived only a short distance from this freshly-opened drain, and that the fever, once introduced, followed with particular malignancy the course of this sewer, the cases being more frequent here than elsewhere, and resulting fatally within shorter periods. In the face of such statements as these it seems hardly necessary to search curiously for extraordinary causes.

A provate citizen, a naturalized alien moreover, has been able to accomplish in Philadelphia a reform which one would think a governing body would be eager to initiate and carry into execution without waiting for a bribe of any form. Stephen Girard, to whom Philadelphia owes much, loft a bequest of five hundred thousand dullars, which was to be applied first to open-ing Delaware Avenue, then to widening Water Street, and hastly to purchasing all the wooden boildings in the city with a view to their abolishment. To the State of Pennsylvania be bequeathed three bundred thousand dollars for canal improvemonts, with the condition that the Councils of Philadelphia should be authorized to prohibit the construction of any more wooden buildings in that city. This condition was accorded to, and since, in 1836, the Councils passed the prescribed ordinance, no wooden buildings have been erected in the city. Delaware Avenue has been opened and Water Street has been widewed. yet the original bequest remains intact, for the managers of the Girard Trust have effected these improvements out of the interest accruing from the bequest. Now they are prepared to execate the third commission of the bequest, and have informed the six hundred awners of wooden buildings in the city that they stand ready to buy their old tenements at a fair appraisement. Some owners have been only too glad to come to terms, and are now robuilding in brick. Others, seeking to obtain a price out of all preportion to the value of the building to be destroyed, have remsed to sell, and as, unfortunately, there is no law which empowers the managers to force a sale, operations are brought to a stand in some directions. But the change must be effected in time, and the obstructive owners are only dallying with the inevitable. If in the future Philadelphia escapes conflagrations as disastrous as those which have twice swept over Chicago, she will owe it, even more than to her wide streets, to the sbrewd for sight of Stephen Girard, and his strong common sense and mercantile instinct in perceiving that even when dealing with bodies politic it is best to have a guid pro quo. It is interesting on the other hand to note that Chicago, in spite of the severity of her lessons, does not yet "dread the fire," but has been considering lately the advisability of contracting her fire-limits.

The Board of Alderman of the city of New York has roted to sustain the Comptroller in his refusal to contribute any more money towards the completion of the great East River Bridge, connecting the cities of New York and Breoklyn. This important action of the city government is based upon the facts that the limit of expenditure (\$5,000,000), as established by law, has already been exceeded; that the city has already contributed \$3,500,000, which is more than her legal quota; that the structure, if completed, will destroy lifty per cent of the value of the ferry franchise, one of the most important held by

the city, and one for the interference with which no compensa-tion has been provided, or will be made; that it is and will be a serious obstruction to the navigation of the East River; that, because of such obstruction, the United States authorities may at any time order the removal of the bridge (indeed, a suit to that end is even now pending); and finally that the safety of the structure is gravely questioned by competent authority. It seems probable that the work on the bridge will not be resumed until the questions as to the liability of the city and the obstruction to mavigation shall have been finally decided, and until the exact amount required to finish the work shall have been ascertained and its safety assured. According to the present aspect of affairs, therefore, this looks like an indefinite postpenement of the whole enterprise, and meanwhile the stranger from beyond the seas, as he approaches the metropolis, will have pointed out to him the mighty towers of the bridge, with their unfinished slender threads of connection and their incomplete approaches, and will begin his notes on America with some pertineut reflections on the precipitancy of the national character and our tendency to undertake great works without duly counting the cost; a first impression, we regret to say, not likely to be weakened by subsequent observations and wider experi-

The proposition to begin the long-considered work of deco-rating the interior of the Cathedral of St. Paul's by a costly experiment in the deme, as we have already explained in this journal (see American Architect for August 10th), incets with a vigorous opposition in many of the English papers. This opposition is directed not only against the great cost of the under-taking as compared with the results to be obtained, but against any effort which might tend to make a mere show-house of the great temple. But the criticisms which more immediately concern us, as architects, are those which take exception to the manner in which it is proposed to carry out this monumental enterprise. The subdivision of the domical surface into sections by apparent riles apparently supported by figures (tobusones) apparently projected from the surface is considered an offence against the fundamental principle of truth in art, and a disregard of the obvious intentions of Wren, who, if he had wished such an architectural subdivision, would have provided for it by contriving actual ribs in the stacco linish, which he so well understood how to use. The treatment of the dome by Sir James Thornbill, probably carrying out the modified scheme of decoration as approved by Wron, and virtually having its figures within and heyoud the surface and not appliqués upon it, thus apparently enlarging the cope instead of diminishing it, is deemed much more in accordance with the architectural conditions. Attoution also is drawn to the fact that the scheme, as proposed, does not recognize the great plain surfaces of the drum or tambour of the dome above and below the Whispering Gallery, and, instead of including these important spaces, so much nearer the eye, leaves them have and subject hereafter to the dangerous chances of adjustment to the finished work above. It is claimed, moreover, that the first experiment should be made, not in the part which demands the highest art and the greatest experience in decorative effects, but in the choir, which presents conditions far more familiar to the artist, and which may consequently be treated with better chances of success, thus educating the hands and eyes of those engaged in the work to a better appreciation of the more difficult parts, especially of the collamation of the decorative problem in the dome. The whole discussion, though covering a very high region of artistic thought, is maintained with vigor and carnestness, indicating that the literary as well as the professional circles in the old country are thoroughly interested and capable of intelligently considering the achievements and due position of the nation in respect to its monumental arc.

The smutty appearance of buildings in London has always been ascribed to the smoke and soot of the metropolis, but those who remember the different degrees of blackness with which St. Paul's is disfigured, without any apparent cause, will not wonder that science has been led to seek, and has apparently found, another explanation of the phonomenon. Investigation showed that buildings in Bath, constructed of a similar politic stone, were bestutted in a like manner, while in Wolverhampton, one of the smekiest of English towns, churches and buildings of sandstone were unstained. Clearly, then, if smoke affects masonry at all, its influence must be confined to certain

limestones. The discovery of a certain rusticated Italian wall in Cambridge so far out in the country that smoke could not have affected it, which was yet covered with the same blackness which so disfigures the northern side and the lower portions of St. Paul's, led Professor Paley to the belief that smoke was not the cause of the disfigurement, but that it was caused either by some vegetable growth, or by some exidution that was not under-Careful investigation by analysis and by the microscope seemed to show that the discoloration was caused by infinite lichens, amorphous in form and of extremely low organization, shanning light and warmth and posessing the power of extracting its necessary sustenance from limestone. Of this fact there seems to be no doubt, for those parts of St. Paul's, the best known example of this discoloration, which are exposed to the full light and warmth of the sun's rays still show the original whitish color of the oblitic stone, while those parts on which sunlight never falls, the soffits of the cornicus, the under sides of mouldings, the north sides of window jambs and vertical mouldings, and a great part of the north side of the building, are stained and strenked with various shades of blackness. On the north side indeed there are whilish streaks and patches, which observation has shown to coincide with these parts on which the oblique rays of the setting sun fall at certain seasons of the year. If these conclusions are tenable, the proper step to take for pro-tection against this lugabrious parasite is to discover some way of treating the surface of a building by chemical washes so that the lichen cannot attach itself nor feed upon the stone.

In accordance with a resolution passed at the last session of Congress, the Heads of the Departments have been generally requested to state what objectious, if any, existed to the introduction of the metrical system as obligatory in public and private transactions respectively. It is well known that the system has already been legalized by Act of Congress. The repties which have been received from the several Departments are significant of the very serious obstacles which this proposed reform is destined to encounter. The Navy Department pointed out that as regards mayal affairs an obligatory change in this respect would "involve a total loss of all charts and chart plates now in use," the soundings thereon being given in fathoms and feet, as in the case of all English charts. The Postmuster General's objections were not of a serious nature, and did not touch any fundamental points; indeed, it would seem that the gradual introduction of the metrical system could be effected through the Post Office more conveniently and with less disturbance than in any other Department of Government. The State Department maintained that in dealings with foreign countries the disadvantuges of the change would, on the whole, outweigh the salvageages. In the War Department the change was very strongly opposed, especially by the Quartermaster General, on the ground that it would greatly increase the labor of computation and the chances of error; that it would involve great expense in change of scales, weights, and measures, and great confusion and misunderstanding, until the metrical system had become theroughly naturalized not only among government officials but among individuals in all parts of the country. He was of opin-ion that Congress had no power to render the system obligatory in private transactions, and maintained that the meter, not being, as was originally supposed, exactly the ten-millionth part of the quadrant of the meridian of Paris, is "quite as arbitrary and muscientific a standard as the foot or yard." Evidently, however, the Government must make the first practical move in this matter; but, as it seems to us, this move should be made very gradually and in concert with Great Britain, the only important commercial nation besides ourselves which still holds to the old standard. Without such concert, the difficulty of the transition would be more than doubled for either. simultaneous adoption of the metrical standard in the post offices of the two countries, for example, would apparently introduce it with the least embarrassment and with the best opportunity for rendering its usage and its values familiar to the public.

PAPERS ON PERSPECTIVE.

XII. DISTORTIONS AND CORRECTIONS. - PIGURE PAINTING.

254. It has been pointed out in the previous paper that the perspectives of circles often look very queer; the clipses by which they are represented seem unaccountably and even unactually inclined, their principal axes slanting in directions difficult to anticipate. The effect of this is particularly objectionable when the circle is horizontal or when it forms the base of a cylinder. The base of a cylinder.

der always presents the appearance of an ellipse whose major axis

der always presents the appearance of an ellipse whose major axis is at right angles with the axis of the cylinder, and it is offensive to find it drawn otherwise, as in purspective often happens.

255. A horizontal circle always appears to the eye as a horizontal citipse, as an ellipse, that is to say, whose major axis is parallel to the horizon and whose minor axis is perpendicular to it, and it is extremely obtoxious to see it drawn with the axes inclined. This is illustrated in Fig. 58, by the perspective plan of the capital at the top of the figure and that of the base at the bottom. The effect of this would be so disagreeable if the curves of the capital and base were inclined in like manner, that it is customary to introduce a certain correction, as it is called as is done in the figure. These lines are drawn as horizontal ellipses, just as if the object were at the centre of the picture.

258. Fig. 50, c, still further illustrates this point, showing that in the column at the centre of the picture the ellipses are horizontal, and that the others are more and more inclined as they are farther removed from it, which looks like an unmarrial distortion. In this figure, moreover, the outer columns, which as seen from the station-point at S would look the smallest, since they are farthest from the eye, are on the contrary drawn larger in diameter, an apparent distortion oven more offensive than the other. So with the spheres by which the columns are surmounted. The outline of a sphere always looks like a circle; it is not agreeable to find it drawn as an always backs had a circle; it is not agreeable to him it uniwa as at ellipse. But in perspective it must always be an ellipse, unless its centre is just at the centre of the picture; for the perspective representation of the sphere is the section of a right cone with a circular base, and it must always be an ellipse unless the axis of the none is perpendicular to the plane of the picture.

257. Of course all these distortions disappear when the eye is at

the station-point, at a proper distance in Iront of the pheture, oppusite the centre C. From that point of view the purspective lines exactly cover and coincide with the authines of the objects. But practically it is impossible for the spectator always to be exactly at the station-point, and since from every other point circles, cylinders, and spheres appear, in general, to be more or less distorted in the man-These corrections are pulpable violations of the rules of perspective made in order to avoid the disagreeable consequences of described the station-point. They consist in drawing all horizontal circles as horizontal ellipses, whether apposite the centre of the picture or not; in always drawing the elliptical representation of the cylinder at right angles with the cylinder itself; and in drawing all spheros as circles. If a row of columns, moreover, is parallel to the picture, they are always made of the same diameter, as if seen in elevation, and if their direction is slightly inclined to the picture care is taken to diminish their width a little as they recode.

258. Fig. 50, o, illustrates these corrections, and shows further

how the same treatment is sometimes extended to the octagon. The right-hand side of the actagonal figure at the top is drawn steeper than it ought to be, not being directed to its proper vanishing point, in order to remedy the apparent distortion seen in the corresponding

figure below.

250. Fig. 50, a, shows also the effect of applying to vertical circles and semicircles the same corrections as to horizontal onus. cular window which in the figure below is drawn in true perspective as an oblique ellipse is here shown as a vertical one, a change which will probably be regarded by most persons as an improvement. The effort of a similar correction in the semicincular-window head beyond is less happy; it makes the nearer half look much too big and obviously throws the imposts, or points where the arch begins, quite out of level.

280. Since these so-called corrections change and generally diminish the apparent size of the etreles, cylinders, and spheres to which they are applied, the relation of these objects to other objects is necessarily changed at the same time. In the first place, more of the hackground has to be shown than can really be seen. In the figure, for example, the openings between the columns are increased. and objects are seen beyond which in point of fact would be hidden. This discrepancy is not very important and in general would hardly be noticed, but the altered relations between these circular figures and other objects in their immediate neighborhood is a more serious matter. The square abacus between the shaft and the sphere that surmounts it looks too hig for its place if left without correction, and looks smaller than its fellows if reduced as the sphere and cylinder So also when an netagon occurs in immediate connection with a circle. If its shape is adjusted to that of the corrected ellipse its want of harmony with the rest of the drawing often becomes painwant of narmony with the rest of the crawing often necesses painfully apparent. A sabisfactory adjustment may sometimes be effected by a compromise, the ellipse being made not quite borizontal and the octagon or square being not quite harmonized with it. But a perfectly satisfactory adjustment is in some of these cases, and notably in the case of a row of columns, almost impossible.

These difficulties are of columns, almost impossible.

These difficulties are of course greater as the objects in question are further removed from the centre of the pictures, and may be distinshed or removed altogether by so taking the position of the picture and that of the speciator that the circular object is at or near the centre C.

261. Although the distortions of circular and spherical objects are, in general, the only ones that call boully for correction, and it is to them alone that correction is systematically applied, it is obvious

that a similar disturtion must exist for all objects equally distant from the centre of the picture, the so-called distortion consisting in this, that the shape of the object in the drawing is different from the shape which the real object presents to the eye. This is in fact implied in the fundamental principle of perspective, the principle that a perspective drawing will look right from only one point, namely, the station-point. Now as from the station-point every part of the picture except the centre is viewed obliquely, ustance, as it were, everything must be drawn of a different shape from what it appears in order that when the drawing is looked at thus obliquely it may appear as the object itself does when looked at directly. By the very theory of perspective only the object just opposite the syn, seen, along the axis of the picture, just at its centre, is drawn as it loaks. Everything else is, so to speak, distorted. The outline given to it is not its real outline, but one which will look like its real outline. when seen sideways from the position assigned to the spectator. This distortion is inevitable, and every object in a perspective draw-

ing, except the one at the centre, is always distorted.

202. The disfigurement produced by this does not of course become very obvious, except for circles and spheres, so long as objects are not far removed from the centre, that is to say, so long as the picture is of tunderate extent. The limit commonly assigned to a perspective drawing is sixty degrees, that is to say, the width of the plettern should not be greater than its distance from the station-point. But this implies that the centre C is in the middle of the plettere, which as we have seen is often not the case, and it is better to say that no part of the plettere should be distant from the point opposite the eye more than half the distance of the spectator in front of it. But even within this range the distortion even of restiliant perspective drawing is sixty degrees, that is to say, the width of the opposite the eye more than and the distance of the specialor in trans-of it. But even within this range the distortion even of rectilinear objects is sometimes into crable, and great cantion must always be used in regard to objects situated at the edges of the nieture. 268. This limit of sixty degrees is obviously an arbitrary one, and only means that by the time it is reached the distortion begins to be

moticeable. It is toolish to say, as is sometimes said, that this is fixed because sixty degrees embrace all that one can see without turning his eyes, or as others say, without turning his head, and that this is accordingly the natural range for a picture. For our has to this is accordingly the natural range for a picture. For one has to cura his eyes, more or loss, to see directly anything larger than a pin-head, held at arm's length; and he has no need to turn his head to embrace a horizon of ninety degrees. Beckles, why should not one turn his head as well as his eyes in looking at a picture as well as in looking at nature? If he is at the station-point, where he ought to be, turning his head cannot make things look wrong, and if he is not there keeping it still will not make them look right.

264. What has been said of cylinders and spheres strictly applies to the luman figure, which may be regarded, in a rough way, as a cylinder surmounted by a sphere. Perspective distortion is here even more intolerable than in the case of the more exact geometrical

solids, and the need of correction is more imperative.

This is excellently illustrated by the phenomena of the familiar parlor amusement called "Chinese Shadows," in which a sheer is hung across the middle of a roun and the shadows of the performers on one side are thrown upon it for the entertainment of spectators on the other side. A single lamp is used, and it is obvious that all the shadows except the one just opposite the lamp and on a level with it must be more or less distorted as they are more or less removed from this centre. But it is also obvious that if one of the speciators places biouself exactly opposite the lamp and as far in front of the seven as the light is behind it, the distorted outlines will be foreshortened into the true shape of the figures on the other side as seen incomition.

irom the place occupied by the flame.

365. A historical picture then, if painted in true perspective, with all its figures so drawn as to prosent their true aspect to the spectator standing at a given point in front of it, would have all its personages as much out of drawing as are Chinese shadows upon a screen. Pig. 60, which exhibits the results of an experiment with a screen. Fig. 60, which exhibits the results of an experiment with a group of statuary and with half a dozen round balls, illustrates these

conclusions.

266. No such picture of course was over painted, painters always adopting the same course for figures that has been recommended for their geometrical prototypes. Every figure is autlined independently of all the others, and in its natural proportions, just as if it occupied the centre of the picture. In order to see it correctly the speciator has to stand opposite to it, and as he cannot of course stand exactly opposite to more than one figure at a time, it follows that he can never see more than one at a time in correct drawing. All the others are distorted by fore-shortening. But if he is at a distance from the pieture this distortion is not naticeable, and when he comes near he

confines his attention to the figure nearest his eye,

This is very well illustrated by Raffaellu's famous fresco called the
"School of Athons," of which the principal part is shown in Fig. 65. The figures on the extreme right and the spheres which they carry are drawn, as has been pointed out by M. Adhemar, just as if they were in the centre of the picture, opposite the eye. If the spectator were in the centre of the picture, opposite the eye. If the spectator were in the middle of the room, one wall of which is occupied by this picture, the chief one of these figures would appear foreshortened, as in Fig. 64, a, the sphere looking like an egg on end. One sometimes in the scenery of a theatre sees a round hall on a post present a similar aspect, from the same cause. In order to make the figure appear as it should, to make it assume when seen from the middle of the room, the form intended by the painter, he would have had to draw it as shown in Fig. 64, b, giving the sphere a flattened

form, just as in Fig. 59 c. 267. If his picture is a large one, the painter often has a difficult task to reconcile his background and accessories, which are drawn according to perspective rule, and calculated to be seen from a single point, with his figures, which utterly violate these rules, and permit and indeed require the spectator to regard them from half a dozen different positions. The background proper may not give much trouble. More of it will be seen between the figures than would be the case in nature, as has been pointed out already in regard to columns, and care must be taken not to use any forms which require the spectator to remain exactly at the station-point; for this he will not do. But that can easily be managed. The chief difficulty is found in fitting the figures into the foreground. If a chair, for instance, occupies one end of the feart of the picture and is put into perspective along with the walls and floor, so as to appear repaired by from a point of opposite the middle of the picture, it must needs took more or less crooked when looked at from a puint opposite the end of the picture, and it is no easy matter to make a figure painted from that point of view look as if he were seated comfortably in it. It, moreover, he is to be represented as looking straight across the picture, it is by no means clear whether he should be drawn in profile as he would appear from this point, or with the three-quarter face which he would show from the other.

208. There is even greater difficulty in reconciling the perspective

of a floor with the want of perspective of the feet that stand upon it. If a number of persons are shown in the foreground of a picture all facing the same way, it is impossible to make the direction of their feet agree with that of the boards on which they stoud. Fig. 61.2, shows how the feet of a dramatic company, seen just as the curtain is descending, would be drawn in true perspective, agreeably to perspective plan below. Fig. 62 shows the necessary correction, each pair of feet being drawn just as if it were exactly opposite the spectator. But it is to be noticed that the end man is necessarily

represented as standing diagonalty across the floor bourds.

269. In general, the artitude of the figures at the edge of a large picture is not very clearly defined, and varies as the speciator changes bis position. In Guido's "Amora," for instance, if one stands uppo-site one and of the picture the figure at the extreme left seems to be marching along the from, and Aurora herself to be looking out of the frame. If he goes to the other end she seems to be looking back at Apollo in the chariot, and the other figure seems to be just now

Another difficulty in the perspective of figure subjects is, that if the figures are as large as life everything mearer than they becomes colossal. But this may be avoided, and generally is, by nut having anything in particular in front of the principal figures.

270. All the difficulties encountered with the human figure are met

property at a large second

in even greater force with ligares of animals, except that it is possible for them to be considerably out of drawing without detection, Fig. 65, which is burrowed from the work of M. Thiébault, illustrates at once the extent of the distortion and the difficulty of correcting it.

MODERN PLUMBING, VII.

WATER CLOSETS. 1.

ALL the forms of water-closet now in use may be reduced to four

types:—

First, the hopper, which is a conical basin with outlet at the hottum, inserted into the mouth of an S-trap.

Second, the valve-closet, properly so called, which consists, in
substance, of a hopper with a door closing tightly the outlet, so that
a body of water stands in the basin, kept up by the door or valve,
outli a lever is pulled, which causes the valve to drop and the water

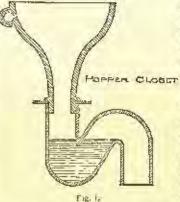
and other contents to escape together.

7 hird, the pan-closet, in which the lower orifice of the basin, instead of being closed by a valve, dips into a pan hinged at one side and filled with water, which is dropped by the action of a lever, and the contents thrown out into the receiver in which the pan works,

and thence pass to the drain; and

Fourth, the plunger, or side outlet closet, in which the outlet from the basin runs sideways, far enough to allow it to be closed by a plug working vertically by the side of the basin, which holds the water in the basin until hined, when the discharge takes place below it.

Happer or cottage closets are commonly made of cast-fron, coamelled inside, but carthe aware is also used, or sometimes an carther-ware basin is set in the mouth of a short iron hopper. The earlier shape was nearly conical, but it is found that the action of the flusinshape was nearly conical, but it is found that the action of the flushing water, entering at the side and descending spirally, is more uniform if the sides of the hopper are curved, as in the Philadelphia or the Mott patterns. The lower end of the hopper may be inserted into a lead trap and the joint filled with putty, or it may be hofted to a east-iron trap by the flange left for the purpose. This is the usual way, and the traps are east with a removable cover, for cleaning out. An arm is east on the hopper near the top, into which the supply-pipe is inserted, the joint being made tight with putty, and the water is admitted by any kind of stop-cock or valve. This makes a strong and simple apparatus, suitable for the use of persons who can not be trusted with the better kinds of water-closet; but the sides get smeared with filth, and the contents of the trap fluat directly under



the orifice of the bowl for bours or often days at a time, so that there is usually more or less smell from it; hence it should be placed in a well-aired situation, or the bowl should be ventilated in some way.

Illated in some way.

Ventilated hopper-closets are made by N. G. Tucker, of Worestor, Mass., R. D. O. Smith, of Washington, D. C., and perhaps by other parties, hesides a ventilated bospital hopper by W. S. Carr & Co., of New York. It is not difficult to drill the shell of the ordinary kinds and insert a brass hipple for connecting a pipe for ventilation. Such ventilatfor ventilation. Such ventilating pipes are best carried to an

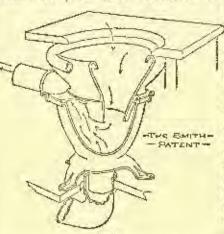
independent outlet, and not into a claumey, unless a separate fluc is built for them; but they are far less objectionable than a vent pipe from a trap or soil-cope.

The Tucket closet, which is also made and sold by various dealers



in New Eugland under the name of the "Worcester bupper," from the place where it was first introduced and most extensively used, has an earthenware hasin inserted into the mouth of a short comical hopper, which has, just above the trup, on arm east on it for the attachment of a ventilating pipe. The arm is of good size, 14 or 12 inches in diameter, and where the connecting pipe can be carried to the outer air, or into a constantly heated the, the ventilation is quite effectual, and the cost small.

The Smith patent closet also has an earthenware basin, in



serted into the top of an iron receiver, something like that of a pan-closet, with a dat top. The lawer part of the receiver is topered like an ordinary copper, and is set in the same way, while out of the flat cover, by the side of the bowl, springs a wentilating pipe, which is to be con-nected with a fue or carried to the open air. The foul air as-The foul air aslower hopper clings to the walls, by a well known property of moving gases, and

of moving gases, and is thus earried up beyond the orifice of the basin, and having gone so far, it cannot, as long as there is a frue cacape for it in the same direction by the ventilating pipe, move backwards so as to get into the inner basin. The draught of the ventilating pipe tends to draw sir down through the inner basin, and forms a further obstacle to the ascent of vapor. This is also a cheap, strong, and, where an outlet for the ventilating pipe can be had, very excullent apparatus, which should be more widely known. The same principle, of distance in the ventilation of the cacabian peak into a cacabian peak into a cacabian apparatus, where the ventilation is a cacabian peak into a ca charging the waste through a conical neck into a receiver ventilated by a pipe which opens into it above the discharging mouth, is applied by the patentre to washbowls, urinals, etc.

Buth the Worcester and the Smith closets can be supplied with

Bith the Woreester and the Smith closets can be supplied with water in any way desired; either by common or self-closing cocks, or by some automatic apparatus. Still another music of ventilating a hupper is by Albee's closet ventilator. This consists of a flat pipe of zine or galvanized iron encircling the top of the bowl, just under the seat, and pierced with holes. At the back a connection is left for a pipe to be earried to a flue or other outlet. This can be easily applied to any cld or new closet, hopper, pan, or otherwise, and is very useful in many cases.

aseful iu many cases.

Hopper-closets are often supplied with water by means of common stop-cacke, ground or compression, but the 4 inch pipe, which is the size to which the arm of the basin is usually fitted, will waste water rapidly it the cock should be left open, and self-closing cocks or valves are generally used, especially the variety known as the "hopper cock," which works with a lever, placed under the seat, and lifted by a brass knob somewhat like the pull of a pan-closet. Valves, as Carr's or Bartholomew's, are often employed, placed under the seat, which is hipped, so that when the seat is pressed down while in use the valve is opened and the water flows, and stops when the weight is removed from the seat. Some valves run for a few minutes only the valve is opened and the water flows, and steps when the weight is removed from the seat. Some valves run for a few minutes only when the seat is relieved of the weight, and some, the best of all, run for a short time while the weight is imposed, and again when it is removed. A valve is made by John II. Stevens of Cambridge, Mass., which is operated by the opening of the closet door.

A useful closet for cold situations, such as occur in characters where

the temperature of the whole building may be below freezing five or six days in the week, is a hopper with the outlet carried vertically downward by a length of iron pipe to a trap so far below the surface of the ground as to be out of reach of frost, and supplied with water through a pipe and cock also buried four or five feet beneath the sarface, the cock worked with a long spindle like a street hydrant. The vertical part of the pipe, from the cock to the arm of the hopper, will not from which the mater in transition and the cock to the arm of the hopper, will not freeze while the water is running, and the cock unist have a tube waste, and he surrounded by loose stones, so that when it is shore off the water in the vertical part of the pipe will drain out and soak away among the stones. An excellent cock for this purpose is Lane's Boston Selt-closing Valve. The rost can be ordered of any length, and tubes are made for enclosing the valve and rost to keep the earth Where the closet is placed in a shed or basement, the trap may he baried in the same manner, and a supply each of any kind can be put in the kitchen or other warm place. By either of these methods hoppers will work perfectly where any other kind of water-closet work be useless in cold weather.

Instead of being supplied through the ordinary supply-pipe with its coeks or valves, the hopper may be supplied from a vistern placed over it, with a valve like an inverted cap over the mouth of the pipe which leads from the eistern to the arm of the basis. On pulling a wire or chain attached to one end of a lever over the distern, the other end of the lever lifts the valve, and the water runs into the hopper with a lorge and suddenness which have a good effect in arging its contents quickly through the trap, instead of leaving them floating in it, as often happens with a feether flow. Rhoads's percelain-scated closet is a hopper supplied in this way from a service electro. No woodwork is used about this apparatus, as the hopper and trap are all of poreclain, with the top turned over so as to make a comfortable sent, and the whole is screwed to the floor, making a very clean and efficient apparatus. A ristern supply of this kind can easily be arranged to work by the opening of the closet duor, out of the reach of

mischievous hands.

It's still more offectual mode of automatic flushing is desired, a small distern holding two or three quarts can be fitted up in any conresions place, supplied by a 1 inch pipe, and discharging by a larger pipe into the arm of the basin. The supply is regulated by a supposed on the small pipe, so as to fill the cistern once in fire or ten minutes. As soon as filled, it is discharged by a valve with a float

or some other sulf-anting arrangement. In an automatic distern just patented by W. G. Rhoads, of Philadelphia (see American Architect for July 27, 1878), the outlet pipe forms a siphon in the cistern, and the inlet pipe discharges over a dish so balanced on a pivot that when coupty it rests horizontal, but when full it falls forward and coupties used into the distern. When the eistern is nearly full, the addition of the dishtut of water brings into serion the siphon, which empiles the contents instantly into the hopper. The regular flushing at short intervals obtained by such an apparatus keeps the closet always clean.

A patential closet of this kind is sold by Alfred Ivers, of New York, which is thoroughly made and works extremely well. With

the addition of a ventilating pipe, like that of the Smith closet, it

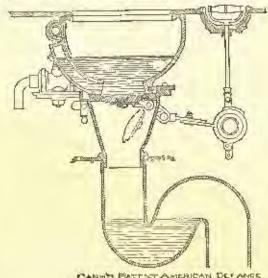
would leave little to be desired for use in aursories or hospitals.

Any apparatus of this kind, however, nonsumes a large amount of water, a discharge of three quarts every five mitutes absoluting to overcroo hundred gullons a day, and where water is costly, or the supply limited, their use is impracticable. Hopper-closets in general require a good deal of water to keep them clean, and in cities an extra charge is made for their use, even when supplied by self-closing

The name of valve-closet is by common usage applied to any apparatus, whether employing a pan or other cover for closing the lower orifice of the bowl, to which the water is supplied directly through a valve on the supply-pipe, in distinction from the indirect supply by the intervention of a service cistern; but it is convenient supply by the intervention of a service cisters; but it is convenient here to restrict it to its technical application to those in which the water is held in the basin by a valve, instead of by a plunger or a pan. This variety is common in England and on the Continent, and one English form, the "Bramah" closet, is occasionally imported into this country. The only native example that the writer is acquainted with is the "American Defiance" closet, made by Wm. S. Carr & Co., of New York, which is much used throughout the United States. In this acquaint to the harder with its constant to the product the

In this apparatus the hada, with its overflow in one piece, and the valve are of porcelain. The basin is bolted down to a small iron hopper, just large enough for the valve to work in, and this is enamelled inside. The fan, under which the water enters, and

which serves to spread the stream over the sides of the basin, is also of percelain, made in one piece with the bowl, instead of being formed out of a bit of sheet lead or copper. An S-trap is set below the hopper. This makes a very clean, nice-tooking apparatus, all



CARN'S FATENT AMERICAN DEFANCE

Fig. 4.

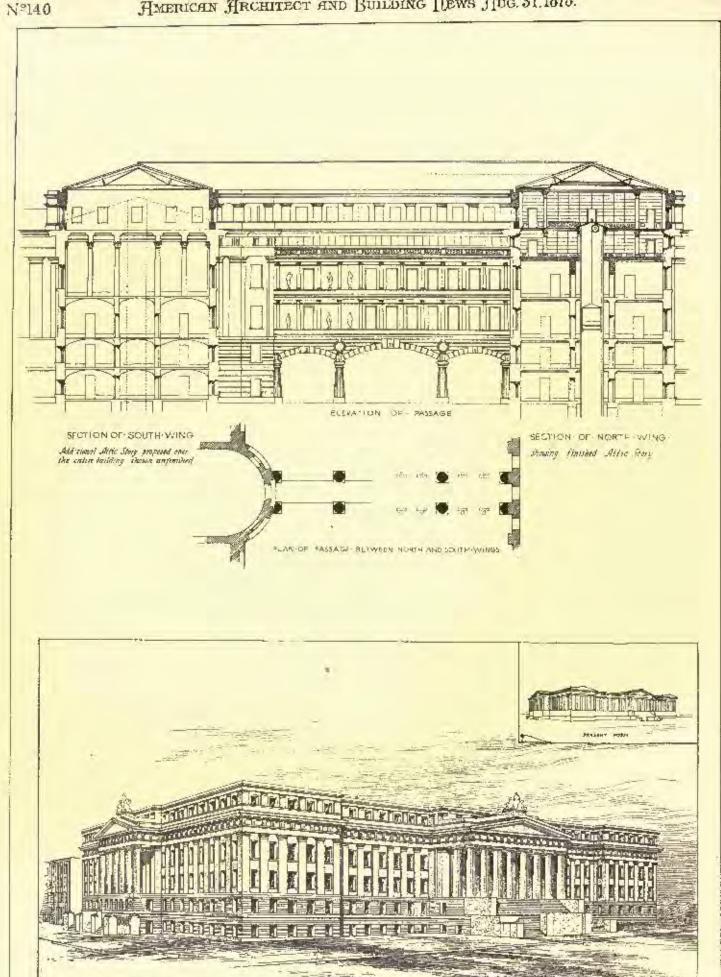
the visible parts being white porcelain, with no brown streaks from the metal imis and screws, and no exposure of rusty copper pans at the bottom, and when in good order no closet is pleasurer in use; the bottom, and when in good order no closet is picksunter in use; the bowl holds a large quantity of water, so that there is no danger of its sides being fouled, and the opening of the valve throws the whole contents instantly out of sight. In addition, the space between the valve and the trap, which must necessarily be full of the cmanations from whatever is in the trap, is small, and, being lined with enamel, the filth passes through it without striking, so that the quantity of gas which is generated or retuined in it is insignificant quantity or gas which is generated or recorded in it is insignificant in comparison with the blast of vapor which comes from the container of a pan-closet. Its successful uporation, however, depends greatly upon the proper working of the valve. There is nothing to keep the water in the bowl except the upward pressure of the valve against the rubber procking of the outlet at the bottom, and if instability and the contest at the bottom, and if instability and the contest at the bottom, and if instability and the contest at the bottom, and if instability and the contest at the bottom, and if instability and the contest at the bottom, and if instability and the contest at the bottom, and if instability and the contest at the bottom of the contest at the contest at the bottom. perfectly made, or muskillully put in, the valve may not fit tightly or with sufficient pressure, so that the water can run away, and leave the hasin dry. Pieces of paper often get in and hold the valve open, with the same result, so that the apparatus should be used earetally, but it well repays good treatment. The trap should be ventilated, to avoid all possibility of siphonage, which is not unlikely, from the large quantity of water discharged, and would admit a stream of sewer gas into the room around the journals of the valve, even though the basin might be full of water.

These closets like most of those mode in New York, are usually supplied directly by a branch from the main water pipe, through a valve worked by the action of the lever which at the same time drops the valve under the basin; but it is better to employ a service cistern, something like that occasionally used to supply hoppers, and dispense with the value. The collinary service eistern for pan and valve closets is a wooden box about two feet long and one fuot in height and width, holding some lifteen gallons, and fined wish lead or timed copper. To the under side of the cistern is attached a service-box of heavy sheet lead, usually six-pound. The communication from the eistern to the service-box is through a cistern valve, two luches or so in diameter, which is raised by a lever, connected to the pull of the closet by copper wires and cranks precisely like those used in bell hanging. An air tube leads from the service-bux to the top of the cistern, and a # inch or # inch pipe rons direct to the basin. When the pull is lifted, the valve is depressed and the basin emptied, and at the same thme the valve in the cistern is raised and the water runs through the contraction of the cistern is raised and the water runs. through the service-box into the basin and out again through the open valve. If the distorn were made without a service-box, as used for hoppers, the flow would cease as soon as the lever was dropped. without the after-flow necessary for filling the basic after the pull is released and the valve closed; but as adapted for pan or valve closets, the raising of the large cistern valve fills the service-box faster than the small pipe to the basin can curpty it, and when the eistern valve is dropped by releasing the handle, enough water remains in the service-box to continue the flow until the basin is full. This detailed eistern supply can be adapted to any closet, at a cost of a few dollars over the direct valve ampply, and is much simpler, stronger, and safer, as well as more perfect in action.

as well as more pertical in action.

Where a closet is connected directly with the main, it often happens that in case of a failure of water, such as frequently occurs in upper stories, the closet is used, and no water following the raising of the handle, this is left up, so that whenever the water comes again the closet may be flushed. The consequence is that if the water sinks still further in the main, an almost perfect vacuum is created behind it, and the air rushes in through any open pipe. A

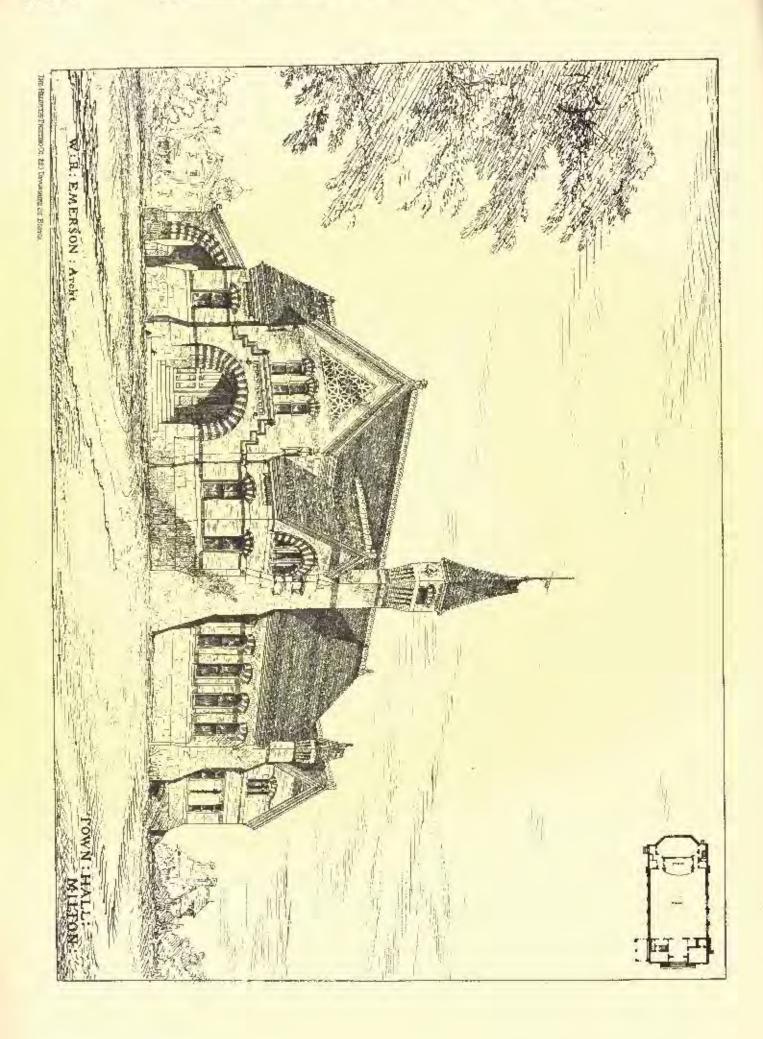


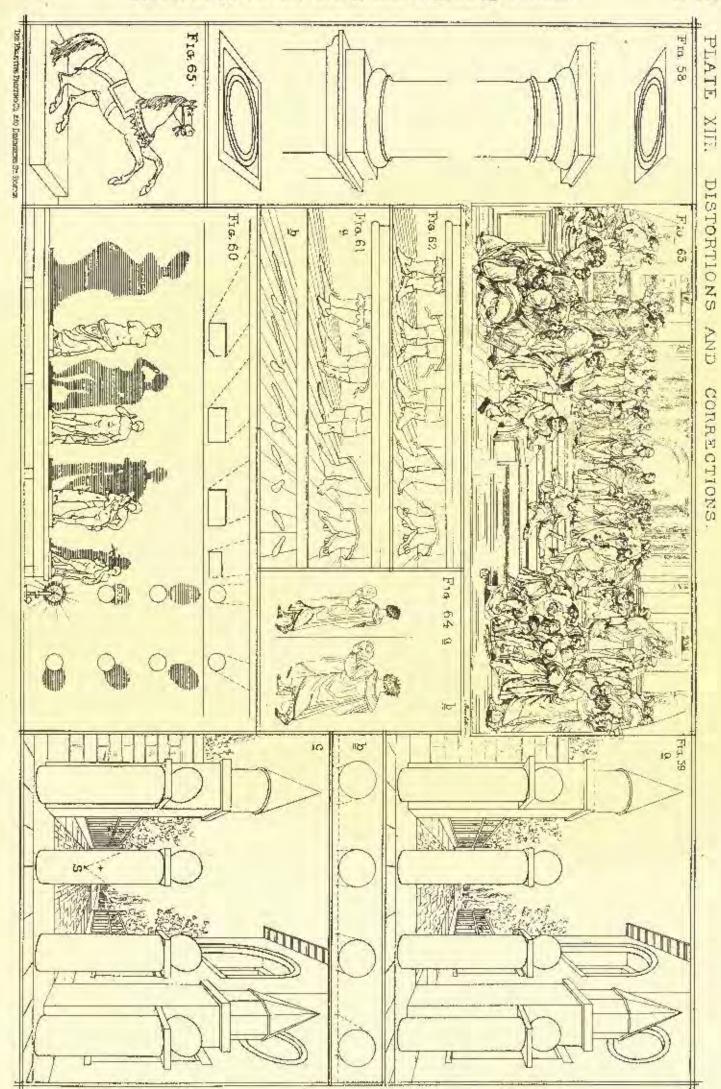


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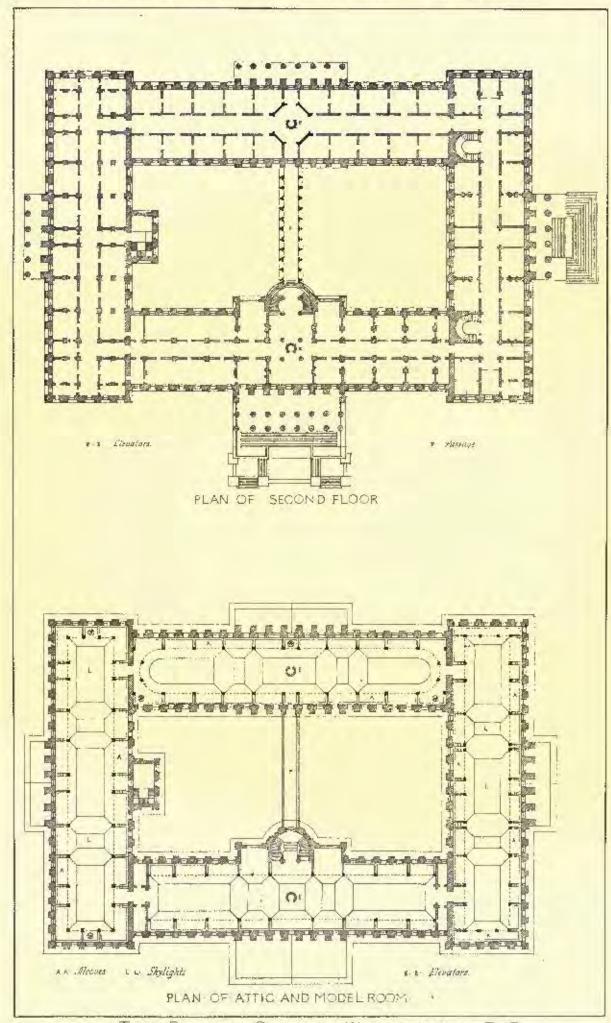
PROPOSED ALTERATION - New from Southwest



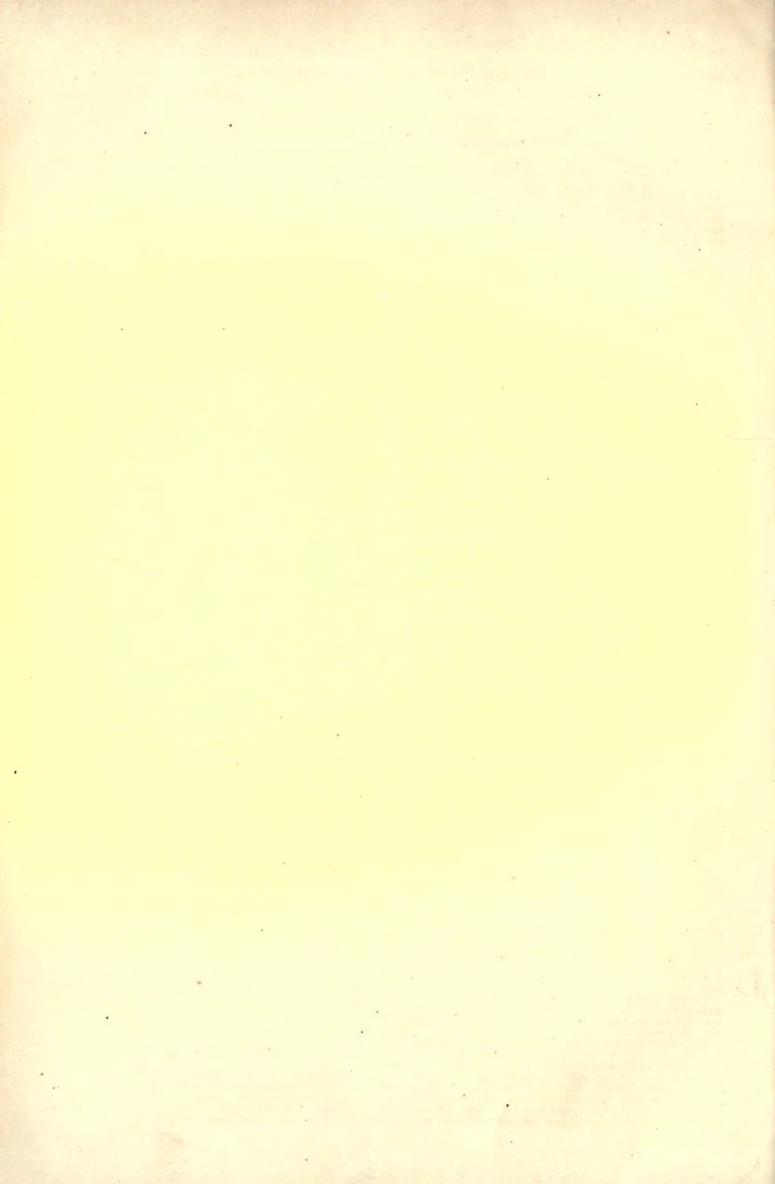








- THE PATENT OFFICE WASHINGTON D.C. -



closet valve, thus held open, becomes a conduit through which the vapors of the basin, and sometimes particles of its contents, are sucked with great force into the supply pipes of the house. Fatal disease has been traced to this source of contamination.

Another objection to the direct supply valves is that they soon begin to leak, especially if subjected to a varying pressure. They often come enclosed in a little box, with an outlet to be connected to the waste-pipe, and if not so protected, the whole closet is frequently set in a lead safe, so that the leakage of the valve escapes without doing any mischief, but it may become so serious as to waste considerable constitution. considerable quantities of water. If the valve, again, is out of order, the closet is ascless until a plumber can be sent for to repair it, while with the eistern supply, the breaking of a wire or crank is easily rumedied.

Where the eistern supply is employed, care must be taken to adapt the service-box to the size of the closer basin. With a hopper, no service-box is necessary, as no water is needed to remain in the basin; with pan-closets a small one, holding enough to fill the pan, about a quart and a half, is all that is required, while with the "American Defiance," the English "Brands," or any of the plunger closus, a service-box holding at least two gallons is necessary. Instead of the ordinary rectangular lead service box, with air pipe to prevent the compression of the air from impeding the entrance of the water, a substitute is often made by extending a two or three inch lead pipe down from the ciscers valve about two feet, or more, according to the amounts of water noded and then concreting it. according to the quantity of water needed, and then contracting it to the \$\frac{1}{2}\$ or \$\frac{1}{2}\$ inch required for the supply to the basin. This needs no air pipe, and the water runs into the basin with more force than from an ordinary service-box of the same capacity

OFFICIAL REPORT ON THE PATENT OFFICE COM-PETITION.

WASHINGTON, D. C., August 9, 1878.

TO THE HONORABLE CARL SCHURZ, Secretary of the Interiors

Sir,—The undersigned, a commission appointed to "examine into, and report upon the plans submitted for restoring and reconstructing the Patent Odice Building," have attended to that day,

and would respectfully report:

We have received the contributions of thirteen (13) competitors, consisting of one handred and ten (110) sheets, containing appears of two bundred and fifty-four (254) drawings, with explanations, and twelve (12) written descriptions. Of these, we were obliged at the outset, to reject one, — the contribution of Mr. J. H. Merrill, for violation of the rules of competition, in failing to make his con-

tribution anonymous.

tribution anonymous.

If your a careful consideration of your letter of instructions, together with circulars of June 14, and anondments of June 27, 1878, and accompanying lithographic sheets, upon which architects were invited to base their contributions, we resolved that our recommendations must be favorable "to that competitor, who, taking into account the various requirements and suggestions of circular of June 14, shall have presented, in a single scheme, the most intelligent emballment of these requirements and suggestions;" also, "that, in determining the merits of the various schemes which have been submitted, we, as exports, must, in justice to all competitors, he governed safely by the requirements of said circular, and accompanying plans." plans."

Having now carefully examined the various drawings and written Alaring now carefully examined the various drawings and written explanations, we are manimously of the opinion that the author of the contribution designated thus, <, has "presented the most intelligent embodiment of the requirements and suggestions" of the governing circular, and we recommend the creation upon the walls of the present building of an additional story or "attie," substantially as suggested by this competitor. The adoption of this scheme will give an entire new story of offices, seventy-two (72) in number.

In connection with this, we would recommend the central connection passage, shown upon shorts Nov. thickern (13) and fifteen (13) and

ing passage, shown upon sheets Nos. thirteen (13) and fifteen (15) of same competitor; or, instead of this, a building, rectangular in form, about seventy-five (75) feet from north to south, and seventy (70) feet from east to west.

This structure should be tangent to the curve of wall of present stairway of south wing, and connect with north wing by a narrow passage only, thus interfering as little as possible with the light of present building. If made with three (3) finished stories, it will contain, say, eighteen (18) offices; thus the proposed treatment of present building, together with the central structure above described, will farnish a total of ninety (90) new rooms, of average size of

The new model-room, as proposed, will be of uniform height and style over the whole area of the present building; well arranged for light and air, and capable of architectural treatment in harmony with the present structure, both externally and internally.

As a matter of interior arrangement, we would recommend that the principal gallery be made of somewhat greater width than that shown upon section sheet No. filteen (15), and placed at a lower level, and that a narrower gallery be placed above this.

Much ingenuity has been displayed by competitors in attempts to seeme needed space, while creeting nothing which shall be visible above the present sky-line, except at a considerable distance from the building; but every such attempt develops some scrious difficulty. the building; but every such attempt develops some serious difficulty,

such, for instance, as lack of sufficient height in proposed model-room; absence of light and free circulation of air; interference with light and air of present model-room; lack of proper and convenient means of communication between various portions of building; or,

means of communication between various portions of building; or, fundamental defect in form, which no management of detail, however elever, can obviate, and which in a room of national importance, cannot be accepted or overlooked.

The question of "design for restoration of the building, substantially us it stood before the fire," is hardly more than one of interior detail. Taking this by itsulf, we are of the opinion that the nullior of the contribution designated thus (C S in monogram within a circle) has in shorts No. three (1) and four (4) exhibited the least acceptant has in sheets No. three (3) and four (4) exhibited the best practical answer to this requirement; but that this arrangement would require modification by a widening of the central longitudinal passage, by reduction of projection of cases, and by the opening of others parallel with this, and marrer the side walls. Also, that the roof, as proposed, is open to serious objection on the ground of conduct, and would require to be supplemented by an interior shell or ceiling, would require to be supplemented by an interior sholl or ceiling, separate from the substance of the roof, and enclosing a sufficient amount of air, with proper semilating arrangement, for protection against excreme temperatures of summor or winter.

The question of "an entire new roof," has been variously answered by various competitors, but in no case has a plan been suggested, so far superior to others, or to those methods of construction, which are the common property of all skilled builders, as to call for special mention.

montion.

Iron roofs, protested by "lime of Tiel," "purous terra-cotta," or "other improved fire-penol materials," are recommended. The lime of Tiel, and perous terra-cotta, are both good materials for the purpose, and enpable of adaptation to any form of iron work.

In the design of <, sheer No. lifteen (45), which we have recommended, a common form of roof is indicated, spanning the width of

the building.

If our suggestions as to the widening of the galleries in this plan be adopted, the columns may be made to stand over the intersection of the corridor and cross walls, as shown in another scheme of this countributor, (sheet No. nine [9]), in which case the piers or columns may become parts of the construction, and thus divide the benches of the roof into three comparatively small bays, readily spanned by a shall bays.

of the roof into three comparatively small bays, readily spanned by a single beam.

We would suggest as proper locations for three passenger elevators, the well-holes of the two stainways in castern wing of present building, and one well-hole of the double stainway of western wing, while the opposite well-hole of the latter affords excellent opportunity for a freight elevator, if desired.

The arrangement of the pilesters of the south portice is such,—the outer one, which must govern the projection of an actic, slanding considerably forward of the line of the intermediate ones,—that the south wall of the attic must of necessity be supported over the space below, primarily by transverse iron girders, or their equivthe space below, primarily by transverse from girders, or their equiv-

the space below, primarily by transverse non griders, or their equivalent, resting upon the intermediate pillasters and opposite columns.

Before closing our report, we feel it our duty to call attantion to the very dangerous condition of the ceiling and roof of the south parties; these are of wood, furred and plastered upon the moder side in each case. A wall of masonry separates the enclosed space from the main model-room, but does not pass through the roof. In this wall are openings leading to the main model-ruom, as well as into the space between the vaulting and roof of same, which openings are entirely improtested, being closed merely by doors of word. Fire might readily be communicated to this space, either through the roof, as in the case of the recom conflagration in west wing, or from below, should any evil-minded person, with sufficient ingentity, be tempted to take advantage of the present condition of the ceiling of the portice. In carrying out the proposed changes in the main build-ing, this coiling and root should be replaced by substantial fire-proof RIGHARD M. HEIGHN. construction. Very respectfully,

H. W. HAHTWELL.

DEPARTMENT OF THE INTERIOR. Washington, August 8, 1878.

Mesers, James K. Wilson, R. M. Crionn, H. W. Hartwell, Present:

Gentlemen, - I have this day received your report as a Board of

Gentlemen, —I have this day received your report as a Board of experts to pass upon the competitive plans for the restoration and reconstruction of the Patent Office building.

With the submission of this report, your fluties in this connection are ended. Delicate as these daties have been, I feel assured that you have falthfully and importially discharged them, for which please accept the thanks of this Department.

Very sincerely yours,

C. Schurz, Secretary.

THE ILLUSTRATIONS.

THE PATENT OFFICE ALTERATIONS, WASHINGTON, D. C.

We here present the designs which show the proposed alterations as submmitted to the committee by the successful competitor, Mr. J. A. Vrydagh. The description of the arrangements will be found in the official report of the committee published herewith.

DESIGN FOR THE TOWN HALL AT MILTON, MASS. MR. W. R. EM-ERSON, ARCHITECT, BOSTON.

Ture design was submitted in competition some months since.

STUDY IN PERSPECTIVE. PLATE XII. See the " Paper on Perspective " in this issue.

VENTILATION OF SEWERS AND DRAINS?

Is the following remarks I wish to speak but briefly on the theory of sewer ventilation, and more fully on the practical results of the various systems in operation; for we have nowalays quite a begion of fameiful and unworkable ideas which must early die on account of their incompatibility with existing laws, habits, and conditions of

the people.

Given a certain condition, namely, a net work of sewers, and we have sewer-gases. Their nature and formulæ are well known; but we are most concerned with their disease-producing power. That they are capable of generating disease which kills thousands, and they are capable of generating disease which kins thousands and prostrates tens of thousands annually, is generally admitted, hence the handable ingenuity and activity in devising means to keep asunder sewer-gases and button beings.

Such devices have been muserous. Among the first were "traps" of various kinds and names, and from our past experience, we can

but "man-traps;" for thousands, trucking to their protection, bave

but a mendraps; for thousands, interns to their potential, and found them a delusion and a source.

Then we had the introduction of upright pipes or shafts from the main sewers into the streets, and from w.c.'s up to the housetop; and then came the conflict of opinion as to the density and behavior of sewer-gases, whether they would go up these tables, or whether they would not require some apparatus to draw them up, without which would not require some apparatus to draw them up, without windle they would be of no use, and this matter was so conscitted, that each person was left to follow out his own notion as to what was best. Last year the great idea in advance may be expressed in one word, namely, "disconnection," and there can be no doubt of the value and importance which that word implies, and of the myriad dangers and importance which that word implies, and of the myrize dangers which its application would prevent; but, as supplementing or resulcring unnecessary off the past schemes, we have what may be termed rearblation by exhaustion, and in a few words I will describe its principle and mechanism. The system is known as "Stati's system." It consists in connecting sewers and drains with the furnaces of steam boilers, or other furnaces with a strong draught. For this purpose the arbis place is included by a door, so as to connect the arbis iron the server or drain in any convenient manner. In all cases hipe from the sewer or drain in any convenient manner. In all eases, however, it will be observed that the furnace to which a sewer or drain is connected for the purposes of ventilation, the connection must be so arranged that the furnace must only reache its supply of sir to support combustion from such sewer or drain. Consequently, it must be combinately exhausting the said sewers and drains of fool gases, which must also pass through the fire and be consumed, or rendered barmess.

After making a number of experiments on the spot with the above system. Dr. Augus Smith wrote the following:—

"Some of the admired plans for contiluting severs are positively danger-ons, others are simply valueless. When the sever car is brought though the fire, as by your method, it is impossible to imagine that it can escape particular to some extent, and one question of prominent importance is,

to what extent?
"It is extremely probable that the description of all dangerous substances "It is extremely probable that the destruction of all dangerous substances was complete in such cases as I saw. So far as we know, the substances to be destroyed are not very stable budies, and are readily decomposed. We may say with safety that the method in question, anothly, passing the sewer gases through the great fires of factories, will remove the most dangerous properties, and, if the speed of passage he not too great, the purification will be complete. If sulphureted hydrogen he present it will burn, and the sulphurens acid formed will pass up with the some acid from the coals. If carbonic acid be in excess, it will pass up the channer with the exchange seid so constantly formed in the fire. If organic substances, rither as germs or more developed living forms he present, they will not andore the heat unless driven through with great rapidity, and if the substances are in a state of putrefaction, that state will be destroyed by a similar heat. The result then is easily known, so far as theory goes; the process if performed well must render the purification complete. So far as practice is concerned, we may be sure that some and even the greater part in francy cases of the noxious matters will be thoroughly rendered innocent, whether all or not is a question of size of lineage, amount of air passing,

in frany cases of the noxious matters will be thoroughly rendered innocent, whether all or not is a question of size of lineage, amount of air passing, time of passing, and so ou.

"The next point to be considered, is to what extent in the sewer is the current of nic formed, or we may say, how for will one fire, burning a given amount of fuel, cause a draught in a sewer of a given size. It will require a good deat of experience to answer this question, and that experience can be obtained only by the use of the method in various situations; and I certainly feel justified in recommending that it should be tried and its action carefully examined. The distance to which the draught of air will extend in any sewer depends on the condition of the newer as well as of the formers, and I could not pretend to follow the matter into datalis willhout abundant experiment. I can say, however, that to cause the currents of air to pass from the interior of our houses into the sewer rather than in a conteary direction, would be to do an incalculable service to a great population, and, indeed, I doubt if there be any one sanitary problem of equal importance before us. It is sufficiently evident that your

The question then is, to what extent will the furnace exhance the sewer, for it may be admitted that when once the gases and organic

bodies are through the fires very little harm can they do.

The first experiment was made at West Vale, near Halifax; the amount of air passing through the fire was measured by the anometer, and was 980 cubic feet per minute. The question then was, where does this air come from, or how far? This nearest opening was seven yards from the furnace, and the furthest 800 yards away, and between the two points, fifteen other openings or open gullies. Down each of these gullies the anemometer did not register more than about twenty cubic feet, but the fact was abundantly established that, in all of them, remote as well as near, there was a down our-real. The whole of these gullies were then made up, not absolutely, but in a rough and ready fashion, and the anemometer placed at the extremity of the sewer, when it indicated 490 cubic feet per minute, thus showing that, with well trapped gullies, the effect must extend

The next application of the system was to the Halifax Union Poor-house, where some 400 immates are constantly housed. The guardians in their report say that, since the adoption of Mr. Stott's system in the house, the bad smalls, which have taken tons of chlorida. I have taken tons of chlorida. ride of lime to disinfect, have been entirely removed; that, although apwards of 150 cases of small-pox and fever have been brought into the infirmaries in a lew months, with only four ileaths, not one case has resourced among the immates of any infectious disease; such immunity was never known before the sewers and drains were con-

neeted with the boilers.

The Corporation of Halifax then took it up, to see whether such connection with the bollers of mills would remove the complaints of bad smells from certain neighborhoods. The first complaint came from one of the best parts of the town; it was loud and strong, the stonely rising into some of the houses at certain times was unbearsble; upon investigation, the cause was clearly discovered, namely, the passage into the sewers from several factories where woot was washed of the residual liquor after the soap had been extracted by the addition of sulphuric acid. This liquor, I need not say, was peculiarly offensive. The question then was, shall we stop the business in which this was made, or shall we find a remedy? As our wish was always to interfere as little as possible with business, we decided to commet the sewers with the furnaces of two of the factories; the result has been that we have not had a single complaint since. I ought to add that several of the complaining houses were half a mile from the factories.

Shortly afterwards, in nearly the centre of the town, a similar complaint was made; it was only at certain well-defined times of the day that the stanch was so very offensive, and we ascertained that these were the times when the liquid was run into the sewers out of the large cisterns in which it had been stored, so we tried the experi-ment of running off the liquid at midnight, thinking, of course, to cheat the people, but the effect was that some scores of people had to turn out of hed and out-of-doors hoo, to escape the noxious efficient. We then connected the sewer with the boiler of the factory, continuing to use the drains as before, without a single complaint. extends over a period of four years. A number of similar cases could be added, but the story is the same, namely, complaints which have found their remedy, therough, effectual and simple, in the connection, on Stott's principle, of the sewers with the furnace of some factory or other furnace having a strong draught.

In 1873, the furnace of Castle Mills, Oldham, was connected with

the sewers on Stott's principle, and after giving general satisfaction over a tengthened period, on the recommendation of Dr. Sutton, the Medical Other of Health, the Corporation decided to have six other connections made in the most complaining parts of the town, and the

following were made in 1876 :-

	Area of Connecting Paper	Number of Revolutions of the Anemometer.	Cuble Feet of Air passing per Minute.
Albion Mills Horaedge Mills Frintanuia Mills Frintanuia Mills Frintanuia Mills Castle Mills Castle Mills	22 × 77 22 × 77 23 × 5 21 × 5 22 × 5 20 × 8 16 × 16	61 18 101 61 10 41	750 7,520 920 800 1,090 700
			5,780

Thus we have for the six mills 5,780 cable feet of air drawn through the sewers per minute; or for a day of ten and one half hours, 3,041,400 cubic feet. When these had been in operation twelve months, Dr. Section gave a report to his committee, in which he sava :-

he says:—

"All are working well except one, the fireman stating that when the apparatus is closed, there is not sufficient draught for the fire, consequently the doors have to be opened. If it had been connected with Gravelwalks drain, as I recommended, instead of the cross-street drain, it would have worked well, the drain in Gravelwalks being much larger. Several of the householders in the neighborhood complain that the offensive smells from

method solves it to some extent, and I believe it to be equally clear that it is the duty of those, who have the means in their power, to find to what, extent the metter is applicable. If the range of action in the sowers be great, the public benefit will be great also. I hope the inquiry will be rigorously made."

¹ A paper by D. Aleier, M. R. C. S., L. R. G. P., etc., Officer of Health, read before the Society of Arts, and published to the Journal of the Society.

the street grids are as bad now as they were tradve months ago. (Query, Because the apparatus is not working?) The inhabitants who resided some time previous to the adoption of this system in the other parts, informed Inspecter Walbon and arealf that the offensive smells were considerably lessened, a result which they principally staributed to Stota's patent; but as Mr. Rawlinson, the Consuling Engineer to the Local Government Board, who visited Oldham previous to my appointment, urged upon the Council the importance of removing the grid traps throughout the town for the purpose of promoting free ventilation, which was carried out, a great position of the efficacy of Stota's system is condictated; but even under these circumstances a considerable amonat of fool air is conducted from the tributary drains to the furnaces, where the subjuncted hydrogen, amonomia, and organic compounds pass through the firs, and are residered innocuous." dered innocuous.

In the first week of this month (May) Dr. Sutton made a further inspection of the district partially under Stott's system, and the following is his report: -

Iterated Department.

Town Hall, Outside, May 3, 1878
Upon inspection, during this week, I find in every case where the same tenants now reside who did so in September, 1877, that they one had all highly appreciate the great improvements of the atmosphere of their houses. Frequently complaints were formerly made to me of their rejecting their food, caused by the feetil steam being blown into the streets strongly the grids, and into their houses through the grids, and into their houses through the stepatone pipes; and the mortality by simple continued fever and convulsions is materially reduced. I entermin the same opinion which I have always held that, in closely-coolined and densely-populated districts, nothing surpasses this method of dealing with sewer-gas.

J. M. Surron, M. D.

Two years are the managers of Smedley's establishment, at Mat-

Two years ago the managers of Smedley's establishment, at Mat-Two years ago the managers of Smedley's establishment, at antilinek, not satisfied with the sanitary condition of the place, applied
to Mr. Slott with regard to his Invention, with the view of rendering
the place as leadily as it was possible to make it. Mr. Stott examined the drainage, and suggested that the whole of the drains should
be connected together, and then attached to the beiler on his principle. This was done in a most satisfactory manner, and the result has been all that could be desired.

In conclusion, it will not be out of place to state that this principle is well adapted for the ventilation of steamships, by making the heat of the funnel the exhauster of the fool air below: nothing can possibly be simplet, more effectual, or more economical.

And just as I finish this paper comes the sad news of the explosion on board the meil steamer Saddnia, the facts of which are all well known to you; suffice it to say that, if this principle had been extrict out on that steamer, such a catastrophe would have been an absolute impossibility.

CORRESPONDENCE

A COMBINATION PLAN. - WORK AT THE CATHEDRAL - THE SAFETY OF SOME PUBLIC MULLIPASSIS.

A spirit of exclusiveness and a desire for privacy laws prevented in great measure the carrying out of anything like combination in the designs of private dwellings. We have rows open rows of brown stone fronts, each house having no closer connection with its neighbors than the party-wall between them. Now and then in the rows stone fronts, each house having no closer connection with its neighbors than the party-wall between them. Now and then in the rows of cheap cottages some attempt is made to unify the several buildings, perhaps by carrying the central one up a story higher, or by setting the fronts on different planes, but in general the only architectural device for housing several families in what is really one building is manifested in the apartment house. At the corner of Thirty-third Street and Madison Avenue Mr. R. M. Hunt is to put up a combined dwelling, a real combination too in plan as well as in cutward design. At this place Mr. Edgerton L. Winthrop and Mr. Frederic Bronson are the awards of a plot measuring 49×76 feet, the shorter length on the avenue side. Instead of cutting this into a pair of equal parallelograms, a give-and-take policy has been followed. Mr. Bronson enters from the avenue at one corner, while Mr. Winthrop enters from the street by a central porticoed doorway. The two houses are in no wise flats, since there is a distinct party-well rising between them, though this wall is not built in one plane. The dividing line has been built parallel with the Thirty-third Street front, and by giving a little here and a little there where he can well spare it, each house-owner gets in return available space which in houses of the ordinary type would be wholly wasted. The Bronson or avenue entrance leads by the hall to the stairway in the scentre of the house, past a large reception room, while the dining-room is at the rear, overlooking the area. The service stairs run up beside the dining-room. The Winthrop house has its reception voon on the outer angle of the building, curtailed somewhat by the carrying over of the party-wall to allow space for the Bronson hall. Directly before the cortance is the main stairway, starting at right aning over of the party-wall to allow space for the Bronson hall. Directly before the entrance is the main stairway, starting at right anghes, and heading up by easy cons; back of this, in the space gained by setting back the party-wall, is the servants' stairway; to the left is the dining-room and here the party-wall is on the axis of the plot. The houses are of the English basement pattern, and upon the first floor houses are of the English basement pattern, and upon the first floor great fire-proof folding-doors permit a general opening on gala nights. Above the ball of the Wintbrop house and extending our in a broad bay over the projecting vestibule is a "bouldir", or morning room, with a fire-place against the blank cull of the bay. The chimney atrangement here is peculiar. In the basement is a range fire-place innocliately below the main door-step. The flue runs up in the brick sides of the porch. The porch and bay fall back into the main wall

on the line of the first chamber floor, and from that point to the roof the chimney-stack is earlied on the sleep iron box-girder and relieving-arch of brick, while between two of the windows on the mansard roof the chimney top appears, rising apparently out of the main entrance. The construction is good, and security is amply looked after, but the feeling is that guests and visitors enter the house in a sort of herizontal Santa Claus fashion, through the chimney. The exterior is in Philadelphia brick, with Belleville, N. J., stone for window and door finish. No distinction is made on the outside between the two levildings, pages, their interior division line indicated in the ones. The finish within is mainly in oak; and at a total cost of over \$60,000 the dual building will be a noteworthy one.

At the Roman Catholic Cathodral on Fifth Avenue, it has been

decided to build a crypt below the main alter, and workers are now drilling the opening in the rock bottom upon which the whole church drilling the opening in the rock bottom upon which the whote shorch stands. As the stained glass windows are in the nave-aisle and cherestery windows, blasts cannot be used in the building, and the rock is lifted all slowly and laboriously by plugs and wedges. The apse windows have not yet been inserted, nor will they be until the high alter is in position, when they will be designed with special rederence to their effect upon the whole. The after itself has arrived from Italy, ready for erection, and will be put up as soon as the vault and foundation are completed. The crypt will contain twenty one spaces for bodies, and will be reserved for archibishops and high church dignitaries. The body of Archbishop Hughes, who over twenty years ago originated the project of building the cathedral, will be removed there upon the dedication of the huilding. Working are now busily engaged laying the floor. The ground was cleared down to the rock face, and brick bearing walls at distances of twelve feet were carried up and down the nave and aixles; upon these the wooden beams rest. and down the neve and aiskes; upon there the winden beams resi, and the floor will also be of wood. Advantage has been taken of the space below to hang the steam pipes, water and gas pipes, and these may be reached at any time by crawing below the floor. It was at one time intended to have a the floor, but Cardinal McCloskey feels that such a plan would entail suffering upon the kneeting worship-pers, and insists upon the use of wood, except in the lubbles and en-trances. The seaffolding has now been entirely removed from the building.

Attention has been called to the several government buildings here by alarmist reports that the Custom House and the Assay Office were in dangerous condition. The Custom House, once the Merchants' in dangerous condition. The Cliston House, once the Merchants' Exchange, was built by Rogers, architect, in 1845, and stands to day without an appreciable crack or sign of settlement. The heavy granite columns and walls were well set, and the building is no whit infecior as a piece of workmanship to anything of a later date. Around its interior courts run galleries of stone supported on granite brackets or carbets, and it is the alleged insecucity of this stone-work that has given rise to the alarming reports. One angle carbet cracked and fell several years ago, owing to some unforcesson imperfection in the stone, and grow this General Section in the stone, and grow this General Section in and left several years ago, comed to some introceed imperfection in the stone, and upon this General Steinmetz pointed but the advisa-bility of taking down all the galleries and substituting iron balconies. At the Assay Office it is asserted that the acid fumes and the leakage have excited rust and corrosion in the iron-work, and wouden sup-At the Assay value and corression in the iron-work, and wooden sup-have excited rust and corression in the iron-work, and wooden sup-ports have been inserted as much to bear any additional weight as to supplement the weakened iron columns. In the Treasury Build-ing proper, a great iron safe is building, 47×28 feet in plan and twelve feet high, for the storing away of the rapidly accumulating silver coin. The safe is now standing at the works of George Da-mon, Boston. In a few days it will be taken apart and shipped to this city, where it will completely till the vanit arranged for it. W.

BARTHOLDES STATUE OF LIBERTY. [Parts correspondence of the New York World

The statue of Liberty has been before the world as a proposition, The stance of Liberty has been before the world as a proposition, if not in bodily shape, at any time since the great Contennial; and its literature of purposes, principles of construction, and measurements is now quite a library in itself. I have no difficulty, therefore, in finding out that the figure in shear height, clear of all reskening for its cornner, and for what may be called its footstool, will measure 32 metres, or 104 feet 11\frac{2}{2} inches. I learn further that the pedestal of granite on which the lady is to stand is, with all due respect for my electore, 25 metres high, instead of the 27 named, the 25 nettes being equal to 32 feet. Lastly, that if you take the figure from the sole of her classic foot to the extreme end of the torch in her upstreached hand, you will have a height-of 42 metres, and if you add stretched hand, you will have a height of 42 matres, and if you add this to the 25 already given as the height of the pedestal, you will have a grand total of 67 metres from the surface of the ground at Berlloo to the extreme end of the torch. Now, 67 metres make exactly 219 feet 11½ inches. Can anything more forcibly illustrate the niggardly closuress of the French in a reckoning than their neglect to make it 220 feet?

to make it 220 feet? Let me add but this in the question of size: The statue, as a statue, and quite apart from its podesial, is to be the higgest thing of its kind; the Colossus of Rhodes would be a mere toy to it, and so would the great Sphinx.

But all this refers only to the work as it will be; now let us consider it as it is. It is being made in pieces, as space and funds permit, and for the first piece made, the fore-arm holding the torch, New Yorkers may see it may day by going to Madison Square. The second part, the head and neck and the beginning of the spacious

breasts (which would be large enough for their function if Liberty were the mother of all the virtues), is now finished and on view on the Exhibition grounds, whence it will be dispatched straight to its oblimate destination. The rest—the trunk, the capacious druperies to cover the lower limbs, and the arm holding the tablet of independence—is all yet to be, and the world will have reason to congratulate itself if it get fully "enlightened" by means of this completed

torch-bearer by the year 1881.

Long before the head reached the Champ de Mars my emlosity as to this stupendous specimen of womanhood took me to the work-shop in the line Chazelle, near the Pare Monceau, where it is being The workshop was built wholly and solely for the accommodation of this one limate and her attendants, some lifty workmen hummering for their lives on sheet copper to complete the toilet of her tresses for the show. The Lilliputians reached her back hair by means of ladders running from stage to stage of a high scaffolding. means of failurs running from stage to stage of a first scarbothing.

I mounted the scarfolding with them and stood on the level of her awful eye—some thirty inches from corner to corner—to be ingulied in her gaze. One of them, a failur manikin than the rest, by something more than the thickness of her thumb nail, from a platform just level with the line of the lips, was tinkering at a line that marks the meddle of her brow, and his six feet of height exactly fluid marks the meddle of her brow, and this fix text of height executy covered the space between the two, and no more. The whole secution abounded in these curiosities of measurement. A number of plumies of our species crawling about the inside of what appeared to be a vast califron used in the sugar-refining trude were understood to be really at work on the crown of her head. A smaller caldron, on which two little fellows were busy in a corner, was the tip of her which the life, from dimple to dimple, were as long as my walking-stick, and litteen people, I was told, might sic around the flame of her touch.

My final care is to see some men of note on not who may consent to give me their judgment on the statue, and first I turn to Auguste Bartholdi, the designer. I find him at his studio in a small street of which the name has really escaped my his studio in a small street of which the name has really escaped my recollection, though 1 know well enough which way to horn for it when once I am in the neighborhood of the Gare Montparnase. Barcholdi is an Alsacian as well as a Frenchman, still young for an artist of his reputation—I should not give him a day more than forty—sincere and winningly hold in manner, of middle height, dark, large-heatured, and with a very penetrating glance. He gives you the impression of a man of power, and his works confirm it. He loves to mode on a colossal scale—perhaps because this must readily conduces to the simplicity and massiveness of effect which he seeks in art. He is a sculptor of the old, and, as most of us still think, the less school; and the modern Italians, I know, and Carpmann, I believe, are his base. He is the sculptor of the Lion of peans, I believe, are his base. He is the scalptor of the Lion of Belfort, which is to be put up in front of the rock-built forcess so herdeally defended in the last war, and by that defense preserved fermeatly accounted in the tack war, and by that decense preserves to France. This beast is to dwarf all others of his species, includ-ing those of Teafalgar Square. In fact, I think he might find room for all lone of the latter at a meal in his single person, for the con-siderably reduced model of him exisibited in the Salon this year is bigger than any one. He measures in his full proportions ninetyone feet ten inches in length, furty-nine feet three inches in height,
and he is a superb example of the skill and knowledge which the
French have developed of late years in the artistic treatment of his
race — a fine vindication of truth and nature against convention, as
represented by that monster in every sense, the blubbering Lion of Lucerne. But I must not forget the artist in the work, nor omit to say of the former that he was a very distinguished member of the Franch jury at the Exhibition of Philadelphia, and that his report on the decorative arts of the United States is one of the best things of the kind,

of the kind.

In my visit to him I found him naturally unwilling to say much about the statue of Liberty. He could only be induced to discuss it by a reference to the general principles on which he had worked. I have a horror," he said, "of all frippery of detail in sculpture. The forms and effects in that art should be broad, massive, and simple. In my Lion of Beliott, since you press on for an example, I have given only the grand outlines. I have not wasted my time in grooning the mane. I have sought only such a distribution of masses of light and shade as may be likely to tell at the distance from which the thing is to be viewed. I own that the work of what we are pleased to call our modern school pains me by the absence of all endeavor of the kind. The Italians, for instance, as we see them in this exhibition, are positively mean in their limitations of texture in deavor of the kind. The Italians, for instance, as we see them in this exhibition, are positively mean in their initations of texture in marble work. The pattern of a lady's ian, the lace in her dress, her slippers, and the embroidery of her essubsic, are done to the life, and nothing else. All that is but so much taken away from the effect of the essential parts—the form and face. You can hardly conceive how much a figure may lose by such treatment until you see it in some striking example. There is one in New York, a monument in Madison Square, of a great man scated in his chair. The chair is so claborately wrought that it takes all attention away from the creat man. The unbolstery is the first thing you look at and the chair is so claborately wrought that it takes all attention away from the great man. The upholstery is the first thing you look at and the last. Contrast that with another seated figure, the Voltaire of the Théâtre Français, in which I will defy you to ignore, for one moment, the head, the noblest part of the work, the sease and motive of all the rest. Of the statue of Liberty itself I can only say that I have modelled it on these principles, always bearing in mind the place it is to occupy, and consequently not breaking up the work into frivolous detail."

Mr. Story said: "The Greeks built up their colosed statues most solidly in stone or wood, and on this laid the plates of gold, ivory, or other material that gave the finish to the outward form. I think or other material that gave the finish to the cutward form. I think they were just as right in the mechanical part of the business as we know they were in the artistic. They could dare to do big statues, because they had thought out every question belonging to such work. I am not sure that we have done so; we have too much else to think of novadays. There are many things to hear in mind before you can rear a statue of a hundred feet with crudit to yourself or pleasure to the heholder. The first is that, when you are close to such a statue you cannot see the whole for the higness of the parts, and that when you are at distance you lose the parts—the features, the dress, and all the comparative nicetics of the modelling. Lack at that imposes statue on the top of the Cardeol at elling. Luck at that immense statue on the top of the Capitol at Washington. Try to see all of it, and I will defy you to see more than a great splinge. All detail, even necessary detail, is lust; it is a more silhonette, a great blot of black metal against the sky. Now the Greeks knew of that difficulty - knew that a colussal statue seen the Greeks there of that difficilty—knew that a colusal statue seen at a distance had a tendency to become a mere outline—and so they nok care to make their outline, in so far as possible, tell the whole story. It was pure, varied, and highly illustrative, beautiful in itself, and in some measure independent of the rost of the work. Their figures were in general so modeled as to present a good outline from every point of view. You could not surprise the composition into ugliness by more cunning in the selection of a stand-point. Will all these conditions he fulfilled in the present state? I do not seen him that they will not far it will be furnissible to independ the even him that they will not, for it will be impossible to judge of the effect of the coloses without seeing the coloses itself, and, as yet no man has seen that — not even Bartholdi, who is making it only bit by bit. Mere statuettes, photographs, and other reduced copies. give absolutely no help; we must have the full-sized original in its page. We may all of us then, at our leisure, apply to it the recognized law of art which evidently governed the practice of the first nation of sculptors in the world."

TRANSLATION OF THE INSCRIPTIONS ON CLEO-PATRA'S NEEDLE.

Da. Brach, of the British Museum, has just favored Mr. Dixon with the following revised translation of the hieroglyphical inscriptions on the obelish:—

"First Side — Central Line toward East when Erected on Embank-ment. — The Horus, lord of the Upper and Lower country, the pow-erful hall; crowned in Uas or Thebes, the King of the North and erful bull; crowned in Uas or Thebes, the King of the North and South, Rassen Cheper has made his monument to his father, Haremarks, (Horns in the Horizon,) he has set up to him two great obelisks, capped with gold, at the first time of the Isstivals of thirty years, necording to his wish he did it, the son of the Sun Thothemes, (III...) type of types did it beloved or Haremachu (Horus in the Horizons) ever living.

**First Side — Left Line. — The Horus of the Upper and Lower country, the powerful bull, haloved of the Sun, the King of Upper and Lower Egypt, Ra-assums, approved of the Sun, lord of the festivals, like Pude-Tanen, son of the Sun, Rameses beloved of the fastivals, like the son of Nu, (Osiris) whom none can withstand, the lord of the two countries, Ra-assums, approved of the Sun, son of the Sun, Ramessu, (II.) heloved of Amen, giver of life, like the

of the Sun, Ramessu, (11,) beloved of Amen, giver of life, like the

"First Side — Right Line. — The Horus of the Upper and Lower country, the powerful bull, son of Tam. King of the South and North, lord of diadems, guardian of Egypt, chastiser of foreign countries, son of the Sun Ramesau, (II.,) beloved of Amen, dragging the South to the Mediterranean Sea, the North to the Poles of Heaven, lord

to the Mediterranean Sea, the North to the Poles of Heaven, lord of the two countries, Ra-user-ma, approved of the Sun, son of the Sun Ramessu. (H₂) giver of life, like the Sun.

"Second Side—Central Line, toward River (South) as Erected on Embandment.—The Horus of the Upper and Lower country. The powerful boll, crowned by Truth. The King of the North and South, Ramen Cheper. The lard of the gods has multiplied to him festivals on the great Persea tree in the midst of the place of the Phoenix (Heliopois.) He is recognized as his son, a divine chief, his limbs come forth daily as he wishes, the son of the Sun Thothmes (HL,) ruler of An, (Heliopolis.) heloved of Haremacha (Horos in the Horizon.) in the Horizon.)

"Second Side — Left Line. — The Horus of the Upper and Lower country, the powerful bull, beloved of Truth, King of the North and South, Ra-nær-ma, approved of the Sun, horn of the gods, holding the two lands, (of Egypt,) as the son of the Sun, Ramessu, (II.,) beloved of Amen, making his frontier wherever he wished, who is at rest through his power, the lord of the two countries, Ra-user-ma, approved of the Sun, son of the Sun, Ramessu, beloved of Amen, the large of the Sun, son of the Sun, Ramessu, beloved of Amen,

the lastre of the Son.

"Second Side - Right Line. - The Harus of the Upper and Lower recountry, the powerful ball, son of the god Chepera, the King of the North and South, Ranser-ma, approved of the Sun. The golden trait, rich in years, the most powerful, the eyes of mankind behold what he has done, nothing has been said in opposition to the lord of the two countries. Ranser-ma approved of the Sun, the sun of the the two countries. Ra-user-ma approved of the Sun, the sun of the Sun, Ramessa, (II.) beloved of Amen, giver of life, like the Sun.

"Third Side — Central Line, West Side, as Breezed on Embankment. — The Horns lord of the Upper and Lower country, the pow-

erful hull, behaved of Truth, the King of the South and North, Ramen Cheper. His father Tun has set up to him his great name, placing it in the temple belonging to An. (Heliopolis.) giving him the throne of Sch, the dignity of Cheper, the son of the Sun, Thuthmes, (III..) good and true, beloved of the Spirits of An. (Heliopolis.)

ever living.

"Third Sble—Right Line.— The Horns of the Upper and Lower country, the powerful bull, well-beloved of Ra, the King of the South and North, Ra-user-me, approved of the Sun, lord of festivals of thirty years, like his father Ptak, son of the Sun, Rameson, (Il...) beloved of men, son of Tum, beloved of his fains; Athur, the guildess, directing the two countries, has given him birth, the lord of the two

directing the two countries, has given him birth, the lord of the two countries, Ra-user-ma, approved of the Sun, the son of the Sun, Ramessu, (II.,) beloved of men, giver of life, like the Sun.

"Third Side — Left Line. — The Horns lord of the two countries, the powerful bull, son of Sun, the King of the South and North, Rameser-ma, approved of Ra, the level of diadens, director of Egypt, chastiser of foreign lands, son of the Sun, Ramessu, (II.,) beloved of Amen, bringing his offering daily in the house of his father. Thus, not has been done as he did in the house of his father, the lord of the two countries. Rameser-ma, approved of the Sun, the son of the Sun, Ramessu, (II.,) beloved of Amen, giver of life, like the Sun.

"Franch Side and Central Line Toward Road (North) as Erected on Embandment. — The Horns of the Upper and Lower country, heloved of the god of the tall upper crown, the King of the South and North, Ramen Cheper, making offerings, beloved of the gods, supplying the alter of the spicies of An, (Heliopolis), welcoming their persons at the two times of the year, that he might repose through them with a sound life of hundreds of thousands of years with very numerous festivals of thirty years, the son of the Sun, Thorlmes, (III.) the divine ruler, beloved of Haremachu (Horus in the Horizons) ever living. zons) ever living.

"Fourth Side — Right Line. — The Horus lord of the Upper and Lower country, the powerful bulk beloved of Ra, the King of the South and North, Ra-user-ma, approved of the Sun, the Sun born of the Gods, holding the countries, the son of the Sun Ramessa, (H.,) beloved of Amen, the strong band, powerful victor, bull of rulers

heloved of Amen, the strong hand, powerful victor, and of latter King of Kings, lord of the two countries, Ra-user-ma, approved of the Sun, son of the Sun, Ranessu, (IL.) heloved of Amen, heloved of Tum, lord of An, (Heliopolis,) giver of life.

"Fourth Side - Left Line. — The Horus, the powerful ball, son of Prah-Tanen, lord of the Upper and Lower country, the King of of Prah-Tanen, lord of the Upper and Lower country, the king of the South and North, Ra-oser-ma, approved of the Son, the lawk of gold, rich in years, the greatest of victors, the son of the Son, Ram-cssn, (IL.) beloved of Amen, leading captive the Rutenin (Syrians) and Peti (Lihyans) out of their countries to the soat of the house of his father, lord of the two countries, Ra-oser-ma, approved of the Son, son of the Son. Ramessn, (Il.,) beloved of Amen, beloved of Shu, the great god, like the Son.

"The scenes on the pyramidion represent the monarch Thothmes III., under the form of a sphyox, with hands offering to the Gods Ra and Atom, the two principal delities of Heliopolis. The ofterings are water, wine, milk, and incense. The inscriptions are the names and titles of the delities, the titles of Thothmes III., and the annumerment of each of his special gifts." — London Times.

QUESTIONS IN SEWER VENTILATION.

TO THE EDITOR OF THE AMERICAN ARCHITECT:

Dear Sir, - Having lately to re-arrange the drainage of my house, and having become much impressed by the necessity of properly ventilating all drains. I adopted what seemed to be a thorough and rational system. As there were no set-basins or bath-tub wastes to complicate matters, but only one water-closet and the kitchen sink to provide for, the problem was of the simplest. The sail-pipe, untrapped at any point below the water-closet trap, was carried above the roof and covered by a suitable rentilating cowl. That all the gasses generated in the dight respondint which all the seware is carried might not pass through this soil-pipe, and by escapsewage is carried might not pass through this soil-pipe, and by escaping through unsuspected leaks cause the very evil I was seeking to avoid, I took great care that the costpool should be well wentilated. This was done by a line of five-inch drain-pipe corried above the roof. Satisfied that the pressure of gas could never be great enough to force the few traps, and that a parfect circulation of air through this small system of pipes was established, I called my work good and thought no more about it.

Time showed that the system was working as it was intended to work: the draught was perfect, the circulation uninterrupted, and work; the drangar was parteet, the circulation brinterrupted, and the smalle probably rejoiced exceedingly at the case with which they escaped into the upper air from their polluted source below. But as the cesspool filled and matter securinalists in it I became aware, on nights when the air was perfectly dead and quiet, of a sickening and coisome odor, seemingly pervading all the atmosphere, but which when traced to its source was strongest at the base of the five-inch ventilating shaft. I have remedied that evil for the moment by steeping up the opening from the cesspool into the shaft, the result of which is to force the soil-pipe to fulfil, maided, the dangerous task of ventilating the cesspool. Now what have I done that is wrong, and what shall I do to remedy the evil?

Some of the expects from whom I hope to hear through the col-

mone of your journal will say, undoubtedly, that the trouble is earsed by the fact that the top of the ventilating shalt, though rising two

or three feet above the roof, is only a few feet from the caves, and is consequently some twelve feet lower than the ridge-pole. Perhaps it would be better to raise the vent above the highest part of the roof, but the fact that the odor is strongest at the very base of the raot, but the fact that the offer is strongest at the very base of the shaft seems to show that the escaping gas is heavier than the air, and that after being forced to the top by the formation of new gases in the cesspool below, it simply trickles over the edge and flows down the nutside. To raise the outlet above the ridge would then only increase the evil by distributing the heavy gas so that, under certain conditions of the atmosphere, it could flow down both slopes of the roof.

nut the carrying of the open soil-pips above the roof about as insanitary a scheme for ventilating public sewers as can well be conceived? B' such is the action of sewer-gas under certain circumstances, is

It is very noticeable that the odors arising from a cesspool in which a thick, greasy seam has formed, are less obnexious, though possibly more moleculary, than those which (ise from a half-filled

vault in which no such seum has had time to form.

In some countries it is customary for persons who have been drink-ing liquor to awallow a small quantity of olive oil, which floating to the top of the contents of the stomach prevents the exhibition of the unpleasant gases arising from mixed and fermenting liquors. Is it probable that the application of a quantity of oil — particularly if made strongly around the state of the contrins of a greatest with her If made strongly aromatic — to the contents of a cerspool would have a similar result?

Is it possible that too much air is inconfuced, and that instead of merely providing for the escape of the gases which sense form inevitably. I am in readity manufacturing gases must connecessarily?

I would ask, too, us to the results to be expressed from filling with

a layer of powdered charcoal, say to half its capacity, that portion of the shafe which, being below ground, is harizantal; but I lear I have asked soo much already.

Respectfully, yours,

THE STUDIES OF AN ARCHITECT.

We reature to print, without special permission, the following extract from a letter which we have received from an architect, breamse we think our readers will see in it, as we do, it very interesting record; and because the mostly energy which it displays, and the resolute endeaver of the writer to make therough work of his training, should be a valuable example to other students, who may find the way of professional schooling a sceep one, and may be strongly temped to content themselves with the least preparation that they think will do instead of working patiently for the greatest they can get. It might also serve to emphasize to the sudents of this day the advertage they have over their professors, in the professional schools that have lately been opened to them, which set the means of professional instruction before them in the next direct and advantageous way, and save them the hard processing of working without clear direction, and buttling them the hard necessity of working without clear direction, and harding alone through all their course. - EDS. ANDRICAN ASURITECT.

"You have been having ideas on the proper qualifications of architects. I will tell you of my education and how it was obtained. I went to work at nine years of age to tend the pitch-pot in a ship-yard, where my father was foremen. I worked three months at that and turning the grind-stone. Then I was taken into the month-loft and helped to lay down vessels. After leging in the yard probably four or five years I had thoroughly mastered the intricacies of ship-building theoretically, and presty well practically. I studied nights and odd bours, until I could read Latin and Greek quite well. I could read Casar and the Anabasis, and translate, as my friend a reverend D. D. said, quite well for a self-educated boy. Then I attended Grammar-school No. 22, in New York, and graduated prepared to enter the Free College of the City of New York; but I did not, I went to work under instructions as a carpointer and stair-builder, passed three years at that, intered college in New Jersey, with no money nor friends; took care of seventeen ares the first winter, and worked "You have been having ideas on the proper qualifications of arnor friends; took care of seventeen tires the first winter, and worked at odd hours at my trades; thus I managed to get into the senior year but did not graduate, for my funds gave out. I studied three years with an architect and set up for mysekt. From the time that I surred when nine years of age I have had to take care of myself. I hold this ground: that no men should be allowed to practice as architects unless they have had a practical training. Ship-building is the best schooling for irregular work one can get into, and the curpenter's and stair-builder's trades are the next best; and I would orge every one to take a practical course before entering architec-

orge every one to take a practical course before entering architecture.

''No boy, however humble his origin, need be illiterate. All can be educated if they have the will and force of character to educate themselves. Pluck, sir, pluck, is what we want in this world. I have gone to bed many a time hongry. A three-cent stamp was an article of luxury that I seldom licked. But those days are gone by; times have changed. I remember when at school blacking the hoots of the president at his request; be said when done, 'G., If you ever get to be anything, I shall tell people that you once blacked my honey.' Some of the students stood by; they were of the aristocracy, and jested at the boot-black; one is in the Tombs at New York, some of the others are the devil knows where. The moral is, treat everyhody as gentlemen and ladies, no matter if they have been mean to you, because time changes many things. My experiences I relate to students at my office from time to time. It gives them support and they know what to expect in life, — not much sympathy the poor or struggling receive.'

NOTES AND CLIPPINGS.

A Monument to Thomas degrees — Those who recall the lively interest that President Jefferson felt for architecture will not be surprised to term that he left amongst other things a design for his own moment, executed by himself. This design is about to be carried into execution, Congress having at its last session appropriated \$5,000 for this purpose, provided the owner of the land at Monthello, where the grave is, would deed to the Government two square rads of land surrounding and including the grave; and would, moreover, grant the public a free right-of-way to the grave over his estate.

The Jenner City Strains. — The liberers at the Jensey City Resercony, who struck last week, have shown an unpleasant disposition to be ricony. On Friday, August 23d, the sub-contractor appeared on the ground
with one hundred ballan workwoon, whom he had promised in New York.
The strikers who were on hand showed signs of intention in assail the forcigners, but were restrained by Commissioner Semmler, who said he would
try to prevent the foreigners from ecopying their places. He then went
to the contractor and absolutely inchade his employing any one on the
works who was not a citizen of Jersey City. To this high-houred and
unjositiable demand the contractor rates much discussion was obliged in
wield, although, as may be supposed, there was nothing in his contract,
which limited him in the matter of the domails or the nationalities of the
workmen he might employ.

Chor-Burking. — The runders that the communists in California were bent on a wholesale destruction of the crops have been fulfilled purify in the neighborhood of St. Jose. The means adopted by the crop-burners to escape detection manifest a certain ingenuity. Investigation showed at each point where a whole field had been fired a bent wire stoking upright in the granud. One of these wires livisted about with olded paper, which was connected with a heap of steary, was discovered holding in its collain extinguished candle, long enough to allow the escape of the incendiary before it should bern shown to the olled paper.

PENNSLLVANIA'S Henous.— The symbots who up to this time have salmited models for the statues of General Peter Modulatery and Robert Falton, the men whom Pennsylvania is to homer by placing their statues in the "Hall of the Heroes," at Wash ugum, are Huward Roberts, Blanche Nevin, Mr. Kerne), the semptor of the Catholic Tetai Abstinence Fountain in Farmount Park, Philadelphia, Henry M. Gord, of Beston, and Franklin Simmons, the scalpter of the statues of Governor King of Maine, and of Roger Wallians, which now should in the Rotanda.

GRAYETAED ADUSES. — Converts to the rite of eremation will be strengthened in their convictions by the discovery lately made in the Aersey Ciry Cometery of a large egult, which is said to have contained nearly a thousand corpses in various stages of decomposition, and to which I rish additions were still making. Escape for the noxious cases arising from this decaying mass was provided through holes cut through the bank, and whence issued adors which have for years made the neighborhood unbealthy, and infrantely led to the discovery and abolitica of this crying abuse. A comowhat similar case has come to light in Richmond, Penna, where the sexton in charge of the Potter's Field made it a practice to presend to lary a corpse and, when the nomined until crough other backes had accumulated to riske it worth his while to bury them in one and the same pit.

Farming Houses.—Recently two more houses have found that it was passer to jumble into the adjoining excavations for cellules than to stand upright upon nothing. In Washington on August 19th, the party wall of a house a tibe corner of Ninth and R streets was undermined and fell and on the 5d of August's house on Mission Street, Sun Francisco, iell holdly into the results due excavation at its side. The halding, a two-story frame house, fell completely over on its side, and was wrecked and twisted out of shape. The three persons who were in the house in bed at the time of the accident fortunately escaped injury.

MANCHESTER Town Hall.— (If the twelve subjects for the minal decoration of the great hall by the chosen artists, Mesors, Madox Brown and F. Släeds, the building committee less accepted all but one, and work upon them has beginn dready. The Parry process will be used in their acception. The subject sedected are: (1.1 The Romans in Britain ; Agricula builds a fort at Macuatum, c. n. 79. (2.) The Saxons Baptism of Endwine at Manchester, a. n. 627. (4.) The Dimes; After a hard fight they seize the lawn, a. n. 870. (4.) Origin of manufactures; Establishment of Flemish weavers in Manchester, a. n. 1330. (5.) Early Restoration Movement; John of Gamt, Duke of Lancaster, defends Wickliffe hefore the Consistory Court, a. n. 1377. (6.) Commercial Integrity; Weights and measures tested by municipal decree, a. n. 1666. (7.) Science; William Carbires on Korsal Moor (now part of Manchester) discovers the sun's parallax by observation of the transit of Venus over it, a. n. 1866. (8.) First Blood Deawn in the Civil War; Captain Bradshaw with thirty muskersees heats back Lord Strange's army, 4,500 strong, 1. n. 1642. (9.) Education; Hoophirey Chetham, merchant, establishes his free school for boys, a. n. 1650. (10.) Jacobine Movement; Prince Charles Edward musters his troops in the Collegiate Churchyard, a. n. 1745. (11.) Cotton; John Kay, inventor of the "thy shuttle," Is-saved from the fury of the mobi in a wool sheet, a. n. 1753. The subject of the twelfth and rejected design, was the "Peverloo Meeting."

Carrs or Cheuraraa's Kreuts. — Under the direction of Mr. Builten, who, eight years ago, was sent out to India by the authorities of the South Kensington Museum to make moulds of the Sauchi Tope gateway, men have been busy of late, in taking moulds of all the Loca of the obelisk for the purpose of anaking a cast of it for the South Kensington Museum. These moulds were to have been of galatine, but the heat of the weather has been so great as to compel its abandonment in favor of plaster of Paris.

GRANTER VS. SANDSTONE.— The net on of grantle and sandstone under fire was shown briefy at the borning of St. Peter's Chineli, Lamerton, England. The fire is supposed to have cought from a heap which was piaced inside of the organ to regulate the remperature of the instrument. The chirch itself, which in great part was built of grantle, was completely minod, while the tower, hall of a heal freezone, — around which the heal of the fire was the greatest, so great indeed that five of the six bells in the befrey in that where they hang, — was left inteer, although the grantle window-jambs and sills were decreased.

The Tour Jean same Peun, Paris. — Galignani's Messenger sage that the work of responsible the keep of the Duke of Burgandy's tower in Paris, a view of which was published in the American Architect for September 8, 1877, is about completes. The portion of the building referred to forms part of the group of Schools channel by the City of Paris. It is a square edilite with embattled parapets. During a long time it was divided into small budgings; in the grout hall two agrics had been constructed, and the grand-more was turned into a storchouse for broumongery. Now the while place is responsed to its original appearance, and all the partitions, our base disappeared. The staircase of this tower is of particular interest to artists and archivologists.

BANDER. — A correspondent of the Pail Mall Gazetic says, "According to Mr. Conder, in his recently published "Tent Work in Palestine," the world is in danger of being one of its wonders. The six remaining columns of the great Temple of the Sun in Budbec are nothing to their fail. The Porks have already supped them in seeking for the mont cover run into the joints; every frost adds sewething to the progress of destruction, and any whoter may being the desirantion of three out of the six. These endumes, seventy-five feet high, are among the noblest architectural works in the world, and the method of their evertion is still unexplained."

LAND TRANSFERS IN ANCIENT BARLLON, — Mr. W. St. C. Hosenwen has discovered among the contract tables in the British Museum two deamnests of great interest to geometricians. Attached to two terracoust tablets containing deeds of sole of escales near Babylon, Mr. Boscawen found two neatly-drawn plans of the estates in question. The first of these is a deed relating to the sale of some land which took place toward the latter end of the reign of Neloschadnezzan. It represents an estate of about eight and one half acres in uron, and bounded on the nonthern side by the canal of the geodess Bantuo. The names of the owners of sid the adjacest lands are given, and the greatest core is taken in giving the dimensions of these plots of land. The whole is divided into three pairs of parallelograms, and chesk dimensions are taken to test the accuracy of the work. A semicircular portion on the east side is most carefully measured, both radius and especially on the remaining portions show the same care and accuraces as is found in the perfect one. The deed of side into the reign of Darius Hystaspes. The value of these documents is fained in the reign of Darius Hystaspes. The value of these documents is fained in the Eight buildets. Mr. Boscawen hopes shouly to publish these documents, accompanied by fae-similes of the plans and translations of the doeds relating to them. — London Atheneum.

European Powers: — According to the University Zeitens the

EUROPEAN FORESTS. — According to the Heutsche Industrie Zeitung, the area still covered by forests in Europe is 730,880,722 meres, which is parted amongst the different countries as follows:—

negal sate than rome assertions					Acres.	For ment of Productive Area
Rassia (in Europe)		ų.	+		477,192,922	47.44
Anshia						211.05
Sweden					43,532,960	75.72
					35,696,942	59.56
Germany					84,981,274	27.21
Norway					25,424,523	89.93
Spoin					21,335,156	26.90
France					20,641,958	15,97
Turkey (in Europe)				7	13,371,023	19.72
Baly					12,413.956	19.18
Portugul					2,682,175	22,90
Grence					2,235,353	33,99
Swiczorland	2	4		-	2,032,598	27.55
Great Bricain and Ireland	10				1,974,820	3.98
Belgium					1,139,959	17.58
Holland					The state of the s	8,69
Denmark , , ,					456,068	6.36

BLAGEROARD PAINT. — The Canadian Mechanics' Magazine says that the following is a good recipe for blackboard point: One quart of shelled dissolved in alcohol, three courses pulvarized positive-stone, two courses pulvarized rottenstone, four courses lamp-black; mix the last three ingredients together, moisten a portion at a time with a little of the sheller and alcohol, grind as thereagily as possible with a knife or spatula; after which pour in the remainder of the alcohol, string often to prevent settling. One quare will furnish two coast for eighty square feet of blackboard not previously painted. The preparation dries immediately, and the board may be used within an boar, if necessary. No oil should be used.

A Lournous Coors Face. — It is said that a envious clock is about to be introduced by the Ausonia Clock Company of New York. The dial, which to all appearances is of ordinary percelate, becomes luminous when placed in the dark, so that the hands and figures can be plainly stem, and the sime easily distinguished. It is the invention of a French chemist, and is thought to be imperishable.

Duranthary or Pine Surveiles.—It is said that white-pine shingles on the Shakar meeting-house in Canterbury, N. H., put on with wooden pine eighty-six years ago, are still in a good state of preservation.

BOSTON, SEPTEMBER 7, 1878.

CONTENTS.

SUMMARY:-	
The Sessions of the Congressional Labor Committee. — Two Encouraging Features of the Investigations. — Ought an Architect's Fee to be Secured by a Lien on the Building. — Some Reacons against such Protection. — An Elevator Accident in Chicago. — Recognition of the Merits of an American Architectural School. — Establishment of a Master-Ruflder's Course at the Illinois industrial University. — The Rhode Island School of Design.	51
RICHARD LIMORY	82
Dilapidations	84
The Illustrations: -	
Hotel Brighton, Coney Island, N. Y.—Bouse in Buston, Mass.—Design for a Cottage at Westelester, N. Y.—Bouse in Washington, D. C.	55
Correspondence:	
Letter from London	85
THE TREATMEST AND DISPOSAL OF SEWAGE IN CHINA	26
Mr. Ruskin on Color	87
Notice and Chieffins	SK

This sessions of the Congressional Labor Committee have continued to be more interesting than those of most commissions, not so much because of the fruits they have borne as because their subject is one which is really important to the pub-The testimony of the witnesses lately examined has been less visionary than that which was volunteered at the earlier sessions; but, as was to expected, the most of it has been from per-sons who simply booked at the subject from the point of view of their own peculiar avocations or associations. To one the cause of the depression of labor is to be found in the decline of the shipping interest; to another in taxation; to others in protection; to others in the national debt; to others in the currency; to others in the introduction of machinery. One ascribes it to bad living and consequent sickness among the laboring classes, another to impradence, another to intoxication. The remedies suggested are therefore generally of the nature of patent medicines. The few men who have broadly studied the condition of the country naturally confess themselves unable to point out the one determining cause or the specific remedy, while it is easy to show many things that act mischievonsly. It was a foregone conclusion that the work of this committee should disappoint those who expected from it any generally satisfactory explanation, or any legislative remedy. But if the people and press of the country, and especially the more sensible part of the workingmon, follow the committee with any attention, is will do a useful work in merely showing up the conflict and the absurdity of a great mass of popular opinions. It is a good thing that many wild theories which are formenting in the dark should be thrown up into the light, and the bubbles which they generate scattered in the open air. It is also a good thing to let people whose notions are not wild but only one-sided and narrow see how little ground they cover in comparison with the whole question.

Two things meanwhile come to notice which are encouraging in their different ways, as far as they go. One is an indica-tion that the idle condition of the laboring men is after all not so had as it has been represented to be. Some of the testi-mony before the committee shows this to be the case; and a recent publication of facts by the Massachusetts Bureau of Labor Statistics shows that in that State at least, where the condition of labor has been thought to be worse than anywhere else in the country, except in Pennsylvania, the number of noemployed is much loss than has been asserted. One witness had estimated the unemployed in the whole country at nearly four millions, which is something like half the entire voting population; and others have assumed that they were two hundred thousand in Massachusetts alone, which is a still greater proportion. The labor statistics of that State indicate that the number there is about thirty thousand, including mon and women, or say one in fifty of the population. This is to be regretted, but when we allow for those who will not work under any circumstances, —and they are very many, —and for those who are out of work because they will not take the wages they can get, the

outlook is by no means so bad as we have been told to believe. The other encouraging thing is a project which has been started in Chicago for a great shoe factory, to be owned and conducted by the workmen themselves. Such a venture as this, much as it has been talked about, is, we believe, an entirely new thing in this country. Its success we should suppose to be very doubtful; but a much more important thing, broadly speaking, if it should be set going and carried on long enough to let its working be seen, would be the opportunity it would give to an important body of workingmen — the Crispins, who have the thing in hand — to find out what the position of a capitalist really is, and to learn how much care, hard work, difficulty, risk, and perhaps loss, is involved in the management of his capital.

THERE has more than once been question among some architeets in the United States as to whether an architect could and should enforce a claim for his professional fee by a lien on the building which he has carried out for a client. The impression has been that existing laws, at least in most of the States, do not give him a lied; and there has even been some talk among the profession in certain places of amending the laws so as to allow the architect the protection which the mechanic has, A late decision in a Pounsylvania court hears upon this point, and is, therefore, interesting. An architect sued for compensaand is, therefore, interesting. An architect such for compensa-tion for his services in preparing drawings and specifications for a bause in West Chester, and for three visits, "to locate the building and explain the drawings to mechanics;" he applied for a lieu in support of his charge. It appeared that only one of these visits was for the purpose of explaining drawings to the mechanics, and that this one was before the house was begun. This proved to be the turning point in the question, the plaintill's counsel having cited a previous case, in which a lien had been granted to an architect, the judge in his opinion declared that the assential point in the previous case was the fact that the architect in charge by superintending work, inspecting materials, and examining accounts, had actually "performed work about the crection and construction of the building," which under the terms of the statute gave bim a lim; whereas in the case under consideration the architect, having never seen the haibling, could not be said to have performed work "for or about the construction" of it, the more making of plans and specifications not being work under the meaning of the statute. The plaintiff, therefore, had no better claim to a lien than the scrivener who copied the specification, or the surveyor who laid ont the lines of the building.

Some expressions in the published report seem to imply that in the winning case the architect, or be who seed as such, had actually done the work of the builder and even made his drawings inside the building itself as it went on. The question of work actually done at a building or away from it, no matter what its kind, is a mere question of verbal interpretation of a statute, and of no importance otherwise; but the division of an architect's work into two kinds, one of which, the properly architectural, being done at his office, is unprotected by a lien, while the other, done on the spot, the superintendence, is pretorted, — this division is of some importance to those who are disposed to claim such a protection. Nevertheless we must say that it seems to us very undesirable for architects to have to do with liens. It is enough, perhaps, to say that there is no better reason to targe for them than the more fact that the existence of the buildings gives an opportunity for them. Workmen are assumed, whether wisely or not we will not pretend to judge, to deserve, or need, a special protection above other creditors. They live on days' wages, more or less from hand to mouth, and may be supposed to be in greater need than other men of making sure of prompt payment. Hence the concession to them of a special remedy. But we see no such reason, nor any other, why architects should be preferred to other classes of creditors. On the contrary there is an instinctive feeling, which we think may be trusted, that such a remedy is not of keeping with the professional relation between an architect and his client. The thought of such a special weapon held in reserve is at variance with the feeling of personal confidence which should be the characteristic of this relation. There is still too common a disposition to regard the architect's function as a mechanical one, and any such habit as resorting to liens would in its degree encourage this disposition. There is no question that the dignity of a genuinaly professional attitude is of real value in strengthening the confidence and respect which a profession inspires. Any loss of these would be poorly repaid by the very small advantages which architects could in the long run derive from lieus.

True folly of intrusting to inexpert and ignorant persons the working of machines more or less complicated in their construction is made more apparent every day. The familiar experi-ment of trying to put a belt over shafting in motion often results The familiar experiin the dismemberment of the experimenter; elevators take upcontrollable Hights up or down their wells, because of the ignorance of those who undertake to guide them; locomotives and stationary engines explode, generally because of the carelessness of soi-disant engineers; and just at this season the portable on gious, which in the West are used in great numbers in harvesting the large crops, are exploding with uncomfortable frequency. These too frequent accidents are often followed by coroner's verdiets, more or less Indicrons in their award of blame. On Friday, August 23, three men loaded upon the elevator in the Rawson Building, Chicago, a plane weighing nine bundred and fifty pounds, and began to descend with it from the filth story of the building. After going but a few feet something gave way and the elevator with its load fell to the hottom. One of the men saved himself by jumping off after the elevator had fallen about Afteen fect, another seized the brake-rope and climbed to the top, while the third fell to the bottom and was killed. The testimony at the inquest was conflicting, some expects saying that the accident was caused by the ignorance of the men on the elevator, who brought about the accident by their improper use of starting line and brake-rope; others, that the kind of brake in use on this clavator - a Storer Union Safety Elevator - was never reliable, and almost all agreeing that the machinery was not properly adjusted, shafts being out of line, and one of thom two inches out of the horizontal, so that the strain was brought on one corner of each tooth of the gear-wheel in such a way as to cause a breakage. But the machinery was so wrecked that no reliable explanation could be reached. At all events, some one was to blame; for only two days before the accident new cables had been put on, and had things been as much out of order as the testimony indicates, it must have been apparent to the workmen who made the repairs. Knowing, perhaps, of the verdict rendered in the case of the elevator accident at the Grand Hotel, Paris, and feeling that it was incumbent on them to censure some one, as it certainly was their duty so to do, the coroner's jury in its wisdom have brought in a verdict which says that "the owners of said elevator are to blame for such accident from their neglect in keeping said elevator in repair," and this, uso, in the face of the testimony of the agent of the building, who declared that one of the conditions of the lease of the building was that the lessors should keep the clerator in repair.

In the published list of medals which have been awarded to foreign architects for the excellence of the designs which they this year exhibit at Paris, there is, we regret to say, no mention of an American name. Although the Trustees of the American Institute of Architects did not see fit to charge themselves with the task of gathering such a collection of drawings and photographs, as should best show what the profession has done and is doing in this country, we had hoped that some of our most able architects would send, as individuals, enough of their work to show that, though courtesy to the government commissioners may demand that the façade of the United States section on the Rue des Nations be acknowledged as typical of our architecture, it is not in achieving such results that American architects are exclusively employed. Yet the architectural calcut of the country has not been passed over without such recognition of its merits as can be expressed by a silver medal, although it is to the work of the "babes and suckings" of the profession that this compliment has been accorded. The students of the Arch-itectural School attached to the Massachusetts Institute of Technology may indeed take satisfaction in the knowledge that this solitary laurel branch has been won by their careful work. the real architectural merit of this work, of the study and thought bestowed on its development, as well as of the value of the course of instruction by which it is produced, evidence is at this moment afforded by the somewhat similar collection of drawings at the fair of the Massachusetts Charitable Mechanic Association, which opened on Monday last in Boston. Although this collection is made up in great part of drawings which it

was thought not best to send to Paris — of refuse material, as it were — it will well repay the careful attention of the architect, draughtsman, or student who can dovote to its inspection the time it deserves.

The catalogue of the Illinois Industrial University comes to ns in a more attractive form than usual, illustrated as it is by six photographic views of the interiors of several of the college rooms, notable among which are the two views of the art gallery, which show that the institution is possessed of a fair collection of cases of busts and statues, both antique and modern, while hing upon the walls and screens are a number of framed engravings and some architectural photographs. In looking through the list of students we find that out of a total of three hundred and four male and sixty-three female students, thirteen students one of whom is a huly in the fourth year of the course, are studying architecture. In the curriculum of the architectural school attached to this institution, we have now only to notice one new feature. This is the establishment of a course for those who desire to become master-builders. The idea is excellent, and as there is apparently no intention to grant a certificate or diploma, the limitation of the course to our year's work is not as injudicious, perhaps, as it at first blush seems to be. At any rate, it is a case where half a loaf is better than no broad, and we trust that in the facure there will be a large number of mecleanies, both old and young, who will profit by this opportunity to obtain some portion of the theoretical knowledge which master-builders ought to possess, but which the demands of daily practice too rarely allow them to acquire. At present one student is pursoing this course, which includes instruction in wood, stone, brick, and metal construction, orthographic and architectoral drawing, instruction in agreements, specifications, estimates, hearing, ventilation, and architectural design, and shoppractice in carpentry, joinery, and cabinet-making. The enta-logue contains no reference to the summer session of classes in wood-working and from-working which, as we have mentioned (American Architect, May 25, 1878), was to be held this summer in the Exposition Building at Chicago.

Apparently the Directors of the Rhode Island School of Design have succeeded in obtaining the money which we once stated (American Architect, May 25, 1878) they must have, before the school to which the Women's Centennial Commission had appropriated its surplus meneys could be opened. At present rooms are fitting up in the Hoppin Homestead Building in Providence for the use of this school, which will probably open in Octobor, as originally intended. We do not know just what is to be the course of study to be pursued, but we understand that, although it is to be assentially a school of industrial design, instruction will be given in other branches of art. The school is to be under the charge of Mr. Charles A. Barry, who for more than twenty years has been an art teacher, and during six years was supervisor of drawing in the Boston public schools. Mr. Barry is one of the eight gentlemen who, in 1858, founded the Boston Art Club.

RICHARD UPJOHN.

It is the good fortune of the successful architect that his record cannot be confined to books and papers, like those of other professional men, cannot be shut up in galleries and inaccessible bouses like those of other artists, cannot be buried in the treacherous memories of relatives and friends like those of the rost of his fellow-creatures, but is permanent, visible, and outof-doors; his whole professional career is illustrated by a series of durable public memorials. When character and opportunity so happily combine in a human life, that, in its closing, it asserts itself as a complete and symmetrical whole, thus mounmentally set forth before the eyes of mankind, there seems to be no room for vain regrets. In considering the professional career of Richard Upjohn, therefore, the task of the biographer is easy and in every way agreeable; this career, moreover, is well worth tracing, with such circumstances and detail as our space will allow, not only because it is an essential part of the listory of American architecture, but because it may serve as a proof that common sense, sound judgment, caroful observation, energy and imagrity of character, - all of them qualities more or less attainable, even for "plain people," — may combine to produce a reputation which, if not quite heroic in its proportions, is certainly great in its results. It was not by brilliant and exceptional genius that this good fortune was achieved, but be

fidelity in the development of natural gifts, and by hard work judiciously bestowed. There was more prose than poetry in this busy life, and it therefore touches our common sympathies, and ruts parallel to our common experience often enough to

serve as a practical example and an encouragement.

Mr. Upjohn was born at Shaftesbury, Dorsetshire, England, and after enjoying fair educational advantages, was apprenticed to a cabinet-maker, and finally became a master in the trade. But in 1829, in his twenty-eighth year, he came to the United States, and settled in New Bodford, Mass, where he followed his craft in the day-time and taught drawing in the creatings. Three years afterwards he went to Boston and entered the office of Captain Paris, who was then the architect of the Boston Court House. We soon behold him his own master again, and one of his first designs as an architect were the fences and entrances to the Boston Common. St. Joho's Church, at Bangar, Me., was also one of his carliest works. But his professional career may be considered as dating from the preparation of the designs for Trinity Church, New York.

This wealthy corporation, in the year 1833, had decided upon some alterations and enlargements of their old edifice, but finally found it expedient to build anow. The site was element, therefore, and the present church was creeked between the years 1833 and 1845. It was then, and perhaps still remains, the most conspicuous religious monument in this country, and the advances since made in the science of architecture, in the knowledge of precedent, in the experience with great works, and in improved professional education and methods, has not served by comparison to dwarf its proportions or lessen its excellence as a work of art. It still holds its preliminent position with dignity and firmness.

We are not prepared to give a chronological, on indeed, a complete list of the exclesiostical buildings which Mr. Upjohn produced after this conspicuous and fortunate beginning; the succession is imposing in numbers, and fully sustains the high standard which he had himself set up. Among these, in the city of New York, are the church known as Dr. Pott's, on the corner of Tenth Street and University Place: the Church of the Ascension, near by, on Fifth Avenue; that of the Holy Communion, on Sixth Avenue and Twentieth Street; that of the Nativity, on the East side, St. Thomas's, Trinity Chapel and Schools, and Dr. Adams' Presbyterian Church, on Madison Square; in Brooklyn, L. L. are Christ and Grace Churches, and the Church of the Pilgrims; elsewhere the succession is marked by the Church of St. Junes, at New London, Ct.; St. Paul's at Buffalo, N. Y.; St. Paul's at Brookline, Mass.; St. Stophen's and Grace Church, at Providence, R. I.; the Preshvierian Momorial Church at Springfield, Mass.; the Parish Church, at Portsmouth, R. I.; and a chapel at New Berlin, N. J. To these may be added St. Mark's, built on a steep hillside for Asa Packer, at Manch Chunk, N. J., St. Thomas's, at Tannlon, Mass., Grace Church at Newark, the Geneva Memorial Church, St. Peter's Presbyterian Church at Rochester, and Zion Church at Rome, N. Y., and churches at Salt Lake City, Millville, Mass., and Geneseo, N. Y. Mr. Upjobn also prepared plans for the Church of the Advent, in Boston, which were not earried out. He also creeted wooden churches at Stockbridge and Plymouth, Mass.

A gentler the spreads round the boly spice.
Whene'er they use the sylven waste county,
And nory harrests crown the fortheles.

Wordsworth's sounce may be quoted as applicable also to those scattered churches, but mainly in another sense. As the first examples of pure Gothic built in a country almost entirely ignorant of true mediaval forms, they immediately dispelled the illiterate traditions of the style which were until then generally accepted as correct and satisfactory, and planted seeds of knowledge which fell not upon stony ground. Although a few excellent architects had preceded Mr. Upjohn in the field, their work had been lessed principally upon Remaissance types, and every effort in the direction of a Gothic revival had been made without the advantage of a recognized standard of the style. Such standards were planted wherever Mr. Upjohn's spires acrose, and even to this day they may be accepted as safe guides and sound examples. Though perhaps never surprising us with new combinations of original design, never unduly imaginative until rarely pootic, his Gothic has, at least, always been sober and correct, less ingenious than learned, but by no means confined to metely common or conventional types. His churches are not marked by personal conceits, —Mr. Upjohn did not write his name upon his architecture, — but his works have all the grace which can be conferred by variety within the

strictest limits of loyalty to style; and so also when he sought his effects outside of his English types, as in the Romanesque of St. Pan's Church at Baltimore, his archeological correctness was never suffered to stiffen his hand or to interfere with a just freedom of design. But his natural refinement of thought and delicacy of imagination and invention had a clearer and more fortunate field in the tombs and monuments of Trinity churchyard and Greenwood Cemetery.

Mr. Upjobu's service to the architecture of America consists in his timely appearance upon the scene, an artist at heart, a man of business and enterprise, thoroughly equipped with all the knowledge and forces essential to the propagation of pure style in a new country. It is safe to say that from the time of his first public appearance as an architect our civilization began to enjoy the emotions and appreciate the sentiment of mediaval art, which before that time had rested upon the bastard traditions of Walpole's ville at Stanberry Hill, and Beckford's Abbey of Fonthill, upon Abbotsford, and the eastle of Otranto.

Although his professional career was concurred with domestic and civic works in large proportion, his reputation must repose mainly upon his ecclesiastical monuments and upon his knowledge of and respect for the Gothic style of England. His domestic work was almost, if not entirely, confined to conventional forms of Italian Renaissance, as if he considered his Gothic a thing consecrated to far more serious uses, and his dwollings were rather dignified and academical than picturesque according to the modern type. They generally stand "four square, with no playful conceits or eccentricities, no ingenious devices or far-fetched addition of detail either in plan or elevation. His characteristic respect for monumental types followed him also in this department and chastened his faculty of invention. Among his town and country houses we are enabled to recall the Lytchfield and Packer houses at Brooklyn, that of J. II. Burch, Esq., at Chicago, of Edmund Dexter, Esq., at Cincinnati, of G. M. Atwater, Esq., at Springfield, Mass., of Jas. A. Cowing, Esq., at Buffalo, of John S. Stone, Esq., at Bay Ridge, L. L., of W. M. Stebbins, Esq., of Tarrytown, the Johnston House at Flachush, L. L. the Forsyth house at Kingston, N. Y., that of Mr. H. R. McKean, of Philadelphia, those of Messrs. E. King, Amos W. Smith, and others, at Newport, that of Mr. Win, Mason, at Tauntine, Mass., the Theyer bouses in and near Roston, and those of Mussrs. Seth Adams and Murshall Wood, at Providence; also the six gate-lodges of Sonnel Zimmerman, Esq., a). Cliffon, near Niagara, the building of the mansion having been stopped by the untimely death of the proprietor. Lindenwald, the residence of President Van Buren, and the seat of the Patronn at Albany, were altered and enlarged under his direction. In all these works it is evident that Mr. Upjohn's lathits of design were controlled by a solier sense of duty, and were never at the mercy of passing fishions or of his own thronging fancies; they are distinctly, and often severely, classical in conception and treatment, and, as such, being more in sympathy with the prevailing contemporary architectural idea, have hurlly served, like his churches, to mark a step of artistic progress far in advance of his time.

In civic buildings Mr. Upjohn's experience was more limited, but in this field also be preserved his characteristic solviety and correctness. He built Trinity Building and the Corn Exchange Bank in New York, a savings bank at Kingston, N. Y., a school building at Brooklyn, a hotel and public school at Tannion, Mass., and a railroad station at Norton, Mass.; he also designed a chapel for Bowdoin College, a library for Brown University, and had propared complete drawings for the proposed new Columbia College buildings which were to have occupied one of the blocks in the vicinity of the Roman Catholic Cathedral, when the old Deaf and Dumb Asylom property was secured for

This purpose and the new project abandoned.

Although Mr. Upjohn prepared designs for the city half in Brooklyn, and, in 1855, for the state library building at Albany, with the understanding, we believe, that he was not the only architect who had been invited to do so, these were exceptional cases, and his attitude of hostility to architectural competitions was assumed with deliberation and maintained with decision and self-denial. He lost no opportunity of impressing upon the younger men in the profession the importance of maintaining the dignity of their calling by abstaining from especial bargains with reference to their fees and from all competitions which implied volunteer or unpaid labor. The tone of his annual addresses as President of the American Lastitute of Architects was always very earnest in claiming for the profession a

social and moral position far in advance of that which it had hitherto occupied; and his theory was strengthened and illustrated by his own example of honorable practice. Indeed, his service to American architects was quite as important as his service to American architecture; no one in the profession took a more active part in the planting and caltivation of that wholesome sentiment of fraternity and mutual support which first found expression in the founding of the Institute in 1857.

From that time to the year 1876, when he resigned the office of President, which he had held from the beginning, he was noceasing in his efforts, so far as his powers and opportunities allowed, to raise the standard of practice and to illustrate the advantages of union and good-fellowship among all the mombers of the profession. For this service his memory deserves to be charished by his brethren. A complete memorial of his professignal experience and observation would necessarily include the history of the greatest development which our art and the prac-

ties of it have experienced in this country.

ffis national position was recognized by his election as honorary member of the Royal Institute of British Architects, and of the Institute of Portugueso Architects. What other honors may luve been conferred upon him by faceign societies we are not propared to say; but certainly the large tribute of affectionate respect bestowed upon him by those who have known him personally, who have worked with him and watched his successful career, who have been counselled and emonraged by him, is far more significant than any merely official reneguition, however graciously accorded.

DILAPIDATIONS.

Our purpose is to give some details concerning the Law of Dilapidations as it now stands, and to examine a few typical cases of its ap-plication which have come under our notice, and which will serve to show by practical illustration the disadvantages, as well as the benetics, which neerne to the Church and the elergy by the present work-

Let the results, however, of our former inquiry be constantly borne in mind, which are these, camely, that the original statute Law of Diapidations is still in farce, with the single exception of the clause velating to the priority of the debt of diapidation-money over other debts; that this law is a good and equitable one, which no one complains of; and that it is in the mode of application of the law only that a better has been been that that a change has been made, which bears heavily, and, we think, unjustly, upon the mass of incumbents and as we shall see, tends more and more every year to defeat the main objects aimed at by the framers of the Act of 1871.

We may supplement our former general statement by the following details. Every isemplent is bound both by stature and common law, to keep his house of residence on the glebe in repair and to restore or rebuild it, if necessary, without addition, alteration, or improvement, out of the income of the living; but if it is see small or near, it may be entarged. He must insure it against fire in some focan, it may be entarged. He must insure it against fine in some office approved by Queen Anne's Bounty, and for a sum agreed upon with the patron and outlinery. There is no liability as to the mode of cultivation of the land attached to a living, but the fences, farm-buildings, etc., must all be kept in repair, and come thus under the law, even if they have been cructed by himself. Timber on the globe may, of course, be felled, but only for repairs necessary to the buildings of fences, and wood may be cut, but only for necessary fiving. The sole, among other personal effects, of faggors, etc., cut on the globe, which we sometimes observe in anchors, held by the expense. the glebs, which we sometimes observe in auctions held by the excentors of a deceased incumbent, is altogether illegal. Most of the fixtors of a deceased members, is altogether illegal. Most of the fix-tures and additions, which in the case of ordinary tentars would be removable, are not removable; not, as we said before, is any charge made for dilapidation of inside paint and paper. But the successor to a vacating incumbent may compel the removal of all additions made by his predecessor, if they are of an unnecessary character, and would encomber the living, such as box-houses, aviscies, etc., and in default of removal, the expense of getting rid of them would be thereaf as dilapidations. be charged as dilapidations

Now all this is very right and proper, with perhaps the single exception relating to the land. An incumbent will not be likely to leave his land altogether uncultivated and fallow; he is, however, tompted to exhaust it, and so to reduce the income of his successors; as, for instance, by selling off the hay-rops by apetion every year at their bighest price, and neglecting the proper mannering of the land afterwards, whereby the soil is much fleteriorated. Some action with regard to the hand, as well as the haldblogs, of a living might perhaps have been desirable in the new law. But this is a minor point. Let us rather see how the new law works in practice. And little, as to the appointment and reinneration of surveyors. We must remember that they are appointed to such that they are appointed to such the surveyors. must remember that they are appointed for each diocese by the rural thems, and that, in most dioceses, the main part of their remunera-tion consists, besides fees, of a percentage on the amount of the work ordered by them to be done. Here, then, are two points not quite as they should be. Not only is the surveyor naturally tempted

* Building World for December, 1877.

to make his estimate too high, with the view, inconsulously no doubt, of increasing his percentage on it, but when the work is done and paid for, if the contractor, as is often the case, performs the work for less than the estimated sum, the surveyor still gets his percentage on the estimate, while the difference between the estimate and the actual sum disbursed is not returned, as one would naturally expect it would be, to the ineumbent who has to pay, but is kept for further repairs hereafter! This is unjust to the outgoing incumbent. Take a case, in illustration, which has come under our notice. We will call the Bauelles A. Here the estimated sost of dilapidations amounted to £65, and the repairs were all executed to the satisfaction of the surveyor and a certificate for the five years' exemption from further liability given, for the sum of £361. So that the late incumhent of A has had to pay £30 more than he in equity should have done. For dilapidation money is a debt from the old incumbent to the new incumbent, and from the new incumbent to Queen Anne's Bounty, who seem unable, for some reason or other, to return any

Bounty, who seem unable, for some reason or other, to resure any money once poid to them.

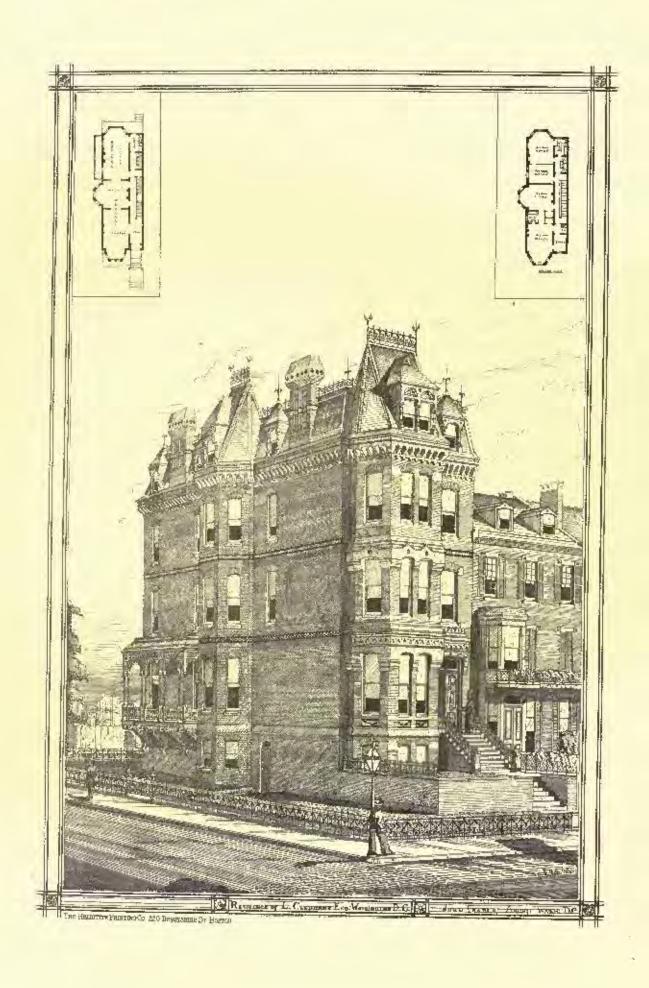
Again, not only does thus the outgoing incombent orast book careforly to see that he himself is not made to undergo something still worse. For while the former has no fees to pay to the surveyor for his work, and has his liability limited to the payment of the netual sum specified for dilapidations, all the onus, risk, and fees fall upon the latter. If, for instance, the old incombent is bankrupt, the new incombent is still bound to pay over to Queen Anne's Boonty, within its nearth's of his induction, every farthing of the dilapidation money. incombent is still bound to pay over to Queen Anne's Boonty, within six month's of his induction, every furthing of the dilapidation money, which, as in such case he cannot get if from his predecessor, he must pay out of his own packet, or, if allowed to do so, he may in certain cases mortgage the benefice, and so reduce its value, suffering thus, in any wise, a bardship which, although the law justly proposes to case it for him, Queen Anne's Bounty, as we remarked in our previous article, is at present unwilling to act upon so as to help him by a loan. A case of this kind is that of Benefice B. Here the living was worth only £156 a year. The dilapidations amounted to £600, for the house was old, and thore were large out-buildings. The incumbent who find helt no effects whatever. He was an old bachelor, who had simply lived on his income. The new incumbent, also a poor man, took the living without much consideration, and also a poor man, took the living without much consideration, and was instituted and faducted, and thus irrevocably bound to pay over at once four years' income before touching a penny of the endowment! Doubless he has often wished that his bishop had left him ment! Doubless he has often wished that his bishop had left him in his curacy. Observe how exceld the Act is to provide a renerly for such hardships, and contrast with it the action of Queen Arne's Bounty in refusing loans sanctioned by the Act. We can give even a worse case than this in Benefice C. Here the late incumbent was appointed in 1863. The living was worth £120 a year, and he died in 1874, leaving only a daughter, and the sum of £1,000 in consols. The surveyor ordered the louse, which was a timber building erected on piles, and much dilappilated, to be entirely rebuilt at a cost of £818! Here was a poor incumbent maleted of more than all he had ever received from his living during the six years of his tenancy, and his daughter felt penalters, only because he had the misfortune to be one of the incumbents of 1874, for whom special provision was made in the Act, and Queen Anne's Bounty has made that provision made in the Act, and Queen Anne's Bounty has made that provision a dead letter!

But, it may be asked, cannot persons in such circumstances appeal against these hardships? Is there no way of softening down such eases? Yes, in the case of Benefice C, the appeal was suggested against the surveyor's award in the manner prescribed by the Act for cases of appeal. But, with the advice of counsel, the matter was dropped, and no uppeal was made, for the simple reason that the law directs that the whole costs of appeal shalf be paid, and the whole expense of re-valuing dishursed, out of the estate of the out-going incumbent instead of out of the living, and the sole executrix of this poor parson was willing rather to salmit to pay the whole of this poor person was strong rather than the charges and anxiety of litigation.

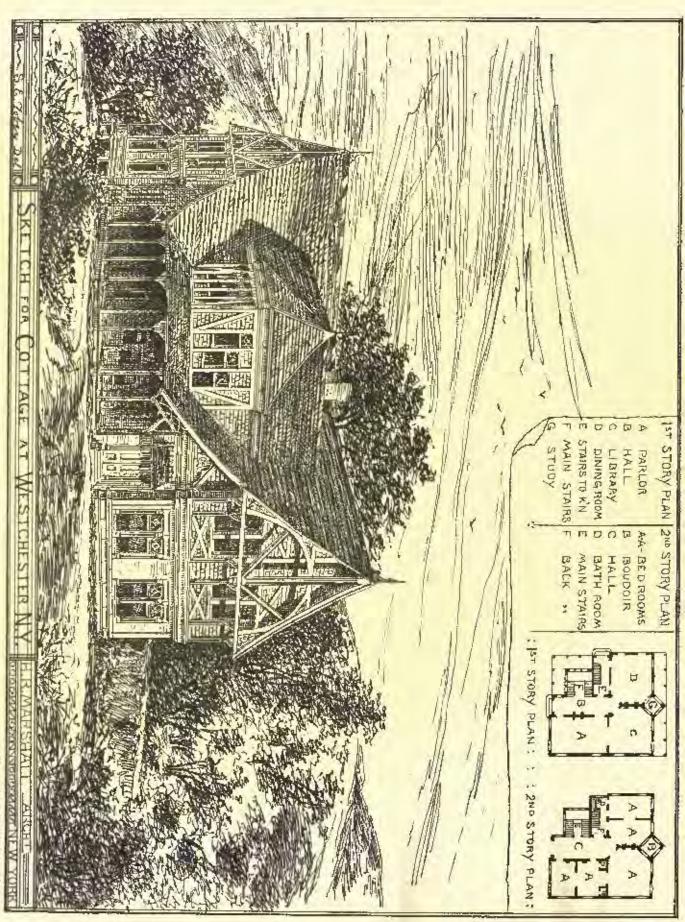
The diocesan surveyors, who are generally architects and men of

good standing and honorable dualing are gradually through practice becoming more acquainted with their new dulies, and, we trust, more leplent in their awards; but their first introduction to a comparatively new experience errated by the Act naturally tended to lead them to proceed more exceeding to the strict letter of the law than according to occurr, while it was the same accordable with these surveyors who live in London, of some curious manifestations of ignorance about agricultural and local customs. In certain parts of England, for example, all the fences round fields are composed of hose stone walls without mortar or cement. One surveyor ordered all such walls to be rebuilt with cement on the globes. This was, of course, too absurd to be neted upon, and he had to revoke his order, after learning a little about the habits of the district. Another surveyor that we had heard of, though we have not had the pleasure of actually meeting him, directed that all the pig-styes should be painted within and without with three coats of while point! Other survey-ors seem puzzled by the differing local customs, whereby, in some parts, all field gates are painted, while in other parts of the country such a thing is never heard of. Most of them, however, seem to be agreed that it shall be part of their duty to order the painting of all external wood and ironwork not pointed the year before with two coats of paint, to empty all cess-pils and drains, and, in general, to put things in complete readiness for the new tenant.

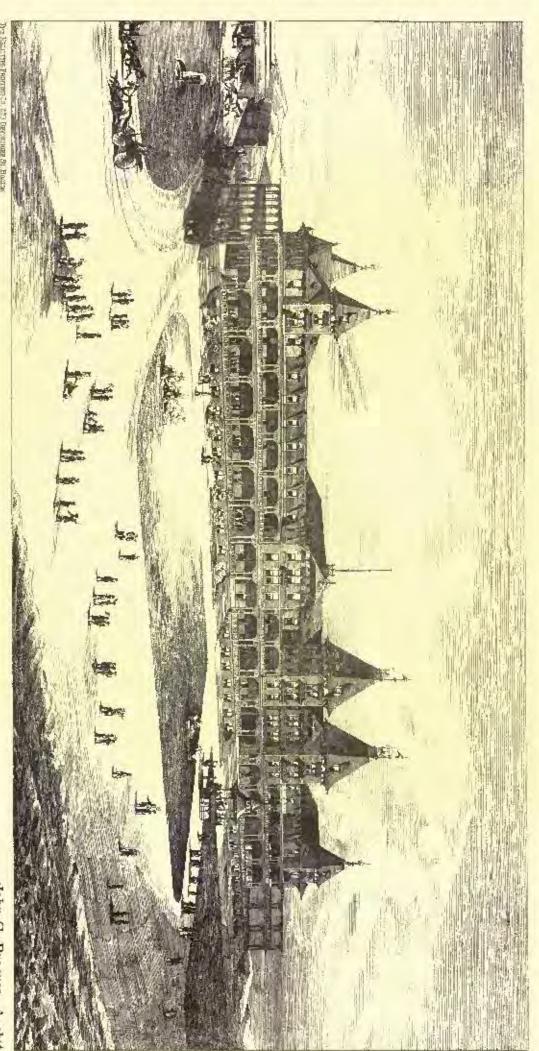






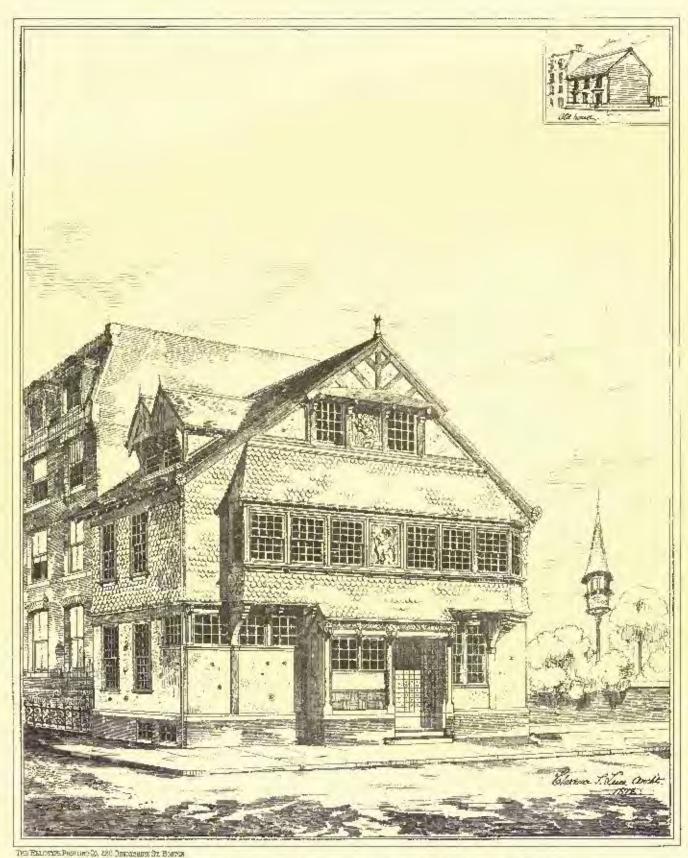


THE SECTION PROFITE CO. 220 DEMERSHES OF BESTOR

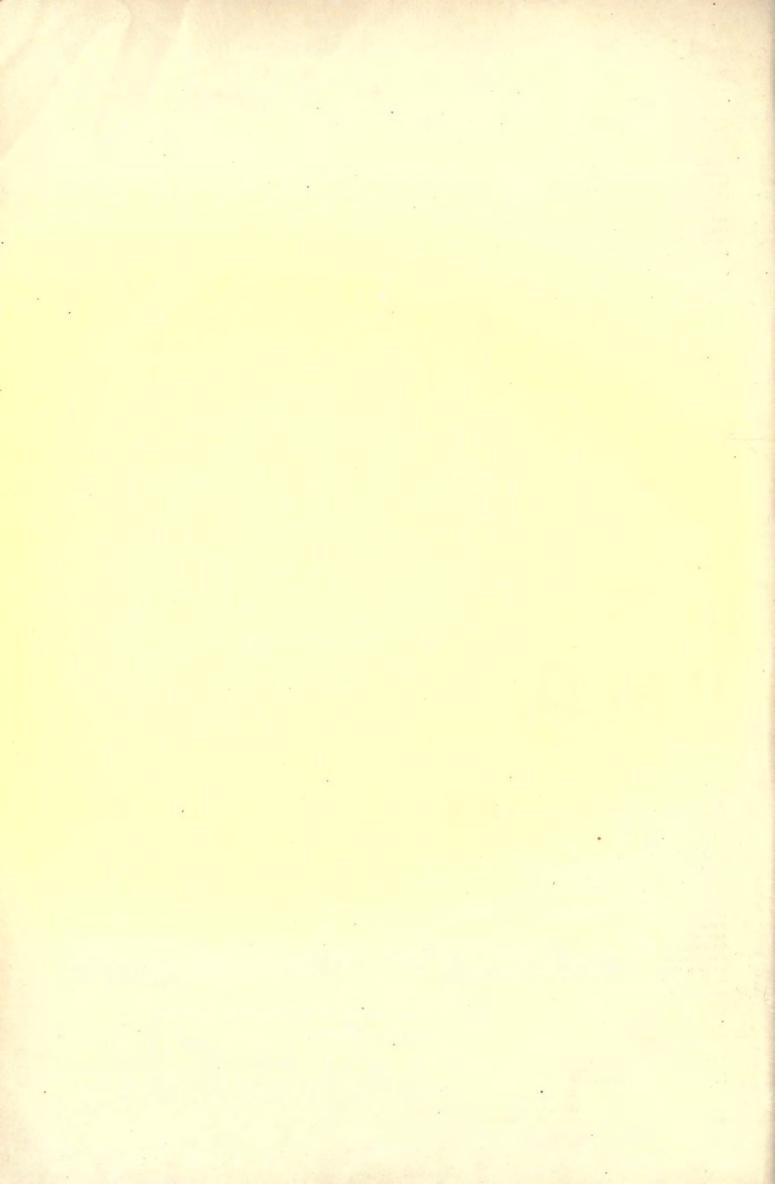


John G. Prague, Archit.





REMODELLED HOUSE AT THE CORNER OF MT. VERNON & RIVER STS. ---



Our readers will doubtless be glad to have all the items in an average and typical case, which we will call that of Benefice D-This will enable them to see more clearly how the ones is divided. It is as follows:

 It is as ionows:

 Schedule of Dilapidations (Benefice D), October, 1872:
 Stop round sash-frames; leak round chimney; mend panes of glass; cut out cracks and stop ceiling; repair chimney-piece; new keys and locks; mend decayed flooring; repair plastering; lead lights; repair

 locks; ment decayed flooring; repair plastering; lead lights; repair door and cupboard; new nosings to stairs; repair treads, risers, newels, and halusters; new collar to roof; repair decayed sleepers and joists; renew skirling and rafters; repair soil-pipe, and empty cess-jut; new sills to doors; mend and renew thatching; renew states on walls, and point; new states gutters; searl door-ports; repair and paint field-gates; point all onlyide iron and wood. — Total, £81.

2. Fees poid to hishop's officers; —
Secretary's order for inspection.

2. Fees paid to histor's officers;

Secretary's order for inspection, £1 1st; filing order by registers, 3s. 4d.; copy for Queen Anne's Bonaty, 5s.; secretary for bishop's consent to after plan, £1 1st; filing it by registrac, 3st 4d.; secretary for bishop's connecting nature to surveyor's certificate for payment. 2st; registrar for filing surveyor's certificate of execution of work, 3s. 4d. — Total, £3 2s. 0d.

3. Surreyar's fees: Survey, valuation, and reports, with two copies, £5 5s.; travelling and other expenses, £2.8s. 6d.; survey and certificate, under section 4d of the Act, £1.11s. 6d.; expenses, 10s. Thral, £9.15s. 6d. Here the £61 is poid by the late menubent's executors to the new incumbent, and by him to Queen Anne's Bounty, while the new in-

cumbent pays all the fees of both hishop and surveyor.

We are glad to find that the case of repairs to parish choreles, mentioned in our learner article, appears in a fair way of being settled. It arose thus. The Claurch of All Saints in Lambeth is one of those built under the Claurch Building Act, which enacts that, as in the case of all other churches, the freehold shall be in the incombent, but that all repairs shall be done at the expense of the parishioners. This church had become so far out of repair as to be unrismoners. This council had become so far out of repair as to be dis-safe to passengers along the street, and, in fact, a portion of the tower fell not long ago, and seriously injured a woman. The in-cumbent, Dr. F. G. Lee, was called upon by the Metropolitan Board of Works to repair the church, as church-rates had been abolished without any provision being made for the maintenance of the Labrie, and no one also could be made to pay. The under of the Board, if and no one else could be made to pay. The order of the Board, it allowed, would have become a precedent for making every inclimient in the country responsible for the repairs of his church, as well as of his house, and would have thrown an intolocable burden on the elergy. Dr. Lee refused to do the work, and the Board, acting under the provisions of the Metropolitan Bailding Acts as to repairs of "dangerone structures," then did the work, and sued the incumbent for £105 incurred in the operation. Dr. Lee, supported by combent for £105 incovered in the operation. Dr. Lee, supported by his bishop, declined to pay, and showed, at the trial of the case, that his freehold in the church was by no means the same kind of freehold as that of an ordinary proprietor, and that he was mable to sell the church, or raise money upon it to pay off the debt. Although the Lord Chief Justice has acquitted the chrzy of the responsibility thus sought to be imposed upon them, and so far justice has been done, we are, however, still without legislation on the subject of the important question. Who is to keep the Church in repair? The clergy are cicarly not liable. The hity refuse to have church rates. Can we depend on voluntary help? We fear not, in the case of must parishes at any rate. of must parishes at any rate.

In conclusion, what is the result, so far as benedices are concerned,

In conclusion, what is the result, so far as benefices are concerned, at which we are serived in the present state of the dilapidation question? We are sorry to say that the mode of application of the law is still tending to defeat the object of it. Two practical values appear to be gaining acceptance with the clergy, forced upon them by the circumstances to which we have alluded. The first is, to take more than ordinary presentions in acceptance a living, and to decline to take anything under a really valuable benefice if there is the last take anything under it really valuable benefice if there is the least suspicion of insolvency in the case of the outgoing incumbent, or if the repairs are likely to be a section matter. This tends to prevent really good and hard-working men, if poor, from entering the Church, or it keeps them down as utere curates, in which position their £150 or £200 a year is quite unincombered. The second rule is, having once taken a fixing and our satisful to do absolute the additional contents. once taken a living, and got settled, to do absolutely nothing more towards the preservation of the buildings, except the merest necessary repairs against weather, without which the house would be uninhabitable; and for this reason that, since the surveyor most find something to sorvey, and has to so many cases ordered things absolutely at variance with the ordinary rules of the ceaft, it is much chapter, so they say, in the long run, for a poor incumbent to pay more in comparison on his volumes of the benefice, than to be conmore in comparison on his voidance of the benefice, that to be constantly compelled to repair bit by bit every year. It is too thishop or architecton may compel proper regains during the life of the incumbent, and may deprive for neglect; but unless this is acted up to better than it is at present, or unless some change is introduced into the working of the law, and especially into the actitude which Queen Anne's Bounty takes up towards the elergy, we fear that this demoralizing effect will be only increased, instead of diminished, as time goes on. — The Building World.

The Thranks at Milax. — The centerary of the fumous Téatro della Scala is to be observed by the redecoration of the huilding.

THE ILLUSTRATIONS.

HOTEL BRIGHTON, CONEY ISLAND, N. Y. MR. JOHN G. PRASDE, ARCHITECT, NEW YORK.

HOUSE ON MI. VERNON STREET, BOSTON, MASS., REMODELLED BY MIL. C. S. EUCH, ARCHITECT, BOSTON.

This sketch shows the alteration in the house at the corner of River and Mt. Vernou structs, belonging to the estate of Mrs. Marcha Smith. The old house was built about 1840, and was an uninteresting structure. The alteration was made in the early part of the present year, at a cost of \$2,000. The first story is of coment, plastered, and is not a concrete wall, and the second story is of tiles made at Akran, Ohio, which are the first of the kind ever manufactured in this country, after an English pattern. The manufacturer states that he ruined nearly 20,000 tiles before he was successful in guiling the 5,000 used on this building, and even these are not al-together satisfactory in color. The carving in the panels is of pine. The late haspector of Buildings was averse to allowing the alteration under the Building Act, it being a wooden building and within the fire fimits, but Mr. Damrell took a different view of the matter, and very kindly allowed it. The appear sashes of the first-story windows are filled with cathedral glass, and the dining room is decorated by Mr. Frank Hill Smith-

SERTON FOR A COTTAGE AT WESTCHESTER, N. Y. MR. D. B. MARSHALL, ARCHITECT, NEW YORK.

HOUSE OF 1. CLEFHARE ESQ., WASHINGTON, D. C. MIL, JOHN DRASER, ABCHITECT, WASHINGTON.

CORRESPONDENCE

THE EXHIBITION OF TURNER'S WATER-COLORS. - MR. RUSEIN'S PRESENT ESTIMATE OF TURNER'S METHODS AND GENIUS

LUNDON, Approst 15, 1878.

As exhibition of unusual interest closul here last week. It was a collection of water-colors and similies by Turner, belonging to Mr. Ruskin, who prepared a catalogue, with enpious notes on each sketch; to this was added, also with explanatory and critical notes, a series of the Oxford professor's own studies in line and color. The secret films a which last February strack down Mr. Ruskin threatened to prevent the completion of the catalogue, but the Rev. W. Kingsley, an old and valued friend, came to the rescue, and added the conchaling notes, which, to judge from the enthusiastic fact-notes Mr. Ruskin was able subsequently in add, are worthly examples of Turner worship. This pamphlet of some one laundred and forty pages is of deep interest, expressing as it does the latest, and perhaps the last, opinions of the author of "Modern Painters," whose views are known to have undergone such marked modifications that he has persistently refused to yield to the domand for a cheep and popular edition of his earlier works. His writings of late have all been fraught with weariness and bitter disappointment, which in these last productions are suddenly changed to a lone of sudress and almost of gentleness, strange indeed in the author of those scathing early polemies. With the exception of a constant and really pourie protest against the march of civilization in descerating with its works of engineering the picture-squeness of nature, his only denunciation now is of himthe preparations of nature, his only deministration low is in this self, and contemporary art escapes scot-free. In his preface, he manfully turns open blueself, saving, "As in my own edvancing life I learn more of the laws of noble act, I recognize faults in Turner to which once I was blind; but only as I recognize also powers which my her's enthusiasin did but disgrace by its advocacy." In the notes which once I was blind; but only as I recognize also powers which my her's chilorsiasm did but disgrace by its advocacy." In the notes themselves his disciples must be startled by occasional reservations and criticisms of 'Inrucr's work which they would never have dreamed of permitting to themselves. Think of his speaking of the large water-color, the "Battle of Fort Rock" in the National Gallery, as an inferior work, terribly forced and conventionalized I and saying in regard to one of the earlier Italian studies: "It fails in many respects, especially in the lutherous figure; he was not yet able to draw wither the figure or even animals with skill." Further on: "In both, however, the trees are still very rudely drawn." Of a later study, done, however, in his prime, he says: "It will, I hope, put an end (with No. 28) to the ordinary notion that Turner 'could not draw trees.' But it may very well uncontained the also very ordinary, and much better founded notion that he could not color them. Its dislike of fresh grach is a emious idiosynerasy in him; no drawing exists, that I know of, founded frankly on that key of color." Could Turner's bitterest critics have made a severer stricture upon him as a landscape painter than the early he could not color trees? I quete these examples to show how time has changed his former partisan opinions. Yet through all, the old love and admiration consecrated by so many years of devotion to his here is his ruling principle, softened only by a westy andness revealed in his conclusion to the latroduction: Oh, that some one had but told me in my youth, when all my heart securit sames revened in ms conclusion to the lattrefaction: "Oh, that some one had but told me in my youth, when all my heart scenned to be set on these colors and clouds that appear for a faile while and then vanish away, how little my laye of them would serve me when the silence of lawn and would in the dews of morning should be completed, and all my thoughts should be of those whom, by neither, I was to meet more!"

The slotches are classed in five groups, corresponding to as many decades, beginning with the year 1800. The first group is character-

ized thus: "His manner is storn, reserved, quiet, grave in color, forceful in hand." They, in fact, particle of the prevailing fashion of water-colors at that period; for at the end of the last century, water-color drawings—as the English still call them—were literally such, pencil or ink drawings, with simplest pale flat washes. In speaking of one of this group, he which a portion is quite finished, leaving the rest outlined on the unroughed paper, Ruskin says: "I can never get the public to believe, nor until they believe it can they over understand the grasp of a great master's mind, that, as in freeco so in water-color, there can be no retouching after your day's work is done. . . . There is absolute demonstration in this, that Turner did his work hit by but, finishing at once, and sure of his final harmony." This certainty was not the ordinary method of limit narrhony.

English water-catorists, but it is, curlinsly enough, that of the present Italian school; for the latter in their figure studies completely finish, beginning with the head, each bit of drapery, often without even sketching in the rest, which results in purity of color at the expense of relative values.

of relative values.

In regard to the second group, which comprises pictures of Swise scenery, he writes: "And observe generally. Thener never, ofter the time, drew from nature without compacing. His lightest pencil sketch was the plan of a picture, his completest study on the spot a part of one. But he rarely painted on the stort; he looked, gathered, considered; then painted the sum of what he had gained, up to the point necessary for due note of it." An admission which the apholders of Turner's more forced effects would do well to mark, as it allows to individual criticism a bulder judgment of the truthfulness of the scene presented than would be used in face of studies made on the spot. Of notes made for some of his Swiss pictures made on the spot, therefore, to make rapid pencil note of his subject on the spot; and, it seems, at his intending the part to put so much color on this cutting as would recall rapid penelt note of the subject of one spect, and, it seems, at his in the evening to put so much color on this outline as world recall the effect to his mind.\(^1\) This babit explains, but does not excuse, the false values constantly found in Turner's works, more especially in his foregrounds, for his notes recording chiefly atmospheric and distant effects, he was left to compose from this those very parts of his work which most demanded local study.

There is real frankness in this reference to a landscape of his mid-dle period; "But he has missed his mark in the vernilions of the foreground, which full in distinction of lines between sunlight and smale; the riviently forced shadows on the field (lake in form also) not redeeming the want of tone, but rather ashibiting it." A just not renoming the which impartiality would apply not to this example only, but to the majority of Turner's foregrounds, for there is a great similarity among them; the same could greens and pellows to give aerial effect to the distance, the same grotesque figures outlined in vermilion and without real solidity or modelling to give relief.

Referring to those almost invariably grotesque and brutal figures, Ruskin philosophizes these 81 thick it will be seen that much of what the public were most pained by in Turner's figure drawing arose from what Turner kineself had been chiedly pained by in the public. He saw, and more clearly then he knew himself, the especial force of England in 'radgority.'" Then referring to these figures drawn from law life, he adds: "With all this, nevertheless, he had in himself an appul sympathy of he liked it at more and wind discussed. himself no small sympathy; he liked it at once and was disgusted by it; and, while he lived in imagination in section Carthage, lived practically to modern Margate. I cannot understand these ways of his; only be assured that what offends us in these figures was also, in a high degree, offensive to bins, though he chose to paint it as a posultarly English phenomenon, and though he took in the midst of it, ignobly, an animal English enjoyment, asknowledging it all the soldle to be ugly and wrong." This wanton brurality in his lignres increased as he grew older. Fulling at first apparently from sheer inability to draw his forms and then later impolicitly slurring or exaggrating them he transformed them into deliant caricatures. But his gerating them he transfermed them into defiant concentres, for his applicipant finds a more poerfical reason, and of his middle period says:

"Thereaforward he shows clearly the sense of a terrific wrongness and subsess mingled in the teantiful order of the earth; his work becomes partly satirieal, partly reckless, partly—and in its greatest and noblest features—tragic." Further on: "With this change of feeling came a twofold change of technical method. He had no padence with his valgar subjects, and dashed them in with violent pencilling and often conde and greates soler, to the general burgins of his and often coude and coarse color, to the general hurting of his sonsitiveness in many ways." In conclusion: "But assuredly, whether faultful or fated, real conditions of error affect his work from this time ferward, in consequence of which it in many respects greatly lost its influence with the public. When they see, gathered now together in one group, examples of the drawings in which the calamitous change is expressed most clearly, the public may, perhaps, see how in the deepest sense their own follow were the cause of all that they blamed, and of the influidly greater all that they lost." Rather hard, that, on a public which was inclined to believe as Mr. Rāskin care they have he represented in that Theorem. now does, before his cloquence persuaded it that Tuner's art was perfect and above all reproach. The English public have now so well learned their lesson that one has only to stand near the Turners in the National Gallery to hear one monotonous stream of adulation. The public dure not eciticise Turner, — it would be "Irad form" [s it a suspletion of this which less finally opened Mr. Buskin's eves to some of his hero's defects? Does he begin to reslize that blind admiration of Turner may, after all, be but little better than that similar taich in Chaude which he was at such pains to uproot? Be

this as it may, of those paintings in the National Gallery, which by the locality of his early writings he has — to the mere reader, at least — forever endowed with the most windrous powers, he now says: "But they rotted, rent, faded, and mondered away in miserable patches of variously deforming changes, darkening in spots, but to the rich colors bringing patter, and to the subtle ones absolute effacement. Cleaning and retouching over cracks followed, and the cuin is now total."

I have quoted so largely, thinking it unlikely that this catalogue, in spite of its deep significance, would reach America, and that the many followers of Mr. Ruskin there can but be interested in this revision, in his maturity, of more youthful opinions. I have selected the passages with the design of simply illustrating this change of tone, and in no unfair spirit, for the beauty and power of Mr. Roskin's writings command my sincere admiration,—always making due allowance for the exaggeration which keen particularly drove him into. The collection of drawings itself is a fairly representative one; the the categorian of drawings user is a rarry representative one; the trawings showing little that is unusual in style or power (at least to this generation) among the first half, and the latter containing—in spite of the fine collections Mr. Ruskin has generally given to Oxford and Cambridge—some of the most perfect examples of Turner's genius. This is perhaps been gharacterized in the poetical—sometimes with—flight of his imagination, controlled vather by the laws of composition than by those of nature; his during and original conception of effects encouraging him to force them in a way which, however beautiful the harmonics of color may be in themselves, can but seem nanatural to literal students of nature.

R.

TREATMENT AND DISPOSAL OF SEWAGE IN CHINA.

Hen Majesty's Symmetry of State for Foreign Affairs has been good enough to obtain at the request of the Council, the following reports on the treatment and dispusal of rewage in China: --

THE TREATMENT AND DISPOSAL OF SEWAGE IN PEKING.

Paking is fairly well supplied by water. In addition to the manerous surface wells within the wals of the city, the water of which is land charged, especially during the rainy season, with organic imparities, which percolate the percolaseaudy soil, there is an abundant supply of power and source water, derived from the springs and lakes of the rightly of the summer palaces, situated at the fout of the reservability, some circlit miles distant. A wide stream runs to the northwest angle of the city wall, where it opens out into a large reservoir, in which the water is confined by dams, the surplus supplying the city meat. From this reservoir the water is conducted by a could which after passing names the north wall exprends into any plying the city most. From this reservoir the water is conducted by a could which, after passing under the north wall, expands into several large takes, from which proceed two canals which traverse the Tartar city. The Chinoso city is similarly supplied by a small river, which there from the Nan Haitzur, the vast southers lumiting park, and each in the most. The water from these sources, after traversing the two cities, admittely finds its way into the Tangchow Canal. The sewers intersect the city in a reatingular network, and open into the canals. The wide parallel streets have a large sever on either side, into which upon the smaller sewers from the lanes. The main rewers are square in section, of diameter sufficient to allow a

main sewers are square in section, of diameter sufficient to allow a man to crawl through them, and are consenered of large bricks, and covered with a layer of some slabs. They are intended principally to carry off the flood of rain-water which inumbaces the city in July This elaborate system, however, is all but useless, havand August. ing long since fallen into ruin from duray and neglect. Some of the sowers project high above the level of the roadway, gradually worn flown by tradiic. All are chronically choked with unional and regetable debris. It is the common practice of the inhabitants to remove one of the flagstones in front of their hunsus, and to throw in all the refuse, solid and fluid, so that the sewer becomes merely a focus of The purril contents overflow into the streets after putcefaction. rain, and in dry weather are tapped for the purpose of watering the

roads. In short, the sewers in their present condition are not only useless, but absolutely prejudicial to the public health.
The only detail of sanitary work which is at all efficiently performal is the removal of facal matters. The fluid exercts are either pointed into the removal of faced matters. The finid exercts are enfer poored into the readway or open sewer, or scattered over the street at smost to lay the dust; but the suiid excreta are unsit earefully collected, as in all other parts of China, for use as manure. They are removed entirely by the dry method. There are no respools in the houses, only a shallow lude lineal with bricks, which is emptied daily This is a regular business and means of liveliby the seavenger. hood in Chinese cities, and the man with a large wooden tub suspended on his back by means of a wide hoop passing over the shoulder, and a long-handled iron scoop in his hand, is a well-known figure in the streets. He does his work, as a rule, granultously, passing from house to house till his tub is full, when he carries it to dispose of the contents at one of the depots or assunfactories. Another man wends his way along the public highway, where he also is able to pick up a fair livelihood, for the common Chinaman never scruples to halt by the wayside, even in broad daylight, and in full view of passers-by. The scavenger often digs holes in the ground of the more retired corners within his circuit, for the convenience of the wayfarer and profit of himself.

The matters collected in this way are earnied to one of the depots, whence they are conveyed outside the city in wheelbarrows, with a

I From the Journal of the Society of Arts.

central wheel of large diameter, and on each side of the wheel a long course wicker basket, of the estimated especity of two rwt. The wheelbarrow is driven by one man, who supports it with a yeke over his shoulders, and is assisted by one or more other mon dragging with a rope in front. These baskets are quite open at the top and, being conveyed through the streets at all hours of the day, they are an insufferable unisance. Within the walls of the city itself, moreover, there are not a few manufactories of manuro, and, in fact, any large vacant piece of ground is usually utilized for this purpose. The exercise are first couplied into large holes dug in the ground, then spread over the surface in a layer about an inch thick, and constantly turned over with a spade until they become thoroughly dry. This process takes three or four days, the ground being dry and sandy, and the air remarkably free from moistures during ten mouths of the year. The manure, when dry, is piled into heaps, and sold retail by the small backet. A ton of this paudrette is estimated to recall by the small backet. A ton of this paudretic is estimated to sell for about sixteen shillings of our currency, which is the equiva-

lent of a month's wages of a laboring man in this part of China.

It is a principle in native husbandry to apply manufe to the plant rather than to the soil. The powdrede is sown with the seed or supplied to the root of the growing vegetable before irrigation.

In connection with this subject a rondensed note on the comparative prevalence of certain diseases may be appended. Entozon are very common in China. The natives scrapulously avoid drinking unfoiled water, but, on the other hand, they are fount of raw and half-cooked fruit and vegetables. An unusually large proportion of children come to haspital suffering from the pressure of hundred. Trans is also often net with, the result of the aniversal consumption of park, which is, besider, and infrequently inferted with triching. The pigs are allowed to wander through the streets, and foreign residents are chilgral to refrain from native pank. Or zymotic diseases dysentery and diarrhees are provident, and especially dangerous after the rains, and appear to have direct relation with the amount of heat and moisture. Typhoid favor is a rore disease all over China, although typhus diphtheria, scaratina, etc., are rampant in the large cilles. The rarity of typhend may be directly due to the system of the removal of himan exercise, preventing the contamination of water.

S. W. Bushicha, B. St., M. D., Lond.
Univ. School, Physician to H. B. M. Legation.

Praise, 13th February, 1878.

THEATMENT OF SEWACK IN CANTON.

In all parts of the city of Cauton there are public latrices creefed, consisting of a number of compartments separated by a wooden pur-tition. These are the property of the "Kai-fog," or street organisation, who, by the money derived from their round, contrive to deirny a considerable portion of the municipal expenses. The solid and liquid exercin collected separately from these receptueles, which are only used by men, are removed daily to the fields in baskets and buckets. The night-soil from private dwellings is carried away daily by women imployed for the purpose, who empty and wash the itensils, and convey the nation to book built specially for this object, by which it is taken into the agricultural districts, that from Canton going chiefly to the Tangkwan district. The solid exercts are usually partially dried before heing used as manure, and are occasionally partially dried before heing used as manure. any partiany dried before noing used as manure, and are occasionally noixed with ashes. Liquid manure is very largely employed for watering vegetables. Every country village has on its autistizes a paid or tank, on the banks of which latriage are built, and into which the sewage flows. In the winter the liquid is desired off, and the solid deposit at the bottom, which is rich in fertilizing matter, is

dried and used as manure.

The sewers in the city of Canton are cleared out tricanially by the amborities, and the deposit carried off to the fields. But besides this, the liquid black matter which collects is taken away from time to time, when considered sufficiently rich in fertilizing matter to pay the cost of removal, by men who obtain access to the sewer by re-

moving a stone from the payenger.

The foregoing is all the information I have been able to obtain in the subject.

If, HARCK, apan the subject. H. M. Acting-Coural at Canton.

Carron, March 28, 1878.

TREATMENT OF SEWACE IN FOCCOOK.

Sin, — in reply to your despatch, No. 1, of the 25th idition, on the subject of them sewage, I beg to offer the following informa-

in the town and suburbs of Fooebow there are drains under the main streets only, the side lanes being without; the scourings of the dyers and pulse makers, together with the waters and slops of dwellings and shops, compose a sewage of dark and rich consistency made up from the silting of the river tides which wash the drains. It is much sought after for the purpose of enriching ground set apart for rice entitivation in its natural state. There being none but public privies, human excrement is emptied into the street, and is fetched. privies, human excrement is emplaced atto the street, and is letched, in pails, from long distances in the country by gauge of men and women, and then cast into oven pirs, lined with chanam, until wanted for manare. When diluted with two thirds of arine and water, the market gardeners sprinkle it over the cabbages. Millions of tabs of this description of manure are employed in this way, to quicken the growth of vegetables, putash being in a few instances added to the composition. No part of this valuable manure is lost

in sewers, while the cost of its transport into the country must be

There is not much difference in the method of manuring in any of the provinces south of the Yellow River.

> C. A. SINCLAIR. H. M. Consul at Foothow.

Forcitow, February 28, 1878.

MR. RUSKIN ON COLOR.

Those who were interested in Mr. Ruskin's aphorisms on drawing which we printed in our Issue for December I, 1877, will doubtless find of interest the following excerpt, taken as it is, like the former, from the "Laws of Edaole," and printed in the Architect.

trom the "Laws of Fésole," and printed in the Architect.

"In my introductory Oxford lectures you will find it stated that "all abjects appear to the eye merety as masses of color;" and that shadows are as full in color os lights are, every possible shade being a light to the shades below it, and every possible light a shade to the lights above it, till you come to absolute darkness on one side and to the sun on the other. Therefore, you are to consider all the various pieces either of shaded or lighted color out of which any scene whatsoever is composed, simply as the patches of a harbenin's jacket, of which some are black, some red, some blue, some golden; but of which you are to imitate every one by the same methods.

"It is af great importance that, you should understand bow much

"It is all great importance that you should understand how much this statement implies. In shoots all the received codes of art-in-struction you will be told that the shadows should be transparent, and lights solid. You will had also, when you begin drawing your-selves, that your shadows, whether laid with lead, chalk, or penell, will, for the most part, really look like dirt or blotches on the paper, till you cross-batch or supple them, so as to give them a look of notin you cross-tated or supply them, so as to give them a book of network, upon which they instantly become more or less like shade, or, as it is called, 'transparent.' And you will find a most powerful and attractive school of art founded on the general principle of laying a literally transparent brown all over the picture for the shade, and suiking the lights upon it with opaque white.

"Now the statement I have just made to you implies the falseness of all such theories and methods. Essentially, the use of transparent brown by Rubens (followed by Sir Justim with asphaltum) rubent the Netherland schools of color, and has remerced a school of color.

brown by Rubens (followed by Sir Joslam with asphaltum) refined the Netherland schools of color, and has rendered a school of color in England hitherto impossible. And I mean to assert that falsity in the most positive manner. Standows are not more transparent than lights, nor lights than shadows; both are transparent when they express space; both are opaque when they express substance; and both are to be initated in procisely the same manner, and with the same quality of pigment. The only rechained law which is interest constant, and which requires to be observed with strictmes, is precisely that the method shalf be uniform. You may take a white ground and lay darks on it, leaving the white for lights; or you may take a dark ground, and lay lights on it, leaving the darks for darks; in either case you must go on us you begin, and not introduce the other method where it suits you. A glass painter must make his whole picture transparent, and a freeco painter his whole picture opaque.

opaque.

"Get, then, this plain principle well infixed in your minds. Here's a crosss — there is the sun; here, a piece of coal — there the hollow of the coal-scatcle it came out of. They are everyone but patches of

of the coal-scattle it rame out of. They are everyone but patches of color,—some yellow, some black, and must be painted in the same manner, with what ever yellow or black paint is handly.

"Suppose it however, admitted that lights and shades are to be produced in the same manner; we have farther to ask, wbut that manner may best be? You will continually hear artists disjuning about grounds, glazings, vehicles, varnishes, transparencies, apacities, oleaginus messes. All that talk is as idle as the east wind. Get a flat surface that wan't crack, - some colored substance that will stick upon it, and remain always of the color it was when you put it on, and a pig's bristle or two wedged in a stick; and if you can't paint, you are no pointer, and had better not talk about the art. The one thing you have to learn, — the one power truly called that of 'paining,' is to lay on any colored substance, whatever its consistence may be (from morear to ether), at once, of the exact tint you want, in the exact form you want, and in the exact quantity you want. That is painting.

"Now you are well aware that to play on the violin well runnires some proadles. Painting is playing on a color-violin, seventy times seven stringed, and inventing your tune as you play it! That is the easy, simple, straightforward business you have to learn. Here is your catgut and your malagany - better or worse quality of both of course there may be — Cremona tone and so on, to be discussed with due care, in due time. You cannot paint miniature on the sail of a fishing-boat, nor do the fine work with hog's bristles that you can with camel's hair; all these catgut and bristle questions shall have

with cannot's bare; all these eargin and bristle questions shall have their place, but the primary question of all is — can you play?

"Perfeedly, you never can, but by birth-gift. The entirely first-rate missions and pointers are born, like Mercury; their words are misic, and their touch is gold; sound and color with on them from their youth; and no practice will ever enable other human creatures to do anything like them. The most favorable conditions, the most docile and apt temper, and the inwearied practice of life, will never venable any painter of merely average homen capacity to key a single touch like Gainsborough, Velasquez, Tintoret, or Luini. But to onderstand that, the masser must still depend on practice as well as on genius, that painting is not one whit less, but more, difficult than playing on an instrument, and that your care as a student, on the whole, is not to be given to the quality of runr plane, but of your touch, — this is the great fact which I have to teach you respecting color; this is the root of all excellent doing and perceiving.

And you will be utterly amazed, whon once you begin to feel what color means, to find how many qualities which appear to result from peculiar method and material do indeed depend only on leveliaces of excention; and how divine the law of nature is, which has so con-

perman memor and material to indeed depend only on levelthess of excention; and how divine the law of nature is, which has so connected the immortality of heavily with patience of industry, that by precision and rightness of laborious art you may at last literally command the rainbow to stay and forbid the sun to sel.

"To-day, then, you are to begin to learn your notes, — to hammer the steady wour first five furter exercises, and as it much

"To-day, then, you are to begin to learn your notes, — to bantoner out, steadily, your first five-finger exercises; and as in music you have first to play in time tune, with stubborn firmness, so in color the first thing you have to learn is to lay it flat, and well within limits. You shall have it first within linear limits of extreme simplicity, and you must be content to fill spaces so onclosed, again and again, till you are perfectly sure of your skill up to that elementary point.

"So far, then, of the manner in which you are to lay your color; next comes the more debatable question yet. What kind of color you are thus to lay, soher or bright? For you are likely often to have heard it said that people of taste like subdued or dult colors, and that only vulgar persons like bright ones.

heard it said that people of taste like subdued or dul' colors, and that only vulgar persons like bright ones.

"But I believe you will find the standard of color I am going to give you an extremely safe one. —the morning sky. Love that rightly with all your heart and sort and eyes, and you are established in fundation laws of color. The white, blue, purple, gold, searlet, and ruly of morning clouds are meant to be entirely delightful to the human ermatures whom the 'clouds and light' sustain."

NOTES AND CLIPPINGS.

Ax Expresses Boarn or Health.—The Illinois State Board of Health has been in operation one year; has had thirteen meetings in various parts of the State; has issued certificates to 4.950 physicians and milwives, each of which is signed by its seven members; has examined 3.66 applicants for the license to practice, and rejected 2.21 of them; has driven 1.200 magnafited practitioners out of the State; has stopped eight colleges from giving two graduating contests in one year; has refused to accept or to recognize the diplomas of eight medical schools; has revoked six certificates for gross imperiessional conduct and invertising; and or its meeting in Deester, time 27th, authority was given to sevoke the certificate of another physician, accused of being an abortionist, in case the facts prescured were proven. scured were proven.

Frances of the Surao Tannel.—A reduction in the temperature of the 2000-feet level of the Savage mine, from 120 degrees to 94 degrees, since the Surao mand p-netrated that mine, is now reported, and the conding process is still going on. If the air draft through the mine line the mines can reduce the temperature 26 degrees to so short a time at a depth of 350 feet below the level of the tunnel, there is a reasonable prospect that it will altimately twee a like good effect upon many other trines put or to be put in communication with the trines! More can work without danger of collapse at a temperature no higher than 94 degrees, and thousands of miners have done good work in the goddness at 110 degrees, but at 120 degrees it is impossible for any man, lowever strong to work more than a few minutes without rest. If the Sutro tunnel should bring about a like clange in the temperature of the Comstock mines generally with that alrendy realized in the Savage 2000-feet level, it will be the means not only of making mining more prolimble, but of saving a very great waste of life and health ascendant hidrers upon that kind of labor, — San Francesco Chronicie. EFFECTS OF THE SUPRO TRANSLA. - A reduction in the temperature of

The Rundon Rivert Tennet.—It is announced that within a mouth work will be resumed on the Bladson River Tunnet. The company having been incorporated in both New York and New Jersey, there are two sets of directors, those on this side of the river representing \$7,000,000 of the capter stock and those on the other side \$3,000,000. The old company dag neircular well, twenty-five feet in diameter and thiery feet deep, near the workhouse, and walled it with brick three feet direk. The manufling will proceed from this well. It is to be facilitated by the appliance of an air-lock, which will compress the air in a chamber large enough for three men to work in. At one corner of the chamber will be placed a portable funual, into which dire and stones will be thrown. The air in the chamber will force the dire through a long pipe which is to run over the shaft and above the surface of the water to a stow in which it will be carried ashore. With a view of preventing danger from leakage or caving, a brick wall three feet thick, the outer layer of bricks to be chemically propagate in withsound moisture, will be built as fast us the annualling proceeds. The grade of the numel will be row feet to the hundred, descending from Jersey City; thus three feet to the hundred ascending on this side for fifteen hundred feet; and shen from that side to the terminus in Washington Square, two feet to the hundred. The top of the tunnel in the course of the river, where there is a depth of sixty-two feet of water at abb tide, will be twenty feet below the river-bed. Work will be resumed on the Jersey City side, and will be continued until the tunnel is carried two shieds across the river. This is to facilitate the removal of Girt. Then workmen will be placed on this side, and the work will be completed when the men meet a fav reds off the slove. Cal. Wm. It. Paine, the engineer, easy that it will take two years to complete the work. The directors expect to spend \$10,000,000 apan it. The track will be four miles long. — Money and Faginaering

ARCHITECTURAL DIPLOMAS. — M. Davioud, in his paper on Architects and Engineers which obtained the Prix Bordin, does not councemance the establishment of architectural diplomas.

A Trappist Monaster.— A Trappist monk is negotiating for land near Philadelphia on which to build a menastery large enough to contain two hundred munks, who are to be recruited from the Trappist monasteries of Monat Millary in Ireland, Sept-Poulls in France, and Mariastern in Turkey. As these monks number amongst them architects, builders, and confisment of all kinds, American mechanics will responsely problem. this new enterprise.

A New Journal. — It is reported that no eight-page, fortnightly jour-ted, named the Art Interchange, will shortly be published under the super-vision of the Speicty of Decorative Art of New York.

Chearing Queens Harmon.—The difficulties in the way of keeping the channels of infand navigation in mavigable condition is shown by the operations that have for some time been going on at Queber. Here one hundred and seventy-five anchors, swenty-four of which were broken, have been recovered by the lifting barge, together with eight thousand fathoms of chain cable. It is thought that as soon as the hulk of the French vessel L'Oxiginal which was snak more than a hundred years ago, is either caused or demolished, the river-led will be onen more thoroughly clean.

The attentions of a Senious Strike.—Just at present Londoners are seeking a solution to the old question, this ensolute canodes? for there seems to be imminerat a strike which will cause even more passing inconvenience than did the strike of the Parisian anchors which has just ended. The Metropolitan police has as a body become discontented, and a spirit is manifesting itself among them which thosely approaches moting. The cause of complaint is the law rate of their pay, which is for a first-class controlle thirty shillings a week! (86.75), cernially a very small sum to per a man who may at any moment he called on to risk his life as a matter of every-day duty. The matter is a peculiarly delicate one, and autocomately the authorisies seen indisposed to meet the issue fairly, but are trying to put the men off with fair monthes. The importance of keeping the police contented will probably prevent the Government from letting takings go so fat as to allow an artial strike to take place, but the effect of according to such a demand on compulsion, even if the domand be a just one, cannot but have a had effect on the morale not only of the police force but on that of the whole community. the whole community.

THE HOUSE IN VILLE, PARTS. — M. Halls says that although the work at the House do Ville, Paris, is making satisfactory benelves, it will probably be ten years before it is finished. He thinks that the exterior stonework may all be laid up by 1850.

The New Hardon son Bonjonne.—The Scientific American says that one of the last sens of the French Parliament, before separating for the holidays recently, where vote nearly \$3,500,000 for the construction of a new deep so-charlor for this well-known vatering place. The chief former of this harbor is a solid stone jetty on the southwest 2,255 yards long, a wooden jetty on the nordinast 1,570 yards long, and a solid stone breakwater 516 yards long on the outer or western boundary. Between this breakwater and the jetty will be two corrunces 272 yards wide, and 143 yards wide. In the middle of the harbor will be a stone jetty, 436 yards long and 218 yards wide, alongside of which steamers may renbork and land passengers at all boars of the tide. The new pure will have su mean of 510 acres, and a depth of water surging from sixteen to twenty-six first at the lawest spring tules. The new pure was projected by M. Alexandra Aslam, formerly Mayor of Boologue and ex-President of the General Conneil of the Passde-Culais. The plansadapted are those of M. Specklin, Chief Fagmeet of the Ponta-et-Chaussées.

VENTERATING COWES. - Mr. W. P. Buchau, a sanitary engineer of

Glasgow, says: —
"As the result of the experiments made at Kew by the judges of the Sanitary fundance with ventilators as against plata pipes is still commanding considerable attention, will you permit me to publish the following results, showing the effect the shape of the outlet has upon the speed of the

There recently put up at my bouse a four-inch pipe about thirteen feet in height, and whose my stands about two feet above the ridge. At eight v. at lest eight I tried the up current, first with the plain pipe, then I put an expanding or trainipet-mouthed order perpendicularly upon the rop of the pipe. This, being tried, was taken off, and a layle's ten-inch soil-pipe ventilator with three-inch pipe attached put on; this being also tried, was taken off in turn, and a three-inch Bauner's cowl was than tried, and the following are the results, showing the number of feet per minute which each produced of up-current; --

Plaso open pipa. Pipe with trampet month. Doyle's, Banner's. 200 400 800 900 230 800 2000

In this case the plain apright pipe with expanding outlet gave much the best results, and when at four r. a. to-day I repeated the experiments, the trainper outlet gave much the quickest ap-current. The plain pipe again gave 200, but Banner's cowl only 200, 170, and 160. The open joint where cowls turn helps to fact their effect. Yesterday I tried a drain at Dr. Cassell's house, Newton-terrace, here, which has the suil-pipe going up the centre of the house to act as its rentilating shaft, and which soil-pipe carries off the min-water from the centre gutter; the anemometer showed an in-current of fresh air into the drain through the rentilating trap of 300 feet per minute, but after running but water down the suil-pipe the in-entrept rose to 500 feet.

An Augusterian Mannum.—It is said that Miss Hesman has devised a way of making arcilicial marble. In this process the subject is sculptured in limestone, and is then placed in a holder filled with pure water in which it is betweeterly scaled and fire is applied. When the pressure indicated by a measureter shows an atmosphetic pressure of fire or six degrees the water is altowed to cool. The sculpture is then withdrawn and treated in colored bashs, slam being, we believe, used as the mordant.

COMMUNICATIONS:

NOTES AND CLEPPINGS

BOSTON, SEPTEMBER 14, 1878.

CONTENTS.
SUMBARY: -
The English and German Systems of Architectural Education. — The French System. — The Application of these Systems to our own Canditions. — The Competitions in Interior Decoration. — Engineers vs. Architects. — The International Health Congress at Paris. — Suggestions underly Delogaces. — The Mining Débris Question in California. — A Correc-
tion
Modern Plombing. VIII.
Tur Illistrations: -
The Vanglan Building, Providence, R. I.—Designs for Cot-
tages Designs for Vestibules Chapel at Malden, Mass. 5
NOTICE OF THE FIFTH COMPETITION IN INTERIOR DECORATION, S
ART SCHOOLS IN GERMANY
Correspondence:

The Humors of Compenition. - Black Morphy 96

WE print in another column a portion of a paper in the Architect, by Mr. John Sparkes, head master of the National Art Training School, on the Art Schools of Germany. What principally concerns us is the system of instruction pursued in the Academy of Architects at Berlin, and its apparent results. As contrasted with the English system of apprentice-ship, whereby a pupil is "articled" for a term of years to some distinguished practitioner, in whose office he gathers such instruction as he may by independent experience and observation of practice, the German method has all the advantage of academical precision in training, with exact scientific instruction in all the branches of construction and testheties, including the rigid classification and theory of the styles. It seems to us that this difference of systems explains much of the characteristic difference between the architecture of England and that of Germany, and opens the important question whether architecture as a fine art can really be developed like a school by encouraging exactness of definitions and correctness of archeology, and by establishing a uniform method of observation and analysis. results from this system of education is apparently a ecrunic quality of "coldness and uncompromising exactness" in modern German architecture, a want of freedom and case of expression, which seem to be inconsistent with the health and natural development of a contemporaneous style. If this be so, if it is the German scientific spirit thus applied to architectural instruction which confers upon modern design in Germany this character of unimaginative precision, and pedantry, the natural fruits of the Roglish want of system in instruction are the frequent development of individualities in the profession, a freedom from restraint, a picturesqueness which borders upon liceuse, the rapid formation of separate schools following men of decisive character and talents in the profession, sudden and phenomenal changes in style, together with the pursuit of fancies and fash-ions in design; so that the whole building interests of England, so far as they are presented to us in the professional papers, seem to be engaged in a grand architectural masquerade. In a word, through their several educational systems, Germany seems to have an architectural gurment too classic and formal for adaptation to daily use, and England a fine old wardrobe of theatrical proporties. In neither case do we behold the development of a distinctive style.

In France, on the other hand, by virtue of four continuous conturies of academical discipline confined to classic forms, the classic Renaissance is at home, and in successive eras has adapted itself to the characteristics of the time by natural processes; so that for each reign there is a distinctive style or variation of style, not forced by individuals, but developed by historical conditions. This state of affairs seems to give to architecture its greatest function of furnishing to history a series of permanent and monumental records of the spirit of the epochs. It deprives the art of the picturesqueness which results from the English system of a personal architecture, subject more or less to the caprices of fashion, but it encourages refinement of invention in confining it to certain traditionary forms; it educates the eye to a greater degree of sensitiveness; it creates an atmosphere of art by its constant associations with the triumples of masters working always with the same elements of expression, namely, the

four orders of architecture, - elements which are understood by all, and are never "out of fashion;" finally, it seems that this academical system, in making the Freuch architects as a class constant to a style, has made them subordinate to their architecture, and has made their architecture singularly imporsonal without detracting from its flexibility and interest.

Such historical lessons must be taken to heart by all who are interested in our own architectural expressions. It is evident that for our use neither the German, the English, nor the French systems is such as can be transplanted to our soil with profit, but none of them can safely be neglected in the preparation of our own schemes of architectural education. A vernacular style, more or less suphisticated of course, as we have had frequent occasion to say, doubtless now exists, such as it is. How to develop it into grammatical forms, how to breathe into it the spirit of art, how to free our buildings from the dominion of individual caprice in order that they may the more faithfully illustrate our civilization — a duty which for the most part they do not perform, being, as these pages have often shown, rather funcies of individuals and faint reflections of the English fashions than expressions of the epoch, — these are the questions to be solved by our education in art. We have discovered that there is no virtue in the entire neglect of systems of education, and we can readily see that in establishing systems it is easier to go wrong than to go right. The committee on education in the American Institute of Architects is composed of intelligent men in the profession, but they have of late made no sign. commend this subject and Mr. Sparkes's report in especial to their earnest consideration.

Ir will be noticed that the judges who have lead under consideration the designs sent in for our lifth competition have declined to award a first place to any one of them. The drawings, as may be seen, are not without many points of excellence, but, with scarcedy an exception, they exhibit an incapacity or an unwillingness on the part of their authors thoroughly to work out the design. There are plenty of good ideas, and these are generally fairly brought out so as to show their merits and to give effect to the drawings, but the absence of intelligent study is obvious to the most casual inspection. Most of the competitors have seemed to imagine that grammatical excellence in design, a conformity, that is to say, to the most ordinary usages of style and to the olwious and universally recognized principles of composition, is too simple and easy, too commonplace in fact, to concern themselves about, and that a clever violation of usage is really the only interesting thing left to them to do. In this respect it is true that they follow a natural tendency of the time in the profession, and that a certain piquancy is sometimes thereby conferred upon design, as speech may gain a certain radiness through bail grammar, bad spelling, mispronunciation, and even slang. But this is not the sort of merit which these competitions are intended to encourage. To say what one has to say in the most striking and effective way practicable, without violating the proprieties of speech, is the way of speaking and writing approved among civilized peoples. Their architecture should follow a similar method. Moreover, the chief merit and chief interest in games of skill depend upon the players' strictly following the rules of the game.

We had occasion lately to express the belief that, in this country at least, engineers are trusted by the public much more unquestioningly than are architects, and chiefly because ougiueering successes are more easily appreciated by the practical mind of the American than the artistic effect of a good piece of architectural design. That the English public or any portion of it, should be similarly affected towards engineers, to the dishonor of architects, is somewhat remarkable in a country where our profession is in good repute, and where, thanks to the many notable buildings both ancient and modern which owe their being to architects, the public is better able to appreciate its achievements. Yet on the 18th ultime a special meeting of the Northern Architectural Association was held at Newcastle to protest against the action of the town council in employing the borough engineer and his subordinates to design and carry out the projected architectural improvements of the town, which at present involve the expenditure of nearly a million dollars, as they include such buildings as a free library, a fish-market,

the public park buildings, etc., buildings of such importance to the town as to warrant making every exertion to secure their proper architectural treatment. The association adopted a resilution regretting the action of the town conneil and recommending that all public work be put to public competition, as was customary in other large towns in the kingdom.

The meetings of the International Health Congress, which have been held at Paris lately, appear to have had a really international character, for we timi that active part in the discussions was taken by delegates from the United States, England, Belgium, Holland, Russia, Austria, Hangary, Sweden, Greece, Spain, Pressia, and even from Egypt and Japan. A striking incident of one of the sessions, where the matter of unwholesome dwelfings was under consideration, was the speech made by Mrs. Bovett Sturge, M. D., of London, in which she controverted, as far at, least as England is concerned, the conclusion reached in the leading paper upon the subject, that artisans' dwallings in which large numbers of persons are boused must be ipsa facto unhealthy. Having obtained her degree as doctor of medicine at Paris, Mrs. Storge was able to express herself with a finency and correctness equalled by that of only one other English person present. She was able to show that in Loudon, while the average death-rate is twenty-one per thousand, in the model artisans' dwellings, such as the Penbody buildings, which can accommodate less thousand persons, the average mortality is only seventeen per thousand, while deaths from infections diseases are in these buildings one third less in number than in other buildings in London. The discouraging number than in other buildings in Loudon. The discouraging statements made by the writers of the paper in question, MM. Trobit and Do Mesnil, may partly be accounted for by facts that came to fight thuring the discussion; as, for instance, the fact that one block-building in Paris, which contains 1,800 working-men, women, and children, is wholly manuphied with water. This, taken in connection with the statement of M. Durand-Claye, that the night-soil taken from the houses of the working class contains from seven to eight kilograms of nitrogen to the cubic meter, while that taken from the houses of the upper class, where there is a water supply, contains but lifty or sixty grams to the cubic meter, speaks volumes to those who knew what provision is made in French houses of the lower grades in the way of water-closets, - perfectly ontrapped clinics leading from the different floors into a hogshead in the cellar, emptical as occasion denembs.

The delegates were fartile in suggestions as to what legislative quaetments ought to be made to enforce a more general attention to laws of health. One of the most important of these was the suggestion by Mr. Edwin Chadwick, C. B., that in each country should be created a Minister of Public Health with logislative power to provide, and executive power to enforce, such canditions as science shall show to be most conducive to imblie health. The idea was received with approbation on all sides. M. Du Mesnil desired to have a buy passed prohibiting the leasing of a furnished lodging, unless the same had been inspected and approved by sanitary authorities, and prescribing an allowance of fourteen cubic meters space to each bed. As instances of such legislation, Schater Crocq mentioned that in Belgium the communal authorities had power to give what orders they chose as to making a house wholesome, and if the proprietor did not comply with their orders the police closed his house. Mr. Adolph Smith said that an English landlord could be fined twenty pounds for letting, before it had been thoroughty disinfected, a room in which a fover panient had been ill. Finally, at the instance of Mr. Jäger, of Amsterdam, an international association has been formed, with Mr. Edwin Chadwick, C. B., as honorary president, for the purpose of urging upon each government the necessity of compelling the several local governments under its control to supply their several districts with pure drinking water.

The struggle between the miners and the farmers in Califormia does not promise to be quickly decided; nor is it likely that any decision will be accepted till the whole legal ground has been fought over. There is no doubt that the farm lands in the valleys have been seriously injured, even if not so much as has been claimed, and that the damage will increase so long as the miners are allowed to empty into the streams the "milings" washed down by the present system of hydraulic mining. The

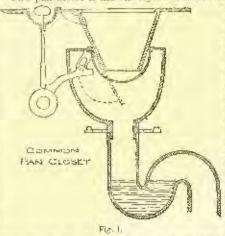
Sacramento Record Union, which has argued the case of the farmers with moderation and without hostility to the miners, insists that it is a question of the min of the whole Sacramento Valley, and possibly of Suison Bay and the harbor of San Francisco. However this may be, it has been made clear in the testimony of the Bear River case, to which we afforded a short time age (American Architect, August 24), that the question is a vital one to the farmers. In the interest of the miners it is urged that they have for thirty years had the right of throwing their sailings into the streams, and that this right is part of the title of every mining claim; so that to take it away is to dospoil the miners by wholesale, to destroy many millions of property, and to bankrupt whole counties. What the law of the case may be, the courts will decide; but as far as the permanent interests of the State are concerned, it can hardly be doubted that if it has come to a question between the two, agriculture is more important than mining. It is bard to helieve that no way can be found of working the mines profitably without sending the tailings down stream, or that if this were the case the mines could be valuable enough to make their preservation a matter of vitat importance. But in any case it is likely that unother generation will exhaust the mines, and if in the mean while they are allowed to destroy the valleys below them, there will be nothing left worth preserving in the region in question. Under these circumstances few uninterested persons will doubt where the interest of the State lies. To an outsider, moreover, it would seem that in a State where society is still somewhat inchoate, as in California, it was of no small importance to establish clearly the principle that one industry must not be practisad in such a way as to destroy another.

A year obvious mistake was allowed to pass uncorrected in a paragraph of last week's summary, where, in speaking of the elevator arcident at Chicago, the word "lessor" is used in the hast line, although the context clearly demands the word "lessee" in its place.

MODERN PLUMBING, VIII.

WATER CLOSICE. IL.

The pan-closet is the variety most extensively used, and there are



many varieties, differ-ing in workmanship and the mode of supplying the flushing water rather than in principle. A good pan closet is strong and reliable; the water will not run out, even if the levers or valses are out of or-der, and if properly treated it is offensive only when the handle is lifted, in-stead of all the time, like the average hopper; but all the varie-ties have the grand defect that they empty their contents not di-

really down the drain, but into a large receiver, constantly smeared with decomposing filth, the gas from which, pent up by the trap on one side and the water in the pan on the other, finds its way through one side and the water in the pan on the other, finds its way through any joint, and rushes out in a volume when the pan is tilted after the closet is used. The infurior kinds have additional faults of their own: in many the pan is so small that the water held in the bowl is not sufficient to prevent the sides from being fouled, and the receiver is so small as bardy to afford room for the working of the pan, so that paper and other matters got caught between the edge of the pan and the sides of the receiver; and in all the copper pan is subject to corrosion, which, in a period tarring from two weeks to two years, according to the thickness of the metal and the virulence of the gases, eats holes, through which the water leaks out, and heaves the pan dry must of the time. It is not difficult to replace it by a new one, as it is only attached by a mass of solder to the spindle; but the usual practice is to leave it uncarred for as long as it will hold a little water while in use, regardless of the streams of the foolest vapor which uscend through and around it as soon as the water has leaked away. cend through and around it as suon at the water has leaked away.

The pans would be made more durable by tinning on the bottom

instead of only on the inside; but—perhaps because it would be bad for the trade, which finds considerable occupation in replacing worn-out pans—it has never been done until hardy, when an linglish plumber took out a patent for this very obvious improvement.

In this country the most successful attempts to pullfate some of the

inherent fants of the pan-closet have been made in Boston, where

much use is made of receivers cuantelled inside, and furnished with a cent at the top, behind the pun, with coupling for a pipe to be carried to a flue, or some better outlet. The receiver is large, so that the pan can work freely and the flushing water splash about in all parts, and the enumelled surface is washed by the water for more pairs, and the enumelled seriace is washed by the water for more periently than the rusty iron of ordinary receivers, while the vent precludes any accommutation of gas, and if any drought can be had will prevent the discharge of vapor into the room when the pan is opened. The backward motion of the pan also helps to waft the faut sir through the vent. These enumelled pan-clusets with restilated receivers are made by London & Co., Ward, Carley & Co., and occasionally by William Mills & Co., all of Boston. The enamel, not being exposed to the action of hot water, is very dorable, remaining per lest after fifteen years' use. per set after fifteen years' use.
Where a good draught can be obtained, Albee's patent ventilating

ring, referred to in treating of hupper-closets, is a useful addition to a pan-closet, answering some purposes for which the vent from the reserver alone is not sufficient. The supply should always be from a detached eistern, rather than by the common method of direct-acting

Thus improved, with enamelled and ventilated receiver, ventilated trap, and eistern supply, a well-made pan-closet is easily managed and kept in order, and is comparatively inoffensive; for these reasons it is still, earliers, the best apparatus for average use. The rons it is still, perhaps, the best apparatus for average use. The planger-closets, or the Defiance valve-closet, give more perfect cheanliness, with equal or greater depability, but they demand more care, both in fitting up and in use, and the best hoppers with automatic supply, although superior both in simplicity and in effectiveness to any non-closet, require too great an expenditure of water for ordinary

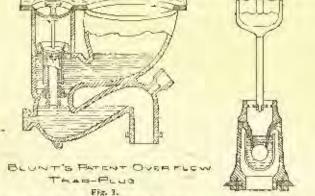
Where water is tolorably abundant, and the owner can exercise a little patience under the difficulties which aften attend their first intraduction, and a little care subsequently, no apparatus, unless the valve-closets of the Dollance class, can compare in cleanliness, durability, and efficiency with the plunger-closets, of which the well-known Jumings patent is one of the best examples.

CEHMMAS, PATENT Fig. 2.

All these consist essentially of a basin without pan or other moving parts, the outlet of which, descending first obliquely and then vertically, is closed by a plunger or plug. On lifting the plunger, which lits closely to its seat, the contents of the basin escape below it into the soil page, either directly or through a reap, and the plunger closes the outlet again. There is no furboring of fifth in a re-reiver, as in the punctosets, to give off tumes into the room in volumes when the hamille is lifted, and more slowly at all times around the journals or through the holes in teaky pans, and the water held in the hasin by the plunger prevents the fouling of its sides, which is inevitable

with a hopper-closer; so that in their use the saniturion's ideal mode of disposal of refuse is attained, all the fifth being "east instantly out of the house, and the doors closed behind in."

The various forms differ in the mode of supply and overflow. In



the original Jennings closet the plun-THE BONER

ger is hollow, and as the water from Parent - Property the supply-pipe rises in the basin it Fig. 4. rises also in the chamber in which the plunger works, which communicates with the basin, until it reaches the top of the plung through which it overflows directly into the trap, as shown in the figure. The obvious defect of this arrangement is that any gas which may The obvious defect of this arrangement, is that any gas which may return through the trap ascends immediately through the hollow plug and escapes around the handle into the room, and several modes of avoiding this imperfection are in use. In the simplest of these, Blunt's siphon overflow plug, made by the Nason Manufacturing Company, New York, the original plunger is replaced by one somewhat similar, but having the upper orifice covered by a deep inverted cop, which forms a bell-trap in the water of the plunger chamber. D. P. Bower & Co., or Cleveland, Ohio, have also adapted their admirable rubber-ball trap to closing the buttom of the hollow plug, forming a plunger which leaves nothing to be desired. Either of these can be substituted in a few moments for the ordinary plunger,

and at small expense give great additional security.

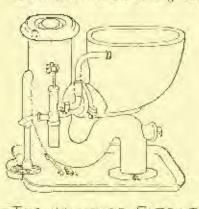
Residus these devices for improving the original Jennings closet, the managers of the Jennings Sanitary Depot in New York have introduced modified forms, in which the plunger is solid, and the over-flow takes place through a tube connected to the side of the plunger-

thow takes place through a time connected to the side of the plunger-chamber at the proper height and to the soil-pipe below, with an in-dependent trap at the bottom. This is the arrangement in their Safe-Pan Closet and Trapless Closer, described below.

The supply to the original Jennings apparatus is automatic: the lifting of the bundle only raises the plunger to let the contents of the basin and plunger-chamber escape, but a float, consisting of a bollow robner ring, cests on the water in the plunger-chamber, and as this runs out the float descends, thereby opening a valve connected with the float by a lever. This valve consists in substance as this runs and the float disseries, thereby opening a varie connected with the float by a lever. This valve consists in substance of a rubber displicagm, to both sides of which the water is admitted from the service-pipe, on the tap by a small tube and at the bottom by a large tube, the pressure, however, being by hydrostatic law the same on each side, so long as both tubes are open, so that the displingm is balanced. The sinking of the lever closes the small tube, and the pressure being thus cut off above, the pressure below pushes up the displicagm and thereby opens a passage through which is flower to the basin until the float rises again and restores the equi-I flows into the basin until the float rises again and restores the equi-

librium by opening the upper tube.
This mechanism is very delicate. If the diaphragm is too stiff, the pressure will not ruse it, and no water will flow; if too weak, the pressure when the valve is opened will burst it, and spoil the valve; so that displicages should be selected by the manufacturers to suit the pressure for each case, which they are always willing to do. Even with this precaution, however, the pressure in city water-works is often so variable that it is impossible to get a diaphragm which will not give trouble occasionally if connected directly with the street service. This can be reaccided by supplying the closet through the intervention of a service-distern or tank, which gives a head of water which remains always constant, and allows the displacem to be proporly adjusted; or a new brass valve may be used, which is sold at the Jennings depot in New York, and works by the same float as the old valve, but does not depend upon a diaphragm, and is consequently more reliable.

Several varieties of the Jennings closet are made, of which the



HEMVINGE PATE THE WITH SAFE-FAN-Fig. 5.

most expensive is the earliest form, all of earthen ware, with closet and trap in one piece, the hollow pluuger, and the diaphragm. valve. An extra outadvisable for a Bower patent or Blunt siphon plunger, to put in place of the hollow plunger which comes with the Next to this closet. comes the same tern, also with diaphragm valve and hollow plunger, but with an iron trap bolted to the earthenware basin and the joint tight with made

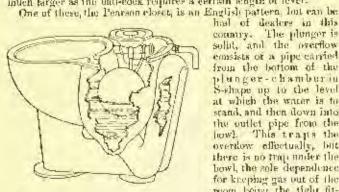
This costs less than the first form, and should also have the hollow plunger replaced. Next in price is a very convenient and excellent form, called the Jennings Safe-Pan Closet, with earthunware basin and from trap and the new brass valve; and in addi-tion a galvanized-iron safe-pan under the whole, with trapped outlet, an independent overflow from the planger-chamber connected with an independent averrow from the planger-chamber confidence with the trap of the safe-pan, and a solid plunger. This, with all its advantages, costs less than the older forms. Still another form, called the Jennings Trapless Closet, has the independently trapped overflow and solid plunger of the last, but omits the trap under the bowl altogether, the necessity for it being supposed to be obviated by the complete closing of the outlet by the solid plunger, and the independent lent trap in the overflow. This has the new brass valve, and costs less than any of the others. But if the soil-pipe is not thoroughly ventilated, gas may come up through this seed when the plunger is raised, in spite of the opposing influence of the descending current of water, or if some obstruction should get under the plunger so as to hold it open, and therefore the protection of the trap should not be hastily ahandoned.

The Jennings Closet, as well as all the other closets with side outlet and plunger, is peculiarly liable to give trouble by catching grains of sand, pieces of paper, or, when the work is new less! filings, between the plunger and its seat, which prevent the plug from fitting tightly, and allow the water to escape from the basin. Unlike the Defiance or the Bramah Closet, which when continued by defective closing of the valve remain empty, the automatic supply of the plunger-closurs comes into action as soon as the water begins to escape, and keeps a constant stream running through, thus causing a considerable waste of water, which most persons do not know how to prevent.

This may be guarded against, if the water is liable to impurities, by inserting in the pipe which supplies the closet a filter of brass wire gauze with a piece of flamed or bit of spenge, which can be fixed into an ordinary coupling, and when in use the handle should always be held up for several seconds, so that all paper may be well washed out. When this becomes habitual, there is not much dauger of leakage from When this becomes habitual, there is not much danger of leakage from this cause; but if it should occur, the bottom of the plunger and its reat can be easily reached through the basin by the hand, and the obstruction brushed away. Even without leakage, the consumption of water with the plunger-closets is rather large, as the basin holds a considerable quantity of water, and the plunger-chamber has to be filled at the same time with the basin; but the Jennings is perhaps, on account of the comparatively small size of the plunger-chamber, less wasteful of water than the other kinds.

There are two other forms of plunger-closets, which, instead of the delicate valve and float of the Jennings closets, use a hall-cock, working in a chamber attached to the howl, like the Jennings, but much larger as the ball-cock requires a certain length of lever.

One of these, the Pearson closet, is an English pattern, but can be

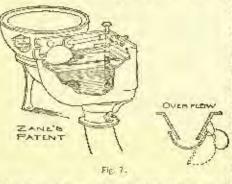


-THE PENASON PATENT--TWIN-BASIN -

emisists of a pipe carried from the bottom of the plunger-chamber in S-shape up to the level at which the water is to stand, and then down into the outlet pipe from the low! This traits the overflow effectually, but there is no trap under the bowl, the sole dependence for keeping gas out of the room being the tight fit-ting of the plunger. The basin, plunger eistern, and overflow pipe are in one piece of white earthen-

ware. The ball-rock is much more reliable than a valve, and the whole forms a simple and next apparatus, which with the addition of a trap would be safe in use, but is much more expensive than the Jennings closets, and consumes more water,

Zune's closet, made by Joseph Zune & Co., Boston, is also trap-

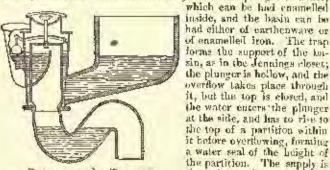


less, and the ballcock through which it is supplied works in a tank of considerable capacity. The able expandly. The plunger is so id, and overflow sists of a little hop-per at the proper height, closed by a pan, working in a receiver connected to the waste pipe like a miniature panploset. The pan , however, is counter-

inside, and the basin can be

balanced, so that when the water runs in and fills it the weight tips it down, and when the water runs when the flow stops it returns to its place, returning water enough the trap the orifice of the little hopper. This is ingenious, but it would dry out in a few hours if the closet were left massed; and when the pan is tipped down and the water is overflowing there is nothing to prevent the ascent of gas but the attraction of the water running in the opposite direction, which is of little effect. This closet, like the prereding, is simple, but the overflow cannot be considered properly protected, and the consumption of water is enounces.

A better apparatus than either of these, and one which rivals the Jennings closet, is Democret's Patent, made by the J. L. Mott Iron Works, New York. This is made only with iron plunger-chamber, which can be had enamelled inside, and the basin can be when the flow stops it returns to its place, retaining water enough to trap the cribes of the little hopper. This is ingenious, but it



DEMAREST'S PATENT

at the side, and has to rise to the top of a partition within it before overthowing, ferming a water seal of the height of the partition. The supply is through a valve, adapted to any pressure, worked by a lever and ball; like a small ball-cook but not so simple. The consumption of water is about the

same as with the Jennings closet, and the prices are nearly the same. Three qualifies are made, (1.) with painted valve section and enumelled iron bowl, (2.) the same with porcelain bowl, and (3.) enamelled valve section and porcelain bowl.

It is often convenient, in substituting those closets for an old pan or hopper closet, to set the new one into the trap which has served for the old closet, and for this purpose the Denarest closets are also made without the trap, but instead of it a horizontal offset is turned down at the end at the proper point to enter the mouth of the old trap, usually under the centre of the howl, with flange for securing to the floor. This saves considerable trouble in making the change.

In adopting plunger-closets, it must be remembered that the large In adopting plunger-closets, it must be remembered that the large quantity of water they discharge is very likely to siphon but the trap, unless it is ventilated. The Jennings closers have formed on the trap a vent-hole, to connect with a pipe carried to the outer air, or into an open due, which is the only sure protection. The Demarest closet has the head of the trap flattened, on the supposition that by thus reducing the capacity of the trap below that of the waste-pipe beyond, it will be impossible for water to pass through it waste-pipe herond. It will be mapossible for water to pass through it fast enough to fill the hore of the waste-pipe and thus cause a ractum, a theory which may easily fail if the pitch of the waste-pipe is slight, or if its hore should be contracted by some temporary obstruction; so that in using them it is best to drill the trap and insert a brass hipple for connecting a ventilating pipe; and in all cases where a plunger-closet is set over an ordinary trap, a ventilating pipe should In connected.

Any of the plunger closets may be, and the Jennings often is, Any of the philager-closest may be, and the Jennings often is, applied from a service-cistern, with lever, cranks, eistern-valve, and service-box, like that commonly used over pan-closets, but with a larger service-box, thur doing away with the floats and valves of the usual automatic supply. This is a different thing from the eistern placed over the closet only to equalize the pressure on the valve of the amonatic supply, and has certain disadvantages, although its simplicity and freedom from leakage make it occasionally useful. with the ficat-valve, if water escapes from the lasin under the plunger, a fresh supply immediately runs in, so that the hosin remains full as long as any water is left in the pipes; but with a service-cistern if the basin is emptied, no more water flows in until the handle is pulled. If the outlet is trapped there is no danger to be apprehended, even if a slight leakage should drain the basin dry as apprenented, even it a signi leakage should drain the basin dry as soon as it is filled after use, and it may remain dry indefinitely without any further harm than the trouble of reliffing it by polling the handle before use as well as after; but this small inconvenience may be preferable to the loss of water occasioned by even a slight leakage with the automatic supply.

Water-closets with valves should have safes of sheet-lead under

them, as the valves are very liable to leakage; and as most closers serve also for slops, the seat should be hinged, as well as the cover, serie also for stops, the seat should be hinged, as well as the cover, and three-pound sheet lead put on beneath furned up at the sides, and turned down into the howl, to prevent the wood-work from getting saturated. The J. L. Mott from Works of New York make an enamelted iron slop-safe, fitted either to the Domarest or to the common closet bowls. It is not easily, and is much neater than the lead. Two common shapes of closet busins are used: the oval bowl, which has an inlet normal to the curve of the bowl, and requires a feat to strengt the water over the sides, and the Frued restage.

fan to spread the water over the sides, and the French pattern, which has a side inlot, like an ordinary hopper, to direct the water spirally down the basin. The oval bowl and ian can be better adjusted, and are perhaps preferable to the other.

In setting a pan-closet over a trap the lead trap is placed between the floor hearns, the mouth projecting half an inch to an inch above the floor. The lead is then enlarged and beaten down flat upon the floor, the mouth of the closet inserted, and the expanded ring of lead is covered by the flange cast just above the mouth of the closet, which is serewed down to the floor. Potty is spread between the flange and the lead, and a mass of putty is put over the joint after

the flange is screwed down.

The best plumbers, before setting the lead trap, reinforce it by scraping the bottom and wiping on a mass of solder outside of it, so as to make the metal at that point half an inch thick or more, in order to protect it against the efforts of amateur sanitarians, who, when there is any trouble with the closet, generally try to remely it by punching a sick down the trap. The trap should always be connected to the branch of the soil pipe by a brass ferrule, soldered to the lead and caulked into the iron pipe. Nothing short of this will make a proper joint.

make a proper joint.

To connect the cartherware arm of a pan-closet or hopper-basin to the supply-pipe, putty seems to be the only resource. A mass of it is put on and ried up with a cloth and strings, and red lead should be mixed with it, as well as with that put over the junction with the trap, to prevent rate from enting it.

The plunger-closets have a copper tube comented into the basin, with a coupling for attaching the supply-pipe, which is much better than the junta light.

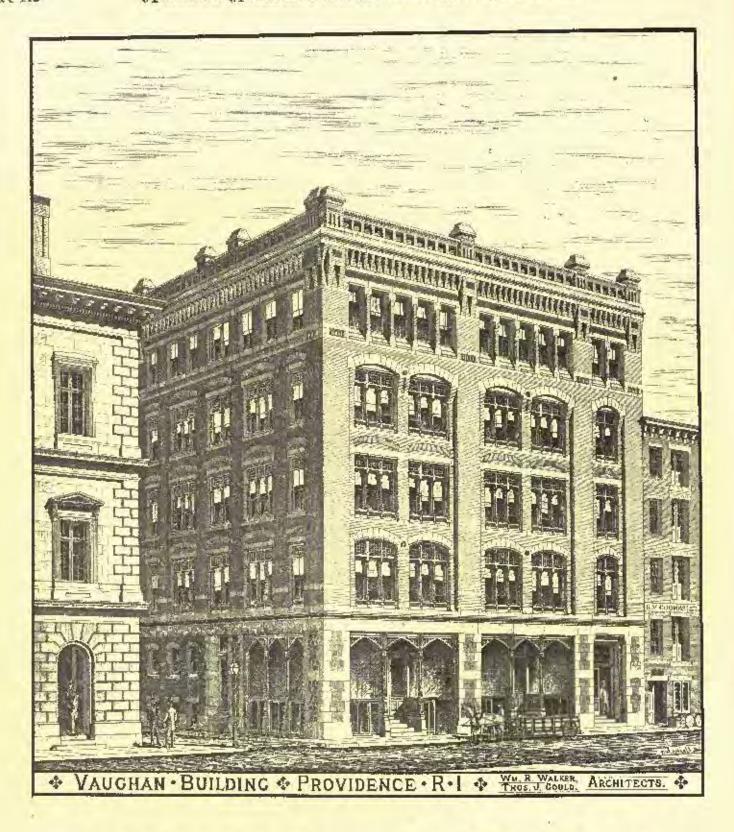
than the party joint.

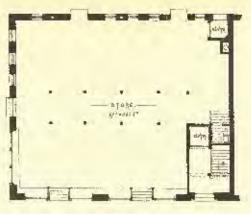
THE ILLUSTRATIONS.

THE VAUCHAN BUILDING, PROVIDENCE, R. I. MESERS. WALEER AND BULLO, ARCHITECTS, PROVIDENCE.

Turs building (the exterior of which is nearly completed) is being built for Mr. B. F. Vaughan, and occupies the site of one destroyed









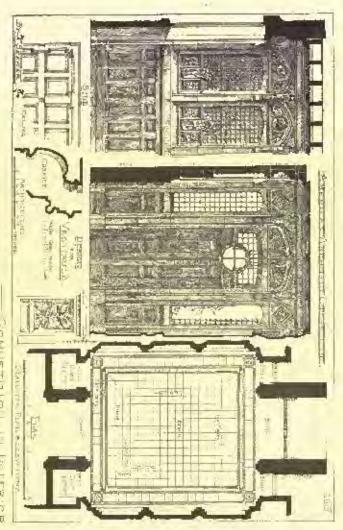
FIRST PLOOR

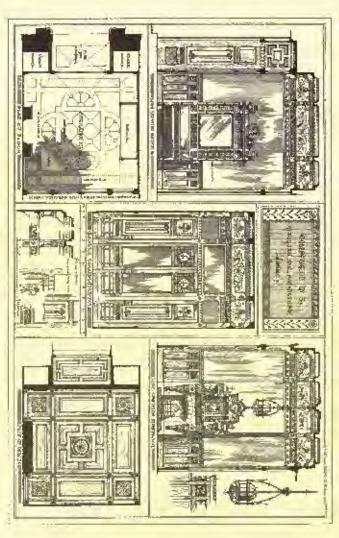
SECONO SLOOK

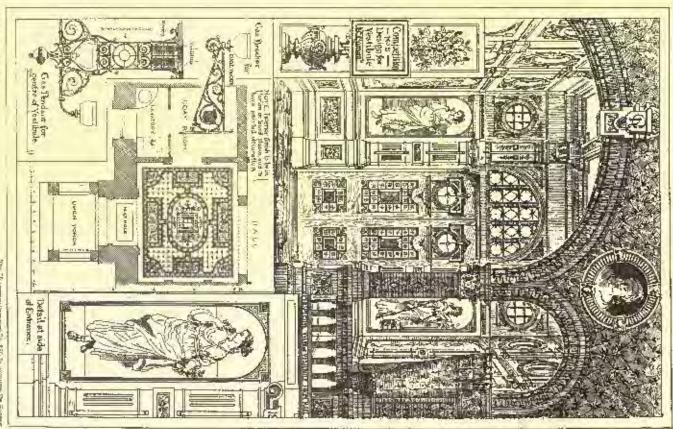
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SE HALDSTON PROFITE OC. 220 Descriptions of Startes



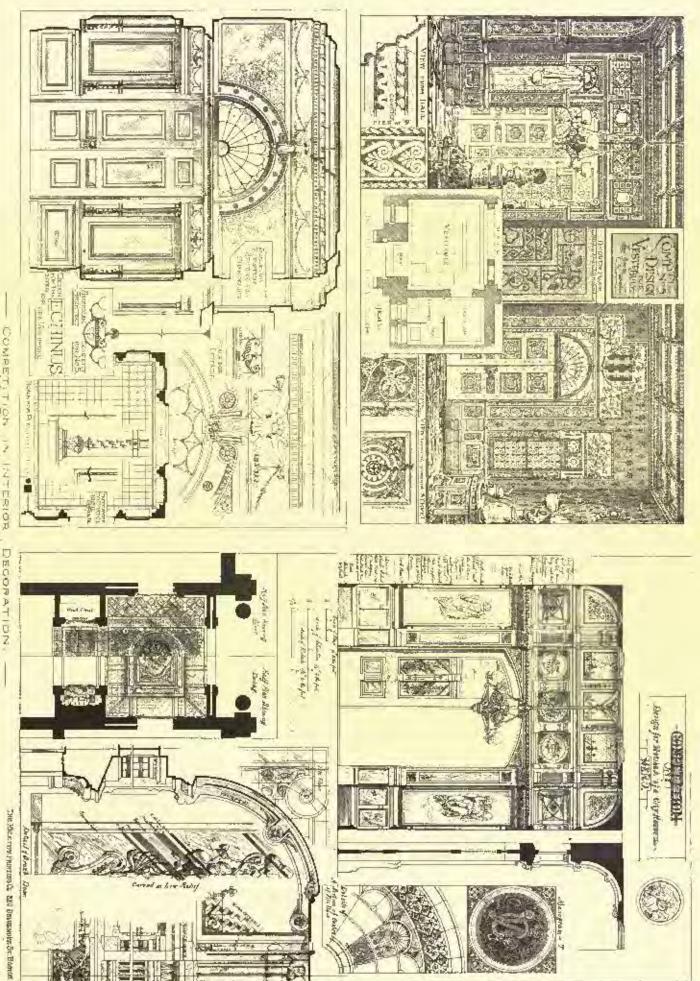






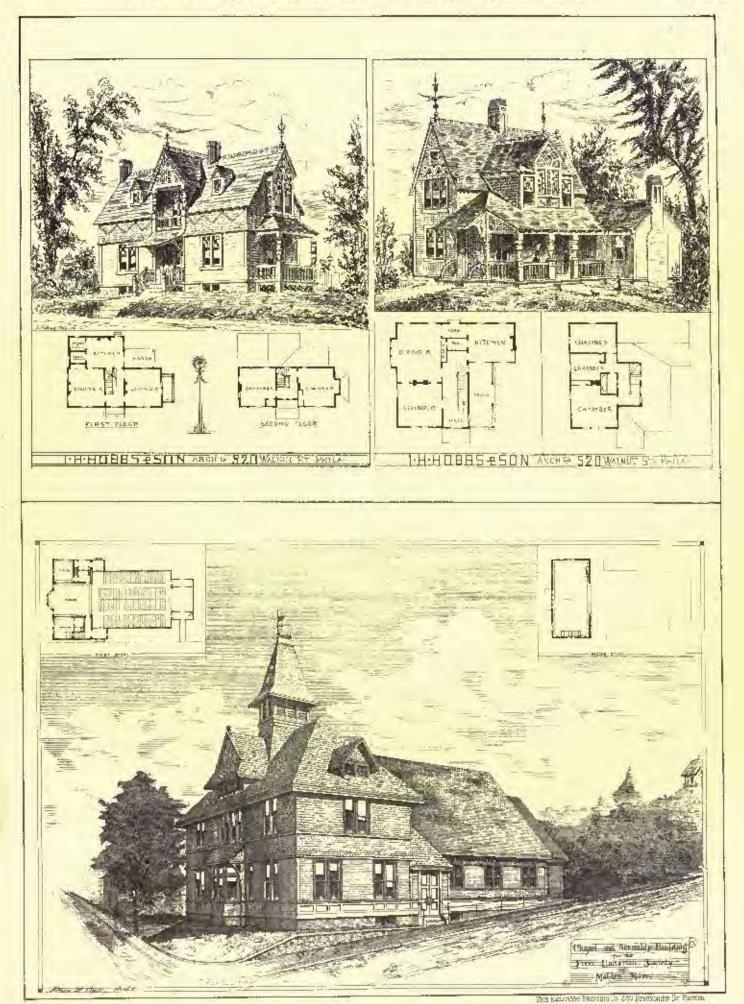
New Designs FOR A VESTIBULE ...

The Hally for Francisco III Denissande II. Sortan



NEV. DESIGNS FOR A VESTIBLES -







The fronts are of dark Philadelby the fire of September 27, 1877. phia pressed brick, laid in black mortar, with finish of brown stone from Belleville, New Jersey. The piers of the first story are of brown stone, with quoins and bond-stones of granite. The store fronts are of iron. Moulded brick is used in the frieze and panels of the cor-nice, and brown brick in the relieving arches. The hullding has two elevators (freight and passenger), and is to be heated by steam. The finish of the corridors and effices is to be of ash. The transom lights of the windows are to be filled with lead suches glazed with small squares of straw-colored cathedral glass.

DERIGNS FOR COTTAGES. NEBSER, L. U. HORBS AND SON, ARCHI-

DESIGNS FOR THE INTERIOR OF A VESTIGULE, - COMPETITION NO. V.

The members of the jury have thought it best not to award a prize to any of the designs submitted to their inspection. They consider, however, that the designs by "Hero," "Stat more in number," "Nemo," and "Echimus," are worthy of homorable mention. See Summary and the following article.

CHAPEL AT MALDEN, MASS. MR. P. & HURR, ARCHITECT.

NOTICE OF THE FIFTH COMPETITION IN INTERIOR DECORATION.

The programme of this competition, as printed in the American Architect and Building News of July 6, is as follows: — "The subject of the fifth competition will be the interior of the entrance-vesjeet of the fitth competition will be the interior of the entrance-vestibule of a city house. In plan it will be ten feet by tweeter, and it will be fortiern feet high. By day it is to be well lighted by transom or side-lights; and as it must be lighted at night, special attention must be paid to the chandeller, gas-branknts, or other attributes of artificial lighting. Required: A plan showing the arrangement of coat-closets, and the design of the floor-filing; an elevation looking towards the street, a section, and details to a larger scale. Or instead of this, a plan, a porspective view of the interior and details, will be accepted."

Twelve competitive designs have been submitted under this programme, and their relative morits naturally largely depend upon the manner in which the formidalds difficulty of the great height of the vestibule, as compared with its width and breadth, has been encountered and solved. The other conditions are more commonplace, and the competitors have mer them with ingenuity and knowledge in

rations degrees of excellence.

"Conse," "Soit names in unders," "Nems," "Eckinas," and
"Night," each in a different way, have recognized the main point of
design in the problem, and, all other things being equal, their rank in
the competition should depend upon the character of the architectu-

ral devices engendered and developed by such recognition.

"Comus," in a drawing rendered with decision and force, gives as a free Ronaissance design, excuses the height of the small vestibule as compared with its area by opening it into the house with a screen of arches, — a with and narrow one side by side, — hold in its absence of symmetry, but wanting in essential relations with the rest of the composition. The columns and pilasters of this screen are not equal in height to those which decorate the walls of the vestibule, and the important line which separates the attic from the order in the sides of the vertibule is not recognized on the side occupied by the serven. Moreover, although the ceiling is not shown in plan, the perspective suggests four beams crossing from the two pilasters on each file, but, the two pilesters being wanting on the screen side, the relation of the beams to the screen becomes entirely accidental, and the unity of the design is interrupted in this respect also, fatal defect, not countenanced by the bravara style of excention, which is effective and imposing, and by the detail, which shows experience and training. The gas pendant is ingenious and has more than the elements of good design.

Suit nomen in umbra" also has an open screen defying ennyoutionalities of symmetry, but it is square at the top and Irealed with quarries of glass above a transom thus opening the vestibule into the house more completely than "Comes," and enabling him the better to dispense with an assic, or broad friezn or great cove, devices which all the rest of the compettors (with the possible exception of "A Seeker") have employed to lesson the offeet of beight. He employs no horizontal wall features except a dado, thus giving to the vesti-bule rather the treatment of a habitable apartment than an architect-oral compromise between the formality of the exterior façade and the freedom and comfort of the interior. In this respect we consider that he has lost an opportunity in his design. But what he has attempted has been carried out with a confidence and a curtain audasity which command respect, although we do not like to see the essential conditions of style and design violated even by such a dashing character of drawing as both "Comus" and the present competitive seen fit to adopt. The interior treatment of the outside door and the window alongside has ingenuity and some good details, and the decorated panels over the transons, apparently filled with designs upon light tiles, though excentric in form over the door, are allowable expedients of decoration. The treatment of the deep reyeals is not explained in the perspective, which in this respect does not conform to the plan. The Roman mesale in the floor does not

suggest a proper contrast of lines in treatment of borders and centre, and is too archaic in design, — in other words, the design dues not justify the cost. The ceiling ribs are of similar design in vestinot justify the cost. The ceiling ribs are of similar design in vesti-bole and hall; but they have no relation whatever with the walls.

The discrepancy is apparently capricious, and this is an offence in architecture. The subordinate rooms are well arranged.

"Nemo's" is a more practicable and less eccentric composition than the others. The follow walls and the ceiling "hang together" well. The place is well lighted, and the detail temperate and well composite the decay of t composed. Opposite the door is a glass screen similar in treatment to the entrance wall, and there is an outer and funer floor hetween the vestibule and the street. The walls are harmoniously divided the vestibile and the street. The walls are harmoniously divided into dado, screen, and frieze, the dado, frieze, and ceiling being of oak and the screen of plaster, without any surface ornament and presumably treated with a plain dark tint. There are also a chim-ncy-piece and a sattle on the opposite sides, but entirely out of scale with the architectural features of the cornier. This arrangement, combined with the absence of vertical pilasters on the sides and the extension of the whole by the glazed screen into the hall beyond, satisfactorily meets and conquers the difficulty of height in a small space. But for all this the design fails to interest because the metif of it has become commonplace.

"Felians" divides his wall space into four parts by an order resting on a dado and supporting an entablature of bold projection; above this are a flat well-space and another enhablature with a broad frieze and a cornice introducing the ceiling. The first entablature is an impost to the full arch with its fan-light over the door. The plan has indications of an open screen separating vestibule from half, but its treatment in connection with the architectural features above noted is not easy to explain and is not attempted. The main most? is correct. It is not a bad idea to emphasize the projection of the impost so as more effectually to separate the upper part of the incrrow vestibule from the lower, thus conecaling a part of the wall-space above, and decreasing the apparent beight. But this impost, which is a full entablature, should not be so entirely disproportionate in height to the pilasters which support it,—a disproportion fatally increased by the device of ongazing light colonnates on the faces of Increased by the device of ongazing light colonnettes on the faces of the pilasters, thus causing the heavy entablature to overhang the pilasters and rest its weight upon the colonnettes, the bases of which, by the byr, are, unhappily, in the form of delicate vases, quite unfitted for the function of learing weight. The figure decorating the key of the arch and hobling the ends of the gutlands, which are festioned along the upper frieze, is a modern French device of the Second Empire, out of scale with the rest of the design, and far too light to do the work of supporting the cornies, which is crucilly blacked up upon her head. A master, however, at the above of *Kehines* could easily have told him how to make the idea of this design more correct and acculande, and this with only a few slight. design correct and accalende, and this with only a few slight changes of proportion. The orders, except in the hands of a skilled

workman, are dangerous things to take liberties with.

**Night" has attempted to solve the problem of height with a great coved coiling, which is almost in the form of a dome. This is an excellent architectural expedient, and the walls support it in good academical Gallic fashion; everything, front doors, vestibule doors, closet doors, in width and height, falls into place by itself, as it were, and the skeleton of the composition is anticentreet. The detail, however, is bald and wants study; the outside door especially being distinguished by a lamentable absence of thoughtful design; also the decurations of the wall-panels do not decorate; they are rather Egyptian than Gothie, and as such are inconsistent and out of keeping. The carred caps of the octagonal piers should have coincided with the height of the frieze; then, accepting his "dark cherry" for the wood-work and his "dull yellow broaze" color for the walls, the frieze might have been in dark olive green and the dome in warm tones with black outlines upon a gold ground. This would have made a combination of color and form sufficiently deep and serious in effect not to prejudice the eye and render it unfit to enjoy the do-mestic brightness within. The "crimson on yold," as proposed in the scheme for the dome, would have made sad discord with the

cherry.

"Here" gives us a fine litte drawing, very carefully executed, the free-hand parts having a little tendency to scratchiness; but the main lines of the composition are simple, and the details conscientiously and labortously studied. Eight plasters, equally spaced from the corners, carry four flat coiling beams adjusted to a coved corner. Under the cove is a broad frieze of five square panels on the long sides and four on the short sides, those over the entrance door being filled with stained glass. The doors are well designed and the principal panels are filled with various woods glued together diagonally and carved in low relief; a capricious fancy. The details, if not actually the best presented by any of the competitors, are the most carefully and delipresented by any of the compensors, are the most garrenty and defi-cately composed. A more vigorous drawing and a coarser scale with a more marked accentration of lights and darks would have pre-sented them more acceptably and done greatur credit to the good qualities of the design. As a whole it is refined and happily free from cereministities, and exhibits moreover not a little unity of com-position. But the detail is too fine and too delicate for the space and the place, and promises more than can be fulfilled in the apart ments to which this is really the vestibule. As regards material and color, the wood-work is nak and black walnut, the wall colors are in russet and brown, the frieze and coiling in warm grays, with fine details of gold and black, — all excellent for my lady's boudoir, but a little out of place where her footnen wait. The gas pendant and little out of place where her footmen wait. The gas pendant and the floor tiling are also designed in an intelligent and painstaking

manner.

"Alpha" presents his scheme in a perspective showing abundance of light with panelled wainsecting, a frieze above treated with balusters, and a simple coffered ceiling supported by brackets, all very eleverly arranged for a long hall, but not adapted to the smaller still, the floor and ceiling being only 10" × 1". One does not naturally look up in such a hall, and therefore an architectural arrangement which does not correct the disproportion and apparently bring down the ceiling is not adapted to the conditions. Moreover, the design suggests the entrance of a country bouse rather than of a city frome. One difficulty of inordinate height he has to a certain extent renteded by suggesting that the treatment here is extended into the hall heyond, but this is only a partial extenuation for a fendamental oversight in design. But unlike the designs of most of his competitors, this looks like a vestibule hall, and, except for the defect of height not being remedied, is worthy of high rank. The detail is sensible and simple. The sketch of the exterior, although showing a porch wanting in some of the oscentials of architectural character, notably in respect to the plasters, which are badly composed, gives a reason respect to the pilasters, which are bodly composul, gives a reason for the lower ceiling over the entrance and of the vestibile and explains but does not excuse the double frieze. The treatment of the gas-fixture is lad. Nevertheless "Alpha" makes an excellent contribution and is a dangerous competitor.

"A Sector" gives us a monumental Gothie design in stone, of fair detail but with a greater predominance of vertical over horizontal detail but with a greater predominance of vertical over herizontal lines than elsewhere occurs, thus failing to recognize and provide for the main difficulty as regards height. A panelled wooden dade improperly covers the stone-work, the weaker being used to protect the stronger material. There is an outside door in two folds, constructed with rappeaur's panellings and only 3' 8" wide between jambs.

There is another monumental vestibule signed 5 3 A, 4I, Aug. 20, 5 without scale to the plan, and conceived in classic forms not well understood. It is a long currance-hall divided into bays on the long side by engaged Dorie columns with raund abaci, and divided between screens of the same order; the outers creen, which is re-

side by engaged force countries with rouns abace, and divided by two open screens of the same order; the outers ereen, which is removed from the doorway only by the width of one narrow buy, has apparently no rouse of force except perhaps partially to cover the two upon recesses on either side of the purch, which are used as closets. The conception and detail are caude and the absence of invention is not pulliment by academical correctness. The thing is a contact. mosaic of small geometrical forms not decorative in character. If the author of this design will study that of "Alpha?" he will learn how an effect equally simple, but far more correct and domestic, is to be obtained by the use of the same order properly carried out: is D. P. P.'s? composition is not necessarily a vestibule, judging

from its treatment, but rather a small room of unusual height. not sufficiently architectural to meet the conditions, and is wanting in holdness and invention. The caprice of the broken panelling is too often repeated and fatigues the eye; and the spartment has not sufficient light. The study of color in the tiling does not assist its

general geometrical idea.

"Walpurgle" presents us with the outside as well as the inside of the front door, and the former takes unwarrantable liberties with the architectural alphabet, giving us compled, stouted, casaged mediacral shafts to support a pedimental form of debased classic. hule has no architectural character and presents but little to criticise. The panciling of the door, however, is considered with some care, but it is not well composed, and is crude and capricious in its ornament.

Finally one who signs himself with indescribable hieroetyphics offers a design which is not architectural, although it is not wanting offers a design which is not architectural, although it is not wanting in indications of a certain inventive faculty; thus there are several curious acchanical devices set forth with painful minuteness, such as a revolving coatcleset, an ornamental hox for a copyain spring, a gasbracket combined with a bell-pull, decorated with purple cloth and supporting a naked creature on a trapeze. The constructive decorative forms we do not understand and will not alround to describe. We would remind this competitor that our business is with architecture, which is a serious malter, and if he proposes to compete he must observe some of the conditions of design. If a man would write a somethe must use the language of civilized people. To inwrite a somet he must use the language of civilized people. To invent a new language, as this hieroglyphist attempts, is painful and ridiculous.

ART SCHOOLS IN GERMANY.

THE GEWERRE SCHOLE IN BERLIN.

The Gewerbe Museum, under Director Granow, Is a large institution which was instituted but a few years ago by private enterprise, on the plan and after the example of the Museum of South Kensingtou. It is now practically supported by a grant from the govern-ment. The museum is arranged for the use of the students and ment. The mission is arranged for the use of the scholars and others who are working at any special industrial subject; that is to say, it has no regard to chromology or geography, but is planned so that all the glass, or woud carving, or chamels, or of whatever other class the objects may be, are placed together, the technical craft

being the basis of the arrangement. Schools under the management of Director Ernest Ewald, of considerable size and importance, have now grown around this central nurseum, and the directors are anxions to establish branch or district schools in various parts of Berlin, as affiliated classes, all to work with the main aim of improving the taste and handicraft of the artisans engaged in art industries, but at the same time to educate any other persons who may submit to the training. These schools are mixed, that is, both men and women work together in the same class-rooms; this is somewhat unusual in Germany.

Germany.

There are six hundred students, and fifteen professors; ten percent of the whole number are free students, the rest pay about six shillings per month, and to some a money scholarship is granted to enable them to develop their gifts, and to allow them to study by day at original composition in design. The elementary classes draw from the large copies in Jacobsthal's "Grammatik der Grammente" the foll size of the originals. A few of these copies are tinted with two or three flat washes; these are copied by the students in sepia or indigo, or other simple tink, with the view of giving them dextericy in the laying on of flat tints exactly in the right place. A large number of Greek frets are among the cepies above mentioned; these are used for the same purpose and answer well, inastunch as the various used for the same purpose and answer well, inastunch as the various changes of direction of the forms in which the times are to be placed give ample exercise to the student to combat difficulties in that washing. Precision of touch and entire absence of retouching, stippling,

or repairing are insisted on.

The application of this practice to higher work is made when the student imitates the east in light and shade in tempera; the benefit of exact thoughtful instation of tints is then seen. The outlit of the student consists of a small wooden hox in which are six pots of mixed color, graduated in tone from the lightest to the darkest tint that will be needed to imitate the east. This color is used on a palette, and the work proceeds step by step from beginning to end in the most smalghtforward manner. It is an excellent exercise, and one the most straightforward manner. It is an excellent exercise, and one that it would be well to encourage in our schools. Its advantages are those that belong to distemper pointing. They are videable in giving exactness in the estimate of tones and graduations; in the directness of the work itself, as each that is put down in its right place at once, without requiring any retouching or menting; and the German method of two-ling disponses with softward edges, but insists on the regions of tints being marked distinctly with precision; the true effect of the soft edge at a shadow is given by three or more changes in the tone as it passes from light to dark. The effect of block-printing is a result of this teaching, but this is not disadvantageous, is assumed as the majority of students who work in this moterial are designers who are engaged in designing for prints of various rial are designers who are engaged in designing for prints of various textures, or those who are being prepared for this occurs of the general it is assumed that tempera is the material in which designers should work in preference to water-color or even oil. It has not been found necessary to develop the still-life section, not even for decora-

The modelling section is excellent, and has a large and beneficial influence on the arts of the town. Berlin, like London, is a town of brick construction; the bricks are covered either with store, or relieved with stone carving, or decorated with terra-cotta. The excellence of the ornamental designs is remarkable all over the town and its suburbs, and I supppose some recent buildings in brick and terraentia are the finest ever constructed of this material. The character of fitness is found everywhere in these applications of the decerating material, and gives evidence of seand principles in teaching. Thuse principles are first, no doubt, given to the architects who design the unilitings, but a considerable amount of the credit is due to the mod-ellers and carvers who carry out the artist's design.

In the Gewerle Schule it is not surprising to find that one hundred in the theorems scale it is not surprising to that into incompact students out of a total of six hundred are modellers; the care taken in their education is very great. They are taught to model from photographs of Italian ornament, never from lithographs are drawings; and are in there so instructed that they after the relief from that shown in the original. This work goes on until the student has all forms of Italian ornament at his command, and has further an intimate knowledge of the principles on which it is constructed. Then he composes and carries out subjects under his teacher's eye; this brings him into the practical region of his artistic life, as he can sell his design if it is a practicable one. Men and women work together to their mutual advantage.

Another section is that of majolica painting, a revival by an Italian artist with students under him, which is being done entirely by the aucient methods, in rooms set apart in the Gewerbe Schule. The result when good, that is to say, when body, enamel, glaze, and colors are successfully applied and well fired, is excellent, but the failures are so many that this happy result is not frequently attained, and it is to be doubted if a commercial success will be the result of the adventure.

A principle of this school seems to be that no professor should be a teacher only; the directors therefore seek for men in various proa teacher that it the directors therefore seek for men in various professions, such as architects, designers, etc., who can give a part of their day or evening to the chasses; the tendencies to pedagogic degeneracy, often said to characterize men who give all their time to teaching, is justly fearest.

THE ACADEMY OF ARCHITECTS.

A very useful institution has been founded by the architects of the

¹ Props a paper by John Sparker, Head Master of the National Are Training Schmil, pun-lighed in the Architect.

town. They have a house of meeting, with which is joined a club for social purposes. A large hall or exhibition morn in the building is set apart for the public display of all products that the architect is concerned in using or producing, other than those required in the mere construction of a building. There are marquateris floors, stoves, curtains, furniture, glass, china, various applications of hand-ratio statements, wall the correling site and market and control of the control and control of the control of the market and control of the control of th rails, staircases, wall-decorations, etc.; also vessels of metal and pottery as ornament. These are constantly added to and changed, and the exhibition forms a gauge of the advancing taste in the decorative The textile reproductions of Byzantine and Gothic tissues are remarkably picturesque. In furniture the best objects are copies from the Remassance period, and a corrain pseudo-French style which is not objectionable. The designers in this section are behind our own, both in simplicity of construction and taste. Some of the most beautiful imitations or regivals were seen in the tarsia panels of proper wood inlays for doors and other parts of a room requiring descration. They are growing into extensive use, and are interesting as being the direct product of the Gewerke Schule. Some of the textile reproductions are excellent, especially those of Byzantine origin, where a flat trentment with interwoven threads of gold is a principle of the design. Others of commoner materist in woul, and even in hump and cotton, were quiet and mobituaive in tone and color, and often in excellent taste.

The into work is remarkably good. There seems to be quite a school for smiths' work in Berlin; the east-iron work is of world-with renown for its fineness and mechanical perfection. In every quarter of the town the iron designs, and excernion of the same, are alike excellent, and the very general use of grilles to the basement windows, sometimes to the graind-floor windows, and almost always to those of the hall door and faulight, in the best class of houses, keeps up a substantial demand for designs of good quality which are

remarkably well worked our.

The stove commonly used is a construction of tiles, made of suitable size and shape to be useful as to the dimensions of the flues and for the purposes of the bond; it is usually while, and gives a large field for the ingenuity of the designer. A modern demand for a fire that shall be visible has necessitated various modifications of the German stove of the past generations, and has resulted in ingenious, and on the whole good, architectural designs for fire-places. The material of which the tiles are made is of ordinary character, but the enamel with which it is covered is really perfect in whiteness and

It is worth mentioning that the architects are almost always the designers of these house-fittings, and that designers not educated as architects are almost unknown. This is purhaps a point that might be dwelf on at length when we consider that training in the construction, proportion, and details of the different styles of building and use of moublings is one of the most meetful points in the educa-

tion of a designer.

The Academy for Architects in Berlin is a peculiar institution that will shortly disappear. At the present time Berlin is the only large town in Germany without a polytectuale school, and the variance found hadly housed in ous arts taught in such an institution are now found hadly housed in separate buildings, with separate organizations of directors and pro-But a recent Act of Parliament has ordered that icclinic school capable of accommodating from 2,000 to 4,000 sindents shall be erected, in which the present divided schools for architecture, cogineering, and industries shall be united. The English system of apprenticing or articling of pupils to entire them who are engineers or architects is practically unknown in Germany, and the State takes almost the whole expense and responsibility of eduthe State rates almost the whole expense and responsibility of concentring students in these professions, and even to some extent of providing them with work after they are educated. It is clear that nothing analogous to this exists in our own country, and that the thorough education secured by the German plan is not easily gained in this country. The bases on which the whole architectural education is founded are twofout. — one the artistic, and one the constructive. On the one side, mechanical construction in its widest searcthat is to say, as applied to all known materials from some to from and wood—in shoroughly undertaken; and on the other side, the artistic, the full meaning and effect of antique proportions, mouldings, and the restletic conditions of all the great historic styles, are chalorately analyzed and nuderstood. The work in the building academy is done under great inconveniences on the score of space. The Schenkel Museum, in which the work is carried on, was designed by the architect whose name it hears, for the accommodation of from 150 to 200 students; this number has been recently raised to above 1,000, with obvious inconvenience and less of comfort to the students and teachers,

A four years' course is provided for young men who give satisfactory proof of having received a good general education. In their progress they take first the simple Greek proportions, and their constructive and methodic meaning, and work out, first, scalies has ed on structive and astheric meaning, and work out, first, studies hased on Bottcher's principles; then they design some specified building, such as a tumb, a town gate, or some other simple construction. Later, Italian, Romanesque, and Gathic are taken up in the same manner. This branch of their education is to serve the one end of artistic offset and the true principles of the different styles. But at the same time the proper knowledge of the builder is carefully kept in view, and is treated as a separate study from that part of the course which develops the artist. The examinations are frequent and very

scarobing. Measuring actual buildings is given as an examination

exercise, and not as a part of the justimetion, as with us.

The private and public buildings in Berlin and other German towns give ample evidence of the therough teatning of German architests under this system; but at the same time there is a certain cold-ness or uncompromising exactness about the whole that seems some-what as if the classic lines by which the architect's education is so what as if the classic thes by which the architects education is so rigidly circumscribed had examped the pictures on element in his art, and had decided the exact form and proportion of everything, to the smallest moulding. In the practice of Gothic architecture the result of this plan of education is indisputably one that gives great prominence to the advantages of our own system, or absence of systems of the condition.

prominence to the advantages of our own system, or absence of system, in the collection of the architect.

In the section of design, however, the Burlin school has many advantages over similar institutions. The professor, Here Jacobsthal, the author of a very practical work on the "Grammur of Ornament," is a most accomplished teacher. The result is that German architects are found capable of dealing with details of ornament in a diegree for surpassing that of the average professional designer here. Hence, no doubt, the superiority of the cont work, terra-cotta panels, and classical or Italian details, which truly ornament and do not overload their buildings.

overload their buildings.

CORRESPONDENCE,

PALL OF A DOUSE ON SUPTY-THIRD STREET.

SATURDAY afternoon last after the workmen had quit work upon a building on the corner of Fifty-third Street and Brondway, the strueture quietly collapsed, and came down a heap of rubbish. Notody was injured or killed and the excitement soon passed away. The was injured or killed and the excitement soon passed away. The building was four stories high, having a frontage of forry-three fact, six laches on Broadway, and a depth of twenty feet on Fifty-third. Street. This last front was of brown stone ashlar, while the side showed a wall of face-brick, and on the first or ground floor a row of supporting iron columns. The property was bought as a speculation by Mr. E. Livermore, a banker of 19 Nassan Street, who had already built a row of houses along Fitty-third Street, and was completing the covering of his land by putting up the corner house. It is said that the work was going on by "thys"-work." but in any case it was no more a large of construction as could passible game with the said that the work was going on by "blyk" work." but in any case it was as poor a piece of construction as could passibly come within the usual specification classe of having things done "in a workman-like manner." It fell within the law, but it was merertheless a "ekin job," — work where economy has first and stability a second consideration. The work had progressed past the "brown-coat" with the physicres, and the carpetters were just about to begin the "trial" when the collapse occurred. The rear wall is of common brick twelve helps thick throughout its height, a plain bulk-head wall without parameters and any kind, to which a chimner size region as brick twelve luckes thick throughout its height, a plain bulk-head walf without openings of any kind, to a high a chimacs gives some additional strength. The Broadway walt was a twelve-head one too, but the heing of four inches virtually left only an eight-inch wall to carry the beams. The joints were wide and the mortar rather inched to erounble, though the square pier columns on the liest floor looked of ample strength. What the character of the fourings is could not be ascertained under the mass of district hut here, no doubt, the fault will be found to lie. The plumbers had been carrying in pipes from the street, and had hig below the asea bottom. The heavy rain of a night or two before had soaked the walls, and the cellar had being amount of water, which it is thought had worked under the pier foundations and caused them to either scatte or slip. under the pier foundations and caused them to either settle or slip. The break extends from the cellar to the roof, leaving only the end walls standing and exposing the entire interior. Had it been properly shored and the windows put in soon enough, no doubt the building would have housed for a long time the four families it was intended to accommodate. The only wonder is that a greater number of our cheap dwellings do not topple over when they get to the stage where this one came down. It is simply ridicultues to expect a brick wall nominally twolve indies thick, but with the bond used wirthally but eight inches thick, to early four tiers of beams and such weight as may be put into the building, in which not an extendoot of tunber was used in bracing. Proper inspection might detect these cases before they get to the fulling point. Somebody should have noted the plumbers at their work or have known that it was necessary to have a dry soil when the foundation was so poor. As The break extends from the cellar to the roof, leaving only the end necessary to have a dry soil when the foundation was so poor. As it was, non-inspection or stupid workmen brought on the fall. Since no one is killed, whatever of investigation there is will develop nothing, as it is to be conducted by the Building Department into what is really its own misconduct.

HUMORS OF COMPETITION.

BOSTON, August 30, 1878.

TO THE EDITOR OF THE AMERICAN ARCHITECT:

Dear Sir. — As "they laugh that win," we have no occasion for sadness. Yet it is only fair toward other gambanes of the profession that we should warn them against the latest trick in competition of

which we have knowledge.

Having accepted the invitation of a committee from the Congrugational Society in Hollicook, Mass., to submit sketcless in competition with three other architects, - whose names were given, - for the rebuilding of the church edifice destroyed last season by fire, we

sent in our contribution, and, as is usually best under such circumstances, dismissed the subject from our minds.

In due time the various sketches were presented by the committee to the parish for consideration and possible selection. At this meeting, a private one called for the purpose, appeared, piloted by a friend who is a member of the parish though not of the committee, one of the competing architects, who "had not been able to get his skatches

ready in time for the express, and so had brought them down."

Being there, the gentleman was granted permission to explain his design, which he did, taking occasion to let it be understood that he was prepared to contribute a portion of his commission to the treasury of the Society, could be but have the opportunity. Not withstanding this, the parish voted to adopt the design of the authors of this communication, — upon which the geatleman accompanying our competitor moved that, instance as the plan did not also according to the plan did not also according to the plan did not also according to the plan did not panying our competitor moved that, incomed as the plan did not give the exact number of six bundred sittings, the vote he reconsidered, and our sketch, along with that of the gentleman who had got himself sanggled into the neeting, he returned to their authors for modification; the parish, graping somewhat in the dark, as all such hodies do for a time, took the proposed action. Monday evening last having been assigned for final action, our competitor again entered upon the meeting, notwithstanding be had been informed such a proceeding would be emishered out of place; and, obtaining consent, proceeded to explain additional drawings which he had brought, and to read a considerable specification of materials and labor.

However, the result (the very quick result, as we are told) of all this was not such as to encourage its repetition, but went to show that at least one body of gentlemen were capable of holding at their proper value such enterprises and their authors.

We are tempted to give you the name of the architect, but think finally we will keep it for the private information of such of our triends as may be invited to compete hereafter in Norfalk County.

H. And T.

H. AND T.

BLACK MORTAR.

YERK, PA.

To the Rolton of the American Architect:

Dear Sir, - Will you please inform me what proportions are generally used to produce good black mortar for brick work. I have for traily used to produce good black mortar for free work. I have for several years past used lamp-black ground in water, and intheral black mixed with a small proportion of crunent, together with line and saud. Comparing the joints made with this mortar with some in your city a few weeks ago, I find mine rather dull and weak in effect; my brick-lovers also complain of its setting too fast. Any information regarding the above will be duly appreciated or gladly remainerated by Truly yours, J. A. DEMPWOLF.

NOTES AND CLIPPINGS.

We desire to draw attention to the following page, where will be found a list of churches now building in this country and Canada, which, incomplace as it is, cannot but be interesting to professional men and laymen ulike, as it betokens an activity which is not contined to any our section of the country.

A REMINDER OF OLD COSTONS. — During the repairs going on in an old building in Plymouth, Mass., last week, a large section of the plastering pave way and broke two large lights of glass in one of the windows of the store boueath. The cause of the fall was found to be a large accumulation of beach and, which, in old times, before the days of carpets, was sprinkled on doors and drawn with a brown into fantastic shapes. This sand had silted through holes and cracks in the bourds notil several bushels had accomplated above the planering, and its weight at last caused the fall. The building was built in 1698.

The Ends of Prayingers. — According to ancient writers, that one of the statues of Prayingles which approached most nearly in sensions beauty the famous Approdite, of which the Venus de Medicis is generally supposed to be a copy, was the statue of Eros, which, it is said, was presented to the town of Thespise by the notorious Phryne. The story goes that she, doubting her ability to refer the best of the works of Praxiteles, and being detormined to have none but the hest, caused an alarm of fire to be raised white she was in the studie; and when she saw that he was most anythms that the figure of Eros should be saved, selected that as her gift to her native town. her native town.

Cheeses Lance. — A company has been formed in Algeria for the introduction of Chiunes laborers, on account of the scarcity of lands for timber-cutting and mining operations. It is asking to be seemed in a monopoly of the business, but question is now redsed as to the policy of promoting its progress at all.

Ogs-Hearing. — It is said that one of the church editions in Berlin, the cableal contents of which are 2,780 meters, is heated by two gas-stoves, 1,40 m. high, 1,10 m. lone, and 65 continuous in width, each having seven brass gratings sixteen inches by two, equal to two fifths of an huch square per cubic meter of the contents of the building; the annual consumption of gas, for warming three times a week, is 1,455 cable meters, or at the rate of 410 liters of gas per cubic meter of contents. At Hamburg, in edition with cubic contents of nearly 40,000 meters is heated by eight gas-stoves, each laving thirty two brass gratings, twelve inches long by about one and a half wide; three liters of gas are required per cubic motor of capacity.

Besissonia & Cenery Quarry.—The political history of the past decade has familiarized as with the spectacle of men resorting to violence in support of political offices to which they had claims, more or less impossehable on the ground of fraud. Sieges of barrieaded State-houses, insurgant legislatures, and rious calling for the intervention of faderal authority, have added tresh hiors to the history of Louislana and South Carolina, blots which have had their lesser reflections mirrored in the rious at East St. Louis this summer, where for a time a dual mayoralty, its representatives supported by rival constabulary forces, put the like of the ordinary clitzen into no slight jeopardy by street fights. It is not often, however, that in covery-day life resort is had to arms to decide questions of disjusted ownership in real proporty, except, perchance, in the lower walks of life, where the constable has to enforce his writ of ejectment with the aid of a passe conductor. Legal processes are usually efficient to determine ordinary business troubles, but in the town of Rasendale, N. Y., last week, occurred a siege of a fortified place, which was conducted with much of the circumstance of war. For some time past the New York Cement Company's quarry in Rock Lock has been the subject of litigation, which resulted lately in the election of a new heard of directors, who declared that the continet of the present lessed was not all and void. As this conclusion was not agreeable to the lesses he prepared to defend his claim by force of arms, and building up a breastwork of slone at the quarry's mouth, he entrembed himself behind it with his supporters. To make the defend his harmed that the caseal kegs of powder were placed under this barricade, and were connected with the wires of a galvanic battery. For three days and nights was the siege an tained, till at length the besiegers, sixty strone, advanced to the assault. The besieged, who numbered furly much better armed that the attacking parts, week driven from the quarry, wh

Accounts,—At Louisville, Ky., a partion of a dilapiduted and uninhabited building field during the night of August 26 without causing injury. Accidents of similar character have Impened recordly at the Cheago Coston House and at the Hartford Capitol in the falling of large detricks; in the case of the Caston House from the top of the walls into the street below, where it only destroyed a back, and in the Hartford case from the base of the done into the building. A two-story frame building on Plymouth Screec, New York, fell in the evening of September 5. A family living in the upper part of the building, which was used for the storage of sand, escaped without burs. The maintified spire of the new Catholic Church at Brauford, Pena., fell in the afternoon of September 6, and inflicted fand injuries on three workmen, who were carried with the wreek to the ground, nearly one hundred and thirty feet below.

THE METRIC SYSTEM. — The International Congress on Weights, Measures, and Coins unanimously adopted, at its session recently held at I'ue's, a resolution deploring the fact that England, Russia, and the United States had not yet adopted a metric system. The American and longlish delegates afterward adopted a resolution petitioning the English and American governments to appoint a rowed commission to consider the adoption of a metric system by hoth countries.

TEXEMENT. — The Sanitary Code of the city of Brooklyn gives the following definition of a tenement house: "That a tenement house shall be taken to mean and include every house, hallding, or partien thereof which is rental, leasted, let, or hired out to be occupied, or is occupied as the house, home, or residence of more than three families living independent of one another, and doing their cooking upon the premises, or by more than two families upon a floor so living and cooking, but having a common right in the balls, stateways, wards, water-closets or privies, or some of them." the halls, studeways, yards, water-closets or privies, or some of them."

MUNORFAL CATHEBRAL TO QUEEN MERCERES. — The Paris Figure states that it is the intention of King Alfonso to build a cathedral as a non-soleum for Queen Mercedes. The building fund will be obtained by subtracting yearly from the king's civil-list the sum of forty thousand dollars, while the Due de Montpensier and the Princess of the Astarias will make a yearly contribution of twenty thousand dollars. Besides this, it is said that Queen Isabella has authorized, for the same purpose, the sule of certain jewels which were deposited in the Cathedral of Atocha. These jewels are said to be worth six hundred thousand dollars.

Discovers at Newberth Abbrev.—The Edinburgh Scalance says: "While preparing some additions that are being made to Newbattle Abbrev the workmen recently came upon what has proved to be the foundation and base of a chapel in an excellent state of preservation. The basement of the building is two hundred and sixty fact long and shout sixty-seven feet broad, and there are numerous massive pillars which are lelieved to have supported a grained arched roof similar to that of the crypt at prescut in course of restoration in the abbey, and which is supposed to have been built about the year 1140. Many claborately convent stones have been found, and these, with the beautiful mondied work to be seen on fragments of the grained arches and pillars, proved that the mason-work must have been of a very superior nuture, and in style akin to that of Melrose and Kelso abbeys."

The Gratitude of Corporate Bodies.—The New York Tribine says that the Roman corporation keeps Prince Tortonis, the agod millionnire, whose charities have been regal, in a state of prickly workingmit. He had a pulsee in the Piazza Venezia and a little palace or pulsazzetto adjoining it. In order to make way for the Via Nazionale the pulsazzetto was eat off and knocked to pieces. But the civic authorities were not satisfied. The beauty of the new street was disfigured by an awkward corner of the larger palace, which had been exposed to view; and the prince has now been told that he must sacrifice for the sake of public taste that portion of his property. He will be deprived of two rooms in which he has passed a great part of every day for many years, and for which he has a particular affection.

THE AMERICAN ARCHITECT AND BUILDING NEWS.

YOU. IV.]

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CONTENTS.	
Sunnaur: -	
Mr. Waterhouse at Manchester. — Criticism of Architects. — Decorative Art in Paris. — Mr. Walker on Ccöperation. — The Sacramento Anti-debris Association. — The East River Bridge. — Art in Chicago.	9:
THE REPORT OF THE MASSACHUSETTS BOARD OF HRAUTH	35
Papers on Penspective. XIII.	11
THE ILLUSTRATIONS: -	•
Alterations at Stamford, Conn. — Design for a Country Mouse, — Stuircase, Hall, and Firensoe in Rosson — College of	
Lebenon, N. H. Study in Perspective. Plate XIV 16	1
AMERICAN VERNACULAR ARCHITECTURE, V	11
Cornestonnence: Letter from St. Lonis	1
COMMUNICATIONS:—	
Cesapool Ventilation	9
Tur Dwellings of the Poon	2
ST. ALBAN'S NAVE	2
Notes and Clarings	3

In his late address before the Manchester Society of Architects, Mr. Waterhouse took what has seemed to us to be the manly and sensible position in regard to the criticisms which the public less been prone to make on the work of architects, and the distrust of them which is now and then shown. He said: " May we not be becoming over-sensitive to adverse criticism? Does not the attention bestowed upon our works by some distinguished and cultivated people show a satisfactory interest in modern architecture? and though they may abuse its want of vitality, - sometimes as we may think, ignorantly, - is it not better for our art that their interances should be sometimes adverse rather than been-existent?" It is in truth the popular interest in what architects are doing, the sense of its necessity, that makes the public care to criticise them. Herein, as we have once said, is the architect's opportunity. It shows him that the work he is doing is of recognized importance, and that if he can command approval his reward is sure. If the public turns to builders or to engineers to do his work, it is simply because it expects to get certain things from them. It becomes the architeet's duty to show that so far as these things are a part of his work there is no advantage in going to anybody else for thom; that on his own ground he is superior to the engineer and builder, and on common ground he is their equal. From any ground on which he cannot compete with his rivals he must be content to retire, and his professional pride cannot save it to him. We are apt - architects, and American architects perhaps more than others - to make the twofold mistake of asanning that public criticism is an offence, and that we have nothing to learn from it. The criticism of the public is mostly of a practical kind, and indicates practical wants that the public will have supplied by one person or another. There is no practical requisite of our work which we cannot supply to its satisfaction if we will take the trouble, and when the public is con-vinced that we do this there need be no fear of intrusion by rivals in our proper field. In architectural design the public has always been led by architects, and always will be unless they forfeit its confidence by incapacity in other things which it can better understand. Even here the criticism is of value. It may be often wrong, but it will be often right, and if we were accustomed to listen to it we should soon learn to distinguish tolorably well when it was right. Our architecture is by no means above criticism, — we may as well confess that on the whole it is not very good, — and if to general criticism we could habitually join a profossional critician which should be at once kindly, discriminating, and outspoken, and could learn not to receive dispraise as an affront, but to study what value it might have, our improvement would be quicker.

It has been the habit to believe that decorative art had its home in France, and pur excellence in Paris, where it grew so naturally as to have no need of the artificial stimulus of a protective association. But it seems that the great advance which the world outside of France has made in this respect of late years has coused the French into some alarm lest they should lose the preëminence which they have been accustomed to consider their own. A society for the encouragement of such art has there-

fore been formed in Paris, among whose many presidents are the Prefect of the Seine, the Due d'Audifret Pasquier, and other notabilities loss notable abroad, and with Mr. Confiffe Owen and Sir Richard Wallaco among its honorary presidents. About a hundred and fifty thousand france was some subscribed, and a museum was opened with small beginnings in the Pavilion of Flora, in the Tuileries. The society has issued a prospectus calling attention to the advance shown in the decorative work displayed in this year's exhibition by foreign nations, smoon which Americans may be gratified to find their own mentioned; and reminding their countrymen, probably without exaggeration, that though they "possess, in virtue of their innate tasto, a superiority," they must gradually lose it notes they bestir themselves to get the full advantage of the traditions of art which are transmitted among their workmen. Thus it appears that international exhibitions, however doubtful their profits in some respects, continue to bear substantial fruits. The present advance in art of England dutes, as we know, from the first world's fair of 1851; our Contounial - favored to be sure by a profixisting influence in society - has given an immense impulse in the same direction to American industry; and now we see that even in France, secure as she has thought herself in her preëminence, the like opportunity produces the like result.

We have not seen in any of the recorded testimony before the Congressional Labor Committee more clear sense than in that of Mr. J. H. Walker, a shoe manufacturer of Worcester, Mass. He has written it out at length, at the request of the chairman, and has printed it in the Buston Daily Advertiser. It would make an improving pamphlet for distribution among those of the workingmen who are open to instruction on the causes and difficulties of their present condition. The experience of cooperation which he eites is worth quoting for the illustration it gives of the difficulties of this remedy, and the unpropared condition of the workmen's minds at present. periments which Mr. Walker has tried, and those which he has watched, have been unsuccessful, because, he says, the workmen cannot be made to believe how small the percentage of profits in manufactures is, and are unwilling to wait for their slow return. Eight years ago be tried to interest his operatives by offering them a share of profits. He asked them to contribute from their wages to the working capital of his business, allowing them their share in the profits pro rate, and without taking any account, in the division, either of interest on the "plant, or of compensation for the services of any mamber of the firm. But no workman below the grade of foreman was willing to try the experiment. Another large manufacturer, who tried cooperation on a different plan, divided a quarter of his net profits among so many of his workmon as stayed long enough to earn a certain sum in any year, - \$100 for mon, and \$50 for women. This was done for six years, in the hope of encouraging good work and economy of material, the dividends being from two to five per cent. (on the capital?) each year, except one year when there was none. But the men could not be made to believe on what small economics of material the profits depended, nor that the dividends, which they expected to be many times greater, were honestly needs. The experiment was given up, as of no real henefit, but rather a breeder of distrust and annoy-MINCE.

This is no more than night be expected by those who will consider the ignorance, not only of workmen, but of all inexperienced people, concerning the employment of capital. Such people are not easily persuaded how small the ratio of profit is to actual disbursement, or to the number of people engaged, just as the communist cannot believe how little way the riches of the wealthy would go, if divided among the poor. If the weaver, touding two or three looms, each of which turns off say forty yards of cotton cloth in a day, could have it fully borne in upon him that the profit of manufacture was only a quarter or even an eighth of a cent the yard, and be made to see that his share of that when it was divided among all concerned must be a small one, he would have a useful lesson. But this is not learned by such experiments in cooperation as Mr. Walker describes, or by any that capitalists are likely to offer. Here is the weakness of all systems of cooperation yet proposed, between manufacturers who must naturally insist on administering their capital, and

their workmen; and here is the value of such attempts as that we montioned a fortnight ago, by the Crispins of Chicago. to establish a manufactory, by their own capital, and under their own management. Such an arrangement as that devised by Mr. Walker, we may add, could hardly be expected to setisfy the workingman, liberal and even generous as it was in its kind; for it does not answer to his idea of what ought to be allowed him, which is an opportunity, not to save capital for himself, and invest it to advantage under the control of other persons, but to receive for his labor alone, over and above his wages, and with no need of saving, a share in whatever profit is made. if this were found to be practicable, however, it would not lead to the result that is the condition of a healthy relation, which is, that if he is to concern himself with capital he should understand the necessities of its employment; the other condition, that he should contoutedly acquiesco in the management of those who are wiser than he, being apparently a thing of the unreturning past.

The war between the farmers and miners in California promises to be a close struggle. An association has been formed, to include the farmers of the whole Sucremento region, which is called the Anti-debris Association of the Sacramento Valley. Its purpose is "to prosecute to the courts of last resort" the suits entered by the farmers to defend their estates against the ruin which is threatened them by the debris with which the hydraulic mining companies are flooding the rivers. The litigation must necessarily be very costly, for the interests involved are enormous, and the suits will be contested in every successive court to the last possible point. The subscribers to the association pledged themselves to an assessment of three per cout, on their assumed interests in the contest, and showed a strong de-termination to carry it to the end. At the organizing meeting, \$170,000 was subscribed as the fund on which the assessment was to be levied, but this is probably only a small part of what will be needed to carry on the war, and of what is expected from further subscriptions. On the other hand the mining companies throughout the State are mixed for the defence. wealthy, and more used than the farmers, by virtue of their occupation, to stake their money on hazards, they will make the strugglo a long and expensive one.

THE whole amount expended on the East River Bridge up to the first of September is shown by the report to the trustees to he \$9,835,988, and the amount due upon it, \$112,309. granite meressary to complete the anchorages had been contracted for at a cost of \$17,467, and to this must be added 32,000 pounds of iron stay-bars which must be built into the anchorages, at a cost of \$1,920, as soon as the great cables are finished, in order to bring the work to this point and make it scence during the To provide for this necessity the recommendation of the Executive Committee was adopted, authorizing the officers to barrow money to the amount of not over \$260,000, in anticipation of payments exported from the two cities of New York and Brooklyn, and an order was passed to bring suit against the city of New York to enforce payment of the sums the from it, which the city at present roluses to pay. The subject of the transit of freight and passengers was again referred to a select committee of five trustees, with a view, we suppose, to the vexen question of emping trains of cars over the bridge.

This Chicago Academy of Dosign, reorganized last spring, as we have before described (American Architect, May 25, 1878), is promising an active year under its new management. day schools are fairly at work under Messrs. Earle and Spread; the evening schools were to have opened this week with a class for drawing from the autique, to which a life-class is to be added by and by. A course of historical lectures upon architecture is to be began next month by Mr. Jennoy, late professor of architecture in the University of Michigan. Mr. Leonard Volk, of Chicago, the sculptor of the Douglas monument, is busy with the first of the four statues which he is to model for its base. The figure which is to personify the State of Illinois is to be sitting on the right of the door of the tomb, holding in one hand a shield and in the other a shock of corn, and dictating the story of Donghas's life to History, toward whom her fuce is turned, and who is to sit on the other side of the door, recording the story upon a tablet. The figures are to be of bronze and of heroic size. It is expected that they will be finished before the summer.

THE NINTH REPORT OF THE MASSACHUSETTS BOARD OF DEALTH.

Ir was a habit of rustic cynics a generation ago, and, for anght we know, of other cynics, to quench their more fastidions fellows with the dictum that every one must swallow his peck of dirt, - an adage that was mainly of uso as an excuse for making the peck a bushel. It had not a scientific basis, but all the researches of modern sanitary science seem bent to show that it was at least within the mark, and that one may be content if he can, with the utmost precaution, keep within this allowance, and can insure that it shall not be poisonous as well as dirty, - in so many and so insidious ways does obnoxious matter intrude itself into what we cat and drink and inhale. The cynicism is apparently not abuted by the verification of the adage, even whon onforced by the losson of danger that goes with it. munities or bauscholds which have long lived contented in the conviction that a certain degree of uncleanliness is a motter of course are not easily brought round to the sudden belief, in apparent contradiction of their own experience, that it is pernicious and may be rainous, at the bidding of a parcel of men whose science they distrust, and whose occupation seems to them idle if not impertment. Hence the public spathy or hostility to the regulations which sanitarians propose, the slowness of people to learn that a vast amount of disease and death comes by common offences against cleanliness which may be and ought to be prevented by joint action or legal restrictions; and hence it follows that boards of health must add to the labor of providing for the public hygiene the labor of persuading the public that the provision is necessary, and justifies the degree of sacrifice which it requires.

How much the apathy prevails is significantly shown in this Massachusetts health report by the record of the votes cust at the last election, when it was set before the cities in the State by legislative act to decide whether they would appoint bounds of health. Boston being up to that time the only city which had one. Out of eighteen cities, eight voted to appoint the hourds, live refused, and five ignored the matter aftogether. What is more surprising than the small success of the experiment is the small interest in it shown by the voting. In Cambridge, where the vote far exceeded that of any other city on the question, it was carried by 2,003 to 458, the population being about 6fly thousand. In Lowell, a somewhat larger city, the vote was 983 to 335, and in mother which accepted the proposition was the aggregate vote greater than eight hundred. In Fall River, a town of about the size of Cambridge, it stood 174 to 52. Indeed, more enthusiasm was shown in rejecting the boards than in accepting them. Thus, in Gloucester, with about seventeen thousand inhabitants, the vote was 629 to 819; in Neuron, with the same number, 545 to 779; in Fitchburg, with twelve thousand, 118 to 648; in Lynn, with thirty-three thousand, 312 Yet Gloucester, which refused to provide itself with such officers, is a town that is in an exceptionally unfortunate plight with its drainage, and has, within the past few years, been scourged with diphtheria in a manner that might be expected to bring the most disregardful population to reason; and Taunton, which did not honor the question with a vote, being in a very similar condition, was last year savagely attacked by the same disease.

The report itself of the Board of Health is a good example of what such a document should be, - clear, simple, and sonsible in its recommendations, moderate and judicial in its tone. The subjects it has to deal with being somewhat unpopular, its recommendations are obviously tempored to the undeveloped con-dition of public equivien. In this we dare say the Board shows a true souso of what is practicable, while it stops short in several respects of what we should like to see done, and doubtless of what it hopes ultimately to accomplish. Its chief attention is given necessarily to questions of sewerage, of water supply, and of the pollution of streams, its most important practical recommendation being the passage of a bill which the Board has propared and proposes for the action of the next legislature, to limit the pollutions of streams, with which are included pouls and tidal waters. The bill is very moderate in its provisions, and drawn with as much tendernoss for existing rights or univileges as is consistent with reasonable efficiency. It forbids any town, corporation, or individual to discharge solid refuse of any kind into streams, public ponds, or tidal waters, or to interfere with their volume or flow except for the sake of sanitary or other improvements; and all illing or other "improvement" is to be under charge of the town authorities, subject to regulations of a

River Pollution Commission. In regard to streams or ponds used as water-supplies, the bill forbids any increase of the quantity of refuse now poured into them, or the discharge into them of any of the soil from dwellings within thirty miles up stream from the point at which water is taken. It is also provided that any refuse whatever that is discharged into such waters shall be purified to the satisfaction of the River Pollution Commission; but this provision, taken in connection with the preceding, is rendered almost augutory by the limitation that it shall not apply to any now existing pollution. The pol-lution of other waters is to be regulated by the boards of health of the various towns, in conjunction with the Commission. Other sections of the bill are intended to protect towns which are sewered against the discharge into their sewers of substances which will injure or obstruct them, or make the sewage more difficult to dispose of. The plans of all new systems of water supply or sewerage and of all new dams are to be subject to the approval of the Commission, and the same restriction is applied to the arrangement of water-supply and drainage in all new state buildings. Finally, the direct discharge of soil from privies, water-closets, and wash-tubs — sinks and bank might well have been added - into any stream whatever is forbidden.

The section which provides that in any sewered town "the local board of health shall, upon application from any parties, order any privy or cesspool to be abolished, and connection to be made with the public sewers," would be likely, unless modified, to lead to rellision in cities like Cambridge, where an unfortunate ordinance exists that requires every house-drain to empty into a cesspool, from which only the overflow may be carried into the sawers. That privies and cesspools shall be abated is devoutly to be desired; yet to enact that in a town where they are required by ordinance the board of health shall, without discretion, abate any of them on application of any person, whether he is affected by them or not, seems to us to be making a law which must remain a dead letter, or else had better give place once for all to one which multifies all such ordinances.

It will be seen that, excepting for the provisions against discharging into streams the soil from human dwollings, which in some form or other are absolutely necessary, the bill carefully abstains from interfering with existing privileges, and contines itself to preventing as far as may be any increase of the pollution which now is. Nevertheless, it is pretty clear that even the existing uses of the water will, if continued, in time do serious injury, and that therefore something more than the modest restructions now proposed must by and by be imposed. In regard especially to dofilement by soil from dwellings, the thirty-mile limit proposed by the Board in case of water supplies cannot be considered as absolutely safe, as it certainly cannot be counted comfortable, when doctors disagree as to the possibility of disinfecting sewage by any amount of dilution. One authority quoted in this report, the late Dr. Letheby, medical officer of London, claimed that sewage diluted with twenty volumes of water would be destroyed in a flow of six or eight miles; on the other hand the English Commission on the Pollution of Rivers has reported that "there is no river in the United Kingdom long enough to secure the oxidation of any sewage which may be discharged into it, even at its source." On the whole, cautions people and fastidious people will unite in concluding that the only course is absolutely to exclude, from all waters at least which lead to any water-supply, all taint of house-drainage whatever, and that in this case even existing privileges should give way without delay.

This year's report contains the results of a careful examination of the basins of the Hoesac and Flousatonic rivers, illustraced with maps, and showing the condition of the towns in
those valleys, and the kind and position of the manufactories
which discharge their refuse into the streams. A circular was
sent to manufacturers throughout the State, asking for information as to the actual pollution of streams, what kind of manufactories were most mischievous, and what the best remedies.
The answers, when they were obtained, were conflicting, as
might be supposed. We ollen mills, on the whole, seemed to be
most unpopular, dye-houses and bleacheries perhaps next; but
the reader of the report is led to surmise that the most offensive
neighbor is apt to be the nearest. The remedies oftenest suggested are settling-tanks and irrigation. Some manufacturers
agree that there is nothing to do with the refuse but to let it run,
while other correspondents protest energetically that the only
thing is "to keep the stuff out of the streams." Some of the

conclusions which the Board draws from its examination will surprise many people, though no doubt they are fully sustained. One is that the hill towns are found to be distinctly less healthy than the valley towns, both pulmonary diseases and typhoid fevers being decidedly more prevalent in them, and the population on the whole less strong and well. This is corroborated by the results of some examinations made for the army during the late war. The reasons given are the thinness of the sail, underlain by impervious rock full of hollows, in which water is retained. making a damp subsoil; and the impregnation of this shallow ground and the wells in it with the discharge from privies, cesspools, stable-yards, etc. In Gloncester, where these combitious obtain, though it is not a bill town, and in North Adams, in the upper part of the Hoosac Valley, the soil has become so contaminated as to poison the ground and apparently to make pollution of the drinking-water the usual condition. In both these towns the ravages of diphtheria have of late years been startling. North Adams has now so for taken warning as to supply itself with pure water; Gloocester, as we have just scon, has continuaciously rejected salvation by means of a board of health. The drainage of such towns is, to be sure, pointfurly difficult. The report rightly objects to both ordinary privice and cesspools, especially those with dry walls, and says in regard to North Adams: "A considerable increase in the pollution of the Hoosac River, if that is necessary, would be a much loss evil than those now existing of nuremoved filth." This is probably true, but is nevertheless a doctrine to lend itself easily to abuse. It is worth while to keep clearly before people the distinction between offences where punishment falls chiefly on those who commit them and those whose injury is laid up for others; thus, between the acts of those who defile their own houses and those who poison the waters for their neighbors and the earth for their successors. The report rightly recommends water-carriage where it is practicable, and dry removal where, as in Cloucester, seworage is very dillically and it is not too severe upon cesspools. Yet it sooms to us that surface irrigation, as in the Mould system, and even the use of tight uncovered vaults for dry-soil, where it can be easily disinfeeted and often removed if people will, and which ought to save the earth from contamination, is preferable to the discharge of sewage into any ordinary watercourses,

With the general report are included a number of special papers of interest, which we have not time to notice in detail. The description of a cottage hospital in Pittsfield is interesting, as an example of a kind of institution which ought to become common. We cannot, however, commend as a model the plan which Dr. Adatas displays with some complacency. The contagious ward is in the midst of the servants' hod-rooms; the water-closets for male and female patients are massed together in the middle of the house, close to the reception-room and the main staircase. They are placed in the bath-rooms, an arrangement which is faulty in a dwelling-house and preposterous in a hospital; the soil-pipes are carried into the chimneys, and the dramage into leaching cesspools. It is a little amusing, after reading the grave condemnations of cesspools and the protests against contamination of the soil, of which the main report is full, to come here upon the maive remark that "the soil, being a coarse, bibulous gravel, is well adapted for cesspools."

There is an interesting paper on dangers from color blindness by Dr. Jeffries; a report on the sanitary condition of Cambridge by Dr. Coggewell, not so flattering to that city as one might wish; a tabular report on the health of towns in the State, with detailed notices of the prevalence of diphtheria and typhoid fever in Glouester and Taunton; a careful essay on scarlet fever by Dr. A. H. Johnson; and a not very encouraging report on the sanitary condition of public schools in Massachusetts by Dr. D. F. Liucola, of Boston. The paper of illustration of potable water, both for domestic use and on a large scale for town supplies, by Professor Nichols of the Massachusetts Institute of Technology, is a clear and well-studied account of an important subject, full of interesting information and valuable suggestion. It deserves to be published separately in a form for general circulation.

PAPERS ON PERSPECTIVE.

XIII. DISTORTIONS AND CORRECTIONS CONTINUED; CYLINDRICAL, CURVILINEAR, OR PANORABIC PERSPECTIVE.

271. The previous paper has discussed the so-called distortions to which circular, cylindrical, and spherical objects are subjected when drawn according to the methods of plane perspective, and has explained the so-called corrections which are applied to such objects.

Similar distortions, it was shown, attend the putting of the human figure into perspective, and similar corrections apply. Indeed, it was printed out (261) that every object not exactly at the centre of the picture must necessarily be more or less out of drawing, though the distortion is not generally such as to attract notice save in the

cases mentioned.

272. Plate XIV. demonstrates the existence of these distortions. exhibits some instances in which they are intolerable, even in the case of rectifinear objects, and shows yet another way of correcting them. By distortion, as has been said, we mean that the outline given in the drawing is different from the outline presented to the eye by the object drawn. Now the rays of light that pass from the outline of an object to the aye form a cone, whose base is this outline itself. The perspective representation of this outline is the line in which this come of rays is cut by the plane of the picture. If this plane cuts the come of rays is a direction at right angles to its axis—that is to say, if the object is at the centre of the picture—then the section is of the same shape as the base; the perspective is of the same shape as the object. But if the plane of the picture ents it the cone of rays obliquely—as must be the case with all objects not just at the centre—then the section is not of the same shape as the base, and the perspective does not look like the object; it is, so to speak, distorted. Of course, when seen from the station-point, obliquely, the perspective is loreshortened and books just as the object does. But in itself, and when looked at merely as a line, it presents a different

273. This is illustrated in Fig. 70, in which is seen a rectangular block, drawn in parallel perspective, but considerably to the right of the centre. Its proportions are such as no rectangular black could ever possibly present to the eye. It exhibits three faces, one of which is a square. But if a rectangular block is held so that one of its faces shows four right angles, it must be bold so that unlither of the other faces can be seen at all. If on the other hand it stands so that two adjacent faces are seen, as this block evidently does, then all the angles must appear either acute or always. The figure widin the eigele shows how the block really tooks when one looks straight it it that the most it is described at the control of the straight at it, and this is the way it is drawn when at the centre of the pie-The difference between these two representations exemplifies the discortion to which all shapes are subjected when the line from the object to the dye is not at right angles to the picture. But this distortion in the drawing is corrected, by foreshortening,

when one looks at the drawing from the station point S, which in this case is a few inches in front of U, in Fig. 56. In fact, Fig. 70, a, was sketched from this point, and is a view not of the cube itself, but of the Fig. 70, b, thus foreshortened into a real likeness of the

abject it representa-

274. Fig. 86 exhibits other and even more striking phenomena. Take heat the church on the luft hand. It is hereibly not of drawing, although the picture does not extend, on this side, very far from the centre. But the objects drawn are so placed as to make but a small angle with the plane of the picture, as may be seen in the plan be-But the objects drawn are so placed as to make but a small low, and when this is the case, this sort of distortion aften presents itself. It is often seen in old fashioned prints and in photographs of

itself. It is often seen in old fashioned prints and in photographs of very long buildings, taken usarly in elevation. It arises, as is obvious, from both somishing points, Vⁿ and V^t, being on the same side. 275. The distortions at the other end of the picture, however, though less offensive and consequently much more common, are almost as great, giving the buildings quite different proportions from what they would present to a spectator at S. For the proportions of an object, that is to say, the relative size of its parts, depend upon the relative angular dimension of the parts, that is, upon the relative size of the angles they abtend at the eye. Their apparent distance apart, right and left, or up and down, is angular distance. A painter, then, who would represent things in their true proportions, as they look, and in their apparent relations one to another, would have to prolook, and in their apparent relations one to another, would have to proportion the linear dimensions upon his canvas as to the angular dimenportion the inear dimensions upon me canvas as to the angular dimensions of his object. And this, in fact, is just what every painter, every draughtsman of whatever kind, always does when he undertakes to skelch from nature. It is the method of every artist who undertakes, outdoors or in, to draw things as he sees them; he can have no other; he must give to the representation of objects the apparent shape and the relative size that the objects themselves present to his eye. In other words, he proportions the linear dimension upon his canvas to the angular dimension of the object. Now this is exactly what perspective does not do. In sketching, one may begin in the middle, fix the position of his central object, and distribute other things about it to the right and left, according to their apparent distance from it. Their distance is proportioned to their angular distance, and their size to the difference of the angular distance of their angular distance. edges. But in a perspective drawing, as is clearly shown in the plan, the distance of an object from the centre of the picture is propor-tional to the tangent of its angular distance, and its size is accordingly proportioned, not to its angular dissension, but to the difference of the tangents of the angular distance of its edges from the centre, The scale to which they are drawn accordingly increases from the centre ontward, just as in Mercator's Projection, which gives indeed a sort of perspective view of the terrestrial sphere, as seen from a station point at its centre.

276. It is plain that the scheme of making every linear dimension in a drawing correspond with the angular dimension subtended by the object could be thoroughly exerted out only by drawing on the inside of a hollow spherical surface, a condition difficult to fulfil. A

cylindrical surface, however, answers nearly as well, especially when, as is usually the case, the vertical dimensions are relatively small; a cylinder, moreover, has the advantage of being a decelopable surface; it can be rolled out flat. This is the surface employed in circular panoramas, and it is virtually that employed in sketching from nature. For as one turns from one object to another be virtually keeps the corresponding part of his canvas in front of him, just as if it were a

cylindrical surface.

277. The place illustrates the result of this procedure, and affords an opportunity of comparing it with the results of plane perspective. In the plan of the street we have the position of the spectator indicated at S, that of a transparent plane, representing a picture plane, at p m, and that of a transparent cylinder at a c b. The centre of the perspective picture is at o, the point nearest the spectator, and the plane and cylinder are tangent at that point. Visual rays drawn from the principal points in the street to the station point pierce both surfacer, and pietures drawn upon them would, when seen from the point S, obviously coincide with each other and exactly cover

the objects represented.

the objects represented.

278. Fig. 66 exhibits the result, as shown on the plane p.p. and Fig. 67 that shown on the cylinder a.c.b. The first strikingly illustrates what has been said of the inevitable distortion of objects in plane, perspective, and of their gradual exaggreration of scale as they recode from the centre. Fig. 6; shows the effect of making the linear dimensions in the drawing correspond to the angular dimensions of the objects drawn, that is to say, of drawing everything just as it appears. Of these effects the most nutlevable are these; that in the first place the distortion of the church on the left entirely disappears, and in the second place the distortion on the right dis-appears also, the houses and the landscape beyond being reduced to appears also, the noises and the landscape beyond being reduced to dimensions proportioned to the dimensions given to the nearer objects, while the size of the picture is greatly diminished. All this is a great gain. But on the other hand the horizontal parallel lines which in Fig. 86 are all straight and converge to a single vanishing point are in Fig. 87 all more or less curved, converging towards the two vanishing points of the system to which these lines belong, 180° distant from one another. This curvature would of course disappear if the paper were bent into a cylindrical form and the eye placed at the axis encoaste the horizon, and in the bowe circular placed at the axis opposite the horizon, and in the large circular panoramas which are sometimes exhibited, and which have given to this method the name of Panoranic Perspective, this of course is done. But in general the developed cylinder has to remain flat, and is must be confessed that this curvature of lines which in nature are straight is itself a distortion which most persons find extremely objectionable.

279. It is worth while to remark, however, that this phenomenon of the apparent curvature of straight lines is of constant occurrence in unture; and it is just one of those phenomena of nature with which perspective has to do, being concerned with the appearances of parallel lines. All systems of lines which are long enough to indicate both their vanishing points, converging to one point on the right and to snother on the left, have an apparent curvature. Such are the long parallel lines of cloud which often cover the sky, or the are the long parallel lines of cloud which often cover the sky, or the sunneams and shadows which conclines at sance pass completely over from west to east. In both these cases each particular cloud or sunbeam, as one looks at it, seems quite straight; but all the others on either side seem concave towards it. In fact, as they all meet, or tend to meet, at two different points, and to separate between them, they must seem curved; straight lines can meet at only one point. It is the same with the horizon itself, which seems straight when one luoks at it, but seems curved when one books up or down. So will other long lines, such as carved when one looks up or down. As one turns his ever rapidly from one and of a stress to the other the

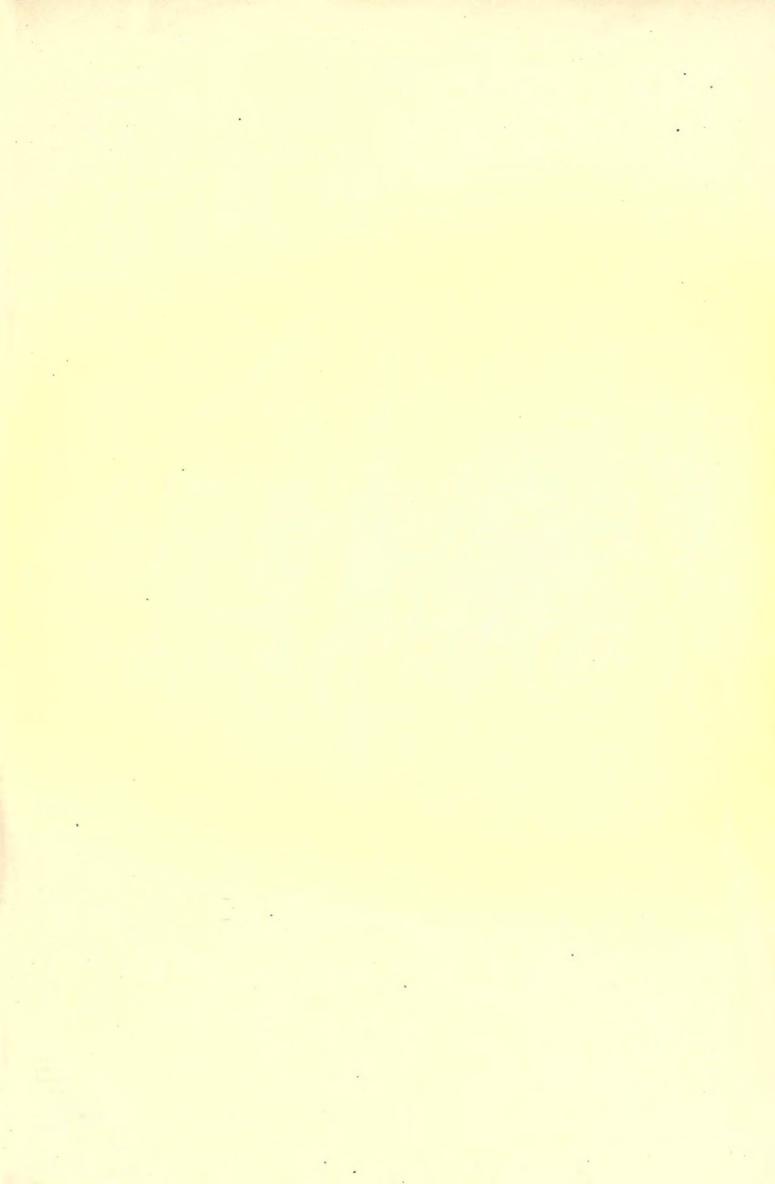
one turns his eye rapidly from one and of a street to the other, the

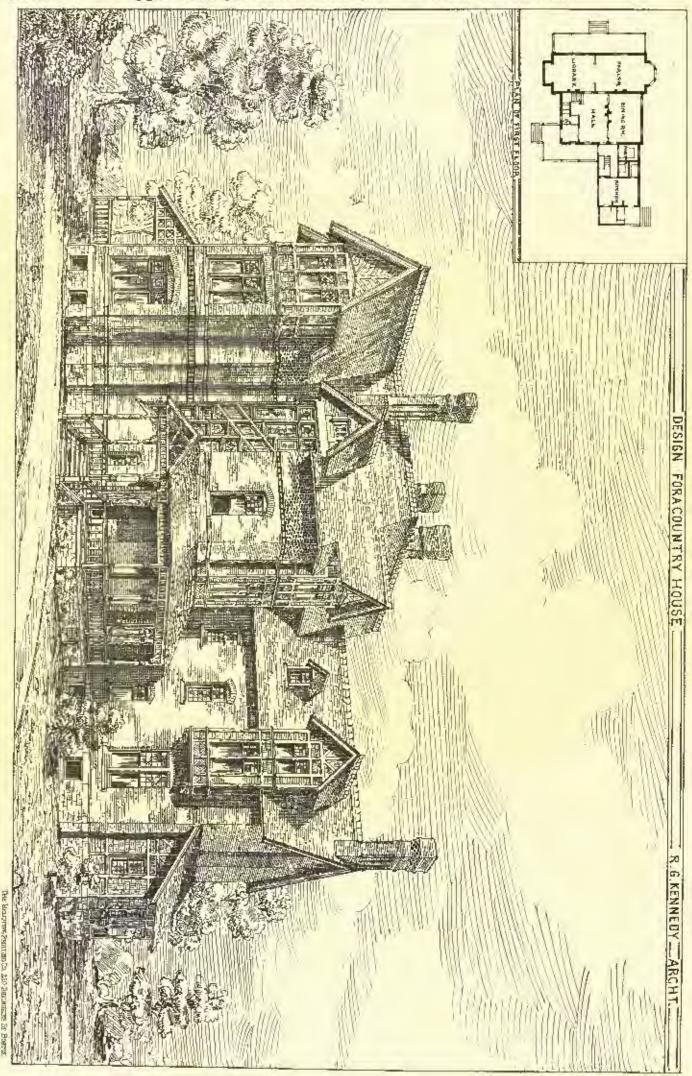
apparent enevature reveals itself unmistakably.
280. To one who is accustomed to observe this carious phenomenon, the enevature of the lines in cylindrical, or, as we may now call it, Curalinear Perspective is but a trilling evil, hardly to be counted against its manifold advantages. Of these the chief is perhaps, as has been said, the perfect conformity of its results with those obtained in sketching from nature. Of this an excellent illustration is afforded by Fig. 68, a rude outline sketch from a water-color by Turner, representing the Ducat Palace at Venice, and the adjacent buildings. He sketched each building just as it looked, and did not mind the resulting convenue of the horizontal linus of his drawing.

resulting convature of the horizontal linus of his drawing.

This drawing exhibits, however, what is perhaps the most objectionable distortion of all, an apparent convexity in the objects represented. The quay, which in fact is straight, looks convex.

28). But perhaps, after all, the chief merit of Curvilinear or Panoramic Porspective is this: that it permits the limits of the picture to be extended indefinitely without the rapidly increasing distortions to which plane perspective is liable. Fig. 69, which is horrowed, though much reduced, from a rare and little-known work, by Mr. W. G. Herdman, published in Liverproblin 1853, exhibits this excellence in a striking degree. It represents the meeting of two streets in some foreign town, and succeeds in showing both sides of both streets, without distorting any part of either. The horizontal angle enbaraced must be more than a hundred degrees. The dotted curved braced must be more than a hundred degrees. The dotted curved lines which in the original were carried across the picture in order to show the theory on which the drawing is constructed, are here omitted. Where the sky-line is as broken as here, and the continuous borizontal lines are so few, the disadvantages of this method, as is evident from the figure, are reduced to a minimum.

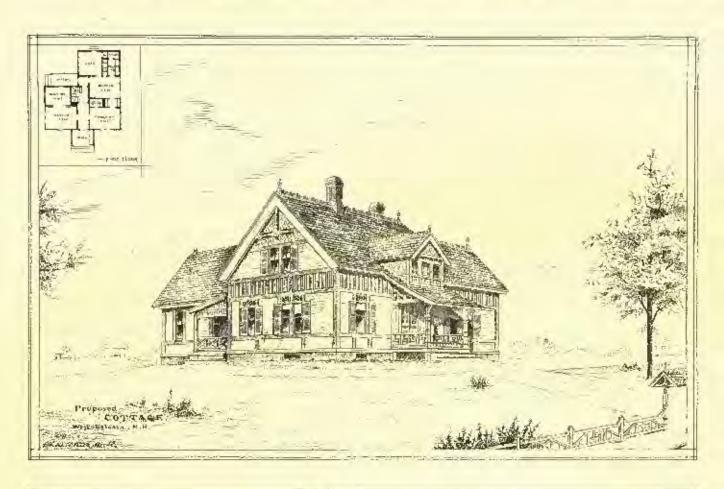


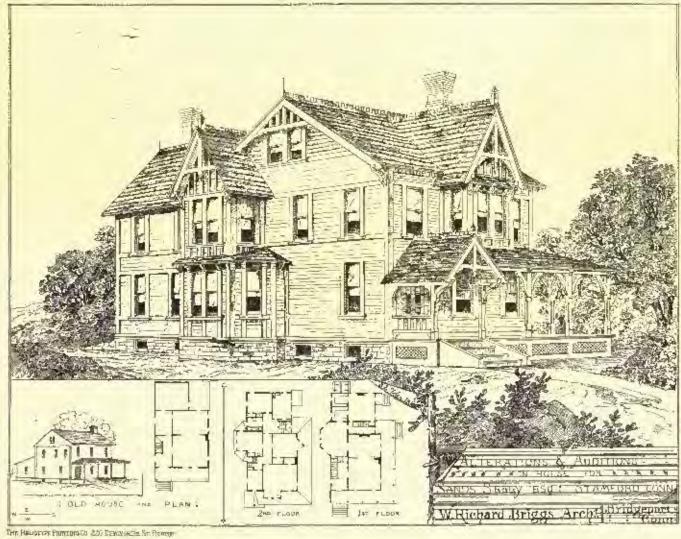




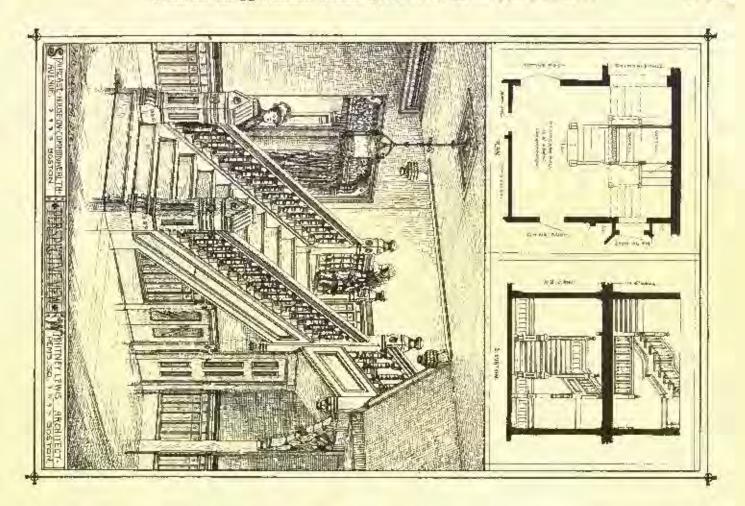
THE HELICIPA PROTERTS TO \$20 REMARKING St. BOSTON

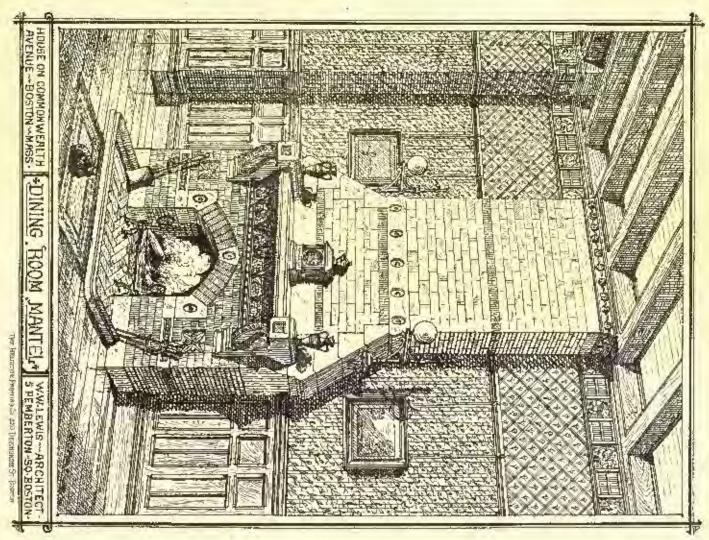
PLATE XIV. CURVILINEAR PERSPECTIVE. Fra. 66 F10 70 a Frg. 67 Fig. 68 Fid. 69 (Copied From Hendman's Curvilinear Frespective.)













282. Whother in any given case plane or cylindrical perspective is to be preferred is a matter of judgment, and one's decision must depend chiefly upon the nature of his subject. For architecture, except in picturesuse sketches, the latter is in general obviously unfit. But for the landscape painter it affords the same means of escape from the inevitable distortions of plane perspective that the painter of figures finds in the corrections described in the previous

Paper.

The next paper will show how drawings in Curvilinear or Pano-

ramic Perspective may be geometrically constructed.

THE -ILLUSTRATIONS.

ALTERATIONS IN HOUSE FOR BANDS SWELLY, ESQ., STAMFORD, CONN. ME. W. RICHARD BRIGGS, ARCHITECT.

This alteration was completed a year ago, at a cost of about 1,000. The old roof was not altered, nor were the windows or \$3,000. doors moved, the additions being put on with as little change as pos-

DESIGN FOR A COUNTRY HOUSE. MR. R. G. KENNEDY, ARCHI-TROT, PHILADELPHIA.

STAIRCASE, HALL, AND FIREPLACE IN A DOUBL ON COMMON-WEALTH AVENCE, BOSTON, MASS. MR. W. W. LEWIS, ARCHI-TECT, BOSTON.

COTTACK AT W. LEDANON, N. B. DESIGNED BY MR. C. A. MICH.

This cottage, to be built this tall for Mr. C. B. Drake, is situated on one of the terraces of the Connection; River, averlacking it, with a western view up the White River. It is to be finished inside with pine throughout, and painted on the outside in party colors, with red roof. Estimated cost, \$1,500.

STUDY IN PERSPECTIVE. PLATE XIV.

See " Paper on Perspective," in this number.

VERNACULAR ARCHITECTURE, V.

" HOUSE-PLANS FOR EVERTHODY," by S. B. Reed, Architect, is House-Plans for Eventually," by S. B. Reed, Architect, a collection of designs for cheap houses, mostly rural, published in the American Agreenturist during the last three years, is the latest exposition of the Vernacular Architecture presented to us in form for notice. If additional proof were needed that our popular fashions of building have been crystallized into a recognized and characteristic style, based upon contamperary manners and customs and upon our natural resources of material, this volume comes with a stamp of legitimary upon it which cannot be denied. It distinctly sets forth the way in which we, in the Northern States especially, plan and build the simpler sorts of country houses, form houses, and what, for build the simpler sorts of country houses, farm houses, and what, for the want of a more convenient term, we must call "suburban villas," There is nothing in it from beginning to end indicating that the author has ever indulged himself either in the reproduction of tor-ign forms or in the dangerous play of original invention. We have here what the profession is prompt to sugmentize as "compenser's architecture," but what the profession must needs respect (to present an almost self-evident analogy) as a dialect which, although it may be vulgar, contains the vigorous roots of pure language. We still insist that the business of the architect is to accept these conditions, and devote himself to the proper and harmonious development of the elementary style thus furnished to him, so far, at least, as relates to his less monumental and more domestic works. Contempt for the present monumental and more democracy contents to the present volgarity of it, and especially for the erudeness of its more ambidious manifestations, is a natural feeling for the scholar familiar with higher types of architectural forms and accustomed to work in what may be called the ideal regions of design, but out of such contempt to direct contribution to the progress of American domestic architectural architectural and accustoments. are can possibly be developed.

The designs in this book are the commonplane results of adapting

The designs in this book are the commonplace results of adapting neachine-made double-hung sashes, machine-made doors and blinds, machine-made mouldings and details, to elevations which, for the most part, pretty readily grow out of plans adapted by experience and observation to the needs of frugal country people, who do their own household work, sometimes perhaps with the assistance of a single servant, and whose habits of living are adjusted to a very small scale of expenditure. The text and the woodscuts clearly explain attacked the residence of accomplicity construction with which, by the large archithe devices of economical construction, with which, by the bye, architects of education would do well to make themselves more familian. Of course the quality of the designs is best where there is the least attempt at adventitions or superficial ornamentation, but, although none of the designs are free from the usual illiterate detail, the book has fewer offences of wild jig-sawed brackets, gingerhread cares-boards, gorgeous but cheap dormers, bastatel mausards, top-lofty forials, and the other pseudiarities of our more ambitious vernacular, than most of the works on the subject. The costs range from \$250 to \$8,000, and those architects who desire to know by what mysteriour processes carpenters are able to produce houses far within what seem to be the lowest limits of expense, will find in this book much to enlighten them.

1 House-Plans for Everybude, for Village and Country Residences, costing from \$200 to \$5,000, mainlying full Inscriptions and Extinates in Intail, etc. 175 Hisstrations, By \$, B. Kiel, Architect. New York: Orange Judd Company.

In each case the estimates are given in detail, and seem to be honest enough. It may be interesting, in view of the question of economy, to present one of these detailed estimates in full. It relates to a farmhouse 45' 6" x 30ft., in two stories and a roof.

The following estimate has been carefully compiled, and may be yelled on for quantities, etc. Prime vary in different localities, but the figures here given form a good basis of calculation:—

an implication 2	
65 yards exeavation, at 20c.	per vard \$13.000
882 R. foundation, or 15c, per	ft 182.30
725 ft foundation, at 10c. jer	Ft
6,000 bricks in chimneys, at \$15	
40 ft. stone steps and coping	at Stie, per ft 12,00
900 yards lath and plastering,	at 28c, per yard 252.00
	1
	45 heams, 3x8 in. 16 ft. long.
1 mist 4v8 in 20 ft long	22 beams, 8x8 in, 22 ft. long,
7 posts 4x7 in. 22 ft. long.	15 bears 3x7 in. 9 ft. lung.
	4 valleys, 328 in. 20 %, long,
	4x6 in, 8c4 it, long.
500 wall-strips, 2x4 in, 13 it.	
310 novelty siding hourds, 94	
150 lbs. tarred felting, at 5e.	per lb
soo matched flooring boards,	95 in. wide, at 28c. cach . 84.00
20 rough spruce plank, at 25	
270 shing ling-lath, at 6c, each	
48 bunches shingles, at \$1.50	
75 hendock boards, 10-inch,	
7 aguares of tin Booting, at	
	outside casings
33 narrow pine fluoring for t	
67 narrow pine ceiling, as 23	
1 bay-window, complete	75.00
26 plain windows, complete,	at \$12 mich 342.00
4 cellur windows, complete	at 86 each
30 doors, complete, at \$10 c.	ieli
Stairs, complete, \$10; 8 c	dosets, filled complete, £40 110.00
2 marble and 2 pine mauth	8 50.00
Nails, 520; range, with a	devalued even, 550 100.00
Plumbing, \$84; cartage,	average 1 nule, \$27.08 . 111.08
Carpenter's labor, not in-	luded above 250.00
Painting	·
Incidentals	25.72
The same to be a second to the same to the	* V avu va
Total cost, complete	52,600,00

The questionable element in such estimates must always be the item of labor, which is obtained by "guesswork" and not by calculation, and varies in different localities enough to affect the total cost materially. But the other items, though in some cases ranging far below what is required by the higher class of work with which ar-

helow what is required by the Inglier class of work with which architects are more familiar, seem to be fairly considered.

The wood-curs, worn by bard service in the Agriculturist, are coarse and badly drawn; the details are in all cases slurred over by the engraver, who is utterly destitute of sympathy for architectural forms; and the original conception of the architectural forms, except when confined to the simplest and most familiar developments, is, as we have already intimated, crude and illiterate. But common sense and practical experience lie at the root of them, and these make the rules of the book not only to the prudent farmer, tradesman, or mechanic, who requires sound advice in the building of his modest homestead, but to the architect, who seeks to know the devices and appliances of cheap construction, and the true basis of style in our rural or suborban domestic architecture.

CORRESPONDENCE.

BUILDING NOTES. -- FORES.

During the half year ending July 1, 1878, 933 building permits were issued. The aggregate valuation of the improvements was \$1,876,793. An equal netroity for the second half year would yield something over 1,800 permits, less than for several years past, the number in 1877 being 2,115; in 1876, 1,825; in 1875, 1,973.

Of the 933 permits, 228 were for frame buildings. This is about twenty-five per cont of the whole number. Their aggregate valuation, however, was but \$49,718 less than form aggregate defined to the whole number.

tion, however, was but \$42,718, less than four per cent of the whole valuation. This comparison shows the insignificancy of frame building in St. Louis, where the cheapness and excellence of the bricks, and the comparative dearness of wood, combined with wise fire regulations and a popular prejudice for once in the right, have almost totally excluded frame houses within and without the city limits. The frame permits are usually for sheds, stables, frame kitchens, and like accessories to other premises. Four only of the 223 reached \$1,000 in value, and their average was but \$200 apiece; while there were forty under \$25 cach, three for \$10 cach, and one for \$5.

use across the river, however, in East St. Louis, where there is no brick clay, and the only foundation is river allovium of unknown depth and doubtful consistency, frame houses are more popular, and quite outnumber their more substantial-looking brick rivats.

Most of the 705 brick buildings created this year are, of course, dwellings, generally small, of but six or eight rooms, and built either singly or in blocks of three or four. The long blocks of dwellings so common in other large cities are rare here, and large bouses are generally in poor domand among renters, says in the narrow and select district most affected by the wealthy few who have not yet built for themselves, though usually hoping to do so at some time. The small

houses are most wanted and pay the best return on their cost.

Early is the spring three fine three-story houses of twelve or thirteen rooms each were finished and offered for rent. They cost with ground \$8,000 cach. They have handsome fronts of stone ashler, slate roofs, furnace heat (broughout, a concreted and plastered orb-lar, hot and cold water from cistern and bydrants on two floors; front, side, and rear yards paved, sodded, and inclosed by a walf of dressed stone, and every appointment without and within of a first-class dwelling for a family of moderate means. They stand on a well-shaded avenue, in an excellent neighborhood, once as fashionable as any, and near our finest park; are convenient to street ears, and but twenty minutes' ride from the court-house. These most attractive houses were offered for several months at \$780 a year, without success. The rent was then lowered to \$660, and one was taken. About a month later a second was occupied. The third is still vacant.

In the fashionable "West End," interior bonses are sought eagerly

at higher rents; but elsewhere no excellence of accommodation or the appears of rent will persuade people to take large houses. They do not need the rooms, and they do not want to furnish them nor to hire extra servants to keep them in order. They will pay as high or higher cents for a smaller house.

In notable contrast with the above may be mentioned a row of eight small brick tenements, for two families each, in suites of three rooms on a floor, which were built about the same time. Each family is completely isolated from all the others, and there is liberal pro-vision of separate closets, cond-boxes, water-closets, balconies, etc., The ground was cheap and the entire cost of ground and houses hardly exceeded \$800 to a family. These houses were all taken as soon as finished at \$12 a mouth each, and have continued fully occupied ever since. After deducting all exp uses they are yielding a net return of about fitteen per cent on the investment. Moreover, as the read is low for the accommodation given, the above Moreover, as the read is low for the accommodation given, the above two illusincome may be expected to be tolerally perminent. These two illustrations show the necessity of adapting improvements to the neighborhood in which they are to be placed if satisfactory results are to

A moderate amount of building usually continues through the winter, the cold weather schlom occasioning any prolonged inter-ruption of such work. Last winter was so wild that hardly a day

was lost.

This city eight to be a favorite with fire-insurance companies. the six months from January to June, inclusive, the entire loss by arm was but \$159,613.76, and the loss to insurance companies was only \$182,380.04. There are many single companies that could earry the whole loss without assistance or great inconvenience.

CESSPOOL VENTUATION.

Basros, September, 1878.

TO THE EDITOR OF THE AMERICAN ARCHITECT:

Your correspondent "V." in last wack's paper (Angust 31), brings to notice some questions in societary science which descree a careful answer, being of general importance, and covering points on which a general misapprehension scens to prevait. I submit the following reply: The trouble complained of arose from ventilating the cesspool through the house drains and through the special pipe ontside the house, attached to the house and "carried up above the Experience has shown in hundreds of cases within my notier that human workmanship is too imperfect in its nature to justify us in inviting into or even near to our itwellings the foul products of decomposing sewage, through pipes of any kind whatsoever. The eardinal principle in the removal of offal by water carriage is to get it carried off at once from our houses, as far as possible, without giving any time for putrefaction, and having done so, to exclude by all means in our power the return of the gaseous products of its decomposition to the neighborhood of our bouses, sicher through the drains or any other pipes. Cospools are at best but poor substitutes for sewers, because they keep the fifth too near our houses during its decomposition. They should, therefore, be guarded with more jealusty than sewers, and should be located as far as possible from the houses. When houses are too much crowded to admit of the cesspool being removed at least one hundred feet from them, and where no sewers are provided, the system of "water earriage" is of very doubtful propriety, and might often be abandoned with gain, and substituted by some system of daily removal by hand, such as is practiced in Rochdale and many other English towns with success. At any rate the cosspool vent should never come near the house, and its gases should be cut off from the house by a trap in the main drain outside should be can on from the house by a trap in the main drain outside the house, with a vent-hole close to the trap on the upper side of same, that is, next the house in the same way as if connecting with a sever. With such a vent hole, opening in a well or may-hole with perforated cover, close to a house, either in front lawn or back yard no offense is likely to occur, for the heat of the house, whether by fire in winter or by sanshine on the roof in summer, is sure to keep a constant draft of air outward by the soil pipe which passes up through the roof, drawing the air invested at this yenc-hole near the The only chance of an outward draft occurring near the trap is from slight pulls of air pushed forward by columns of water descending the soil pipes. These are only instantaneous in their nat-

are, to be sucked back again by the constant dealt in the next instant. The walls of the man-hole should be taid in stone without mortar up to within two feet of the surface, like a well lining, so that any such pulls of air from the drain would come in contact with the earth, whose absorbent and purifying powers are well known to be efficient within such limited quantity as may here be required. Such a system has been applied with perfect success in a large number of eases by investf. With such a protection the air in the house-desir can never become very foul, for though a certain amount of decomposing slime always adheres to the inside of such pipes, the constant current of air established by this arrangement would effectually prevent any such concentration of poison as must always exist in the air

chamber of a cesspool and its vent papes.

In England, and other climates of less rigor than that of Boston, it is easier and more sure to make the discanaccion between the house and sewer or cesspool by allowing the drain to be quite open for a foot in length, just inside the main trap, and to introduce the waste water from butle-tabs, sinks, rain-spouts, etc., by an open delivery over this point. Such a system is made compulsory in many European towns where the local authorities have taken the pains to study the best methods, and it is to be hoped a similar one may be made so here and adapted to local circumstances.

EDWARD S. PHILBRICK.

TO THE EDITOR OF THE AMERICAN ARCHITECT:

Dear Sir,— Your correspondent "V.," who complains of a smell from the pipe which realilates his sesspool, would do better to carry the pipe higher, so as to give the numest possible freedom of diffusion in the surrounding air. In still nights the gas, diffusing itself in all directions, reaches the roof before it is much diluted, and the mixed air creeps along the surface of the roof and walls to the ground. The remely is to have the month of the pipe farther from the roof, so that the escaping gas may be more diluted before it reaches the surfaces over which it creeps, and also that the chances may be

greater of its being swopt away by a current of air.

It is hard to explain why the small should be strongest at the base of the pipe. Perhaps the air is more stagment there, so that the gas from above makes a more sensible impression, or possibly a unixture. of different gases may, by some interpenetration of their atoms, be occasionally heavier than either separately.

Common illuminating gas, escaping into a room, will travel a long distance, and descent considerably below its source, clinging close to the walls, so that the smell will be quite strong two or three inches from the wall, while it cannot be detected at a greater distance. The whole subject of the diffusion and conduction of gases needs scientific investigation. Whatever may be the reason, it is a common experience to find the smell from open sail pipes descending or

and experience to find the shell from open soil pipes descending or ascending into charalter windows in warm, damp weather. It is doubtful whether the charcoal would be of service; some sanitarians think it necless even when applied much more thoroughly than your correspondent purposes. The covering of oil over the contents of the cosspool might do good,—I think it is sometimes used for similar purposes,— or a little sulphate of iron, in powder or in solution, thrown itsets the cosspool occasionally, will do much to-

ward keeping down the smells.

Does your correspondent notice whether any stench descends from the open soil pipe? If not, that is an indication that a similar situa-tion for the ventilating pipe would be satisfactory. Your correspondent does not say whether there is any overflow or

other possible source of air to the cossponl except the two pines. If other possible source of air to the cossponl except the two pipes. If not, one of the pipes, naturally the longest and warnest, should act as the outlet, and the other as the inlet, and the inlet flue, which in this case is probably the ventilation pipe, might with advantage have its area contracted to that of the soil pipe, which is likely to act mostly as outlet. If, on the other hand, there is some access for air to the cosspool besides the two pipes, both of them act as withdrawing shafts, which is of little salvantage, as one answers all purposes of movements the accountation of true under pressure, and a decree preventing the accentulation of gas under pressure, and a dozen would not make the composit sweet, and the two shalts convey an would not make the cesspool sweet, and the rwn snatts convey as unnecessary amount of the cesspool air to the roof of the house. In this case the ventilating pipe might as well be closed entirely. If the joints of the soil pipe leak, the additional pipe will not help them much; but they are not likely to leak if the work was properly. T. M. C.

THE DWELLINGS OF THE POOR!

The question before us to-day is so complicated that it will be impossible to consider it now in all its different aspects. Sewerage, ventilation, lighting, hearing, the avoidance of dampaess, the necessary number of rooms, the cubic space that should be allowed for overy individual, and the disposition of the kitchens, are all points which must be decided, but which cannot be treated simultaneously and satisfactorily in the course of ten short minutes. Such a summary would allow only a minute for each problem, though these problems have been discussed for years, and are not yet solved! Permit me, then, to confine my remarks to only one of these questions, by that which is most familiar to me, and which was the starting point of an important enterprise that I have been fortunale enough to render successful.

^{*} A Paper read by Mr. Thomas Griffiths, at the International Congress of Hygiens in

If there be one thing that is a special grievance to us in England, that one thing is the dampness of our climate; and it may be conceived with what energy we have sought to overcome this common enemy. Diseases of the chest, rhoumatism, etc., and disproportionately frequent in our little island, surrounded as it is with currents of warm air, coming from the Gulf of Mexico and from the tropics, or warm an, coming from the Conf of mexico and train the training on our could coasts, and falling on our dwellings in the shape of fine rain or dense fog. This incressant moisture makes its way at last through the most solidly constructed walls, white persons who imbabit the cheap little houses run up by greedy speculators, are constantly exposed to the fatal effects of our climate. From day to day we see rising from the earth, like clusters of fungi, groups of little houses, built up with extraordinary rapidity on waste lands, in the marshy districts that surround great towns. These dwellings in the marshy districts that surround great towns. These dwellings are inhabited, before even they are properly dried, by our poor trading classes, laborers, and needy families. The same might be sald, possibly, not only of all the great English centres, but of all the centres of Europe; and in all countries more or less suffering is caused by

What have we done to ayert these dangers? In the houses of the poor, very little; in the nalaces of the rich, very nucle. The results are, however, more equalized; for neither the poor nor the rich have, as yet, succeeded in protecting themselves effectively against damp-flowever, I hope to show you that there is one thoroughly effectious means which can be employed, as easily for the poor as for the rich. I allude to the superficial patrification of the interior or exterior contings of the wall. This petrifaction is consolidated, rather than weakened, by the contact of water and damp; it protects not only the health of man, but the durability of the dwelling. It has often been remarked that the morear or centent of old easiles, etc., had become as hard and solid as some. The remarkable fact is due to the action of time; in mixing the siles of sand with lime, a silicate of line is applicate out to prove the line is applicate out to prove the line is applicated out to be set to be s lime is produced quite naturally. But this has taken many years—even centuries. Happily, we have now a liquid which will give to our walls, in a few days, that which it has hisherto required centuries

to accomplish.

This propagation, the petrifying liquid, is a solution of a silicate, the use of which may be intrusted to the most inexperienced workmen. It sinks into the walls, like water, with the greatest rapidity, but after a few hours the water with which the silicate is mixed the after and a petrification takes place, so that the wall is soon covered with a thick coaring impenetrable as stone. The walls may then be washed with water. Should there have been contagions diseases or other infections, the walls may be exposed to the most destructive fundations, or washed with strong antisepties, without in

any way affecting the surface.

The liquid is generally mixed with coloring matters that are not poisonous, or it is used in its simple state for the first coating, to which is added the dileate point manufactured by the same company. The principal constituent of the paint is obtained from a natural source, and is very pure, and appears to be produced by a volcacie action which must have desolated the country in prehistoric ages. With this silex the Silicate Paint Company of Landon and of Liverpool manufacture the petricying liquid of which I have already spoken, and the silicate points, and also an enamel point. All these manufactures have an important hygienic significance. The first immufactures have an important hygienic significance. The first protects us from the damp that penetrates our walls, the second forms a paint that pesists all climates and contains no paironous matter, and the third furnishes a very cleap enumet that resembles porcelain, and has the same advantages as regards cleanliness. Here we have, then, an easy means of improving the health conditions of the phorer classes.

Dr. Du Mesnil, in his report to the Congress, gives us in a few

powerful phrases a summary of the causes that rutu the health of the pour; and unfortunately we must all agree as to the trathfulness of his picture. The sun's rays, he says, do not always reach the narrow streets, which are thus deprived of the natural purification and disintection provided by Nature in the light of the sun. The staircases. are dingy and dirty, and much used; and if germs of disease were to fall there, germs which live on impurity, they would find there a

breeding place, and grow and develop.

Is it not, therefore, desirable to wash and cleanes these stairesses once for all, and to cover them with a conting of paint or enamel which would not offer the same facilities for the accumulation of dust and dirt, and which, on the other hand, would be much more easy to wash and to keep in a scate of proper cleanliness? Dr. Du Mer-nil adds that the tile roots often let in damp and moisture, but the pecrifying liquid to which I have alluded is a certain remedy for this. Finally, the learned reporter complains of walls that are covered

with torn paper.

This final detail is undoultedly most important, and I should like to make a few observations upon it. Wall-paper is often dangerous, and especially in the houses of the poor, where it facilitates the disguising of a false plaster wall from which it does not exclude the humidity, while it attracts dust and vermin, and the damp encourages the detachment of particles of coloring matter, containing, very often, arsenic of copper. Green wall-papers are not alone in their arsenical effects; the finest brown tints often contain assente. The dancer of accomplations of wall-papers to be guarded is also the danger of accumulations of wall-papers to be guarded against. How often has it been remarked, that not one or two layers, but twelve, thirteen, fourteen, twenty, and, in one special case, twenty-five layers of paper have been found placed one over mother!

In the last-mentioned case the family inhabiting the house had often noticed a disagreeable odor; and finally, as a natural consequence, typhoid fever set in. It was then only, and after vain examination of all the causes that might have produced the odor already menof all the conses that bught have produced the onor already mentioned, that the twenty-five layers of paper on the wall were discovered. The paste in a state of pure action caused commations that had poisoned the blood of the family. In order to avoid all these accidents and beconveniences, we must have our walls painted, and painted with a composition that is at once conomical and harmiess.

The paints manufactured by the Silicate Paint Company have

been frequently analyzed by scientific man; among others, Professor Flageolet, of Poris, who declared that the sample he examined con-Flageord, or Ports, who declared that the sample he examined contained 73 per cent of pure silex, 13 per cent of water, 3 per cent of oxide of iron, 4 per cent of alumina, and 1 per cent of maguesia. The material is, it will be seen, thoroughly unique, and the silica, which is almost pure, can, when calcined, and reduced to powder, he employed in many ways. The great railway companies and steam packet companies, the great manufacturing firms, and the Governments. packet companies, the great maintracturing true, and the Governments of Fordand, Germany, Austria, Italy. Spain, Russia, and Egypt, use this silex paint for the better preservation of their ships, arsenals, etc. In the hospitals, the workhouses, the refuges, and primary schools of England, a large quantity of this preparation is employed, for the purpose of knoping the walls free from damp, by using it as a hygicule substitute for wall-paper; and, finally, as a means of insuring clearliness, and lessening the risks of contagion. Ital I the time, I might alimit to several other questions raised by the report which we have read with so much interest; but a will con-

the report which we have read with so much interest; but I will content myself with that which I have stready said, for I know that in your bands all that concerns the well-being of bumanity will receive the attention it murits. If I have confined my remarks to one detail, it is because I am convinced that the detail is important. Finally, let me thank you for your patience, and beg of you, if I have spoken to you at too great length on one subject, to excuse the enthusiasm of a

specialist.

ST. ALBAN'S NATE.

Mr. NEALE's accurate measurements settle the controversy as to the relative lengths of St. Alban's and Winchester Cathedral in favor of the latter. The extreme external length of St. Alban's "from the plinth of the huttress of the east wall of the Lady Chapel to the face of the buttress of the west purch" is 550 feer 14 inchest while that of Winchester, measured between corresponding points, is 557 feet 3 inches, exceeding its Rentfordshire rival by 7 feet 75 inches. This superiority, however, is entirely due to the eastern limb, the nave of St. Alban's exceeding that of Winekester in length by nearly nine St. Alban's exceeding that of Winekester in length by nearly nine fact — 234 feet of inclus, as against 275 feet 7 inclus—while the effect of its length is much greater. "The repetition of the strong unbroken lines of precisely similar length at different levels in the nave and assess at St. Alban's drives home to the imagination in a way quite unique the imprecision of length. The nave of St. Alban's is not only the longest in the kingdom, but the longest in the world," It was, however, surpa-sed by that of Oht St. Paul's, which, according to Mr. E. B. Ferrey's drawings, must have been more than three handred feet long the curire length of the Unithedral being about five largered and ninety-six feet, while it must not be formatted that St. hundred and ninety-six feet, while it must not be forgotten that St. Petronius, at Bulogna, is only the nave of the intended building, and would have inconterably been the largest Gothie church over built. We of course exclude St. Peter's from the consideration. In the case of O.d St. Paul's the effect of length most have been far greater, the main elevation of the building being maintained from end to end, as at York, Lincoln, and Worcester, without any computation of long low chapels to the east, as at Winebester and St. Alban's, or of a galilee to the west, as at Ely and Durbans. The gigantic conceptions of Abbot Paul, to whom we owe the vast and stern labric which, in Mr. Freeman's words, "for size at least, if not for beauty, has remained the worder of all succeeding ages," are well brought out by Mr. Neale by a comparison with the slightly earlier characters of his relative — some said his father — Lantzanc, at Caen and at Canterbury. The tables given, to which we must refer our readers, will show how vastly the scale adopted by Paul exceeded not only those minsters,
—the dimensions of which, however, are to some extent conjectured,
— but all contemporary hubblings of which we have any knowledge,
St. Paul's being the only exception. — The Saturday Review.

NOTES AND CLIPPINGS.

FOUNDATIONS FOR BRIDGES. — The system of making foundations for bridges in marshy soils, adopted by French engineers in the case of the Charentes Railway, a line which crosses a peat valley to the junction of two small rivers, seems to have solved the problem of what is required in such cases. The thickness of peat at this point was so great that any attempt to case the solid ground would have been extremely expensive. In order, therefore, to obtain a good support for the bridge, two large masses of hallest, accurately runnined, were made on each bank of the river, and a third on the peninsula between the two. The slopes of these beaps were pitched with dry stones, for preventing the sand from being washed away by the rains or by the floods in the rivers. Over the ballast a timber platform was laid, this platform earrying the girders of the bridge, which has two spans about sixty feet each. When some sinking down takes place the girders are easily kept to the proper level by packing the ballast under the finder platform, —this platform packing being made by the plate-layers with their ordinary materials. In another case, that of a railway in Algiers, a different

ent plan of engineering was resorted to. The road crosses a peaty plain nearly a mile broad, the floods and the classicity of the ground preventing the formation of any grobankment. The road was to be carried over a viduce across the valley, but the foundations of this stadnet presented scrives differentials the thickness of road on the companies the resort of the stade of the st difficulties, the thickness of peat or of compressible ground being nearly eighty feet. It was quite possible to reach the solid ground with exaction times sunk with compressed air, or any other system; but neither the implements, the workmen, nor the material for such an undertaking were accessible in that region. Under these circumstances the engineers began boring sible in that region. Under these circumstances the engineers began boring boles ten backs in diameter down to the solid ground; these holes, lined with thin plate from pipes, were afterwards filled with concrete up to the very level of the ground. Each of these concrete columns bears a cast-ium column, these columns being braced together in a suitable manner, thus supporting the girders of the visitance.— Railway Review.

HITES BY VARSISHING.—Cassell's Howehold Guide gives the following direction as to varnishing: "Refere beginning to varnish it is necessary that the earlies to which it is to be applied should be perfectly free from all grease and smoke stains, for it will be found that if this is not attended to the varnish will not dry hard. If the varnish is to be applied to old articles, it is necessary to wash then very carefully with soap and water before applying it. When it is wished that the varnish should dry quickly and hard it is necessary to be eareinf that the varnish should always be kept as lung a time as possible before being used; and also that too high a temperature has not been used in manufacturing the varnish employed. It is fikewise easternary, when it can be done, to expose the article to the atmosphere of a heatest room. This is called "storing" it, and is found to greatly improve the appearance of the work, as well as to cause the varnish to dry quickly. After the surface is varnished, to remove all the marks left by the brash it is usually executing polished with fluely-powdered pamples, and also that it is acquable of receiving, it is rubbed over with a clean, soft rag, on the surface of which a mixture of very lineay-powdered tripoil and oil has been applied. The surface is afterwards cleaned with a soft rag and powdered face of which a mixture of very linear-powdered tripoit and oil has been applied. The surface is afterwards cleaned with a soft rag and powdered scarce, and the last pedish is given with the palm of the hand. This method is, however, only congloyed when those varuishes are used which, when dry, become sufficiently band to admit of it. When it is wished to ramish drawings, engravings, or other paper articles, it is usual to previously paint them over with a clear solution of gelatine. This is usually prepared from parchiment entrings."

NATURAL GAS SUPPLY. — It is said that the town of Fredmin, in Chau-tanqua County, N. Y., has been supplied during the past fifty-two years with natural gas, which finds its source between two large coal measures.

THE DECORATION OF ST. PARE'S. - It is said that the dean and chaptor of St. Page's more enterrained the idea of abandiming the use of mo-saies for the new decorations and substituting in their stead hand-painted

Venturative Pans. — Mesers. Verify Brothers, of London we believe, have invented and patented a very elever and simple approatus for inducing corrents of nir in a building. A tank of any desired size is placed at the top of the building, and from it the water is led to the apparatus by a finch pipe. The apparatus consists of a fly wheel, with sets of fans on either side of it, and attached to the same axis with it. This axis is journaled on jewelled contres, so that the system revulves on the application of the slightest force. Upon the fly-wheel two or more fine jets of where how the tank are discrete through two pin-noles, and thus cause the fans to revolve rapidly. It is said that a current of six can thus be exceeded having a velocity of one thousand feet or more per minutes. It is evident that, as the lead of water and the morber of jets can be regulated at will, almost any degree of velocity can be obtained. The waste water is made to pass in a thin sheet over the injection fresh six, and so with from the air the impurities commined in it. As the same method can be applied to supply and to exhaust fans, the ventuation of a building is thus made a very simple thing. VENTURATING PANS. - Mesers, Verity Brothers, of London we believe, thing.

Surp-Cawae. - The bill authorizing the Barataria Ship-Canal Company to construct a canni from New Orleans in the Gulf of Mexico, and granting the right of way for that purpose, has become a law.

Ansonstion of Carbonic Oxide by Living Organisms. - N. Gre-bant has experimented with mixtures of sir and minute parties of carbasic as experimented with maximum of an animal, when compelled for a half hoar to breathe an atmosphere containing only $\gamma \frac{1}{2} \gamma$ of earliest coxide, absorbs that gas in sufficient quantities to saturate about half of the red globules of the blood, so that they become incapable of absorbing oxygen. In an atmosphere containing $\chi \frac{1}{448}$ of earliest oxide, shout a quarter of the red globules are similarly saturated. These results are increasing and improved by relation to a hardeness and havings. portant in relation to physiology and hygiene. - Comptes Rendus.

Dynuyz.—If there were nothing else to mark the skill, genius, and artistic workmenship of the Jopanese, the great bronze statue of Dia Rootze would be sufficient to make their name imperishable. Dia Rootze would be worthy of a place among the woulders of the world, equally so with the Colosus of Rhodes, Cleopatra's Needles, or the Sphinx of Egypt. This sacred image was not only built of bronze, but the joints were so exact in their fit that they were barely perceptible to the closust observer. Its base rested on a dais of masonry about 5 feet in height. The elevation of the built was 5 jins or 50 feet; between the edge of the heir of the head and the lowe crossed. 42 feet; from kings to knee, eccided cross-levend. 35 feet. body was 5 jins or 50 feet; heliweet the edge of the heir of the head and the lega crossed, 42 feet; from knoe to knoe, sected cross-legged, 36 feet, and the circumference of the hody was 88 feet. The following were the minor dimensions: Face, 84 feet long; circular spot on forchand, 14 feet in circumference; eyes, 4 feet long; cycbrows. 4 feet 24 inches; car, 6 feet 7 inches; nose, 3 feet 9 inches vertical and 2 feet 4 inches harizontal measurement; mouth, 4 feet 35 faches withe; shared portion of hoad on top called kik kokes, 2 feet 4 inches in diameter. The spirally carded locks of hair on the head were 95 inches while and 830 in number; each thumb

measured 3 feet in circumference. These figures will convey some idea of the dimensions, if not the magnificence, of this almost superhoman exhibition of Japanese art. The interior of the statue formed a beautiful temple in which were gill images of Buddhist saints, with crossers and glories and other appropriate objects of worship or reverence. In from and at the fact of the statue was an ahar on which were insense pots and arms to receive the votive officings of visitors attracted thither by sentiments of religious fervar or coriosity.— Philadelphia Press.

THE REAL INVENTOR OF THE TELEFHONE, -- An article in a recent number of the Pakin Gazette, written by Chin Hoo, says Kung Foo Whing, a distinguished philosopher who flourished about the year 976, invented the telephone, which is known in China as "Thomphosiu," in the year 968.

ARCHEOLOGY IN PARESTING .- The remains of a large and magnificont church, built of unusually great stones, has been observed at Amwas near 'Ahn Shusheh, in Prossing. It dates probably anterior to crusading simes, and possibly from the fifth century.

How re success Pictures out or Fralk. - Referring to the mis-chance of an English collector in Inving a picture by an old master, ac-quired in Italy, taken from his agent by the Italian customs officials at the chance of an English collector in Inviting a picture by an old master, acquired in Italy, taken from his agent by the Italian ensume officials at the frontier, and placed in one of the government picture-galleries, a correspondent of the Pail Mall Garets says that venders sometimes suggest a way to ende this impleasant difficulty, a difficulty which is countenanced by a law which probables any work of art being taken out of the country without the express permission of the government,—a permission rarely granted; while the government arrogates to itself the right of buying the work of art in question, but only at two thints the purchase price. The way of evading science is to have a modern painting painted over the work of the old master, with the knowledge that modern work can be cleaned sway by careful hands, and leave the masterpiese unburt. "The suggestion," he says, "is ingentions, but my advice is, do not avail yourself of it. Some five and twenty years ago a traveller picked up a verificialle gern from a weil-known galeny, whose owner parted from it with tens and only for a very considerable consideration; and that it might be safely samageled and a weil-known galeny, whose owner parted from it with tens and only for a very considerable consideration; and that it might be safely samageled and it the control, any picture-cleaner with at light linger will remove the veil of the incider pointer, and reveal the beauties which it concealed. The plan succeeded admirably up to a certain point. The picture cleaner thad not a "ingit tinger." He removed the modern landscape, but in doing so unfortunately rubbed out the same time the old master; and the purchaser, when the picture was cleaned, found that all he had really got to adorn his galtery was the portrait of a general officer of the time of George I, in full uniform."

Theixpectants and Decounts to.—Mr. Thes. Taylor, Microscopist of the Department of Agriculture, gives the following in the Washington Exercing Stars. "During the year 1876 I made a series of experiments with escapilist of in including the year 1876 I made a series of experiments with escapilist of including the year 1876 I made a series of experiment of Agriculture, which were published in the require of the Department of Agriculture for that year. I found that the oil of encelyptus disinfected fresh ment as effectually as carbolic acid, besides being a powerful desdovizer, and on combining it with soap found it agreeable, forming a valuable sole-time for the aerholic, especially for the sick room. Torpentins I found to be also a most powerful desdovizer. A tablesphoodial of the latter, added to a pailful of water, will destroy the odor of ecsphols instantly, and in the sick chamber will prove a powerful nucleary in the destruction of germs and lad odors, being both a districtant and decolorizer. I have quite recently added to the hat of disinfectants on degeneral application, and these for many purposes the advantage of cheapness with remarkable effectiveness. I allade to germs of fongi or of other cryptogamic plants instantly destroys them, although it fails to devolorize gasas. Being a solvent of other applied to the germs of fongi or of other cryptogamic plants instantly destroys them, although it fails to devolorize gasas. Being a solvent of othe and talls it destroys animal germs and fatty degeneration gives way to it. It may be employed full arrangth to wash delicate and condended plants and sones without presided gain. It is wholly devoid of the caustic principle; even when applied to the longue it produces no disagreeable sensation. A single drop applied to any insect will kill it, and even its vapors have a most destructive effect on the lower forms of animal life. When gasoline is applied to a wound or to any delicate part of the body, on overcration it produces a sensation of cold, followed soon aft

ACCIDENTS VROM MACHINERY IN PRANCE. - The French government has upon several occasions since the alteration of the laws regulating the use of sman engines published statistics of the socidents which have been caused by them each year. The returns, very carefully prepared, like all the statistical work done by the Eraceh Government, but not brought down to date, deat with the four years between 1878 and 1876 inclusive; and from them is appears that there were 121 accidents (30 in 1373, 32 in 1674, 24 in 1675, and 35 in 1676, which resulted in the death of 145 persons, 193 others being more or less severely injured. Most of the severe accidents were due to the use of boilers which had no inner grate. Only three accidents were caused by the explosion of the hollers of railway engines, and in neither of these cases was there any loss of life.

It is worthy of note that there are fewer accidents in the very large fac-

It is worthy of note that there are fewer accidents in the very large factories than in the second and third rate establishments, though when they do happen they have more disastrons results than any of the others, because of the large number of people employed. At least one-lifth of the accidents have been due to the want of water in the boiler; but it many cases it has been impossible to speak positively as to the cause. Of the 145 fatul cases, 14 are set down to defects of construction, 3 to the bad quality of the metal, 27 to excessive wear, 23 to corresion of the sides of the boiler, 3 to over-pressure, 23 to the want of water, 14 to the carcicesness of the stoker, and 6 to insufficient cleaning. The number of these accidents might, by increased care and watefulness, be reduced; but the returns vary little from one year to enother, and as opwards of 40,000 seam machines are at work, the bill of mortality is not so heavy us it is in some other countries. — Hacelwate Reporter. come other countries. - Hacilwies Reporter.

BOSTON, SEPTEMBER 28, 1878.

A connessiondent, whose communication is in another column, criticises the report of the experts in the Pateut Office competition, and apparently inclines to make it an issue with thom that they practically limited themselves to considering which of the competitors most exactly carried out the instructions of the circulars, instead of deciding what was on its own merits the best project proposed; he intimates that they might in this last way have done the government better service. text of the Report (American Architect, August 31st) shows that the course which our correspondent ascribes to them was what the exports deliberately accepted as their duty; and this was apparently what was expected of them; it does not indicate that they saw no reasons, on other grounds, for a different selection. Whether they might have chosen, among the submitted designs, one which was architecturally better, or preferable for its general merit, we have no means of judging; but we believe that the experts were right in taking the view they did of their duty. The position of referens in a competition is a very exposed one, and the only means of fortifying it against recrimination from competitors or interference from the authorities is a very scrupplous adherence to the appointed conditions. The government was bound, on its part, to the closest adherence to its stipulations, and must exact the same from its referens. The competition was an experiment, and might almost be considered a novel one, being contrary to the policy of the government for a score of years past. The standing reproach of competitions is a want of good faith in their managers. It was the more important, therefore, that the good faith of the department should be unussailable. This was what it owed to the profession as well as to its own position, and this maintained, it was left for the government to decide whether the experiment turned out to its own advantage, and encouraged repetition. Accordingly the department, having issued its final circular, abode by it; the experts held to the latter of their instructions, and decided, so far as we know, without suspicion of partiality; the Secretary kept his faith to them, and to the competitors. by adopting their decision. If, after this effort at fair dealing, the government makes an injudicious choice, this is to its own injury, and is one of the chances which the competitors are bound to accept. They cannot gracefully complain of it, though the right of criticism remains to them. The department has done its duty by the profession when it has shown them courtesy, fairness, and good faith, and there has been no complaint, we believe, that it has failed in these.

This brings up a question which is forever recurring in competitions: How far shall competitors be held to the exact carrying out of a programme, and how far shall they be allowed the liberty of modifying it? It is the very A B C of good faith that whatever condition is laid down shall be rigorously adhered to; therefore it is very desirable to lay down none that may turn out a mere impediment. The habit of careful business men is to fix beforehand as exactly as possible the details of every transaction; and this leads building committees to look with distrust upon an indefinite programme as something nobusinesslike, and to try to decide and declare pretty definitely from the beginning what they will have. But it is impossible for such committees to forecast the ideas that may be

offered, and any unnecessary restriction may rule out some alea that would be valuable to them. In fact, they continually find themselves in the dilemma of being obliged either to disregard restrictions which they have imposed, or to give up the designs which please them most. The safe and reasonable way is to impose only such conditions as are essential to the success and fairness of the competition; as, for instance, the number and kind of drawings, uniformity of scale and rendering and concealment of names; or such as are inevitable from the circumstances of the case - from the size of lot, perhaps, or the necessary accommodation, - and to give the rest of their instructions, the more fully the better, in the form, not of conditions, but of recommondations, by Whielt they may afterwards be governed or not as experience may teach them. Our correspondent was doubtless right in arguing that the hest result is to be got in competitions by following the spirit rather than the letter of the instructions; but this requires that the instructions be drawn ac-The circulars in the case of the Patent Office were worded with an evident desire to leave architects with as much freedom as was possible, while the needs of the government were duly indicated; though perhaps the instructions to the expects might with advantage have allowed a wider scope to their judgment. Architects are apt, indeed, to make the mistake of insisting that as a matter of justice to themselves the programmes should be very rigidly drawn and strictly adhered to, especially in regard to limit of cost. It is safe, however, to remind those that noither justice nor opportunity to themselves call for any more definite instructions to competitors than are directly needed to prevent any one from getting under advantage over others, and save them from wasting labor by working in a wrong direction; and to say to those who offer competitions that anything more than this is less likely to turn out a useful restraint on competitors than a vexations impediment to themselves. Among the great vices of well-meant competitions are too great rigidity of combitions, and, in consequence, too great laxity in enforcing them when they are found to be in the way.

THE Spinola scheme for laying pipes under the streets of New York for the general distribution of steam, according to the Holly system, which we have several times mentioned, makes its way slowly through the New York Board of Aldermen. The original resolution in its favor gave a pretty general and indefinite franchise to lay the pipes and make connections, as should be necessary for any purposes for which the steam distributed could be used, with the condition - which, considering the magnitude of the scheme, can hardly pass for anything more than a decent pretence - that bonds should be given in the sum of five thousand deltars to restore to good condition the pave-ments under which the pipes should be laid. A resolution of amendment was proposed in the Board of Aldermen increasing the bonds to fifty thousand dollars, and requiring an additional surety of one hundred thousand dollars to guarantee the city against injury to itself or to private persons from explosions or other misbehavior of the steam. It was also provided that the laying of pipes should be under supervision of the Department of Public Works, and, what somula less reasonable, that the cost at which the steam should be furnished should be determined by the commissioners of the sinking fund. The committee on public works, however, to which both resolutions were referred, has reported in favor of the original resolution, and there the matter rests at our time of writing. It does not conciliate the confidence of people without the city to be told that the question was decided in committee by a strict party vote. Another company has offered to pay the city twenty per cent of its profits for the privilege of laying its pipes under direction of the Commissioner of Public Works, to allow the city to appoint a director, and to supply it with stoam at forty por cent less than its present cost. In view of this competition an astute alderman proposes to sell the right to lay the pipes at public auction, with a lowest limit of half a million dollars for the franchise.

WE know nothing of the good intent or responsibility of the projectors, but the proposition to require substantial security against damage to sewers, gas-pipes, water-pipes, pavements, and the like, is certainly reasonable. There is no lack of opposition, on the ground that the streets are already sufficiently crowded with the other pipes, and as things are, this is certainly a serious objec-

The rost of the constant tearing up of pavements in great thoroughfares, and the interruptions of traffic due to it, have become great annoyances. The network of pipes and sewers is already quite as complicated as it ought to be, so long as they are so difficult to get at; and the addition of a new system would make it a good deal worse. Nevertheless, if the Holly system is really as useful as its advocates maintain, these things ought in some way to be adjusted for it. All this only points the conclusion that it is time to give up our old fashion of burying the underground circulation of our cities in solid earth; and that sub-ways must soon be accepted as imperative under their chief thoroughfares. The cost of repeated excavating and reexcavating, filling and refilling, pulling up and relaying pavements, must have already outrun, in a single generation, the cost of adequate tunuelling; but the gross expense, being divided among different corporations and different times, has never been taken into account, to say nothing of the interruption to lussiness, which cannot be computed. Such sub-ways must necessarily be built by cities at their own expense, but the companies whose pipes were carried in them might reasonably he taxed for their use, and new companies which were saved the necessity of executation could afford a liberal impost. In case steam pipes were carried through them, they could be availed of, with a piffing expenditure of heat, by boxing or otherwise, to scenre the water pipes against danger of freezing, which in northern cities would be in itself an important service.

The apposition to the New York elevated railways grows. The property owners on Sixth Avenue are combining to pour complaints against the Metropolitan road upon the grand jury, Those of Fifty-third Street, between Sixth Avenue and Ninth Avenue, through which it is now proposed to carry that road, have united to oppose it, and have shown their earnestness by submitting to an assessment of two and a half per cent on the valuation of tacir properties to carry on saits. An application for an injunction has been entered in the name of one of them, as a test case. It is claimed in their behalf that property on that street has depreciated one half since it was decided to carry the road through it. One owner declared that houses which had before rented for sixteen hundred dollars now went begging at half that rent; another, that within a week he had lost a thousand dollars on the rent of one house because of the road. This is the first serious attempt to stop the progress of the read, and will be pressed vigorously. If the injunction fails, there will remain suits for damages, of which there are probably enough in waiting to bankrupt the company if they succeed. It is quite clear that the roads involve a sacrifice of the streets through which they are run. The cost of this sacrifice is a part of the expense of the roads which was not counted when they were planned. At present it is borne by the owners along the route, but ultimately it must come upon the roads themselves, nuless they are strong enough to stave it off and remand it to the abutters - an oppression which it is to be hoped cannot be enforced—or to the city. Thus far the popularity of the roads seems to indicate that they are a success. But their tariffs have, doubtless, been fixed without a view to the cost of compensating the injury they do, to which cost that of constructing and maintaining them may be a trifle. When this is added, whether it takes effect on the rates of fare, or in sinking the money of the original stockholders, or remains the burden of the unlucky abutters, we may discover whether or no the device is, on the whole, a prolitable one. Brooklyn and other cities may learn from the experience of New York that an air-railway will monopolize the thoroughfare which it occupies or makes, and stop to consider whether it is on the whole a cheap means of "rapid transit."

The managers of the roads are trying their best in abate the noise, which is the first nuismose complained of, by finding some way of securing the rails so firmly that they will not rathe, and of cushioning them with elastic material, so as to check the transmission of vibrations. We have as yet seem to account made of what we enspect to be the greatest cause of the noise,—the use of sonorous iron for the trestle-work of the tracks. This was the most natural material to choose, because it was the lightest, cheapest, and least obstructing. But it would perhaps be found that for durability, as well as for noiselessuess, the best construction would be a viaduct of brick piers and arches, properly ballasted with gravel, on which wooden sills with cushioned rails might be laid, the upper part of the brick-work perhaps

being hid in asphalt, to further check vibration. Such a viaduct would be best adapted for wide thoroughfares, and under it
the heavy traffic of the street might pass quietly on sinhe tranways, without mixing with the lighter vehicles outside. It would
be somewhat expensive, and would add seriously to the obstruction of narrow streets; but we may remember that narrow
streets are unlit for elevated roads, and are protty well destroyed by them, at all events; there would be a choice to make
in any given case between the better structure and the lesser
obstruction. When the question of balse is met, the question of
sancke and dust will still remain. The dust and cinders are a
great annoyance, if nothing more. Any one who remembers
the permanent condition of the air in the tonnels of the London
underground callway will easily believe that even under open
sky the constant discharge of carbonic existe from trains which
are always passing, into near windows on the lee side of the
track, must be actually injurious to health.

PROBLER few people are aware from how far back the importance of the city of London dates, and what a considerable town it lead become even before the Roman invasion of Britain. History has next to nothing to say about the town in the Roman times, although it is made clear that it was then, as ever since, a city of merchants, by the chance mentions of historians, and by the fact that the mint of the prevince was fixed there, as is shown by many Roman coins. It is only by what is new and then found in excavating for foundations that indications of the actual extent of the Roman town are got at. The classic reumins are buried so deep that ordinary excavations do not reach them, but by recording and comparing the discoveries which have been made at intervals the compass of the old city has been tolerably well made out. It extended along the river from the site of the tower to Lindgate, including, even then, a quarter on the south side, and must have corresponded approximately with the city comprised within the old Saxon or Norman walls, of which remains were left in the sixteenth century, and marked the limits of what is still called the city. That the town was wealthy as well as busy is shown by the things that have been dug up. pottery, bronzes, mosaic pavements, sculptures, and even fragincuts of wall-painting. A late number of the Architect gives a print of a relief just found, which is the most important piece of Roman sculpture that has yet been discovered there. It was dug out in exercating for foundations on Camonile Street, on the eastern verge of the Roman town, among a mass of fragments of old buildings, consoles, columns, cornices, etc., with some inscriptions and bits of sculpture. It is imagined that the building was a mansoleam, and the fact that the figure, which is in high relief, was engaged in the masonry, as well as the quality of the sculptuce, indicate that it was carved on the spot. The workmanship is inferior, but the proportions and poise of the figure, the broad effective treatment of the drapery, show distinctly the classic tradition, while the dress and the character of the head are Roman. The figure wears a tonic, covered by a heavy mantle, or panula, and carries a sword on its right hip. Authorities are not agreed as to what personage it represents. The right arm is gone; the left hand carries writing tablets, and something else which is not made out. The treatment of the eyes is somewhat peculiar, the irises being apparently cut in marked relief, and the pupils sunk. On its left are the remains of a Coriothian pilester, from which and from the position of the figure it is inferred that it may have been engaged in a niche.

SIMULTANEOUSLY we read of the discovery, in the pool that has been dammed off from the Tiber below the Pente Siste, to expose its bed, of a colossal equestrian statue of a Roman emperor. It is apparently that of one who died in edium and has evidently been thrown down with indignity, for it is not only broken in pieces, but shows indentations which must be the marks of a heavy sword, and the wrist has been severed as if with an axe. Unfurtunately, not enough of it has been found to fully restore it, so that the statue of Aurelius still romains the only complete classical equestrian statue. It is said to belong to the best period of Greeco-Roman art, and is nine feet high, of the finest branze, and heavily overlaid with gold. From the style of the work it is ascribed to the first century, and it has been christened, conjecturally, the Emperor Dominian. The uncovering of the hed of the Tiber has displayed a great accommlation of pieces of sculpture and architectural fragments; and the crowds that gather to look on are evidence that the popular interest is excited by it in Rome as it has not been before,

Wie have received the first number of a paper published by the New York Society of Decorative Art. It is a trim quarto of eight pages, to be published every fortnight, in furtherance of the objects of the society, and to contain instruction, criticism, and gossip in matters of art for those who are interested in them. It promises the collaboration of Mr. Sturgis, Mr. Prince, Mr. Tiffany, and Gen. di Cesuela. The first number takes a pretty wide range, touching on embroidery, bousehold decoration, dramatic criticism, personal information, and news about art, architecture, philately (if our readers know what that means), numismatics, — discussed in short articles which are distributed under the different headings of the Class-Room, the Drawing-Room, the Library, etc. To these are added editorial reflections on appropriate topics and suggestions to students of art; book notices, personal information, and news about art; and a certain amount of matter whose interest is rather literary than actistic, It does not assume to be a technical journal for professional artists; but is rather one which amateurs, and bulies especially. we dark say, will like to read for instruction and entertainment; and which will, as the editor in his salutatory hopes, "both promote the desire to engage in art-industries, and cultivate the taste by which their results are measured." It has ample scope for its attention; on how much of the wide field which it now touches it will altimately bestow cultivation, its editor himself could probably not yet determine. The ideas and suggestions of the present number are good. Its literary quality is agreeable, a thing which, if secondary, is still important to the constituency to which it will appeal. (May we hope nevertheless, at the risk of being impertment, that not even the pressure of a new midertaking will betray the editor into lending his encouragement to the popular confusion between "shall" and "will "?) We cordially wish success to the Art Interchange, and would remind those of our readers whom it interests, that the most valuable support to a new periodical is an early support.

MR. RUSKIN'S DRAWINGS -- DORE'S PICTURES.

Landon, September 5, 1478.

My last letter was taken up by a review of Mr. Ruskin's notes on his Turner water-colors, but as the professor's collection of his own drawings excited quite as much attention here, I will devote own drawings excited space as much attention ture, I will devote part of this letter to his notes on them. These drawings—ethictly in line—serve the twofold purpose of showing to his pupils the various and persistent effects by which he himself learned to draw, and of proving to the public what long and careful studies were required to form the foundation of his literary work. In the latter score, this laborious preparation by a man of keen artistic feeling is a severe commentary on those littécateurs who assume that sufficient and formation for art artistics. qualification for art criticism lies in a fluent pen-Yet, which of qualification for art cricicism lies in a fluent pan. Yet, which of them can pretend to a style as beautiful as thus which the suchor of "Modern Painters" showed in his very first writings—a power, however, which was never permitted to seduce him from the actions studies of a practical art knowledge?

The notes on his drawings are dated June, and therefore since his illness, from which he rises so much weakened, he says, that he

can no longer undertake to teach or advise except through his works, can no longer undertake to leach or advise except through his works, but in them he hopes yet to make good use of the materials he has continued to accomulate for so many years. Ordered to avoid all over-strain and painful excitement he writes, "Unable therefore now to carry forward my political work, I yet pray my friends to understand that I do not quit it as doubting anything that I have said, or willingly ceasing from anything that I proposed."

The descriptor themselves date from the cardiage abildick efforts.

The drawings themselves date from his earliest childish efforts, The drawings themselves date from his earliest children such as a colored copy of a map, —an exercise which he considers among the best for beginners, —down to his studies last year in Yenice. The later penell drawings show in their wiggling, uncertain toneh a decided falling off from the sketches made just before he began "Modern Painters." These, principally architectural, are vigorous, and in the style of Proub at hist, and then evidently influenced by David Roberts, whose Syrian sketches—done on gray paper, with high lights of lemma yellow—produced a sensation at the time, and have remained standard examples of architectural sketches. The most characteristic and best drawing is one of three made for his geological studies, "Gueiss, with its Weeds," which is a marvel of delicate finish in sepia.

But this preoccupation in minute detail he acknowledges injured his artistic sense, until, he says, "hard work under Verenese and Titian forced me to observe the two relations between line and color. But, to my amazement, the conclusive lessons on these mafters were But, to my amazement, the communic lessons on these marters were given me, not by Venetiaus, but by the three Florentines. Butticelli, thou, and — name despised of artists — Angelico." That the lessons which he needed in aerial perspective and its effects, after geological detail drawing, should have come from schools so conspicenously hard in outline, whatever their virtues, will seem even more amazing to others there it did to himself, and perhaps prepare them, should they not have read his last pamphlet on the subject, for his present enthusiasm for Carpaccio. He exhibits a palastaking but mediocre copy of one of the latter's St. Ursula series, in Venice, which is perhaps discouraging for his pupils, as he says it would serve

to show the final manner of work in which I am endeavoring to lead my Oxford pupils."

Close to where the exhibition just mentioned took place is the permanent "Doré Gallery," which, it it contains nothing new, has still the best picture Doré has painted: "Christ leaving the Pra-torium." This, while showing his best characteristics of composition and movement, is also rather fine in color, -as accident he less not changed upon in any other of his large canvases, which are so disagreeable and dirry in tone that it is commonly reported by puints them by gaslight. This, in fact, would be no excuse, for the brilliant water-colors of the Koman school, as many of Fortuny's were, are painted in the evening schools. Account for it as we may, Dors, while having a great variety of fine and not inharmonious that while taying a great variety of one and not inharmonious (lats at his command, ends by enveloping them in a sickly atmosphere which spoils the generatione. As he burst full dedged, or at least full sized, to judge from the large cauvases he first appeared with, into the painting world, so he seems to remain: For there is little or no improvement in his technique, in spite of lavish criticism from friends and enemies. Perhaps, however, we should not expect him to learn from experience, as he seems to accomplish things without it. Yet genius though he was by his weeks are not be interested. it. Yet, genius though he may bu, his works cannot be satisfactory while he seems the laborious processes by which alone work of high art can be produced, nor can be give his genius fair play while he compettes with half a dozen arts at once. He does not submit to professional training, and therefore he is but an amateur in them all, and his indefatigable labor will win for him no higher place.

That labor is pertulate producing.

That labor is certainly predigious. Glance at the works in which his hand is shown this year. At the Champs de Mars he axhibits two large figure subjects and two fine mountain scenes,—in the latter he is at his best,—and in sculpture his large group of "Fate and Love," in branze, which was at the Salon a year or two ago in plaster. For the present year's work he has in the Salon two immense canvases, "Moses before Pharaob" and an "Ecce Homo," wither of which would also have present according to the Free Homo," either of which would alone have occupied any other French painter the whole year, — if not five. Yet he also exhibits a group in sculpture, "La Gluice," as well as in a third department two large water-colors. In the winter, he modelled a life-sized female figure supporting gas-jets, and at the Champs de Mars he has a colossal vase covered with climbing Cupiels. And all this does not represent the whole of his year's work, for he is constantly dushing off illustrations he side. It is no wonder, then, that artists are initiated with this high bandled and swift-financial malacier, the more so that from his high-handed and swift-fingered andacity; the more so, that from his power of composition his works are too full of suggestion to be entirely condemned. The pointers on waters deny that he can point; the sculptors repudinte him as a brother; and the architects best explain, perhaps, the fault which runs through all he does, when they say of the architecture in his designs that it is merely suggestive, and to the professional eye shows technical and historical ignorance of what he would represent. His buildings are eard-board hack-

диоилети.

In the present Exhibition in Bond Street, a collection of his origila the present Exhibition in Bond Street, a collection of his original designs of illustrations, done with sepia and white, is of great heaving the Practorium," painted between 1867 and 1872, his best pictures are the smaller ones of "Dream of Pilate's Wife," dated 1874; "Les Timbres," the night of the Crucilizion; and a sonrise on an army of Crucallers, done two years ago,—each less good than the preceding. His two pictures at the Salon were so bal, it is a question whether they would have been admitted had he not been hors de concours. In fact, most of the puor pictures were marked H. C., so true is it that one swallow does not mean warm weather, much less an eternal spring.

weather, much less an eternal spring.

Referring to the Salon reminds me that the Exhibition growded out of my letters any reference to it. Though it closed August 19th, a "paternal government" makes itself responsible for the works during a month following, so my notes on it may yet serve me for a post-morten examination. Not only were there but few really bad pictures, but the reign of horrors seems over, and the revolting subjects common a few years ago have disappeared. There was too, something very satisfactory in the award of a first-class modal to Etienne Gautier, for his single figure of Saint Cecilia. In view of the many pretentious pictures crowded with life-size figures always in the Salon, - it is a mystery what becomes of them all, - this is eacouraging for painters of more modest and refined works. corraging for pointers or more modest and relined works. The sant is represented lying on her side hencath a stone niche, draped in a pale, yellowish-green robe; the exquisite features (an rare in modern French painting) are turned in profile. The whole is treated with a sculpturesque simplicity suggesting a has-relief, and is peryaded by the purest and most graceful sentiment. Very different is another first medal, Ferrier's "Martyrdom of Saint Agnes," a powerful example of current French art, though painted as an crawi from Rome. It is noticeable that the works of the students at the Villa Medicis are more distinctively French than are those painted by men who have never seen the Italian galleties. The soluts seem to pro-tect their own, for the other first medal was given to Ronot for his "Charity of St. Elizabeth of Hungary," an carnes: realistic painting. Of the Americans, Bridgman has nothing so good as his "Puneral of a Mummy," of last year. Bacon gives with truth and

sentiment a scene on a parting steamer. Edgar M. Ward has a good Boston interior, and John S. Sargent has an extremely clever beach scene. A work painters were curious to see was Vibert's "Apotheosis of Thiers." His pictures are generally small, but foll of distinction, and this one had that same fine quality, and if one adds that it was full of dignity it is praise enough. Partirism eside, it is not a grateful subject, that of representing M. Thiers on his bier; at his head is just alighting a winged figure of Fame, and in the distance, and anid the clouds, are disnly shadowed scenes in his life, — a mode of illustration we associate with title-page wood-cuts.

The Prix du Salon fell this year to sculpture, and as it is to encourage a young artist, M. Lemaure's "Betrayal of Samson" did not need, perhaps, to be more than promising; but that no painter should have been found worthy of the regular medal of honor, and that it

need, perhaps, to be more than promising; but that no painter should have been found worthy of the regular medal of honor, and that it should have been taken from them to be given—in addition to the usual one—either to M. Barrias, for his group "The First Funeral," or to M. Delaplanch, for either his "Virgin of the Lily" or his "Music," a female playing on the violio, is not easily accounted for. In architecture, the exhibition was curiously scanty and pour. The first medal went to L. C. Sauvagoot, for a rather communicate church built at Rouen; but the most interesting drawings were those of MM. Duelos and Suisse, prepared. I hope, for publication, as they give, among other details about Dijon, an interesting restoration of the Abbey Church of Ste. Benigne, now the Cathedral of Dijon, showing an original tower and a buge doubted haptistery, with two tiers of interior galleries, of which nausual features no vestige now remains. interior galleries, of which nausual features no vestige now remains,

PLANTING TREES.

The manner in which trees are planted and grouped around a house has much to do with the impression it makes on the mind, and house has much to do with the impression it makes on the idined, and we can hardly put too high a value on any natural growth than may be made available when selecting a site for a dwelling. While we cannot point to any style of house that would not be benefited by an senessory of this kind, there are those that realize our expectations only when embowered in living green. The heanty of a Guthic entrage, for example, is heightened when seen nearling flown in a grove of round-top trees, for they give greater effect to the expressive lines of the roof; and the galdes, now seen through the vistas, now lost to view, are the more attractive in that they are murically now lost to view, are the more attractive in that they are partially concealed. Then there are often hard angles that need softening, a sharp joining of parts that had better he screened, or an undue length of some extension to be broken up, and this can be done by judicious planting. Here we introduce some of the twoad-leaved ornamental trees and shrubs, there some of the feathers variety at one point we plant a hemlock, spruce, or one of the cypress tribe; at another the graceful bench and acada, the tremulaus birch and fern-leaf beech; while, towering high above all in their majesty, the oak, the Spanish chestnut, and the maples spread their broad arms to shelter us from the sun and the storm.

to shelter us from the sun and the sterm.

Effective graips may be neade of hollies, magnolias, yews, and vices, interspersed with laborators, purple becches, and the more common decilbeau trees and evergreens. In this way the different qualities of green way be interwoven, and what an infinite variety of effects may be produced by contrast of leat, size, and color; for even in spring, when the foliage is in all its freshness, when no clouds of dust have settled down upon it, and no armies of ravaging worms have described by greens the average of most tree is an arrival to the colors. have despoiled the groves, the green of one tree is as unlike that of another tree as the boughs and twigs of one are unlike those of an-

A building standing naked and alone is like a man left on some barren spet, without friends or companions. It excites our sympathy, and we long to do something for it, — to relieve the ugliness pathy, and we long to do something for it,—to relieve the ugliness of its position, to cover, as it were, its nakedness, to shelter it from the blust, and to develop and bring out whatever of beauty and comeliness there may be in its outline. We would plant the ivy and the wistaria where they would elimb lovingly around column and halustrade, and so dispose the acacies that their snowy petals would fall in showers around the porch. No clipped yews should find a place there, no becches tortured into the form of peacechs or caryatules should stare us in the face, but every tree and shoul, in all its fulness and freshness, should make part and purced of a learmondous whole. With every breeze that swaved their presents linds there whole. With every breeze that swayed their graceful limbs they would tell in their own glad way of the love of art and nature that reigned there. The laburums to longer stunted by the cold wind of its native Alps, would mingle its long racemes with the catkins of the birch; the larch would lose the ragged look of its highland home, while the mountain ash displayed its clustered wealth, ripening on every bough.

But we must use judgment in planting. The surroundings of a tree have a great deal to do with its shape when it comes to maturity. A pine, for example, out on the lawn, with sample room on all sides to expand, will grow rapidly, preserving from the stort a well-rounded and pyramidal form; but if a number of these trees are planted compactly, they will shoot up into long poles, very good for many purposes and quite the thing for masts and spars, but if they are thannel out after they have been allowed to grow in this way they will present a very unsightly appearance. All evergreens are impatient of close quarters, and if forest to remain in such a position the lower limbs will dry up and fall off. A deciduous tree, injured in this way, will throw out new limbs when an opening is made

for it, and in time it will recover somewhat from over-crowding, but an overgreen will never make good its losser.

Climbers and much to the beauty of a cottage. There are some climbers that might almost be denominated trees. In climbing they take a spiral winding round an object from its base up. One winds to the right, another to the left. Is this left to chance or is there some influences that governs the discretion of the spiral? Attention has been called to this before, and some day we may get at a solution. What-ever it may he, it is known that if we twist wire after the passage of a voltair current through it, giving it the form of a right-hand serew, the point at which the current cuters becomes a south pole; but if we reverse the operation, then the point of entrance becomes a north Who can say there is not some magnetic induence that governs the action of plants, when opportunity is afforded them to "twist a twist"? CHAMPLIN.

THE HILUSTRATIONS.

PROPOSED MUTHODIST EPISCOPAN CHURCH AT SEA CLIFF, L. I. MICSERS, R. EDWARDS FICERN AND CHARLES R. SMITH, ARCHI-

THE CHATEAU D'AMBOISE.

This elever drawing of a part of the court façale is from a sketch y M. Albert de Korsak, published in the Croquis of the Intime

THE YORK CITY MARKET, YORK, PENN. MR. J. A. DEMPWOLF, architect.

This market, now building, is of common red brick laid in black morter, with bands and still courses of light drah-colored Ambriest stone. The roots are covered with Peach Bottom slate, variegated with red and green bands. A market-master's office and a directors' room have been arranged in the first and second stories of the tower. The two side gubbs are constructed with a view to be extended at some inture period. The interior of the brick wall will be pointed, and the root, which is framed of Georgia pinu, is to be oiled, with chamfers in Indian red. Cost, including fixtures, \$22,000.

HOUSE AT SCHENECTADY, N. Y. MESSES, POTTER AND ROBERTSON, ARCHITECTS, NEW YORK,

These two elevations and first-stery plan show the alterations now making in an old and somewhat dilaphlated house at the corner of Church and Union streets, Schenectady, N. Y., the interior as well as the exterior being entirely remodelled. The conservatory on the south and the portion shown on the west, including the music-room, kitchen, etc., are entirely new. The roof also has been materially altered, the position of many of the windows changed, — to suit interior arrangements. - and the two buy-windows and entrance purch on the side are being constructed according to the design indicated on the elevations. Moulded brick have been freely used in the string courses, size, and slightly projecting quoins of brick have been formed as the corners of the building and the window jumbs.

The old house, out of repair and meagre in detail, had a certain character which might pass as "culonial," which character as effort has been made to retain in the various applied features and detail, so that the value is the certain probability and the surrous and detail, so

that the whole, if possible, might harmonize with its surroundings, which are splendid trees, quaint old houses, and a general air of respectability and refinement which characterizes this part of this good old-fashioned and beautiful town.

THE PATENT OFFICE COMPETITION.

A REVIEW OF THE REPORT AND THE RECOMMENDED PLANS. Washington, September 14, 1878.

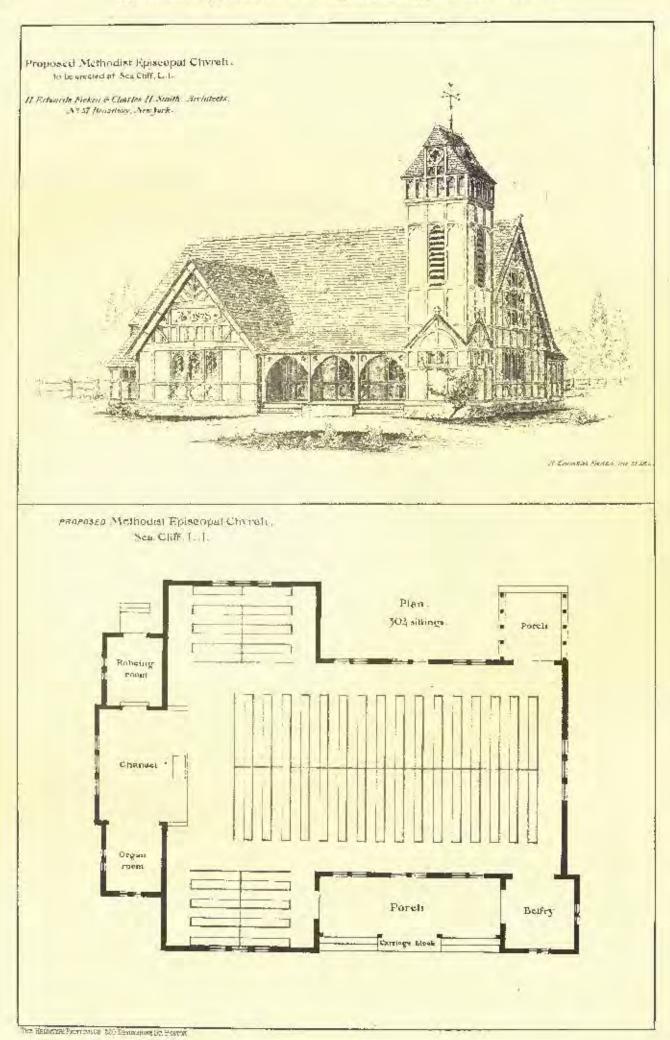
The sole reason for writing this review is that the full material, consisting of fifteen original sheets, is not accessible to persons at a distance from Washington, and the work and ideas incorporated in the plans can hardly be appreciated from the published illustrations.

The experts began by resolving to give preference to that design which should present, in a single scheme, the most intelligent embodwhich should present, in a single scheme, the most intelligent embodiment of the requirements and suggestions of the circular of June 14th, and that in justice to all competitors they must be solely governed by said requirements. In the end they decided in favor of an additional story on the Patent Office, while the circular murely suggested a sketch showing the feasibility of such an addition, which is as yet not oven authorized by law, so that a full set of drawings could not have been expected from all competitors under this aspect.

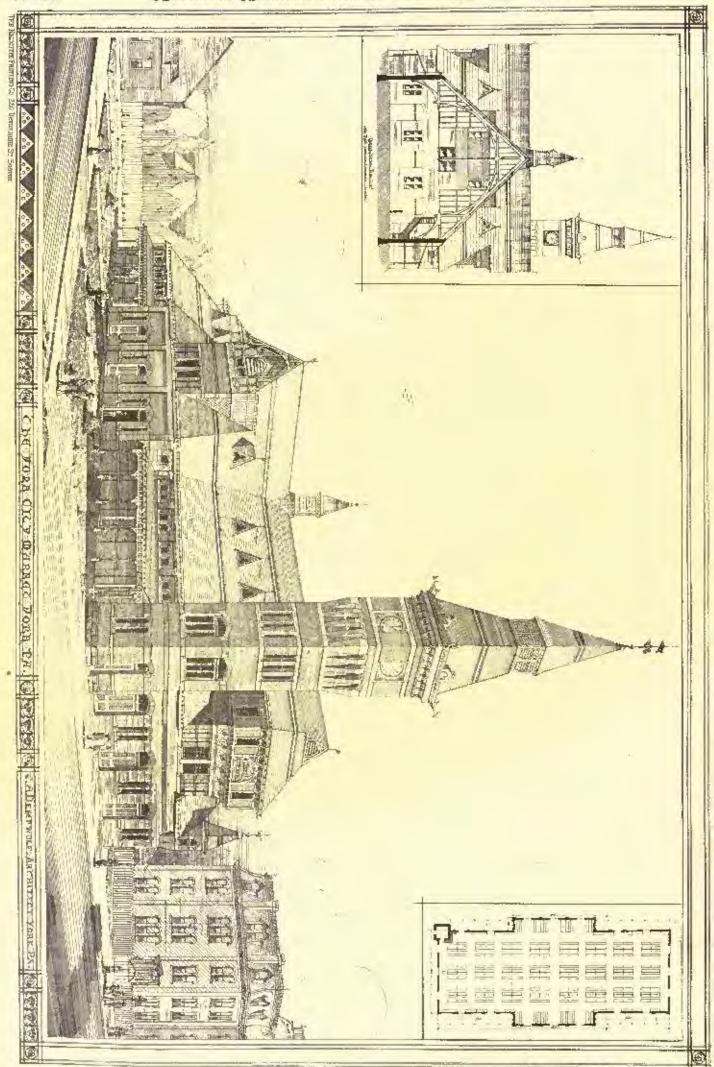
The short circular contained a more outline of what the department specially required presuming general acquaintance with the

The short circular contained a mere outline of what the department specially required, presuming general acquaintance with the accummodations necessary in the Patent Office, with its 200,000 models of various sizes, and leaving free scope to the resources of the architects for exhausting the subject. Instead of the application of a technical rule, to exclude everything not specially mantioned in the circular, it would have been in the interest of the government and of the profession not to rule out anything of merit which was to the purpose, and not in conflict with the directar. As it stands, the experts virtually decided that the plans they recommend suited the wording of the circular "most intelligently," but by no means that they covered the whole ground. This world be proper in an academical tilt, where the programme is worked up by experts, but may defeat the purposes of a complicated problem of practical architecture. In the present case numerous public





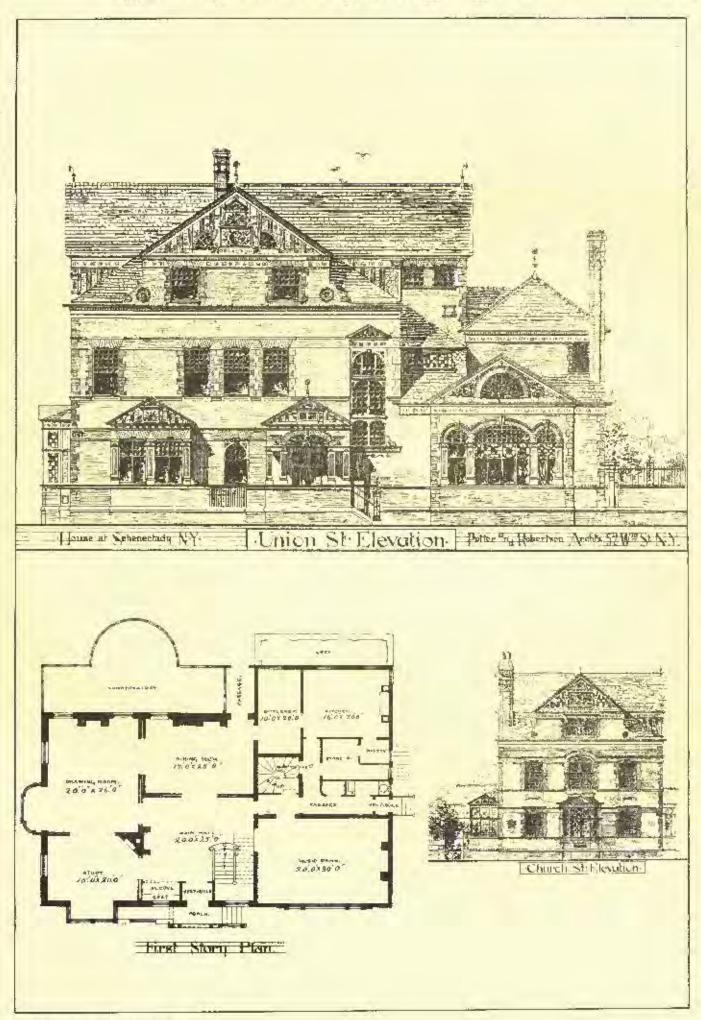






CHÂTEAU D'AMBOISE FRANCE





Tim Bridgian Programmed 150 Degreening St Hoston



documents, distributed over the land from official sources, bear upon the details of the problem, and are within easy reach of any citizen. The building to be reconstructed was open to all interested parties for inspection. The documents in the case leave no doubt that there is a pressing need for an adequate increase of the voluntious glass cases in the model-rooms, which, if not satisfied, would seriously im-

pair the asefulness of the building.

pair the aseratness of the building.

"The new model-rooms, as proposed, will be of uniform height and style over the whole area of the present building, well arranged for light and air, and capable of architectural treatment in harmony with the present structure,"—with this sentence the model-rooms are described in the report. The present mode of fitting up these rooms has been gradually reached by the experience of expects who have spent their lives in and with this skilled branch of the public service. It rousists substantially of place rooms about four four circles. service. It consists substantially, of glass cases, about four free wide, eighteen feet long, and eight feet high, the contents of which are accessible from all sides, under lock and key, within reach of the eyes of the visitor and of the hands of the officials. The proposition is to change this whole system, and to substitute wide and shallow alcoves all around the rooms, fitted up with wall-shelving about fifteen inches wide around the rooms, must up with variestic stag arts, marrow shelves are piled up thirteen feet high on one floor; those above a certain height are of no use, and the exhibits are accessible and seen from but one side. We read in a marginal note of the architect, on sheet No. 12, side. We reall in a marginal note of the architect, on sheet No. 12, that by this arrangement it is expected to "reach a more imposing effect." Such hasty changes can never be seriously entertained. The model-room of the east wing contains at present nearly 1,000 lineal feet of the wide glass cases on the main floor; these would, according to measurement by the plans, hereafter be reduced to about 800 lineal feet of the narrow wall-shelving. The old galleries are twenty-two feet wide, overcrowded with models, and have convenient approaches; those of the recommended plan are only ten feet wide, and reached by diminutive circular stairs.

The ceiling of the model-room it is proposed to support by two rows of piers two and a half feet square. The iron root is independent of this ceiling, and trussed over it in the usual manner for such a span. The old roof was of the same class; its consistent parts were found, pellsmell, in a distorted shape, on the floor, after the fire. Copper and glass were moleculinto irregular image that fire, and cast-iron began to first in many places; hence the temperature was about 2,000° Fabrenheit. The trusses started, he expansion the heavy markle black courses above the copping by expansion, the heavy marble bluck-courses above the cornice, and when their resistance could not be overcome the iron-wark twisted before it finally gave way. There is no difficulty now in resorting to the more extinued methods developed after the beavy con-Bagrations of this decode. With hollow blocks containing ventilated air-spaces within their body, "nating strength and resistance to fire and water, which do not conduct liest, cold, or sound," and other improved systems of construction at dispusal, experienced engineers have made it an object in tire-proof constructions to avoid false ceilings, since the bollow spaces formed above them serve as duets for transmitting the flames of a conflagration whenever joints their for transmitting the flames of a conflagration whenever joints are opened in the masoury enclosing smoke flors, in consequence of settlements or from other causes. Ventilated air-spaces, left within the comparatively thin side-walts of our dwellings, shield us against the inelementies of the weather. The constructor's skill may easily adapt similar methods to the stoping surface of the roots with the same results. With the new methods of construction, single skylights come in as corollaries. By better construction and by individual ventilation all former objections to the level to be a construction and by judicious ventilation, all former objections to their use have been overcome, and by the insertion of two paner of glass, with intermediate air space, in one thick sash, the cold is effectually kept out

in the winter.
The experts trust the application of the new and simple methods offinand, as oversights "open to serious objection," and keep to the boaten track "on the ground of comfort." After all, they evidently felt the insufficiency of the proposed accommodations and construction, for after having counted up the merits of the model-room they "would recommend that the principal galaxy he made of somewhat greater width;" and after a panse they conclude that the supporting columns of the gallaxy "may be made to stand over the intersections of the corridor and cross-walls, in which case the piers may become parts of the construction . . . of the roof." This means in plain English that the gallaxies would better remain twentytwo feet wide instead of being reduced to ten feet, and that the roof would better have intermediate supports underneath instead of being would better tave intermediate supports underneath instead of being suspended over the-rods sixty-four feet in length. Such radical monding is strange, but still stranger it is that in the scheme of another competitor, who had placed columns for the support of galleries and roof exactly "over the intersections of corridor and crosswalls," as above recommended, this feature was objected to in the words, "but this arrangement would require modification by a wildering of the central longitudinal passage."

This passage is sixteen feet wide in a young of sixty-two feet along

This passage is sixteen feet wide in a room of sixty-two feet clear width; the piers defining it are located in the interest of substantial construction in an old edifice built largely of light brick walls be-

tween heavy granite piers.

In a circuit through the north wing of the Patent Office there is no staircase for a distance of about 430 feet; probably for that reason the circular called for elevators in the north and south wings. In the plans these are lucated in the centre of the intersections of the

main carridors. The experts propose to transfer them to the wellholes of the old stairs in the cast wing. These stairs having no side-light, the improvement would obstruct the light and circulation of air, which are drawn solely from these well-holes. This change of the experts, if proposed by a competitor, would have been raied out as in conflict with the programme. Four different plans for a building in the court-yard are among the recommended designs. The experts

reject them all, and propose an essentially different one in their place.

With the adoption of the amendments of the experts the distinc-With the adoption of the amendments of the experts the distinctive features of the recommended plan in point of arrangement and construction disappear. The amendments provide for lowering the height and doubling the width of the gallery, for adding a new gallery, for changing the roof in some undefined manner, for shifting the location of the elevators, and eventually for substituting a new centre building. The new story of offices is merely a duplicate of those in the second story, which are in the Architest erroneously published as part of the new designs. The designs for restoration of the building as it stood before the fire are reported as inferior to those of another composition. Hader these circumstances we hardly find of another competitor. Under these circumstances we hardly find what actually has been premiated.

The design of a so-called " light passage " between the north and south wings has been left intact. This passage is erected upon an enormous stone-bridge construction, reaching through two stories, one of which is not at command, being underneath the foundations of the south wing and the level of the present court-yard, as shown by the official information furnished to the competitors! With these addenda to the exceptions of the experts, nothing in fact is left except

deads to the exceptions of the experts, nothing in fact is left except the change of the external architecture.

The problem is solved by the raising of an attic story on top of the old block-course; it is about 13 feet in height, without any variation all around the building. This treatment results in giving to the building the appearance of a hox, which was ever carefully avoided by architects whose designs in the Greek style are credited as classic. The portions were undoubtedly crowned by pediments in order to relieve the nonotonous sky-lines of the building more effectually than could have been done by mere wall projections. The course of the fagades might have been remranged in different ways; for instance, by raising them to a more prominent height, and treating them differently from the rest of the attic; or else by doing away with the Recently from the rest of the attie; or else by doing away with the present pediments, and arranging a similar feature in the attie. Tiers of artic windows in the front walls are to a varying height blocked up by the body of the pediments. Neither windows nor pilasters should be introduced in the angular space back of the pediments, which is not fitted for anything more than for a base of a higher structure. At such places skylights must be relied upon. The whole attic in all its features is claimsily conceived a patry addition to the "blank, mechanical repetitions of a misused order" (American Ar-The unfavorable proportion of the attic to the whole façade did not, of course, admit of a very lotty construction, but to make the proportions of the attic in itself change because those of the massive building underneath are heavy is had logic. The pilasters are nearly as broad as the main pilasters of the building; their proportions have not the slightest relation to those underlying Greek art: they are placed without any bases on the block-course, probably because the beavy columns and pilasters of the old building have no individually defined bases. But in all moreoments worthy of imitation an order placed on top of another is treated mere lightly and creately as a whole and in detail, than the lower one. The change of the old pediments by a superadded block-course, with aeroteria on the east and west elevations, with big costs of arms on the north and south elevations, and, on all, with the structures which receive the immense groups of statuary, as drawn on the original elevations on file, is anything but Greek, and it would be hard to find the link which connects them with pure classic architecture.

To make the point cumulatic a marginal note of the architect by the front wall on sheet No. 9 states: "Blocks between triglyphs to be changed into windows." Hardly any architect having a due appreciation of classic art would venture to cut out the repose of the fronts by such a change, and whoever prepared the modified perspective view for your worthy journal, which was never submitted in the competition, seems to have been stopped by a sense of piety from indicating the new-fangled windows in the places of the metopes of

the main cornice.

The report of the experts is silent on the merits of the architectare attempted upon the Patent Office. It touches the tender point but distantly, as follows: "The arrangement of the pilasters of the sunth portico is such—the onter one which must govern the projection of an attic stanting considerably forward of the intermediate ones." A reference to the published ground-plan of the attic and section of the building shows that the author of the plans sets bis actic on the inusting shows that the author of the plans sets his actic on the inner pilasters of the south portico, and not (supported as they would have to be by hidden iron girders) upon the hollow space of eighty-two feet span between the two outer pilasters. This would be offensive to the eye of any one who was susceptible to the nice halance of the static forces, of action and reaction, visibly expressed in all forms of classic Greek architecture.

S.

BINGE-MAKING BY STEAM. — There has been established lately in Baltimore the second factory in the country for making bricks by steam, — the other establishment being in Washington, - and it is said to be able to make 200 peop bright and at make 200,000 bricks pur day.

CORRESPONDENCE. WOOD PAVEMENTS.

Something about street parameters may interest your readers at the present time. Chicago may be called the home—I might say the original stamping-ground—of word parameter, and she still clings to them, or they to her, just as you may choose to regard it. I remember when the wood paramete, the original Nicholson, was laid first here, or anywhere, just twenty years ago. It was in Wells Street, between Lake Street and South Water Street. First the street was leveled off with gravel. Thus twester backs were held access street, between Lake Street and Sound water Street. First the street was levelled off with gravel. Then two-inch planks were laid across the roadway, ferming the proper curve for the cross profile, for it was not difficult to spring the long planks. Then the planks were mopped with coal-tar. The blocks, eight inches high and three inches thick, were dipped in tar and nailed to the foundation. Strips, one by four inches, were nailed between them. The grooves the left and filled with cross of conventions. Strips, one by four inches, were maked between them. The grooves thus left were filled with gravel, randined in; more coal-tar was poured over the surface, and then coarse gravel was spread over all. As conducted it made a great smoke and smell for blocks around. Instead of the blocks being hought upon the ground in large bux wagons, as is now done, portable steam-engines and saw-mills were brought upon the street, and there the timber was sawed.

The only wood used for the Nicholson pavement was Michigan white pine. But within the last two years other woods have been used.

used.

On busy structs these pavements remained good for six years, and passable for eight years. They did better service than any others that have since been experimented with. The city bought the Nichthat have since even experimented with. The city bought the Nich-elson patent, and soon many miles of streets were laid. Before use two streets only had been paved with stone: State Street had a cobble-stone pavement, and one block on La Satle Street was paved with linestone cubes, sindlar to those used in the so-called Belgian pavement. These last still exist, though the street is so rough as to be almost impassable, and drivers avoid it whenever they can.

It is true that the Nicholson payenests resisted the great fire, which calcined the curb-stones so that they were literally blown away as dust. But I have noticed that where they were little word and not covered with dust, as on the sides of the readways of residence streets, they were burned out in deep pits. It is where they are worn by vehicles that they show no signs of decay. On the streets

worn by vehicles that they show no signs of the are. On the streets least eleaned they last the longest, because of the protection afforded by the street dost. It is only on the streets that are well chanced and little used that they have decayed in this city.

Up to the time of the great fire the wood pavements gave complete satisfaction. With the exception of the two streets I have montioned, every street of importance in the city was paved with them, and they were all in good under. Chicago paid no attention to the discontinuous as teneral in other places.

dissatisfaction expressed in other places.

After the fire a new system came in vogue. It was necessary to repay some of the streets without delay, and there was a great demand for the extension of pavements on many of the outlying avenues, on account of the rapid growth of the city. Property-namers would combine to make private contracts for paving, getting only the consent of the city authorities, and avoiding the delays and extra expenses attendant upon the work being done by the city government. The result was that contractors were constantly working up jobs with properly-owners, by pretembing to reduce the price of the paving, while they were reducing the quality in a still greater proportion. These new pavements looked as well as any others when first completed, and thus other owners were induced to combine and repare their streets, so that at least ten miles of streets were thus paved in a few years. The quality of the work was reduced to such an extent that nothing but the three-inch blocks, the grading gravel, and the surface gravel remained of the original Nicholson pavement. The foundation was entirely discarded. Contractors went about saying that it was all nonsense, that it soon decayed, and was money wasted. They said that coal-tar did not preserve the blocks; that the idea was a fallacy long since exploded. Hence pine wood was used just as cobble-stones had been, even the parting strips being discarded and gravel thrown between the blocks. But soon these pavements began to grow unered to a frightful extent. The prespectively and the second transfer of the pavements began to grow unered to a frightful extent. The foundation was entirely disearded. Contractors went about say erty-owners began to think that they had been swindled, and the city government to awaku to a realization of the danger we were in. The daily papers were full of complaints, and binted that the day of wood pavements was at an end. All sorts of new substitutes were suggested; the so-called asphalt mon began to put down their sample patches over the wood in places, and even the city authorities repaired these broken pavements will cobble-stones, as if pine blocks were not fit to repair pine pavement. But when It became evident that the city had been imposed on through its failure to compel private contractors to work up to its specifications, an investigation was instituted. About a year ago a compiltee of the common conneil gaye the matter serious consideration. It consulted experts and took testimony. The result was a report in which a standard for street paving was recommended for adoption. It was that all strent pavements of wood should be laid on a foundation of flagging-stones, whether laid by private contract or by the city authorities. I believe that the report was not adopted, but that it was determined to make a series of tests of foundations before deciding upon a definite plan. These tests are under the direction of the Department of Public Works, and no pavement can be laid extheir sample patches over the wood in places, and even the city auciding upon a definite plan. These tests are under the direction of the Department of Public Works, and no parement can be laid ex-

cept by its permission and on good foundation. It is therefore set-tled that hereafter wood pavements shall be laid only on a proper foundation, and that the foundation shall be permanent, so that only the renewal of the surface blocks will be necessary in making repairs. An examination of all the streets in the city has been made to determine what are in need of paving or repaying, and a general ordinance has been adopted defining exactly what streams and parts of streets require it, and authorizing the work to be done from time to time by either private or public contract.

It is therefore pretty well settled that wood pavements in Chicago are not a failure, and that we are to continue to use them. So far I think that our city has not only been the first to use the wood pave-ments, but in the beginning used the best form then known. It is now the first to recognize that wood pavements are only surface drussings, and require permanent foundations, which will not need to

be renewed.

I have omitted to mention that among the foundationless wood pavements a considerable number of streets have within a few years been paved with cedar blocks, out from round logs, similar to pavements which have been in successful use in Detroit for some time. Another experiment, recently tried on Washington Street, has been to place pieces of inch boards on edge, set solld and dressed with tar and gravel, the courses taking a diagonal direction across the struct.

The experiments that have been instituted under the new ordinance are on Dearborn and Monroe streets. Three blocks on Monroe Street have been paved with a foundation of three-inch oak plank well coated with tar and finished with pine blocks had in the regular Nieholson fashion, the blocks being six inches high. The foundation planks are so thick that it has been necessary to lay them in a longitudinal direction, because they will not spring to the profile of the roadway. This seems to be objectionable, for the reason that if individual planks settle rute may be formed, which is not possible if they are laid crossways. In the experiment on Dearborn Street hetween Maddoon and Monroe, the same foundation as that has described has been faid, and the surface is of round crelar blocks with tween Made-on and aboute, the same foundation as that last described has been faid, and the sortness is of round to lar blocks with coarse gravel rammed in the interstiters. This is attracted with coaftar and covered with a top dressing of coarse gravel. One piece on the same street, opposite the Tribuns office, has a foundation of three-inch flag-stones, measuring two by four feet, hid in sand so as to break joints. The surface is of realize blocks are in the usual way.

What seems to me the most practically and serviceable foundation has neither been tried nor suggested in connection with wood pass-ments, and that is a foundation of four inches of concrete. Our nu-tive cements make excellent concrete for such purposes, and are reasonable in price. Our stone breaks up admirably for concrete, and can be lead cheap. Here we anticipate but little trouble from the tearing up of pavements, because branches for sower, gas, and water pipes are carried inside of the curb-lines on every street before it is payed. We do not let three gas companies lay pipes in one street, as they do in New York. All repairs to payements must be made by the Department of Public Works.

It will naturally be asked what we consider to be the advantages of one wooden pavements. The main advantage is the avoidance of noise. This needs no comment. The next advantage is the saving of more and tear on horses and vehicles. The visitor to Chiraco will readily note the excellent condition of work horses. What he will not see noless it is pointed out to him is that through the general use of wood for payenents business wagens and empibuses have come to be constructed in a lighter manner than dose in use in cities where the payements are of stone. This is especially the case with omnithe pavenents are of stone. This is depending the case with order-huses. The horses last longer and wagons wear longer here than elsewhere. With the lightening of the wagons there is a correspond-ing lessening of the wear on the pavements. This is one reason why our good wood pavements last longer than elsewhere. Another ad-rantage of wood pavements is that they are cheaper than any other,

thanks to this being the cheapest lumber market in the world.

Another question that will be asked is why they wear better here than in other cities. One answer has been given. Another is that there are no grades here. Wooden parements will not last more than half as long on a scoop grade as on a level. The reason is that the earlies on horseshoes always pull them one way on grades. the earlies on horseshoes always pill them one way on grades. Another answer is that this is a dry climate. In the summer and fall we seldom have long-continued mins; only showers, which run off and dry before the blocks become soaked. In winter we seldom have rain. The snow does not thaw after every fall, but the streets are frozen most of the time. The spring is the only wet season we have. Last winter was an exception to the general rule. The streets were muddy, partly because of neglect to clean them, and partly because of the mild weather. The result was disastrous to the payements without foundations, and caused considerable decay in pavements wishout foundations, and caused considerable decay in laster streets. The comparative dryness of our climate will serve to account for the difference in lasting qualities between our pavements and similar ones in our Eastern cities. It may be noted here, too, that artificial preservatives have never been used on woods in our pavements. Chicago contractors have distinguished themselves only

In Washington and disewhere by the use of such inventions.

I wish to say only one thing more. It is a mistake to let wooden pavenents take care of themselves until they are used up. Every defective piece should be taken out as soon as it is discovered. Again, every wood pavement should, in dry weather, be periodically

dressed over with a coating of tar and coarse gravel, say every two years. Such a process will greatly prolong its life, serving to stop decay, and giving the blocks a hard surface. This is more importunt in a place where the streets are conscientionsly swept.

Another improvement now contemplated is to pave the gutters

with small couble-stones laid on the same foundation as that used for the wood blocks. In such pieces the wear is small, and loss from decay is greater than in the centres of streets. The system is in such earsful use in Detroit.

Sr. Jones, N. B., September, 1878.

Tak citizens of St. John are a church-going people. Nowhere else in America, except perhaps in Brooklyn, is the custom of attending the America, except perhaps in Proostyn, is not character to enversal. The demand, therefore, for new buildings to supply the place of the charefres destroyed by "the fire" was urgent; and the ruins of our city were scarcely cold before "delegations" were organized and sent abroad in various directions to profit by the sympathy which our mistortanes had excited,

The Roman Catholies of one city worship in one edifice, a fine stone eathedral, which happing did not stand in the track of the con-flagration. Their only loss by the fire was a very old wooden church, flagration. Their only loss by the fire was a very old wooden charter, which had been converted, some years ago, into a lecture-hall and school-house. The replacing this with a substantial brick structure is the only building operation in which they, as a church, have en-

is the only building operation in women rough, as a special gaged.

Of the four places of worship in the city proper belonging to the Church of England, two were destroyed, namely, Triulty and St. James. On the former progress was reported in your issue of August 8d. Since that time the building committen have adopted the derign (referred to in your paper as No. 2) sent in by Mr. Thomas, of Mentreal. Working drawings and specifications have just been completed, and tenders will be asked for at once. The latter building is storated on Main Street, and is at present just being moded in. It is intended to accommodate about 500 persons, and rnoted in. It is intended to accommodate about 500 persons, and will cost about \$10,000. The walls are of linestone rubble, with finish of freestone. The architect is Mr. F. J. Camp, of the firm of Croff & Camp. His design was selected in an informal competition, and he describes the style of architecture adopted in "this modest, but charming contribution to the beauties of the new St. John " as the " Genmerical Gothie or Early English," The curves of the window and door heads, however, are struck from four cen-

of the window and door heads, invever, are struck from four centres, and this, together with its exceedingly low-pitched roof, gives it some claim of very distant kinship with the Tudor family.

The Methodists are building three churches in the city proper and one in Portland. That known as the "Lawer Cove Mission" is situated on the corner of St. James and Carmertium streets. It has a frontings of 50 feet, and is 72 feet in depth. It is intended to seat about 500 persons, and its cost will be in the neighborhood of \$10,000. Mr. D. E. Dunham is the architect; and the material being wood, it will probably be a study in the style known as "Carpenter's Gothic." The limit set by law to the height of wooden structures in this part of the city has rendered the ordinary stilehold reaf improvable. A fremula reaf, religiously with untiles and pitched roof impossible. A French roof, relieved with gables and patched root impossible. A French roal, refleved with gables and truncated towers, has been used in its stead; but the work is not sufficiently advanced to enable one to form a very clear idea of its finished office. Of the other three Methodist churches Mr. John Welsh, of New York, is the architect. All three bear a strong family likeness, the fronts being all built of rubble masoury, with window-finish, tracery, and dressings generally of artificial stone. The mouldings and tracery will be identical in each, the same moulds being used for easting them. The style of architecture claims to be the fourteenth-century English Gothic. Mr. James Thompson, of Portland, is the builder of all three. The artificial stone is being manufactured here by Mr. Wheeler, of New York. Its composition is mainly Portland cement and sand, and when finished it is of a dark biaish tim. In regard to its ability to stand the severifies of our climate opinions are divided, and it meets with very little encouragement is private work. The Centenary Church, the largest of the three, is to be placed on the corner of Princess and Wentworth streets, and is to accommodate 1500 persons. The school-house, which will form in outward appearance the transpeps of the clurch, is already raofed in. It is 40 by 90 feet, and costs about \$18,000. The Germain Street congregation is building its new church on Queen Square, and the walls are at present built to the height of about 20 text. The building is 60 feet wide and 124 feet in depth. I have not had an opportunity of examining the plans, but a description published in a local stance was that it both death truncated towers, has been used in its stead; but the work is not height of about 20 feet. The building is 60 feet wide and 134 feet in depth. I have not had an opportunity of examining the plans, but a description published in a local paper says that "both church and school-room are to be under one roof, and the interior will be so designed that these can be thrown into one grand audience hall."
This building will cost about \$60,000. The Portland church is similar to the above, but will have its school-room in the basement. It will cost about \$30,000.

The Baptists are already occupying one of their new churches. It is at the corner of Germain and Queen streets, and is 65 by 100 feet on plan. It will seat about 800 persons, and has cost about D. Masses, Dumeresqua & Dewar, of Halifax, are the archi-The naterial used is brick, with scanty stone dressings, and the spire is some 150 feet in height. School and class rooms are in the basement. The auditorium is scatted with pews, or rather henches, arranged in circles, and this, with a steep horse-shoe gallery and very brilliant colorings in the ceiling, gives it quite

a theatrical aspect. A residence for the pastor is situated at the rear of the church, and an effort has been made to extend to it the general lines and style of the church, but owing to the unavoidable smallness of its parts the effect is not pleasing. The only other Baptist church of importance is situated on the corner of Sidney and Carmarthen streets, and is now ready to receive the roof timbers. In plan it is somewhat in the form of the letter T. Its greatest length is 114 feet. Width zeross the head of the T is 95 feet. And the auditorium or nave has a width of about 60 fact, and will necom-modate about 700 persons. In the rear are provided vestry, class-rooms, paster's room, library, and kitchen, haptistery, and rooking range; in short, all the paraphernalia required in a church built to suit "the present age, and the habits, wants, and tastes of the people."
The material of the walls is rubble-stone, with a facing of brick-work, and triumings of "freestone" and galvanized iron. The cost of the and triumings of "freestone" and galvanized iron. The cost of the building will be about \$30,000. Mr. John Stevens, of Boston, is the architect, and as the "outline and general features are after models of the Byzantine period" we may expect something similar to Mr.

Stevens's previous works, which may be seen in almost every city from Calais to Lyan.

The principal church of the Preshyterians, the St. Andrew's Kirk, on Germain Street, is, after the new Trinity, the most important church in St. John, both in point of architectural display and in the church in St. John, both in point of architectural display and in the wealth and number of its congregation. In general plan it resembles the church last described. It is 74 feet wide, and less a total depth of 166 feet. It is intended for 800 worshippers, and will cost over \$70,000. The architects are Messrs. Langley, Langley & Hinke, of Tomato. The side walls are of brick, but the front, with the returns of the towers, is of red free stone ashlar, with olive-colored freestone dressings. The front gable is flanked by two square towers. From the tallest of these the spire will rise to the height of 175 feet from the toward.

the ground.

the ground.

The new St. David's (Presbyterian) is rituated on Sidney Street. Its size on plan is 60 by 100 feet. The anditorium is to seat about 900 worshippers, and has a gallery on three sides. A half for the Sunday-school is provided in the basement. The material employed is brick, with stone dressings. The archivests were Messrs. Seammell & Smith, of Toronto. They formished general deswings only. meil & Smith, of Toronto. They formished general drawings only. The details are by the intelligent contractor, and the double-netion have on the entrance doors were sold to the building committee by

hars on the entrance doors were sold to the building committee by Mr. John Stavens, architect, and were put on under his apprintendence. The cost of the building will be about \$55,000.

The interior arrangement of all the churches, except of those of the Church of England, which will, of course, have deep chancels, will be nearly identical. Galleries are provided at first, or provision is made for their future introduction when needed. The pews are arranged in circular lines, and a broad platform is raised at one and for the preacher, the choir and argan being in a shallow recess lumediately behind him. Ventilation on the Leeds principle has been introduced in one building. In the others ventilation is to be procured by cold thes, openings in ceilings, and windows and doors. Two or three stone spires may be expected; should the finances hold out. Chimes of hells are unknown here, and none are contemplated. In the designs of the exteriors of our new clusteless there will be found little to delight the eye of the lover of the pure and trathful in architecture. The formale architects were generally chosen by means of informal competitions, and some, no doubt, owe their employment to the "reasonableness" of the terms on which they offered their services.

Verax. on which they offered their services. VERAX.

AMERICAN INCENUITY.

It may almost certainly be predicated of any modern mechanical congress that the Americans will carry off the pain for novel and ingenious application of force to practical purposes, the substitution of mechanism for hand labor in new and enrious contrivations, which, to the anatters in such matters, surprise as much by the new ways in which old problems are attacked as by the fine way in which the work is done. The mass of invention and practical result from it produced by the Americans within the century, and especially the last twenty or thirty years, is so great and so important in results that it presents an important problem in political economy.—one especially interesting to Englishmen, as American mechanism is an offshoot from English, but an offshoot so peculiar in its character that mere beredity will not quite explain it. A traveller in the New World once said that the most interesting thing in America was its Americanism, and so we may say that the most curious feature of American mechanics is its distinctively American feature. As mechanical science pra-gresses, the greater and more important inventions become claborated by, and the property of, the nation which pushes that science furthest in its experimental studies. The result is incessen, studied, and developed with method and certainty, and great industrial revolutions are oped with method and certainty, and great industrial resolutions are effected with a certain and almost calculable progress. In this process England has long led and still leads the world, owing to favorable conditions of capital and labor. Fullon built the first successful steamer on American waters; but all the latest and most important advances in steamship building are English, and the great mass of the steamers affect are English. The first monitor was American; but the purp craft of that construction across the Atlantic would all go down before one of the last Predich build, and themsh Rabons and down before one of the last English build; and though Rodinan and Dahlgren instituted the experiments to which we owe most of the

present knowledge of the power of artillery and gonpowder. English artillery has left the practical transationalic results out of the chance

of competition.

Yet in spite of this the activity and insight of the American inven-Tet in spite of this the activity and insight of the American in mechanism than all Europe combined. The New Englander invents normally; his brain has a bias that way. He mechanizes as an old Greek sculptured, as the Venetian painted, or the modern Italian sang. A school has grown up whose dominant quality, curiously intense, widespread, and dating, is incchanical imagination. It is not the professed incand daring, is mechanical imaginarion. It is not the professed inechanic or ironmaster who invente, any more than the schoolmaster or the farmer. As Theoretto left his dueing to become a great painter, the American, be he hank slerk, pedagogue, backwoodsman, or plowman, turns in his busy brain some problem of his own, suggested by his experience of ill or too stowly done work, and like Archimedes in his bath, he suddenly finds it and rushes away with his "Eureka!" to some place where he can make his model or get it made — more frequently the former, for want of finds to get it made. There was a want the man had felt, an ideal to be worked out, and in his meditation addenly the thing fisshed on him, and is complete in affits essential parts from that moment. The number of inventions, useful and useless, thrown off in this way in the course of a year, of which only a small proportion attain the realization of the Patent Office, can only be imagined by those who have lived among New Englanders at be imagined by those who have lived among New Englanders at home. - Landan Times.

NOTES AND CLIPPINGS.

NOTES AND CLIPPINGS.

Heating the New Your Capiton.—The contract for boating the capind building at Albaur, N. Y., has been given to F. Tailor & Co., ventilating conjuners, of Boston, who have derived a very novel and very economical method. The space now being provided for is within one half the main building, 300 by 400, two feet high, and is to be completed at an outlay of about \$30,000. The leading feature is that the rontrol of the almosphere within the building is consered with the conjuner to the basement, and he will be supplied with indicators that will show the temperature of every room in the editire as well as that of the several parts of the two large assembly chambers. The system is an air-blast. By means of two 8-feet 8-ton exhapt thus the cold air is drawn in over the boilers, passes through two steam coils having a surface of 10,000 square feet each, and in a direct line of 200 feet from the entrance of the cold air to the end at the coils it shoots under a damper 12½ by 5 feet into a chamber, where from over the damper cold air rashes in and is mixed with the hor. Then it is eaught into the blowers and sont through large zine takes to its several points for warming. By a movem in of the damper the temperature of the sir going through the blowers can be raised or lowered. Thus will be secured an even temperature; the highest proposed to be reached is 75°. There are to be six 54 horse-power steel boilers, with sixty 3-inch tubes each. They are build by Hodge, of East Boston. The fans will be worked by a 35 horse power Buckove condensing angine, baving a 14-inch evilidar, 28-inch stroke, and ranning on 15 pounds of pressure. As an offset to the cooling surfaces of the many 5 by 12 windows, pipes are run helpind the mophosal and will throw up from regular vents radiations from live steam.

Preserving Timer. —The improvements in saturating wood and timber invented by H. Sainsbury, of Paris, consist in employing a solution formed in the relative approximate proportions of water, one thousand fitnes; alpha, sixteen kilos; sulphate of copper, sixteen kilos; bromide of codings, one kilo; and fielde of sodium, one kilo. For the purpose of the invention he prefers placing the timber or wood to be treated in a close vessel, from which be draws off all the nir, and into which he immediately injects the above-mentioned liquid with a pressure varying from liftern prouds to one hundred and fifty pounds to the inch. It is stated that wood thus injected not only acquires thereby a considerable degree of hardness, whereby it is better fitted to resist wear and tear, friction, exposure to the atmosphere and deteriorating causes, but it is also rendered completely incombustible. — Budder. bustible. - Budder.

Houses in Landon and Party. — The total number of houses in London and Party has been officially furnished to the statistical department. In Party the total is 65,000; in London it is 460,000. There are more houses in the great English metropolis than in Party, New York, Berlin, and Vi-BRUS.

KNOX MEMORIAL. - The corner stone of the Knox Memorial Institute was recently haid at Haddington, Scottand, the birthplace of the reformer. It will cost about \$45,000. The Earl of Haddington, who presided, is a descendant of John Knox.

Iron Winnow Sasnes.—Those interested in the practical details of architecture, particularly such as affect the comfort and convenience of every-day life,—and this should include nearly every-body,—will find the novel east-iron window sashes which are being introduced into the new Triuity College buildings well worthy their notice and examination. In general plan much like the French casements, with which some of the readers of this may be familiar, they are much superior to them, being constructed after English models and the first ever made in this country. Solid and strong, but light and easily moved, they are bringed to the window frames, and when opened may readily be adjusted, by means of springs, to any desired angles on quadratural arms. They are very durable, are so nicely litted as to effectually exclude air, dust, and water, and present no "coigne of vantage" to the housebreaker.—Trade Journal.

Sermona's House.— The house in which Spinoza ladged at the Hague from 1652 to his death in 1676 has just been purchased by three of his admirers,— Amerbach, the novelies. Professor Zimmermann, and Mr. Campbell of the Hague Rayal Library,—who will take steps to preserve and mark it with an appropriate rabler.

The East River Bridge is composed of influences strands of wire. There being four cables, seventy-ny strands are required. The two lower or downstream enbles were virtually completed last week. Vesterday the workmen on the hidge were origined in running out the wire for the last two strands of the up-stream cables. It will require about two weeks longer to finish running the wire for these strands, by which time the cable work will practically be brought to an end. A number of the bridge mechanics were employed yesterday in the work of bringing together the nineteen strands of the two completed cables, so as to form a count, compact body. A few months ago seven strands of each cable were brought together and wrapped with wire at short intervals, so as in form a care. Around this core the men are new arranging twelve more strands. Large wooden clamps in two speaking, with holts at the mu and bottom, are amployed to bring the strands into place. When all the changs are in position, they will be loosues? monthly allow the men to hip off and draw one the wire weapings of the core and sucrounding strands. Then the nineteen strands will be pressed into the places they will permanently occupy, and the cable will be learned with No. 10 galvanized wire. After this has been done, the sheds, tool-bone, and machinery on the eachorages and towers will be removed, in order that the final course of masonry may be laid.

Puns Air. — San Francisco has a city ordinance making it a misde-meanor to sleep in a room containing less than 500 cable feet of air to each person. No effort has ever been made to enforce it against any but Chinese, and, in the, it was passed for their especial benefit. On Friday, August 20th, a large number of these poor people were acrested for violation of the ordinance, end were contined in the city prison. The Aira continues the story: "They were squeezed into three cells of the following dimen-sions, ascernance by careful measurement: One was 14 feet long, 9 feet inches wide, and 7 lact high; the other two were each 16 feet long, 6 feet inches wide, and 7 lact high. The total cubic capacity of these sells was 2,179 feet, are triffe over 23 cubic feet of air to each man. At the o'clock Monday morning 91 Chinese were found packed in those pens, on the charge of not occupying a space squal to 45,500 enlike feet."

Fixing the Guinese. — The inhabitants of Vancouver's Island have, it seems, determined to follow in the wake of Victoria some years ago, and Querusland recently, by imposing a tax of £8 a year on every Chinese emigrant who hads in the colony. Probably this will have the intended effect of shuting our Chinemen altogether. This question of the future of thinese omigration and the English colonies is, as we have frequently said, one of considerable gravity. On three occasions it has now been decided by our free governed colonies that they have the right to impose what is in effect a probibitive poll tax on these Asiatic emigrants. It is certainly difficult to justify this action upon any abstract principles. According to the view which we have enforced and are enforcing still upon China, man of any nationality have the right to trade and settle within the limits of all civilized countries. We unge that the Chinese practice of shading themselves up from the "foreign devils" is barbarous and foolish, and so on. Yet we penult not colonies to map Chinese methods in order to protect themselves against that very free competition in one direction than England and the colonies, too, have been so auxious to obtain for themselves in moother. In spite, nevertheless, of this apparent contradiction, he would be a bold man who in support of the free trade theory should contend that lands which have been acquired and are made valuable by the energy and entorprise of Englishmen should be turned over to the aurestricted occupation of an alien race, which does not even permanently settle in the country. Some or later, however, we may rely upon it, the Chinese will argue these points with us as well as with the Americans. — Pall Mall Guzette.

Protectors Al Albant.—The federal government is erectine.

Protection at Athany.—The federal government is creeting a building in Albany for the use of the Collector of the Port and other government officers, the material being grantle. The Trensury Department has ing advertised for proposals for the necessary grantle, to be delivered ent and ready for setting, several prominent citizens of Albany, including State Senator Harris, George Dosson, and Thomas W. Olcott, recently addressed a letter to the Treasury Department directing attention to the fact that there are many onemployed laborers in Albany, and asking that the proposals be allowed to offer both cut and ancut granite, in order that some of the cutting may be done in that city. Secretary Sherman in his reply says that experience has shown that "materials and labor can be secured at much lower rates when obtained offer ample advertisement and competition," and that only by adopting this course can the expenditures he kept within the appropriation. This reply is conclusive. The building in question is paid for, not by the city of Albany but by the whole United States, and in the expenditures only the interests of the whole country should be considered. Besides, if the workmen of Albany are favored at the expense of coonany, the workmen of some other place will be deprived of employment.— N. Y. Exercing Post.

The Elevater Road.—A new plan for diminishing the noise made by the cars of the New York Elevated Railtoad Is suggested. Hard oak timbers are to be placed between the girders to the sleepers, in order to present the latter from vibrating. On the tap of the oak timbers are placed three layers, one of ruther, one of zinc, and the last one of leather. The ordinary rails of the road, which are from tility to thirty one feet in longth, are then taken up and new rails substituted. On top of the latter is placed a flat piece of iron, about three inches wide and a half-line thick, and it is expected by these means to reduce the noise about one half. and it is expected by these means to reduce the noise about one half.

Trinity College. — The new college building that contains the recitation rooms, the chapel, library, estinet, and dining rooms (the south holding), has been named Scabury Hall, after the first bishop of the Episcopal church in Connecticul, as was the middle building that stood on the old college site. The new north building, that countries the domittery rooms, has been maned Jarvis Hall, in honor of the second Episcopal hishop of the State, as was the south building on the old site.

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BOSTON, OCTOBER 5, 1878.

CONTENTS.		
MARY:		
The Custody of Drawings. — The Barry Case. — The F Listed-Labor Union at Washington. — The English Congre of Trades Unions. — The Condition of Labor in England. The House of Lords on Novious Vapors. — The Engli	ens sh	
tibelisk		
LEGIOGY AND AMERICAN ARCHITECTURE		114
Fine-places. I		710
ILLUSTRATIONS: — The Allemania Club-house, Cincinat. — Semi-dotached Houses, Ruston. — Cottage at Cl.	W.	
mont, Penn.		
S ON ARCHITECTURE IS PALESTINE	4	117
HENTGATIONS (-		
L'École des Beaux-Aris		119
Black Mortar	Y	120
The Ownership of Drawings	-	120

A CORRESPONDENT has written to ask as for facts concerning the decisions of cases where the custody of an architeca's drawings is involved. Unfortunately the decisions are hard to come at, the custom, which is undoubted, having been seldom brought up in courts, and the records being meagre and senttered. The most famous and important case in English practice is that of the drawings for the new Houses of Parliament; but being one which involved peculiar relations it is not a guide in ordinary practice. We have not had time to look back to the history of the case, which is distributed through a long series of the English building journals of 1867 or thereabout; but the facts, as we remember them, were these. It was a good while after Sir Charles Barry's death that the office of Public Works surprised his son, Mr. Edward Barry, now president of the Royal Institute of British Architects, — who had succeeded to the business and records of his father's office, and to his place as architect of the building, - with a demand that all the drawings should be turned over to the government as its property. Mr. Barry refused, alloging the usage by which drawings remained the property of the architect. Much tostimony was introduced to show that this was the undisputed custom of the profession; but the government overruled it as a custom which ought not to apply in the case of so important a public building, and took possession of the drawings by a sort of right of eminent domain, we believe, on the ground that it was ossential that the plans of such a building should be in its own possession, and become part of its archives. It has been suggested that Mr. Barry would have done better to acknowledge that the government ought to have plans of the building as a record, and to offer, while pleading the recognized castom of retaining the originals, which in their ordinary condition are seldom very serviceable for this use, to farnish suitable duplicates of the important drawings, requesting a proper allowance for the cost of this nonsual service. This seems to be the reasonable suggestion for such cases, recognizing as it does the rights and needs of both parties; how far it might bave prevailed against the despotism of the then Commissioner of Public Works, Mr. Ayrton, is questionable.

The decisions in the United States which bear on the usage, are, as we have said, not easy to get at. The cases have not been many, we suspect; and probably, like most of the cases of architectural practice, have not been carried far enough to make their appearance in the official reports, having either been decided by referees, or by inferior courts whose opinions are not written out, and whose proceedings are recorded, if at all, only in the columns of enterprising newspapers, and live only in the moneries of the persons directly concerned in them. Hence it follows, as we have before complained, that the actual jurisprudence of architecture has to be made and remade with every new case, and advances very slowly. It is not long since we printed an article on this subject, giving the facts and the reasons of the custom as it exists (American Architect, June 15, 1878). We have made more than one effort for information bearing on this and other like legal matters. Our readers would do a service to us, and also, we think, to the profession, if they would favor us with an account of any apposite cases in their experience.

Ir is not to be expected that the promotors of the Eulisted Labor Association now forming in Washington will be able to prevail on the government to undertake a philauthropic venture on the scale that they propose. In some ways it would be a worthy offspring of the visionaries who testified hefore the Hewitt committee, but as there are points in the scheme which look practicable it may possibly gain some favor. It is proposed to obtain from Congress authorization to onlist for a term of five years a body of one hundred thousand men, who shall do both military and agricultural service and who shall be paid by govorument at the same rate as the soldiers of the regular army. As soon as a corps of ten thou-and men has been enlisted it shall be sent off to some designated government reservation, and having selected therein a suitable site shall begin to lay out and build a city, to roclaim and till the land, and develop the mineral resources of the country. As one of the provisions of the scheme is that one whole regiment of each corps shall be composed of engineers - a provision which may suggest to the scoffer that the inventor of the scheme is an engineer who wishes to better his home practice by moving his rivals from his path - we might expect these now cities of the plains to have in plan somewhat of the attractiveness of Philadelphia. A much more reasonable provision is that each company shall include a minimum of twelve skilled artisms. Foul, seeds, stock, and farming tools are to be supplied to the volunteers by the government, which is also to grant to each man an honorable discharge at the end of his term of service, together with a patout for one hundred and sixty acres, in accordance with the provisions of the Home-stead Act. or if the discharged volunteer prefers he may obtain a lot in one of the new cities, wherein every other lot is reserved to the government. This and the benefits that naturally accrue from the reclamation and settlement of land, together with the possibility of temporarily getting rid of a portion of the disturbing element in society, the followers of the Cohens and the Kearneys, are seemingly the only incentives the promoters of the scheme hold out to the government as returns for the very material expenditures they demand.

As one reads of this latest suggestion for relieving the overstocked labor market, pictures of these modern legionaries introched in circumvallated camps, while busied with the vast engineering undertakings which are to serve for the alimentation and protection of future walled towns, present themselves to the mind. One can facey portions of Roman history repeating themselves, on the plains of the far West; the fratricidal quarrels arising while laying out the city walls; the Agrarian laws; the secessions; the rise of favorite corps commanders to the dictatorship and the consequent internecine wars; expeditions into Mexico and the British Possessions; and as seemingly no provision has been made for sending wives with their husbands, it is possible that that corps which is established nearest to Utah neight make a descent on Salt Lako City and beguile the fair dames of Mormondom, as formerly their Roman prototypes prevailed on the Sabine wives and madens.

DURING the second week of September the eleventh annual congress of trades-unions took place at Bristol, England, and was attended by one hundred and forty delegates, who represented six hundred thousand members belonging to twenty-one trades' councils, and ninety-live affiliated trade societies. tain of the subjects which were proposed for discussion were pertinent to the occasion, as, for instance, the liability of emplayers to make componsation to the workmen, or their families, for injuries received in their service; the reform of the jury law, by lowering a juror's qualifications so that a larger number of workmen might be able to share this unpopular function; the extension of the Employers and Workmen Act to English seamen in British waters; certificates of competency for mon in charge of steam-engines; cooperation and trade-unionism; representation of labor in Parliament; and overtime and apprenticeship. But when workmen or their delegates propose to discuss a reform in the patent laws; the abolishment of imprisonment for debt; the codification of the criminal law; and the reform of the magistracy, both as to the manner of the appointment of magistrates and as to the manner in which they shall exercise their functions, - one recognizes the time-honored tendency of politicians to capture all social organizations which

are large enough to be made useful, and convert them to the general uses of a political purty.

The addresses made at the Congress had running through them an ill-concoaled voin of hopelessness, and though the most was made of the few things favorable to the growth of tradesunions that had occurred during the year, the general impression conveyed was that the employers had, and were likely to have, the best of it by reason of the leagues which had been formed among them, and because of the now common custom of inserting in contracts a strike clause which allows con-tractors to postpone the completion of the work indefinitely, or at least until the strikers have exhausted their resources and are ready to come to terms. The Parliamentary Committee in its report read before the Congress said: "The present year has witnessed the close of two remarkable disputes in the building trade - the masons' of London and the joiners' of Manchester. In both cases the men were supported by powerful unions with large accumulated funds and great resources in the power of buying for extra support. We regret to say that in both cases the men failed to establish their demands. This may be eases the men failed to establish their demands. This may be accounted for in many ways. Although the building trades in Manchester and London were in a prosperous state at the commovement of the dispute, yet, under the power of the strike chauses now inserted in all contracts, the employers are enabled to postpone the completion of the works till an indefinite period." These words, and the statement of disbelief in the success of the coming struggle with which the cotton spinners of Blackburn cutered upon their strike not many months ago, seem to show that before long these useless conflicts between labor and capital may be ahandoned in favor of the more logical and certainly less wasteful method of settling trade disputes, the method of arbitration by referees. It would not be very difficult, we believe, to show in any case where strikers have gained their point that they would have succeeded as well by entrusting their cause to skilled pleaders before a board of arbitum.

In 1862 a select committee of the House of Lords was appointed to investigate the character and amount of the injuries that were due to the noxious capors and gases which were among the waste products of various manufacturing processes. The investigation bore chiefly on the copper smalling and the alkali works, and as it was proved that muriatic (hydrochloric) acid gas was emitted from the alkali works in quantity sufficient. to blast the crops and trees in the direction followed by the prevailing winds, even throughout a distance of six or seven miles, a law was passed which compelled manufacturers to condense ninety-live per cent of the acid produced. It has since been ascertained that it is sulphurous and not muriatic acid that chiefly injures vegetation, so an amendment, passed in 1874, brings into the category of noxious gases sulphuric, sulphurons, nitric, sulphurested hydrogen, and chlorine gases. Upon the workings of this law a Royal Commission has reported lately and complaint as to the destruction of vegetation turned out to be reasonable, but the gases were found to affect most injuriously the trees and plants on high ground, while the vegetation in valleys and on the farther side of slopes was often uninjured. It was also found that the higher the factory chimney was the more wide-spread was the devastation. As regards health it was proved that if not absolutely deadly, the gases at least caused beadache and depension. In the neighborhood of London, where there is a great variety of large establishments, other phenomena have been observed, which being proved nuisances, to say the least, call for legislative action. Chief among these obnoxious places are the cement works at Northfleet and Greenbithe on the Thames, which produce such dense vapors while burning the chalk and clay that navigation of the river is made dangerous, and the Thames conservators have been petitioned by fifty steamship masters and one hundred and thirty London Trinity pilots to abate the unisance. The production of these vapors may throw some light on the late terrible disaster to the Princess Alice. It is said, by the way, that the river at the spot where the steamboat sank was at the time of the disaster nothing more than a mass of sewage, as the outfall sewers were then discharging, consequently it is suspected that when the passengers found themselves in the river they were asphyxiated before they had time to swim ashore. There was probably in the discharging sewage some powerful chemical substance, for the clothing on the budies changed color, and de-

composition set in with such unusual rapidity that identification of the hodies was very difficult.

On Thursday, September 12, the second of Cleopatra's needles was placed spright in what is probably to be for ages its resting place on the Thames ombankment. Whether after all a result of real value to the world or to the British people has been accomplished, or whether the enthusiasm and general interest that has been excited is purely factitious and ephemeral it is useless to impaire. The projector of the enterprise, Dr. Erasmus Wilson, has gained his object, whether it was reputation or patriotic vanity. The enterprise has been attended with many mexpected incidents which have added to the monument a subsidiary value that in the eyes of the world at large may give it greater interest than the obelisks at Rome or at Paris possess. The removal of the obelisk to Alexandria, the abandonment of it, through parsimony, by the fleet on the very eve of its removal in the early part of this century, the Khedive's adoption of it as the expression of international good will, its narrow escape from being cut up into building stone by the fellah whose land it cumbered, its redemption by a private citizen of England, its solitary and storm-tossed wanderings in its iron coffin, - an opisode worthy the attention of Jules Verne, - its rescue and the subsequent suit for salvage, all these are so romantie that for the time they overshadow the claims of antiquity, claims which it shares with the other imported obelisks. Moreover, the transport and refrection of the obelisk have been watched with widespread interest because of the novel yet simple and very skilful means by which the engineer, Mr. Dixon, has accomplished them. If there is a certain anachronism in forcing upon it the companionship of modern sphinxes, it is probable that they will be less conspicuous and unpleasant than the pedestal on which rests the obelisk of Luxor in the Place de la Concorde at Paris, emblazoned as it is with incised and gilded designs which represent the means employed in the transport of the surmounting obalisk.

ARCHÆOLOGY AND AMERICAN ARCHITECTURE.

THE Architect had lately under this title an article in which, quoting an expression that we had used, "the tyranny of archarology," it noticed the influence of archaeology on English architecture and asked the questions: How far is American art free from this influence, and how far has this freedom led to good results? whether, in fine, the effort to dispense with old art does not lead, in the Doited States as well as in Eugland, to disappointment. It is true, as the Architect says with a pleasant cordiality, that the United States "speak with an English tongue, and think with an English understanding;" and though we can hardly go so far with our fellow-journal as to say that the influence of English traditions and relies is the only influence of the kind that prevails with us, -unless "prevails" is used very literally, - it is doubtless the influence that on the whole shows most in our best work. This is not time of our sculpture and our painting, which draw more inspiration from Italy, France, and even Germany; but it is true of architecture and the decorative arts. Accessibility to the longlish influence of the day in these arts is nevertheless mainly confined to New York, Boston, and one or two of the most progressive Western cities, Chicago, for instance; and, curiously, it is very much a thing of recent growth. Even in Philadelphia it has but just begun to make itself felt; in cities further south one may almost look in vain for anything to remind one of the progress of English art for two generations past. It is to the influence of an earlier time that we are to turn for whatever of English tradition survives in these cities in their custom of living in separate houses, and their cousequent manner of arranging them; in their social and domestic habits. The julluences that have altered their arts, so far as they have changed since the days of our fathers, are not English. From New York as far south as anything has changed the old order of things, and through the most of the West, the predominating influence has been German; in New York and Boston, and to some extent elsewhere, French tendencies have struggled with the others, while in the East there is compara-

The most significant fact, however, is the survival of the English influence, the power it has shown to reassert itself and overbear its rivals. Persons who have carefully watched the development of American architecture will be disposed to say that a quarter of a century ago, if one foreign element seemed

likely to prevail in it, it was the German; and, as we have seen, over some parts of the country it has prevailed. A little later, the French element, starting with our two most influential cities, bade fair to get the mastery. But the German influence has wanted; the French has tarely held its actual place, by no means its relative importance. The English element has steadily become more and more prominent until it has on the whole overborne both of the others, and is more or less conspicuous in the greater part of the work that is done nowadays by studious This is due, no doubt, partly to the old habit of looking to English art and English literature for examples; partly to the example of a number of capable English architects who have come to live and practice among us; but wore to the accessibility of English examples through the multitude of professional books that are brought to us, and keep us better acquainted with what our professional brothers are doing in England than with what goes on anywhere else; and more still to the English architectural journals, which come weekly with profuse illustrations. But these are not causes sufficient to account for all the phenomena. The Gothic revival has been stimulated by both Germans and English: M. Viollet-le-Duc has been perhaps a more: honored prophet than any Englishman; the splendid architectural publications of the French press have been very widely distributed among us, and modern French detail has been initiated abundantly in our city architecture. More than this, the most of our young men who have gone abroad for architectural training have gone to Paris, finding there, what unfortunately does not exist in England, a well equipped and well disciplined architectural school. Nevertheless the English fashion gains ground, and it is not a little curious to see that even these men, trained in French ways of designing, as one by one they have come home, after working for a time according to their training have almost to a man dropped the French manner and taken up an English one. Many causes, which it would be interesting to study, conduce to this gravitating tendency, but helind all must lie a common instinct, the result of long inheritance, which inclines Americans to a natural preference for the same forms which Englishmen Commercial as well as literary intercourse helps the influence, and while we see "Queen Anne" houses following "Victorian Gothic," they are lined with Morris papers, and decorated with English tiles and English metal-work.

In all this, however, it must be said that contemporary example has told much more than archwology. American architeets as a class are not very schdious, at least in a scholarly way. They lack archeological fervor, and are by native affinity more attracted to what is doing than to what has long been done. Nor have they the reverence for purity of style that walts on archeology. Although instinct or association or apportunity may lead them to draw most freely from English examples, they lay hold of their goods, like Molière, wherever they find them; and if a feature or detail from French or Italian or German architecture suits their purpose, they are seldom prevented by respect for style from working it into any design to which they can apply it. The old restraints no longer held them. The classical period is gone; even the men who would design churches with attention to historical unity of style are passing away. The leader of them has left as within the summer, and their successors are nothing if not edectic. The stranger who walks through the new streets of Boston, - which we instance; as a typical example because, having been in a great part built over within a few years, its architecture is at once the new-est and most consistent. — will see motives of all dates, and of French, German, and Italian parentage, plentifully intermixed with the predominating English, and all transfused with something which, since it can be classed with neither of these, we must be content to call American.

But thus far we have spoken only of one kind of American architecture, the work of the more educated architects, who set the fashion on the most important buildings and to the cultivated classes, who have got their training from the traditions and literature of their profession, and who keep themselves informed of its progress abroad. Nevertheless, we must remember that there is another kind of American architecture, a kind which, though we may incline to consider it less exemplary, is much more abundant, and even more distinctly our own. It is probably what an observant foreigner would carry away in his recollection as the most characteristic part of American art, if he would call it art. It is what we have more than once described, and often referred to, as our vernacular architecture.

This architecture is as innocent of archaelogy as the Romanesque work of the tenth century, or as any architecture can be. In fact it is the modern example of an architecture practised in the way that Mr. Forgusson and some other reformers declare to be the only way in which such an art can he living and healthy. - by men who work without regard for precedent or rule, using forms which they know only by tradition and example, and with a simple adaptation to the wants of a people, to the materials and mechanical processes at their command. It is an art which every capable building-mechanic in the country understands, and can practice without the aid of books or rules or architects or drawings, exactly as did the mediaval builders whose manner of work we are of late arged to imitate. But it is an art that is altogether abhorrent to purists and offensive to artists, one in which persons of education, offended by its coarseness and ugliness and pretentiousness, will see no redeeming promise, unless they can look through these to its vigorous in-dependence, and have contidence that time will develop an artistic sense to chasten and shape it. It is, however, distinct and coherent; in spite of many local differences in mechanical expedients it is the same thing from Maine to California, and it is unlike anything else in the world. It is not without derived forms; no architecture has been so since that of primitive ages. Those who make it have borrowed at second or third hand many details from German and Swiss architecture, and have culled many forms with free eelecticism from the work of edueated architects which they saw before them. Their chief glory, the dreadful adaptation known as the French roof, which covers nine in ten of all the works of ambitious builders throughout the land, is plunder. But they have appropriated and altered all these things as the Greeks appropriated and altered the details of their Darie and Ionie orders, and have made them as truly their own.

These then are the two components of architecture in the United States; an art of the people, chiefly in the hands of mechanics, or of architects who are only mechanics grown on; and an art of the interested profession. The two are in their characteristic examples thoroughly different, though there is of course a debatable ground on which they overlap. Out of their fusion or confusion must come the future American architeeture. This is not the place to discuss what the interaction of the two elements will be, though it is clear from the present tendencies of society that the prevailing force most be the edueated one, more affected perhaps by the reaction of the other than those who wield it could be made to expect. On the one hand we have a popular art, knowing nothing of by-gone ages, owing no allegiance to precedent, taking its fashions by natural selection, or by inoculation, as do shipbuilders or milliners or shoemakers. On the other is an educated profession, - not yet too well educated, on the average, but gaining every day,more or less studious of the architecture of the past as a repository of convenient material, but not caring greatly for learning, and living much more in the present; fond of license, and quite indifferent to the control of archaelogy. Yet while we have seen in our freedom from this control (from the "tyranny of archaelogy" as we have called it) the future opportunity of our countrymen, we are often tempted to wish that for a time, and until they are a little steadier in their march, they could be subjected to it. The vigorous independence of our veroncular architects is their birthright; being their only possession it should not be taken away from them, and it cannot. But the eelecticism of the educated ones is to our mind far too lawless. It seriously impairs their sense of proportion and harmony, which is the architect's most precious artistic quality; in many cases it seems to have expelled it altogether. A study of style close enough to satisfy urchoology is the best corrective that we know for this fault. For this reason we have orged the study of individual styles as the necessary means of training in architestural schools. For the same reason we have expected benefit from the tendency which we have lately seen to such archesological study as our country gives opportunity for, - from the inclination to revive what we call "colonial architecture," But we have been disappointed to see how in most cases the irrepressible American instinct has turned the repose of this into fussiness, its quiet order into lawlessness. One shudders to think what would have become of English architecture in these days, with its immense activity and its loose methods of training, if it had not had styles to restrain it. One sometimes shudders to see what has become of the American - vernacular or celectic - exempt from this restraint.

THE OPEN FIRE-PLACE. I.

The Open Fire-place, as it is and as it has been, with suggestions for its improve-ment. Heating and rentisedes of private houses, with original experiments on the waste best of thus and on the use of copper, cast and these time, pipes in connection with open fire-places for economising the best and improving the Yentiation.

THE OPEN FIRE-PLACE AS IT IS.

Thar great radiator of heat to all living beings, the sun, furnishes those beings with the kind of heat best suited to support the life

those beings with the kind of heat best suited to support the life which it has developed, namely, that of direct radiation.

If we would only accept this lesson, repeated every day, as if for the purpose of giving it all possible emphasis, in a manner the most impressive and with apparatus the most magnificent that nature can fursish or the mind of man imagine; if we would accept the lesson, and endeavor to host our houses after the same principles, these houses might be made as healthy as the open fields. We should be prompted to respect more the open fire-place, as furnishing the best substitute for the life and health giving rays of the sun, and to discard all such systems of heating as are opposed in principle to that employed by systems of heating as are opposed in principle to that employed by

With direct radiation the body is warmed, while the air breathed is cool and refreshing. With the hot-sir principle of heating the reverse is the case, and it is found that, when this numatural method is long employed to the total exclusion of the natural, serious discomfort and disease are the results. That warm air is less effective than cold and disease are the results. That warm air is less effective than cold in parifying the blood by removing the carbonic acid from the lungs is demonstrated both by our own experience and by the investigations of science. Experiments made on birds and animals have shown that the amount of carbonic acid exhaled when breathing air heated from 30° to 41° Centigrade (80° to 106° F.) is less than one half that exhaled when the temperature is near the freezing point.

The open fire, while it radiates an agreeable heat now our budge.

The open fire, while it radiates an agreeable heat upon our bodies, animating us with a cheering and healthy glow or excitement, like that produced by a bright sen on a freezy morning, leaves the air comparatively cook concentrated, and invigorating for breathing.

Now, although from the earliest times of which we have record the

open fire-place reems to have been the favorite device for hearing and ventiliting the habitations of man; although no modern house is considered complete without it either for use or for ornament; al-though the physician regards it as a most valuable ally in the mastery of disease; and although its improvement has at all times claimed the attention of the most distinguished scientists and philanthropists, the attention of the most distinguished scientists and philanthropists, as well as of the practical mechanic; yet we find it to-day so little understood and generally so incorrectly constructed that at least seven eighths of the heat of the fuel is lost, and its capabilities as a ventilator are almost entirely neglected, so that one fire-places may be properly described as devices contrived in the interest of the coal merchani for the purpose of carrying up to the reci, in the form of smake, the greatest possible amount of noney, and of leaving the analyst possible amount of comfort behind. My definition of the word "chimney" would be this: A long take open at both ends, the lower opening, called a "fire-place," being used to receive fuel and to cmit smoke; the upper, to direct upon the reof from eighty-five to sinety-five per cent of the heat and smoke generated below; generally so constructed as to exerce off as much of the warm air of generally so constructed as to carry off as much of the warm air of the room as is pure enough to be breathed, and cause large dranghts of cold air to supply its place by rushing across the feet of the occu-pants in the manner best calculated to give them rheumatism, con-sumption, pneumonia, and other diseases. To complete the appa-rates, screens are sometimes added to abstruct the circulation in the aparement.

WASTE OF BEAT.

In the city of Paris, according to M. V. Ch. July, there are used In the city of Paris, according to M. Y. Ch. Joly, there are used annually, for heating purposes, over 500,000 cubic meters of frewood alone, costing about twenty-five million francs, and of this only eight to ten per cont, or in value about two million francs, are actually turned into serviceable heat. The remainder, to the value of about twenty-three million francs, annually disappears in the air without profit to any one. "What must we calingte the total amount of annual loss," says an eminent writer on ventilation, "in fuel, both of word and coal, throughout, the notire world when we consider that wood and coal, throughout the entire world, when we consider that the open fire-place is used to-day by over fifty millions of people!"

DANGEROUS DRAUGHTS AND IMPERFECT VENTILATION.

The "Encyclopædia Eritannica," page 897, has on ventilation the following: "An open fice-place, unless the air enters from the ceiling, often produces little or no ventilation above the level of the chimney piece, and, even then, it does not afford the best and purest atmosphere. The air above may be comparatively stagment, and offensive in the extreme from the products of combustion and respira-

tion, while a frash current moves along the floor to the fire-place."

So great is the danger from cold draughts occasioned by open fire-places as they are now constructed that one is said to be less liable. places as they are now constructed that one is said to be less liable to take cold standing in the open air, with the thermometer at freezing point, than sitting on such a day in a room heated by a bright open aire. So unequal is the distribution of heat in such a room that water may be frozen in one corner near the window draughts, and boiled in another near the fire, and it has even been found possible to roast a goose in front of such a fire, while the air flowing by it into the altitude. the chiumey was freezing cold.

"I have no doubt in my own mind," said Count Rumford, " that thousands die in this country every year of consumption, occasioned solely by this cause."

In short, it would be difficult to point out any part of our usual do-mentic edifices which would show such a total absence of scientific principles as the construction of our fire-places and chluneys.

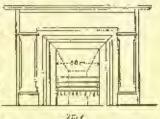
PRACTICAL EXPERIMENTS ON THE WASTE HEAT AND AIR OUR-RENTS.

The best authorities put the waste heat of our fire-places at from eighty to ninety-five per cent, depending upon the shape of the fire-place, the nature of the inel, the amount of the draught, and the size and nature of the flue; but I have been mable to find any satisfactory records of experiments made to eccroborate their statements. Those made by General Murio answer most mearly, but still not entirely, our questions. I have therefore made a number of careful experiments, the results of some of which are given in the accompanying tables.

The first six experiments were made in houses built on the new

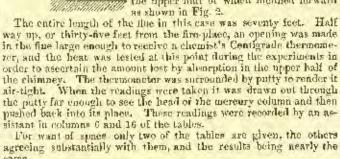
The first six experiments were made and an Marlhorough Street, and the second series of five on the house No. 4 Pemberton Square, Boston. The grates, fire-places, and flues tested were of the so-called "most approved" modern construction, and calculated to utilize the great series and calculated to utilize the great series of the second of beat received. est amount of heat possible willtout employing the populiar or patented forms invented by Franklin, Gal-

Fig. 2.



ton, Winter, Gangar, Fonder, Joly, 254, and others, little known in this country and difficult to obtain and set. The fire-place and grate used in the second series of experiments recorded

in the accompanying tables are represented in front clevation in Fig. 1, and in section in Fig. 2. The dutted lines show the form of the back only of the fire-place used in the first series of experi-ments, the sides forming an angle of 135 degrees with the back, to improve their reflecting power. In the second series the fire-place was smaller, shallower, and the sides were at right angles with the back, the upper half of which inclined forward



The anemometer used was one of Casella's most delleate instruments, lately imported from Lordon. A careful test previously to making the experiments proved it to be exceedingly accurate and reliable. Where possible the observations were made every minute, but where this was impracticable the intervals were made as small as possible, and the figures for the intervening moments were obtained by calculation. The amount of wood burned in each experiment was exactly three kilograms.³

From these tables it will be seen that the amount of heat dissipated

From these tables it will be seen that the amount of heat disapares in the open air through the mouth of the chimney from the combustion of 3 kilograms of dry pine wood, is sufficient to raise the temperature of nearly 16,000 cubic meters of air 1° Centigrade, according to the first experiment, or 16,980 cubic meters according to the second experiment; giving an average of 10,488 cubic meters raised 1°. This is equivalent to 5,070 units of heat, or enough to raise the temperature of over 5 tons of water 1° C., or to raise 50 kilograms of water from lesseing to believe soint. water from freezing to boiling point.

The greatest possible amount of heat which 3 kilograms of dry pine wood is capable of yielding being, according to Rumford, 3,590 \times 3 = 10,770 units, we see that one half of the heat generated passes at once up through the chimney and out at its mouth. Of the remainder we shall hereafter see that about four-fifths is absorbed in the brickwork, and either given out from the surfaces of the outer walls or carried up in the air space between the studding and the brickwork to the roof whence it radiates into space.

¹ In this article I shall use the metric weights and measures, both because the calculations are made easier by no doing, and because these units have brea adopted by most of the witers on the subject whose words we have covarion to consult.

1 Rilogram of thing. = 25938 or 2,2 percents are there covarion to consult.

1 noder = 3.25 Reft; 1 square meter = 10.5 square feet; I cubic meter = 25 cubbs fiet.

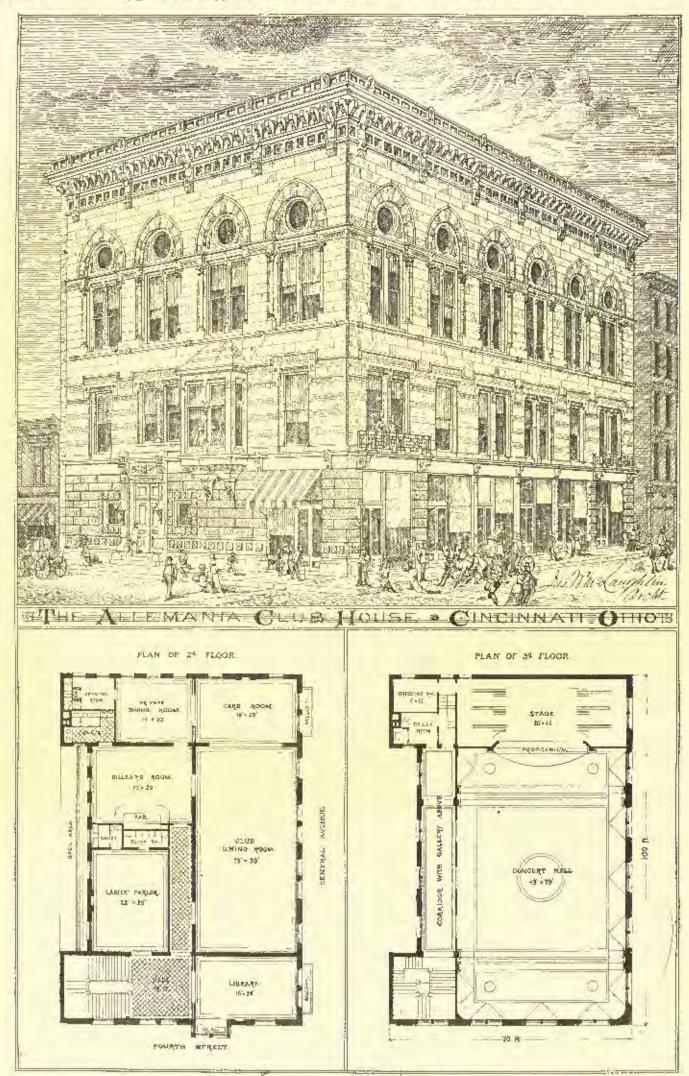
1° Contigrade = 1.8° Fabreubeit.

1° Eabreubeit = 0.56° Contigrade.

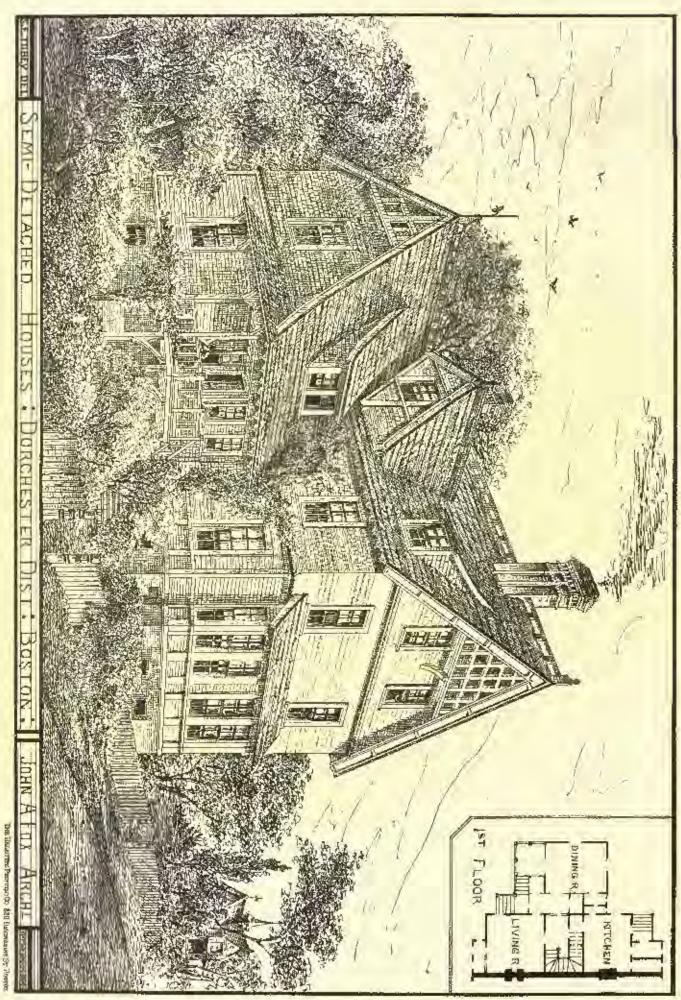
1 metric beet such or calcule is the amount of heat required to take I kilogram of water to Coultrade.

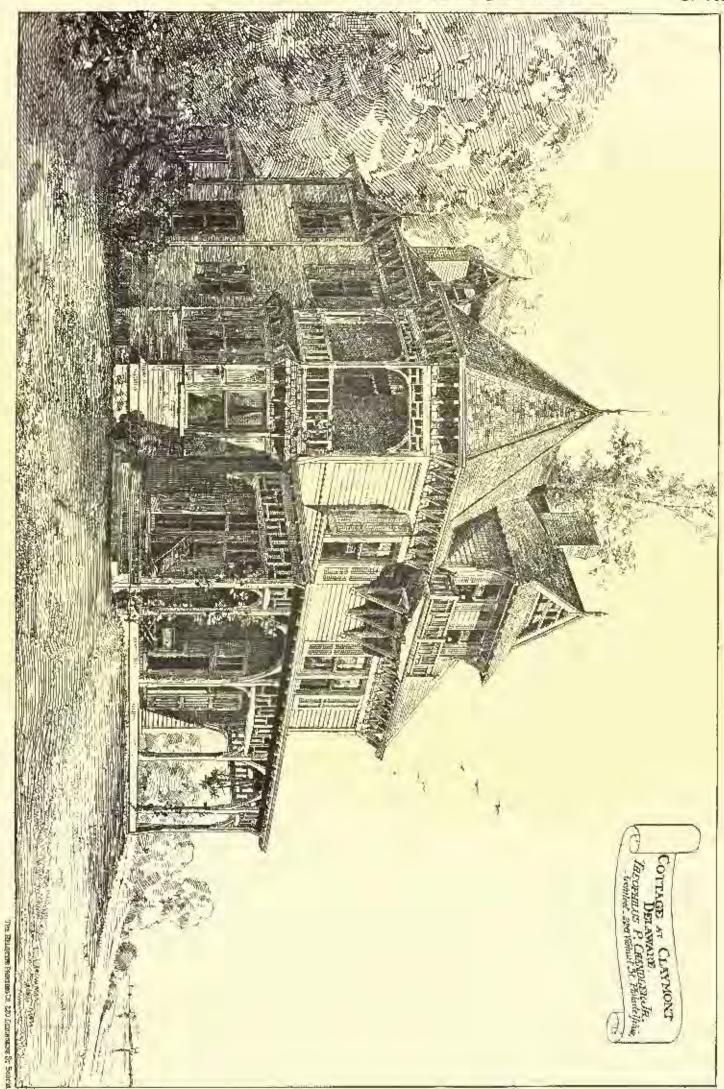
[°] Centigrade.] calorie == 8.968 English heat-units.



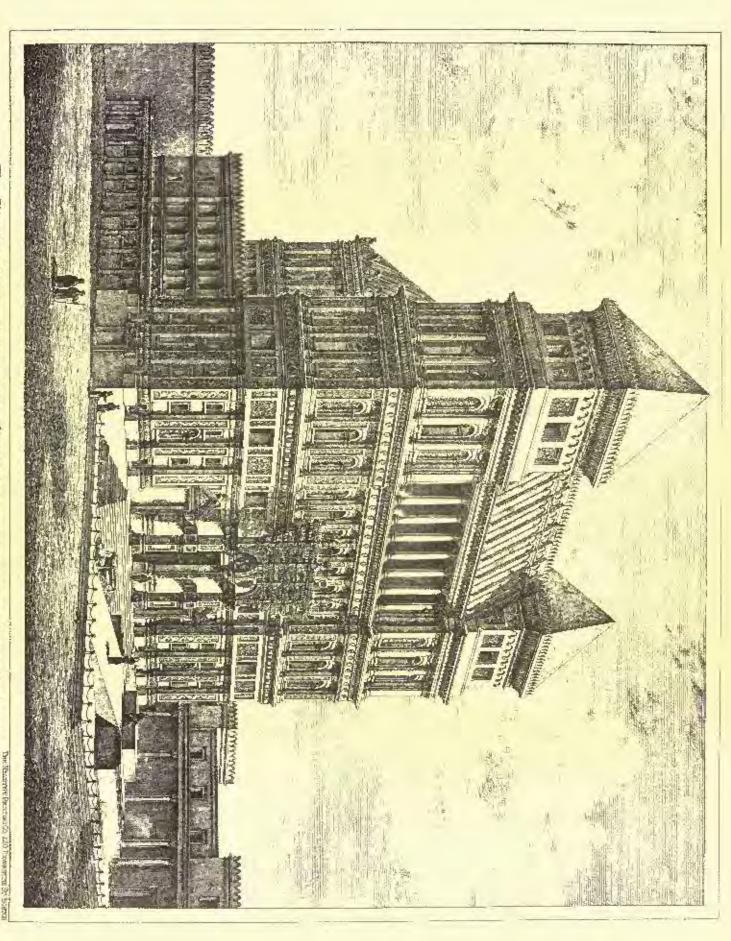












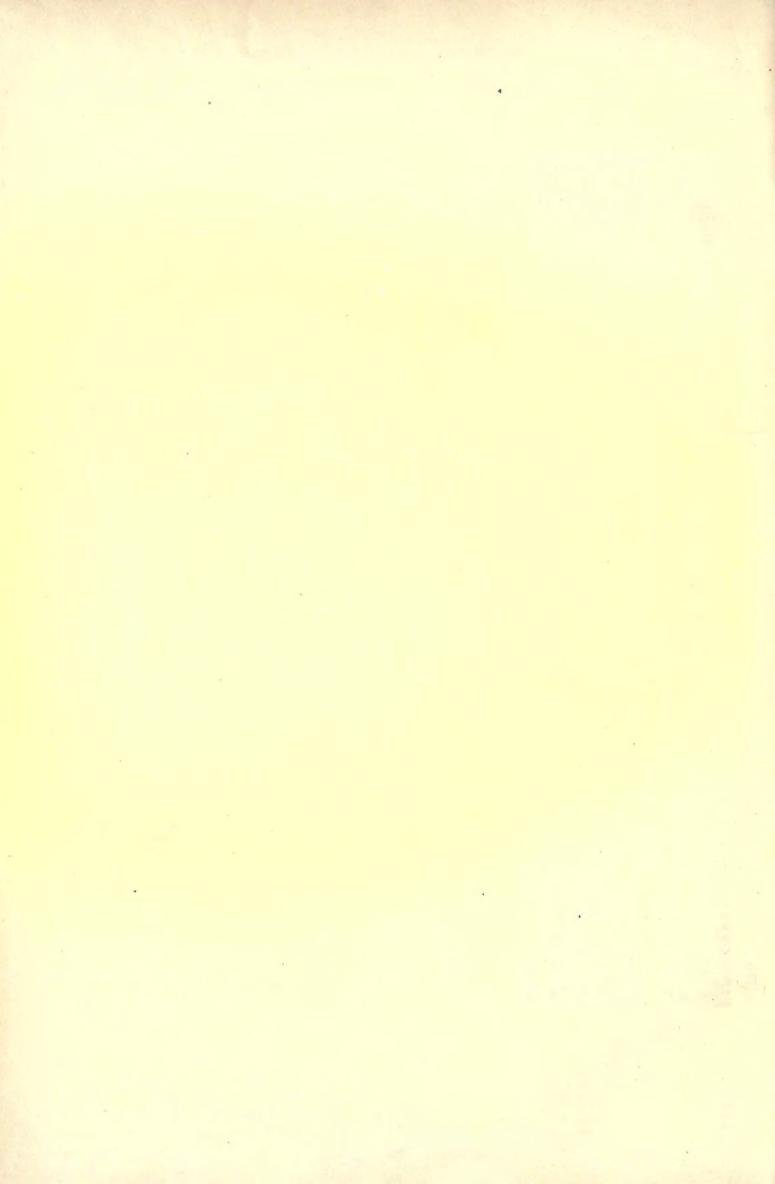


TABLE NO. 1. (Three kilograms wood.) - Time, May 24, 1878.

Experience No. 1. Without Reference. Outside Air from Post C. to 120 C.								Ale	Se C	in_2. 7 coligrad a 2.53 m.	e. 1		etor. Imeat				
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In column 3 of the prescripte fible the Italic capitals rate to the first experiment, while the small blain teters rate to the second or princers, A_j for the first A_j for that there i, A_j for the first i, A_j for the first i. And the first i is the first i is the first i in i M. the lighted; E. full blaze; E. the dictions; D. the thint: E. the early F. no more best in eliaders. M. the lighted; S. full blaze; of the declines; of the fainter, the aut. F. no loom best in cin-dets.

By columns 2 and 12 we see that before the fire is lighted a rentilating deaught of 73 meters per minute is caused by a difference of but 2 or 3 degrees in the temperature of the air in the chimney flue or house, and that of the outside air. But as this difference increases after the fire is lighted until it reaches 70° and 75°, as given in columns 4 and 14, we find the velocity of the draught rising to 285 meters per minute. Thus we have a chintney throwing out hot air raised nearly to the boiling point of water at the rate of 285 meters or nearly 1,000 feet a minute! Yet in some of the chinneys tested on the Back Bay the waste was found to be much greater, one chinney giving out heated air at the rate of over 1,600 feet per minute raised about the boiling point! What might the saving be, if all this heated air could be separated from the smoke partially cooled or diluted with fresh cool air, and brought into the house for use. By columns 2 and 12 we see that before the fire is lighted a ventidiluted with fresh cool sir, and brought into the house for use!

Returning to our table we find by columns 6 and 16 the tempera-ture of the draught as the middle of the flue and, by calenlation, as average of 885 heat units absorbed in the upper balf of the chim-

Now we know that the heat generated by our fuel is of two kinds, of which one is given up to the air supporting combustion, and passes entirely away with this air up chimney in combination with smoke and vapor; while the other, and by far the smaller part, is sent off from the fire in rays in all possible directions. This later part may be considered an uncombined heat, or heat combined only with light as distinguished from that applying a light and heat only with light as distinguished from that combined with smoke and air.
Thus only the radiated heat of the fire is used in our rooms. The experiments of Peciet show that the radiating power of wood is, under the best possible circumstances, when the rays are all collected, only 23 per cent., leaving 77 per cent to pass off with the air of contact. Therefore 23 × 10,770 = 2,477 units radiated in the case of our 3 kilograms of wood.

kilograms of wood.

In the average fire-place only one-third of these rays, or in our case 826 units, pass directly into the room, the rest falling upon the bank, sides, or bottom of the fire-place, or entering the fine through the throat of the chimney.

J. P. Petnam.

THE ILLUSTRATIONS.

THE TEMPTE OF HEROD AT JURUSALEM.

WE publish to-day a restoration of the Temple of Jerosalem as rebuilt by Herod, from a drawing by Mr. Fergusson, published in the Building News. A greatly reduced copy of the same drawing formed the frontispiece of his work on the "Temples of the Jows," to which the reader is referred, as there the data on which the restoration is the reader is referred, as there the data on which the restoration is based are set forth in detail, accompanied by sections and elevations to scale, with the illustrations and quotations necessary to render his various parts intelligible. The great difficulty of a restoration of this celebrated temple is that the Jews probably aimed at producing a building which should be 100 cubits (150 feet) in length, 100 cubits in breadth, and 100 in height without being a cube, and as there is every reason to believe that they accomplished this, no restoration can be accepted that does not take these dimensions into account. But more than this, both the hook of Chronicles and Josephus distinctly assert that some part, at least, of the Teurole attained the But more than this, both the book of Chemicles and Josephus distinctly assert that some part, at least, of the Temple attained the musual height, in these days, of 120 cubits, and this is stated with so much circumstantial detail by the latter authority, that it can bardly be overlooked. All the architectural details used in this restoration are copied from examples which are contemporary with Herod's Temple, or at least nearly so. The two pinnacles of the facade, for instance, are adopted from the monoliths now known as the Tombs of Absalom and Zacharias, exactly opposite the Temple in the Yalley of Jehosophat, and probably of about the same age as the Temple. The pillers of the lagade are copied from those of a small copy of the Jewish temple at Siah, in the Houran, which was undoubtedly of the same age. The vants under the Aksah, which were part of the substructure of the Temple, and Herod's own burying place, now known as the Tombs of the Kings, and other sepulthres around Jerusalem, have all afforded hints for the details employed. In fact, as Mr. Fergusson points out in the work above played. In fact, as Mr. Fergusson points out in the work above referred to, we now know with tolerable accuracy what the style of architecture was which was practised in Syria between the age of Pompey and the destruction of the city by Titus, and the details of that style are the only ones that are, or can be, employed in any attempt to restore the Temple of Herod. They are not such as modern taste will approve, nor suchas previous attempts at restoration would lead us to expect, but they are the only ones that can at present be adopted in any design which purports to represent the Temple as it was in its days of greatest magnificence. The restoration is therefore interesting: nevertheless, we are inclined to doubt whether the builders of the Temple would recognize it.

THE ALLEMANIA COUR HOUSE, CINCINNATI, OHIO. MR. HAMES W. M'LAUGULIN, ARCHITECT, CINCINNATI.

This building situated on the corner of Fourth Street and Central Avenue, is being erected by Rauben R. Springer, Esq. natinty for the use of the Allemania Society. It has a frontage of 70 feet on Fourth Street by 100 feet on Central Avenue, and will be 74 feet in height to Street by 100 feet on Central avenue, and will be top of the cornice. The fronts are of Buena Vista freeslone, portibe top of the cornice. The fronts are of Buena Vista freeslone, portibe top of the cornice. The tions being roughly tooled and the runninder rubbed smooth, entrance hall and upper stories will be finished for club purposes. The large ball on the third floor will 25 feet high, and be provided with a stage, having scenery, dressing rooms, etc., for the theatrical representations of the Altemania Society, concurts, and receptions.

SEMI-DETACUED HOUSE, DORCHESTER MATRICT, BOSTON, MASS.

This house is now building for Mr. Franklin King, on Trull Street, in Dorchester. The two tenements are superated by a solid brick wall.

COTTAGE AT CLAYMONT, DEL. MR. T. P. CHANDLER, JR., AUCHI-TECT, PHILADELPHIA.

The frame is of hemlock, boarded diagonally, covered with heavy sheathing paper, and then with the usual white pine clapboards. The roof is covered with black slate. The shingles under the caves are painted red, and the remainder of the bouse a deep, rich brown. There are four rooms on the first floor, six hed-rooms, large bathroom, china-closet, trunk-rooms, etc. The house is heated by a furness, and has are a first large. furnace, and has open fireplaces.

NOTES ON ARCHITECTURE IN PALESTINE.

THE remains found at ancient Jewish sites include caves, cisterns, THE remains found at ancient Jewish areas include caves, caseris, rock-cut scarps, and rock-cut combs. It is evident that from an early period the inhabitants of the country were skilled in rock-cutting, and that they lived in caves, as the persantry still do to a great extent. There are often rade tunnels cut into the hillside, from which the water of a spring comes forth. The cisterns are generally beelive-shaped, with a man-hole at the top, and from ten feet to lifteen feet deep. Rock-cut tanks of great size are also found at some of feet deep. I the old sites.

The most famous example of a rock-scarp is that which formed the

foundation of the wall of ancient Jerusaleus, at its southwest angle. This was bared to its base in 1874, by Mr. Mandelay, M. I. C. E., and proved to be in one part lifty feet high. At the corner is a projection (wenty feet square, the base of a tower, with a rock-out stair from the outer platform of rock; at the east end (as far as excavated) is a second tower and stair. Cisteens are cut in the top of the scarp, and there is, in one part, a ditch in front of it. This solid foundation for the ancient wall reminds us of the solid bases of the foundation for the ancient wall reminds us of the solid bases of the great lawers, its Hippleus and fellows, mentioned by Josephus. Another rock foundation, forty feet high, exists at the northwest corner of the Harau, and this is scarped in the same way with a vertical face, rudely dressed with some kind of pick.

Fortifications of this kind are found in many parts of Palesting. The village of Bittir (Berher) stands on such scarps, partly natural, partly artificial, and the same unchood of defending a site is noticed by Josephus in description Sameria.

by Josephus in describing Samaria.

The rock-cut tembs are, however, of yet greater interest, and a large number were planned throughout Palestine by the survey party. large number were planned throughout Palestine by the survey party. There is no reasonable cause for doubting their great antiquity, for the typical form of these tombs is described in the Taland, and no examples are known which can well be escribed to other nations than the Jews. The only Hebrew inscriptions discovered during the survey were found over the doors of these tombs, and in several cases the golden candlestick was represented on the walls. The face of the rock in which the tomb is hown is generally vertical, but is sometimes cut back to form a square open cours in front of the tomb door. The door-way is very small, two feet six inches, or even only two feet wide by three feet in height. It is closed in various ways; sometimes by a stone door, swinging on hinges, and secured by a lock, — hinges and lock having now been removed, being probably of metal; sometimes by a slab of stone, resting against an inner rim, and secured by a horizontal bar; accasionally by a door which slides up and down; while sometimes the entrance is built up with four or five blocks. The chamber within is four-sided, ranging from six feet to thirty feet in length, and from seven feet to ten feet in height. A stone beach, about two feet high and wide, often runs round three sides, and steps lead down from the door to the thore. The roof is generally flat, but sometimes cut to a low arch, or to a triangular cross-section. The walls are rudely finished with a pick, or some pointed instrument, and the shape is scarcely ever truly rectangular.

The bodies were deposited in long tunnels, which run in from the walls of the chamber, and they lay with the feet towards the centre, and the head furthest in, at right angles to the walt. These pigeon-hole graves are called kokin (pland of koka) in the Tulmat. They range from four feet or five feet (probably for children) up to seven feet in length, and from two feet to three feet in width and in height. The end opening into the chamber was closed by a stone slab, which was plastered over, and in some cases the interior was packed with chips of stone for a distance of one foot or more. The roofs of the kokon are sometimes that, sometimes pointed, and very generally

arched out into a semicircular tunnel-vault.

argued out into a senticerniar funnel-vault.

The rule stone towers appear to have been intended—like the smaller and less solld ones now built—to guard the orchards. They are about fifteen feet square, and rather more in height. The corner-stones are sometimes five feet long, and are necasionally dressed, while the rest are quite rule. The lintel-stone of the door is also constinues well dressed. There is no moetar in the walls, which are very thick. The roof is composed of slabs, seven feet or eight feet long, rusting on the walls, and sometimes on a central rier. eight feet long, rusting on the walls, and sometimes on a central pier of similar construction. In one case a semicircular arch of welldressed stones was thrown from wall to wall to support the slabs Six or seven of these towers will sometimes occur close together, The great size of their stones indicates their antiquity, as the natives

The great size of their stones indicates their antiquity, as the natives never employ such large blocks in building. Such towers are noticed in our Lord's parable of the vineyard (Mark xii, 1).

To the Herodian period the greater part of the negalishic masonry of the Temple walls is now generally socied. It has been found that the curious griss-cross dressing of these stones occurs also on the voussoits of the Tyropacon Bridge, which does not date earlier than the time of Herod's Temple. An interesting discovery has also been made recently with regard to these walls. In 1873 Licotemant Conder reached the wall at a point previously unexplored near the northwest corner of the Haram, and found the ancient masonry, in size, from the rock to a level higher than that of the inner sourt. The appearance of the wall is shown in a wood-ent in "Tent Work in Palestine" (vol. i., p. 816). At the level of the interior ground it is set back, with a bevelled edge to the stones, and piers are left projecting one foot six inches. This detail is also observable in the walls of the Hebron Haram, which Mr. Fergusson attributes to the Her dan age. The wall at Jernsalem was also found to have a batwalls of the Hebron Haram, which are, Pergusson attributes to the Her dian age. The wall at Jernsalem was also found to have a batter below the level of the bevelled stones, each course being set back six inches behind that immediately under it. The herizontal drafts of the stones were in this part six inches wide, the vertical ones being three inches. The object appears to have been to give a more equal effect to the eye. Where the wall is flush, the draft is three inches on each of the four edges of the face of the stone.

The tombs of this later period are especially worthy of notice.

The tombs of this later period are especially worthy of notice. They are distinguished from the carlier kakim tombs, partly by having surceplusgi under arcosolia at the sides of the chambers, instead of kakin; partly by the large possibes with rock-out pillars support-

ing their roofs. The capitals of the pillars have volutes resembling those of the lonic order, but the uttached pilasters at the corners of the porch are generally of the Dorie order. The rock inside the porch (which measures twenty feet to thirty feet in width, by about ten feet in depth) is often cut in imitation of drafted masonry. Sunk places, apparently for metal tablets with inscriptions, such as the Jaws employed in the second contury of C., are also found, but only one inscription was recovered, being rudely palated to red, and consisting of the Greek word HAPOENHE.

A rock-ent frieze generally occurs above these tembs. The most famous example is that of the temb of Helena, north of Jerusalem, dating in the first century n.c., according to Mr. Fergusson. In this and in many other examples there are triglyphs with guttre, and bunches of grapes between. In one case, the door-way had a design of the Greek fret round the jambs and over the lintel, and a rute representation of grapes and vine-leaves above. In many instances rosettes, wreaths, and geometrical patterns, very well executed, oc-

resettes, wreaths, and geometrical patterns, very well executed, occur between the triglyphs.

New examples of very fine character were found by the survey party at Deir el Derb, in Samaria, and again south of Hebron.

The localus tomb, with a rock-out surcophagus under an arch, can now be shown to have been used by the Jows, and to be later than the kokim tombs. Mumerous transition examples of great interest have been found. In some cases, the outer or older chamber had kokim; the inner or newer chamber, locals. The kokim were often destroyed in making the localit, and in some cases both localit and kokim occurred in one chamber.

The well-known rellier stone, alocing the touch door, is almost al-

The well-known rolling stone, closing the touch door, is almost always found in connection with the totali. Only two instances of lookin touchs with a rolling stone have been found. This agrees with its use in the Holy Sepulcitre, which cannot have been of the class of the kakim tumbs, as the angels sat at the head and at the four of the grave. The stone is in san in the tomb of Helena at Jerusalem, standing in the sloping greave in which it relied. These stones weigh about six bundredweight, and are generally three feet in

diameter. They moved like a cheese rolling on its circumference, and had to be poshed up hill to open the door.

It is worthy of notice that at Umm el 'Amed the pillars of the synagogue were one hundred and sixty inches high, their capitals eight inches high, and the bases sixteen inches. If the eablt was sixteen

inches long (as may be deduced from Mainonides), the pillars were thus ton cubits high, the capitals half a cubit, the bases a cubit. Among the great public works of the Herodian period may be noted the two fine aqueducts leading to Clesarea, partly rock-cut and parely of earthen pipes carefully joined, resting on a concrete foundation in a masoury trough, and supported on fine round arches, with a double ring of vouesoirs. Where funnelled through the bill, these aspedicts are reached by winding stairs, cut in the rock; no doubt intended to facilitate the exavation of the bound in the first in-

intended to facilitate the excavation of the tunnel in the first instance, and for drawing water in the second.

From the time of Queen Helena's pilgrimage to Jerusalem, and the building of Constantine's basilien, in \$33 a.p., down to the year \$350 a.p., when Palestine fell into the hands of the Caliph Omar, a large Christian population spread over the country, and numerous monasteries and churches were erected, especially in the south, where large Christian villages existed, according to St. Jerome. The architecture of this period is very distinctive in style, and the large majority of the ruins now found belong to this epoch.

We have unfortunately only two dated examples of this period in Palestine itself, though in Northern Syria Dn Vogiić has examined many splendick structures of the same style, some of which are dated with examinde. In Palestine we have Constantine's basilica, built about 333 a.n., at Bethiehem, and the fortress on Gerizim, built by

with exactinde. In Palestine we have Constantine's basilies, built about 333 A. in, at Bethlehem, and the fortress on Gerizim, built by Justinian in 535 A. D., round the octagonal chapet crucied by Zeno in 474 A. D. In the first we find columns, with capitals of the Corinchian order, having the cross on each boss between the volutes. These support a very simple cornice, and from above the columns in the central aisle rises a clear-story, once pieced with windows. The capitals are all of one design, and the columns are uniform in dimensions and desail.

sions and detail.

In the second example we find the whole of the exterior walls, built of drafted masonry of a peculiar kind, which is found very communly in the walls of the early chapels and monasteries. The stones are extremely irregular in dimensions, and the courses are not alare extremely irregular in dimensions, and the courses are not always carried the whole length of the wall at one level. Very narrow courses sometimes occur near the foundations, and high courses above. The stones vary from two feet to ten feet in length, and are generally two feet to two feet six inches in height. The draft is deeper cut than that of the Herodian masonry at Jerusalem, and is extremely irregular, being sometimes six inches wide at one side of the stone, and three inches or four inches on the other. The boss of the stone is not always of rectangular form. The dressing is rade, and appears to have been executed with a pointed instrument. The boss is always dressed, and projects about two inches. This masonry was evidently quarried for the buildings in which it is now found, heing adapted for its present use, and occurring also in arches and lintel stones of a size suitable to the width of the cutrances beneath.

tel stones of a size suitable to the width of the cutrances beneath.

Another distinctive feature of the style is the character of the vaulting and arches. The stones are smaller than those in the walls. The keystones are very narrow, the househ stones wide, and the inturmediate voussoirs graduate in width from the one to the other,

This peculiarity is found invariably in all buildings of the period. The vaults are semicircular tunnel vaults, and groined roofs never

uccur, nor are pointed arches ever found:

One of the finest examples yet examined is the monastery of Deir el Külah, in Samuria. The eloisters remain almost perfectly preserved, with exception of the roof. The doors have flat lintel-stones over them, spon which the cross is always cut. Sometimes elaborate geometrical designs sucround it, and over one door the conventional representation of Calvary occurs beneath it. Over these fintel-stones low relieving arches occur. In one case the stones above were only

hollowed out, and no structural arch existed.

The musury of the interior is not drafted, but the outer walls, which rise against the face of the cliff, are of large drafted masoury. In the chapel a simple cornice runs round the walls, and above the small window in the apse this cornice is deflected into a semicircular arch. In this building we thus find two of the characteristic features of the architecture of the Golden Gazeway reproduced, but, unformnately, no date has yet been found in connection with the Samaritan example. The arches and vaults in this building reproduce the pecultarities above enumerated.

The heavy lintel-stones, ten feet to fifteen feet long, which were used in the Byzantine monasteries, are often the only traces left of the building, the smaller stones having been enried away by the peasantry. In one case a Greek inscription was found on a lintel, which was translated, — "This is the gate of the Lord, the right-

nons shall enter in."

It may be noted that the vaulting of the Single and Double Gam-way passages, and of the Twin Pools, and two others of the Haram vaults, show the peculiarities of the Byzantine arching, above described.

It appears that the form of comb used at this period was the same as that above described, used in the later Jewish times; but the Christian examples are never found in cometeries in which bolim

At Bela, in Samaria, a tomb of this kind was found with the Greek inscription, E12 OEOΣ MONOΣ, "One God only," and a date which appeared to be probably 332 a, b. In Jerusalem another example was found originated with large crosses in red paint, and the betters A and Ω at the heads of the graves. In the valley south of Jerusalem the same class of much is found with Greek inscriptions, "The monument of vertain persons of Holy Sion (a Church socialled) from Rome," and again, -- "The excellent monument, the tomb of Amarulph of Germany."

The fine tomb, discovered in 1876 in Galilee, the façade of which is given in a former number of the Badder (p. 644, ante), is also of this period, and with two others is close to a Byzantine church. The façade is covered with a grape-vine, cut in very lard rock, having birds in the branches. On each side of the door is an illegible Greek inscription. The interior has small attached colutins, with spiral finting and modely-out classic capitals. The vine is again out on the walls, and over each sprophagus at the back is a boss on Greek inscription. The interior has small attached columns, with spiral fluring and indely-our classic capitals. The vine is again out on the walls, and over each spreophagus at the back is a boss on which a cross is cut in relief. It is thus clear that the cross is as old as the tomb itself. On the side walls of the open court, before the façade, two tions are readely represented, and two smaller antimals, apparently lambs, with birds and flowers

Carctul plans, sketches, and sections of this curious monument were made by the survey party. A tomb close by has also a cross over the door flanked by two birds in relief. The town where these tombs were found is called Shofa Amr, and was the ancient Shafram, a place where the Sanhedeim sat in the second century A. o., and which was afterwards considered by the Crusaders to be the home of Zebedee. The ancient Jewish concerny is at some distance

from the church and from the Christian tembs.

To this period also several fine structural tembs throughout Palestine probably belong, having domaid roofs springing from pendentives.—The Builder.

L'ÉCOLE DES BEAUX-ARTS.

L'École nationale et spéciale des Beaux-Arts at Paris, founded in 1648 for the teaching of architecture, sculpture, painting, engraving, and gem-cutting, is, as its name indicates, a public institution, being under the supervision of the Director of the Fine Arts. The school is open to all without distinctions of nationality; and ranking senior is open to all without distinctions of nationality; and ranking as it does, especially in the department of architecture, as probably the best institution of its kind anywhere, it attracts to itself students from nearly every country of the world. The applicant for admission to the above department is required to have two letters of recommendation, one from the minister of his country in Paris, and the other from the professor in whose aletter he is working or expects to work. The instription as condidate for admission takes place a few land. days before the examinations, which occur twice a year, in March and July. The aspirants are first tested in east-drawing, being allowed twelve bones in which to make a shaded drawing from a plaster east of an antique ornament. The requirements are very decided in this respect, and while a finely finished drawing is not called for, still the student is required to show that he has the ability and are still the student and are faithfully express the lights and to make a correct outline, and can faithfully express the lights and shades. The examination in architectural designing and drawing which follows takes place on loge, as it is termed, each aspirant being placed in a stall by himself, with the programme proposed before him, and not allowed to leave the mon until the task is completed.

As twelve hours is allotted for this also, from 9 A. M. to 9 P. M., the student is expected to bring a lunch with him. The supposition on the part of the authorities probably is that the applicants shall keep reasonably quiet, and work out their ideas independently; but since the average French student is a being mortally opposed to quiet or close application, and as the loges are separated only by thin heard older application, and are entirely open towards a central passage, the conditions are often not the most favorable for thoughtful work. The projects given vary, of course, each year. The past July it was a "piscine dans un etablissement thermat." The drawings are required to but in linu only, the plan to a scale of four millianters per meter, the elevation dauble. The design is expected to be straigly classic, with one of the orders used in correct proportions, Vignola being assumed as standard. Many of the drawings sent in are finished in color,

but that is entirely optional, the requirements calling more for a sketch than a finished drawing.

At this point in the examinations, judgment is passed upon the work already accomplished, and only those whose drawings are satisfactory are allowed to try the examinations in mathematics and history. These consist in mathematics of first a written examination on loge, followed by an oral examination by the professor in charge. The topics embraced are, arithmetic and its applications, algebra as fur as equations of the second degree, and geometry, plane and solid, such as is usually taught in the high schools of the United States. Also an amount of descriptive geometry about equal to what is contained in the first seventeen problems of Church's treatise on the subject. In history, the examination is amoreous arrangement, questions are given, two from ancient history and two from modern, and the student is required to answer but one from each. The question dates being called for. The examinations are of course all in French, except the history, which may be written in English, if so prefetred.

This is all that is required to enter the department of architecture.

As will be seen, the examinations are not difficult; but the school evidently proceeds upon the principle, that what a man knows at all, he should know well, for the marking is so close that a large number of the aspirants always full to pass. This year, out of ninety-four who were first inscribed, but thirty have been admitted, forly five

drapping out on drawing and designing alone.

The system of instruction amplayed keeps the ateliers, to a sertain extent, distinct from the school proper. To enter one of these it is astern, distinct from the school propose. To enter one of these it is necessary only that the applicant be satisfactory to the professor in clurge, he being the sole judge of the requisite qualifications. The instruction in the school is entirely gratuitous, no fees of any kind being required. On entering the mestry however, a sum of thirty to forty frames is paid for the use of boards and T-squares, and a fee of five france per month is called for to meet incidental expenses

of five frances per equation is called for to meet incidental expanses.

C. H. B.

| Durling the past three years we have had occasion to explain at length to more than one operations what is the source of mathematic modifications are necessary to create passing the entrance examinations. Six months upo our correspondent tells us he was maddle to about the information be now earlies us, and as large may be others who desert to be better informed on the subject it exists well to supplement the information to not easily the information to the subject it exists well to supplement the information to the subject it exists well to supplement the information to information mentioned, one must come from the plants of the subject if the conference of the subject when the subject is the feeled siled of the subject it entire the conference of the subject when the subject of the subject of the subject of an etcher, one is assaulty influenced by the obvious of friends who have studied in one or another of them. There are at the feeled siled only three coefficient in the change of M.M. Address, and because a certain prestige attaches to them as being under the innoculate partenage of Govcennent, partly, too, because they are what are known as arbeits as meating, that is adolers whose partla are constituted though, to obtain an union elarce of recompenses. These others are not much affacted by Americans, possibly because in them having is practiced with some servicity, Besides these, the legitimate work rooms, there are algebrated with some servicity. Besides these, the legitimate work rooms, there are eight arolleys correct which lave a semi-official but well-proaggrained connection with the Ecole. These are under the charge of M. Coquert, M. Unmer, M. Granin-Lebar, M. Guenglin, NM. Mayan-Mayan, MM. Farasal-Quested, M. Train, and M. Vandrenor, more flight standing in the profession, and without exception, we halve, any many the about the first thing to the house of the charge of mathematics. The best way of doing his for thi

The inspection of the free kind and architectural drawings made at this period usually charinate more than balf of the applicants, while the examinations in costhematics and history, which follow after the lapse of a few days, are apt to eliminate fifty per cent of the remainder. Ens. Assumes Architect.]

BLACK MORTAR.

WESTERLY, R. I.

To the Editor of the American Architect:

Dear Sir, — In reference to the query about "black mortar" in the Architect of September 14, I would say that we use here a preparation called mortar black, put up by the Waipole Color Company, of Walpole, Mass. The preparation is "patented," and, not having analyzed it, I am unable to state what it is composed of. The color is a fresh, rich black, which holds for years. Doubtless the gentleman can obtain the information desired by addressing the Walpole Color Company. Color Company, Walpole, Mass-Yery truly yours,

J. IRVING MAXSON.

THE OWNERSHIP OF DRAWINGS.

New York, September, 1878.

TO THE EDITOR OF THE AMERICAN ARCHITECT:

Dear Sir, - We believe it has been legally decided that all plans and working drawings furnished by an architect for the erection of any building belong to him, and not to his client. Will you be kind enough to inform us of any such decisions, either by letter or through the columns of the American Architect?

Yours very respectfully,

Thom & Wilson.

NOTES AND CLIPPINGS.

NOTES AND CLIPPINGS.

The Washington Monument Combission. — There was a meeting of the joint commission on the Washington monument September 25 at the White House. There were present President Bayes, Mr. W. W. Corcoran, Col. Casey, General Wright, assistant to the chief of engineers, U. S. A., Architect Hill, and Architect Clarko. The plan for strengthening the foundation of the monument, prepared by Col. Casey, was read and discussed. It was not infinely adopted, though it was generally approved. The plan, which proposes to strengthen the foundation by underpianing and lateral expensions of concrete would, to be carried out, necessiste an expense of more than the \$36,000 appropriated for the work. The question was raised whether, under the act, may of the money appropriation made for the completion of the manument proper can be expended on the base. It was decided to refer the question to the Attoriory General for an opinion on the subject. Another meeting will be held next Saturday, when final action on Col. Casey's report is expected, and the work of the commission will be mapped out.

Resourch Reservoirs. — The greater part of the perfolence and min-oral oils intended for the consumption of Paris is stored in the docks of St. Onen, where floating reservoirs, each of the approximate capacity of one lundred barrels, have long been in existence. The constant increase in the consumption has made it accessary to calarge the storage account dation; a large number of reservoirs have recently been added, of a cotal expectity of about nine hundred thousand gallons, and the prospect is that more room will soon be required.

These reservoirs are of plate iron avenue-sight feet in diameter by some

more room will soon be required.

These reservoirs are of plaze from avency-eight feet in diameter by some secretary fort in height to the spring of the arched cover; the thickness of the bottom and of the lowest ring of plates is one quarter of an inch, and of the top-rising three sixteenths of an inch, while the thickness of the cover is only one tenth of an inch. They are filled through openings at the top, three feet three inches in diameter, and, being all it one line, are connected by a bridge or louding, which extends from one extremity to the other, a distance of four hundred and twenty feet. They rest upon a platform of wood, laid upon a rabble foundation. The petroleum, when brought on shore from the vessels in the river, is at first deposited in the floating reservoirs, which are partly submerged, from these it is pumped into the reservoirs, and thence drawn off through the pipes but harrels. The total weight of these wrought-iron reservoirs, fourteen in number, is one hundred and tity-one tons.

Anguigness.—A new stone is now being introduced in Wilmington by the patence, Mr. George Richardson. The two ingredients are sond and coment. The sand used is that which is found along the Delaward, and that which is used in Cherter comes from Pennsyrove. The coment used is the ordinary hydraulic coment. The coment rock is submitted to the process of harning in order to expel the carbonic acid gas, which puts it in a condition for grinding, after which it is ready for use. The sand and coment are mixed in fixed proportions for a mortar of a dark gray color. This is then placed in months whose size and shape accord with the article to be produced. These moulds are of wood for hitching posts, window caps, window sills, door-sills, etc., but for draining pipes are of cast from. The substance when placed in the moulds is in a soft condition and analogues a thorough packing. It is then retoaved and is ready for the hardening process. The articles are placed in an air-tight chamber ten feet square, and carbonic acid gas is introduced to burden them. The gas is generated by burning charcoal in a common coal stove, and in passing into the chamber, first goes through coal water to reduce the temperature, as it would otherwise injure the cemont. This gas is so rapidly alsorbed as to keep up a draft from the stove to the chamber, and as long as the absorption goes on the stone continues to harden. After two or three days the articles are immersed in a tank of water honocliately under the floor of the apartment, which makes them harder. They are then ready for all uses that they are intended for.

REFERS MERCHAEL - A tablet commencenting the hanging of the lanters in the old North Church, Boston, April 13, 1775, by Paul Revero, has been put up in that church.

STRANGE STATEMENTS ABOUT YELLOW FEVEN.—A singular fact is that the tirst death from yellow fever occurred on the 21st of July, on a street well paved and in a neighborhood of the wealthy—a fact the more wonderful when it is remembered that New Orleans has vory few paved errors, and, further, that by far the largest number of deaths are on the streets well paved and near the Mississippi River, while out in the rear partion, where the draining canals are recking with filth, where dead dogs and cats are floating around, in a green seam nearly two inches thick, with the bot empouring down upon them at a temperature of about ninety degrees Fahrenheit, there has not been a single death from yellow fever. Again, in the Third district of this city, where there were over five hundred deaths from the yellow fever in 1870, not a death has executed so far, and the same may be said of the Fifth district, situated on the opposite side of the river, surrounded by swamps and very fifthy.—N. Y. Herald.

BROSKE STATUS, - In front of the store of Mason & Co., No. 1202 Chestmit Street, Philadelphia, there has been pheed a bronze stance of the lata William Woodward, of Chucianati. The figure, which is of colossal size, was undelled by Mr. J. A. Bailly, and was east at the bronze foundry of Buteau Bros. & Heaton, No. 909 North Nigth Street. The status will be removed in a few days to Chucianati, where it will be unveiled about the first

ROMAN RIMAINS IN ENGLAND. — Walbrook, England, has, within the last quarter of a century, been the seems of many interesting discoveries of Roman remains. To these has now to be added a "find" which has taken place at No. 9 in that thoroughfare. The premises are about to be rebuilt and colorged; excavations have been made during the past few days at the rear, and the workmen have come upon several objects of interest to the archeologist. One of these is a well, stated to be of Roman origin. It is about 22 feet in depth, the upper portion of the circle being constructed with Kentish rabble, and the lower, to the extent of about 10 feet, being libed with chalk, without erment or other material between the contests. The water is said to have been very pure when the workmen. A Roman jug, very light and rurious, the lower portion of a whater water cooler (the latter made of Purbeck stone), some piecess of tesselated pavencor, etc., were also discovered. piceos of tesselated pavement, etc., were also discovered.

The "Old Baller,"— Newgate will not fall alone. The Old Balley has been condemned, and a new block of buildings will take its place, Within the dock to be removed bave stood Jack Sheppard, Jonathan Wild, and the poet Savage, whose biography was one of the heat that Dr. Johnson wrote. It was in the Old Balley that the regicides had died trial, but that portion of the original structure has disappeared. It is many and curlous forms of law that the Old Balley has seen come and go. "The hangman no langer," gave the Ecto, "sits down by the side of a prisoner halter in hand, as he doll in 1669; and the awful warrants are no longer issued in shoots, as formerly, or in the "good old days."

New York Pavements. — There are 328 miles of paved streets in New York south of the Flarien River, which may be classified as follows: Macadam, 22 miles; geasite, 26 miles; trap black, 180 miles; wood, 14 miles; cubble, 83 miles; concrete, aspludt, etc., 5 miles. Of this nearly 150 miles entirely of rotten wood, dilapidated cobalc, worn-out and shapeless stone

The Cursuse Canal. — The Grand Canal of China is likely to share the face of the Grant Wall. This waterway was constructed by Kahlai-Khan and his ancetasors of the Youn race, and is 600 miles in length. There are 10,000 flat-hydromed boats on this causi, and those are used in the armsportation of grain. The Echo states that this great waterway is an enormous "where elephant," as it costs an enormous amount every year for repairs, the appropriations there, as elsewhere, not belog entirely devoted to the purpose for which they are meant. Junks are dolayed every month while channels are being dog for their passage. This year, for the lirst line since the construction of the canal, the grain from Nankin, with the consent of the Covernment, has been forwarded by sea, and this fact has incelled the Pokin authorities to consider the expediency of abandonhas impelled the Pokin authorities to rousider the expediency of abandon-ing the canal as a commercial highway.

Optical. Intestor Olesko et latterse Hear and Light.—Dr. Joshua Thorne parrates in the Kassas City Review the following facts which lately came under his observation as the voiling mills in that city:—Wide looking at the ceitpes of the sun July 29, I handed the glass to one of the mill "hoaters." He at once told me he could see as well with the naked eye as with the anoked glass. I then tried another "heater," and he at once repeated the same statement. I then went to the rolling mill and tested every "heater," at his firmace. They all told the same story. I hoated up every "heater," in the sown except two (who were not found), over twenty in all, and every one declared he could see the phenomenon, and all its phases, as well or better with the eye unshaded. I took the precention to test each one by himself, told him nothing of what I expected, or of the testimony of others. I made no suggestions to may of them, but lot cach tell his own story. All told the same tale; one peculiarity all agreed to — the image in the glass was upside down from what they saw with the naked eye. They would describe many peculiarlies of color which could not be seen by others with the aid of the glass. It should be remembered that the "heater" has to see his iron in the formace while It is enveloped in a flume whose intents glare prevents unskilled eyes from seeing anything, an education of the eye peculiar to this class of workers, as no other class of workmen is exposed to the same degree of heat or light. In accordance with your request, I ropeated the experiment of Eriesson, and submitted a spherical piece of Iron, eight luches in diameter, to a heat of eyes 3,000° Fahr. It was carried to an almost malting point, withdrawn from the flame and placed on a stand. It had the uppearance of a disk at all distances tried, up to over 100 feat. As seen by the chief engineer of the mill, myself and others, it was perfectly flat. The convexity did not appear; it was, while in this state, so all appearance no longer a sphere, but a disk. A

BOSTON, OCTOBER 12, 1878,

CONTENTS. Summary:— Government Inspection. — The Grand Jury on Elevated Railways. — The Question of Cheapness. — The Suppression of Thoroughfaces. — A Railway on Vesurins. — The Europringenent of Workmen. — The New York Society of Decorative Art's Lectures. — The Women's Carving School at Boston 121 The Equipmention of Armies 122 Connessed North London. — Letter from Chicago 123 The Illustrations:— Church at Oyster Bay. — Diving field in the Palace of the Grand Duke Wisdimir. — House at Chicago Landon. — Reception Hail and Successe in the Allemania Clob House 125 The Rating of Buildings 125 The Rating of Policy 126 Armials At Ancient Rose 127 The American Institute of Architects, New York Charter 127 The American Institute of Architects, New York Charter 127 Notes and Caippings 125

THE facts that have come out concerning the boiler of the steamer Adduhi, which burst at Norwalk a short time ago and killed a dozen passengers or more, coforce the lesson of frequent building accidents, and show us again the precariousness of government inspection. The boiler had been inspected in June and certified as safe. Three months after, it was torn open by a pressure of steam which was less, the engineer declares, than it was allowed to carry. On examination it appears that the boiler was worn and patched and rusted away, into an obviously dangerous condition. A new patch had indeed been put upon it between the inspection and the secident. and still plates were left, it is said, which were worn to the thinness of pasteboard. One naturally asks, llow came a government inspector to give a certificate to a boiler which was in a state to require patching in two months, and to harst in a month after that? And what sort of examination did be make? The inspector has been suspended, awaiting an investigation, and pending this we shall not know whether he complied with the letter of his instructions or not. The hydrostatic test prescribed by the regulations has never commanded confidence. for the plain reason that, like any straining test, it may inself permanently injure the structure it tries; but no working substitute has yet been devised for it. It is clear at least that all such tests are likely to be delusive unless they are supplemented by careful subsequent examination. Whether in the case of the Adelphi the boiler was tested by pressure or not, an inspection which did not discover that it would not endure two months' wear without repairs must be prenounced worthless. The fall of Mr. Livermore's unfinished dwelling-house on Broadway, New York, a short time before, is an indication among many that building inspections are often no better. A correspondent in another part of this paper suggests, in view of the overloading of buildings and the changes in their uses, that they should be rated and re-rated from time to time, like ships, for the amount of storage they are fit to carry. The suggestion is a usoful one, and could doubtless do something to about the dangers which are incurred through ignorance. Government inspections all tend, however, to one danger; they tempt owners to think that their responsibility is transferred to the government, or at least to act as if it were. Considering their fallible nature, then, it may be questioned whether they do not often do harm rather than good. They are necessary, nevertheless, and the only seenrity is in having it thoroughly understood that they are simply precautionary, and by punishing both owners and inspectors alike with rigor when their carelessness leads to disaster.

The Grand Jury of New York have, by a unanimous vote, declared that the Motropolitan Elevated Railroad of that city is "a most unfortunate mistake, and is a great calamity," — "a gross violation of the rights of property-owners and residents in the vicinity of the line." The jury do not indict the read, but they present it before the courts "as a public suisance in its unparalleled invasion of private rights and of public comfort, safety, and health; and they earnestly request the court to lay this presentment before the Honorable Attorney General of the State, and before the Legislature when it shall assemble, in

order that steps may be taken to redress an outrage which they are confident would never have been sanctioned had its enormity been realized." They do this manimously, preferring the presentment to the last resort of a criminal indictment, and putting their trust in the courts and the Logislature to vindicate the rights of the people.

WE have no doubt that the Grand Jury are quite justified in their statement, nor that the building of the elevated roads was a mistake which would not have been allowed if its consequences had been realized beforehand; and that the invasion of private rights and the injury to health and comfort are such that, if they are not compensated, to call them an outrage is using language none too strong. Yet the roads are proved to be a great public convenience, and they, or some equivalent for them, must be accepted as a public necessity. The New York Elevated Road is reported to carry an average of nearly sixty thousand passengers daily, and the Metropolitan forty or lifty thousand, - perhaps together a hundred thousand. The Tribane says, perhaps a little equically, "The sense of a selfish public will be that the few must suffer for the good of the many. Rapid transit roads are rendered a necessity by the conformation of New York Island, and no rouls are so cheap as those on stitts?" None are so cheap to those who build them, certainly, but when account is taken of the amount of property they destroy, and the injury they work to health and comfort, it may turn out, and we are inclined to think it will, that none are on the whole so dear. Here is the secret of the trouble, and the warning to other cities. The roads on stilts were adopted because they could be cheaply constructed, and the travel on them is therefore cheap to those who enjoy it at other people's expense. It is true that the few most sometimes suffer for the good of the many, and Americans are a little prone to the doctrine that a minority has no rights that a majority is bound to respect. Neither the public nor the courts are apt to make much account of the destruction of personal comfort; but to insist that the few must suffer in pocket for the many without compensation, when compensation can be made, is to carry things with a higher band than we should expect to see allowed. Whether the roads are a mistake or not, it is not likely that the people of New York will consent now to give them up, and therefore it remains to fairly adjust the burden of expense. If the heachts are broad enough to include the whole city, the city may be fairly called upon to compensate the losers, and it may be found that this is the only remedy; but if the benefit is to one class of citizens, it is reasonable that this class should pay the scot. They will be called upon to pay it in the form of faces whenever authority shall compel the roads to compensate the damage they have done, - a thing which the courts will doubtless have abundant opportunity to do.

THERE is still another side to the question of the cost of clevated railways which New York especially illustrates, and which other cities will do well to consider. It is clear that the railways, as they now appear, are the min of the streets in which they run. If these are important streets, the loss is by no means limited to the persons whose property is upon them. To divert such streets from their natural uses is to diminish the actual capacity of the city. In a city as narrow as New York the sacrifice of two great longitudinal thoroughfures is a very serious one, not only to those who dwell or own or occupy upon them, but to the whole population, which is restricted in the space available for its business. The use of such thoroughfares as conduits for wavfarers is naturally but a small part of their function, though it may be the key to their other uses. The effect of giving them over to this purpose in such a city is to aggravate the very ovils which quick transit is intended to cure, by still further narrowing the area of business and residence, and forcing it out into still more unmanageable length. And of this every inhabitant of the city shares the inconvenience. cannot be commervailed, it must be added to the other factors in the cost of the roads. It may be that, when all is accounted for, the value of the communication will justify the whole expenditure, but till this is done it is not safe to decide in their favor. Still less is it safe to assume that they are the necessary resort. The people of London, jealous of the comfort of their city, put their railway under ground; the people of New York, bout on immediate saving carried theirs through the air. On the whole, the people of London seem to have been more successful than those of New York. The London system is much more expensive to construct; the New York system bids fair to be in the long run the costliest method of communication that The one creates property; the other has ever been devised. destroys it. The one limits its discomforts to its passengers, and to the time they are in transit; the other permanently rains the peace of whole errorts full of inhabitants. In New York, however, the choice must probably be accepted as irrevocable, at least for our generation, and since the people have not been forehanded enough to adapt the railways to the thoroughfares, the next thing is to devise ways of adapting the thoroughfares as well as may be to the railways. Other cities will count the cost on all hands before they prefer the example of New York to that of London, or may be fortunate enough to discover some third system which will avoid the faults of both.

There is something poculiarly distasteful in the idea of a railroad up Vesuvius. It has came to that, however. A Nexpolitan banker has got from his city government the right to for tourists in a few mouths. He will carry a double track on columns, or trestle-work, the up and down trains being connected by a wire rope passing over a drum, and worked by stationary engines. The trains will be light, consisting of four carriages, with four seats in each, the ascending one, of course, being hab-anced against the descending one. The sympathetic traveller has become used to railroads up Mount Washington and the Righi, and has consoled himself with the thought that at least by their means these places have become accessible to many appreciative persons to whom a three or four hours' ride or drive was an insurmountable impediment. But the half mile of truck up which it is proposed to trumble the Vesuvian tourist will hardly be a real help to any but a few invalids, of whom it is no cynicism to say that they are better off below, and a crowd of lazy visitors, whose numbers the intelligent admirer of the mountain would take a justitiable pleasure in reducing. We may therefore be forgiven the pious hope that the enterprise will prove no more profitable to its projector than it is necessary. It is tille to protest against the rendency to make money by turning all the wonders of nature into careo-shows; yet one might expect the government of a great city to leave respect for its most famous treasure. The truth is, there is a real loss in the value to the world of those natural features whose glory is their remoteness and grandent, when they are made too accessible. The impressiveness of Vesusius is in the naked and anconquered desolation which even guides and tourists alone cannot obscure. The traveller who breasts the slope on foot, or climbs it slowly. on horseback, is forced to feel its grandeur, but they who are dragged up by buckerfuls, along the trestle-work which will soon disfigure the lines of its unequalled slope, to find the edge of its crater marred by a railway station, and its awful emptions mocked by the pulling of a steam engine, will have lost the grandour of an impression which perhaps no other experience of their lives can parallel.

EMPLOYERS of skilled labor who take pains and find means -though it he simply for their own gain - to interest workmon in their work and encourage them to study increase of skill in it, are doing the best possible service to the working classes, and using almost the only influence that is now at hand to counteract the foolish doctrines and dangerous discontent that are conspicnous among them. One encouraging example of this, which we should like to see imitated oftener than we do, is that of a noted firm of jewellers in New York, who have this summer offered a number of prizes among the workings whom they cmploy in making silver ware. Prizes were given for both design and workmanship; the workmanship including chasing, ongraving, and reponse work. Against the efforts of trades unions to reduce all workmen to a level of wages and performance, and to absorb all their attention in political or social effort, some influence of this kind is necessary to advance their skill or oven to keep it from deterioration, to say nothing of keeping up any interest in their work. If manufacturers would combine for this purpose, they might at once improve their own productions and do much to offset the tendency to hostile feeling and divergence of sims between themselves and their employees. A step in the same direction has just been taken by the British Government, which, imitating the action of the French at our Contennial, has sent a school body of skillful workmen to examine and report on the work shown at the French Exhibition of this year. Each

workman is given a free pass to the Evhibition and a sum of money, with the privilege of fares and lodging at a reduced rate, and is expected to spend one or two weeks in examining his own department of the Exhibition.

The New York Society of Decorative Art, encouraged by the success of its previous loan exhibition, is preparing another to be opened this full. The managers have his upon the useful plan of supplementing the exhibition by a course of lectures on kindred subjects. Professor W. E. Griffis is to lecture on Japanese Art; General di Cosnola, on Ancient Art; Mr. W. C. Prime, on Pottery; Mr. John L. Hayes, on Tapestry; Mr. C. C. Peckins, on American Art in the Future; Mr. Charles Dudley Warner, on Egyptian Art. The lectures will be relied on to second the profits of the exhibition; while they will serve the more permanent use of at once illustrating the articles exhibited, and stimulating the common interest in arts they illustrate. They are arranged in some sort on parallel lines with the subjects of the axhibition; but the wish suggests itself, which always arises when we read the programmes of popular lecture courses, and especially where matters of art me touched upon, that the subjects could be systematically and conscentively arrauged. The successive development of styles and the mutual relations of different departments of design are matters in which amateurs of art are commonly very little instructed, while they are very important in its study. Fither of them furnishes a connecting thread by which unity may be given to courses of instruction which are too often disconnected, and therefore comparatively fruitless. The necessities of a course which, illustrating a temporary exhibition, must necessarily be in a sort extempore, do not give much opportunity for systematic treatment; but the subject deserves the attention of whoever is concerned with instruction in art in this country.

The Women's School of Carving and Modelling, in Boston, is reopened this month, with some advantages over last year, having been taken into the family of the Museum of Fine Arts. It was started a year ago with considerable enthusiasm, and, in spite of the narrowness of the funds which could be colfeeted for its support, had in many respects an encouraging success. There were, says its import, lifteen pupils, to whom instruction was given in modelling in clay, casting and carving in plaster, and carving in wood. It was not possible or desirable in one year's course to earry the instruction very far, but the pupils were advanced from exercises in the use of tools and the catting of purely geometric forms, through incised ornament, up to modelling and carving simple ornamental designs in Samples of the work of the school are exhibited in the Mechanics' Fair now open in Boston, and show the commendable advance of the pupils in using their tools and processes. It would be out of place to criticise them as actual products, they being placed there, as the report says, " not with the idea of indicating results, but only to show the methods pursued, and the kind of instruction attempted." This is a right idea, which we trust will always prevail; for nothing works such rule to a school of art as to be invaded by the idea of production or of mercantile success, and to this invasion a school of decorative art is in these days peculiarly exposed. The association with the Museum may be expected to give a valuable stimulus to the school, both by access to its collections and by the working fellowship which it can supply. It is to be hoped that it may find friends who will see that it is not hampered by want of funds; for an experiment of this kind, if it is tried, ought to have the advantage of thorough appliances for its work.

THE EQUILIBRATION OF ARCRES.

A METHOD OF DETERMINING THE LINE OF PRESSURE IN A LOADED SIGMENTAL, SENT-CIRCULAR, OR SEMI-BILITTICAL ARGU,

The conditions of stability in an arch are these:

I. The curve of pressure, in that portion of the arch which is above the joint of repture, must not pass outside of the middle third of the arch-ring.

II. The line of pressure at any joint must not make an angle of more than 30° with a normal to the joint.

III. The mean pressure on any joint must not exceed one twentieth of the ultimate resistance of the material to crushing.

Fig. 1. Draw one half of the arch and load to as large a scale as

practicable, not less than one half inch to a fout. Find the angle of rupture, V, by the following table : -

Let R = radius of extrades. Let r = radius of foundes.

I. For segmental arches, when r is not less than six tenths of the span, the springing joint is the joint of rupture.

11. For semi-circular arelies with horizontal load line: -

When
$$\frac{11}{7} = 1.1$$
 $V = 62 \frac{1}{7}^{\circ}$. When $\frac{18}{6} = 1.72$ to 1.17 $V = 63^{\circ}$. When $\frac{1}{7} = 1.18$ to 1.3 $V = 57 \frac{1}{8}^{\circ}$.

III. For semi-circular arches with load line sloping from an apex above the erown:

I = the angle between the slope and a vertical.

	1 - 60%	1 to 50°.	1 - 60%	I = 465.
ű r	Ÿ	v	¥	¥
1.15 1.15 1.2	7907 37½ 40	3607 35 40	874 874 340	307 323 874 40
1.2 1.25 1.3	471	423 45	121 45	40

The above table is from Woodbury's "Treatise on the Arch." It may be used for semi-elliptical arches, though probably not quite correctly. The precise determination of the joint of rupture is not important.

The portion of the arch which is below the joint of rupture is to

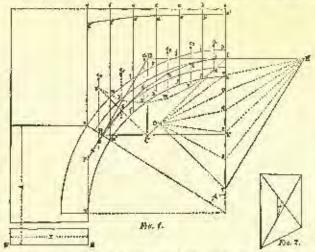
be regarded only as a part of the pier.

Divide that portion of the arch-ring which is above the joint of cupture into three rings of equal depth. Drawing vertical, and divide the load line ag into any number of equal parts, ab, be, ote. Draw hi', cj', etc., vertical. (The occurrence of m' in the diagram Draw hit, cy, etc., vertical. (The accurrence of m' in the diagram at the intersection of the intrados with the joint of rupture is scienceal.) If the density of the load differs from that of the arch, as it usually does, unless both are of brick, reduce at to a'b, so that ah; w'h = weight of a cubic foot of arch; weight of a cubic foot of load. The arch, if of stone, any be taken at 170 pounds to the foot; the load, if of stone, at 150; brick-work at 110. In like manner reduce hi to b'i, cj to e'j, and so on. Find the centre of gravity of the quadrilateral a' b' i' h' (or a b i' b' as the case may be), considering h' i' as a straight line, by the following method:—

as a straight line, by the following method:—
To find the e.g. of a triangle, from each of two angles draw a line to the middle point of the side opposite; the intersection of the two lines will give the e.g. To find the e.g. of any quadritateral, draw diagonals, and from the end of each furthest from their intersection lay off, toward the intersection, its shorter segment; the two points thus found, with the point of intersection, will form a triangle, whose c. g. is that of the quadrilateral. See Fig. 2.

Mark the e. g. thus found C_1 , and in like manner find C_2 , C_3 , C_4 ,

 \mathbf{C}_{s_0} \mathbf{C}_{d_0} . Find the area of each of the quadrilaterals. Assume I, at the upper edge of the middle third of the arch, as the point of application of the horizontal thrust at the crown. (In thin arches and in pointed arches it will be at the lower edge of the middle third.) From I lay off on a vertical, by any convenient scale, Io, to represent the first area a'b'h' i, op the second, pq the third, and so on. Determine the vertical C D, in which lies the centre of gravity of the whole area a'g' n m'h', thus: From I draw I O, and from t iO, at right angles, and connect Oo Or etc. From C, C² on draw porticals. These we reconnect Oo Or etc. connect Oo, Op, etc. From C1, C2, etc., drop verticals. Draw uv par-



allel to Oo, we to Op, we to Oq, xy to Or, yz to Os, and zC to Ot. Protract Io to C. The required c. g. will be in the vertical drawn through C. The edge of rotation will be at R, the lower edge of the middle third. Draw R Y horizontal. Multiply the sum of the areas of all the quadrilaterals by C R, divide the product by I Y, and lay off the quotiens by the scale of Io, etc., from I to E on a horizontal. Connect Eo, Ep, etc. Protract E I to meet the vertical dropped

from C, at 1. Draw 1-2 parallel to Eq. 2-3 to Ep. 3-4 to Eq. 4-5 to Et, 5-6 to Es. 6-7 to Et. Protract 11 to D. If the work is currect D R will be parallel to Et, and 6-7 will be a continuation of D R. The points I, 1, 2, 3, 4, 5, and R are points in the curve of pressure. If 1, 2, 3, 4, and 5 are all within the middle third the arch is safe, provided the other conditions of stability are observed. If the curve runs below the middle third, the arch is too heavily loaded over the same are too lightly or the househors, in these conditions are crown, or too lightly on the baunches; if above, these conditions are

reversed.

The line D R gives the direction of the pressure transmitted from the arch to the piec; and Et gives the value of the pressure, by scale of loads, in terms of area, which, multiplied by the number of pounds in a cubic foot of the arch, will give the pressure in pounds.

To determine the necessary width of the ider which carries the

arch, proceed as follows:—
Protract D R to P. Decompose the pressure exerted at R, and now considered as acting at P, into its vertical and horizontal components, by the parallelogram of forces.

Let H = the horizontal component.

Let V = the vertical component.

Let $h \longrightarrow$ the height of the pier assumed, let n = P B.

Let w = the weight in punnels of a cubic fact of the pier. Let x = the required width of pier for bare equilibrium. The mannent of H is balanced by the moment of V plus the mo-

ment of the pier; that is, I being the edge of rotation of the pier

$$\lim := \mathbf{V}\mathbf{x} + \mathbf{wh}\mathbf{x}_{\pi}^{\mathbf{x}}, \text{ or } \mathbf{Ha} + \mathbf{V}\mathbf{x} + \frac{\mathbf{wh}\mathbf{x}^{\mathbf{x}}}{2},$$

whence

$$x = \sqrt{\frac{\gamma_{2n}}{hw}} + (\frac{v}{hw})^2 - \frac{v}{hw} - \frac{\sqrt{24 \ln wh} + V^2 - V}{hw}.$$
 For stability take $\frac{4}{8}x$, or, if the pier runs up as usual to the load

line. It.

No account is here taken of the triangle um'n', nor of the fact that the specific gravity of that para of the arch which is included in the pier may be greater than that of the pier itself; but these are unimportant, and only add slightly to stability.

CORRESPONDENCE.

LONDON, September 19, 1878.

For those who are looking about for modern architecture in and near London, no building is of greater interest than the Natural History Museum at South Kensington, which is now nearing completion. It is by Mr. Waterhouse, and is a fine example of the use of the round arch in the Norman style. The design is imposing, and in stopplicity of disposition, and is subordination of detail to masses, it is markedly superior to any of the new public buildings I bave such here. No preoccupation for picturesque effect has broken the grand lines which rule from end to end of the immesse pile, white a massive central structure and lofty curner pavilions finely accent-uate the whole. The eye as a glance embraces the design, and un-derstands the disposition of the plan. The two lofty stories, with their large boys, indicate exhibition galleries, while the high basement and aftic are for lecture-rooms, laboratories, etc. Between the attic windows are statues of animals, and gargoyles of animals seem more

appropriate then usual.

Plue entrance is in the central pavillon,—not yet completed though high above the side gatheries,—under a wide round arched portal, decidy recessed with columns, like the finest of the Norman powhes. deeply recessed with columns, like the finest of the Norman porches. Passing through a stadlow vestibule, from which open the exhibition wings on either hand, one stands on the threshold of a noble ball, at whose further end is a monumental staircase, dividing half-way to reach side galleries which lead to the second floor. The larys which separate these galleries from the half are subdivided with delicate double arches, which look all the lighter because of the massive ones supporting them below. The latter form a series of barrel vaults, like the side chapels in some Romanesque churches, and are to be furnished with specimen cases. The great half is, in fact, called Index Hall, from its containing imlex specimens.

Hall, from its containing index specimens.

The staircase from the galleries below to the floor above is carried in a most gravaful and a floor. a most graceful and original manner on a vasi such, which, one bay from the entrance wall of the hall, rises in a wide sweep, unbruken by imposts; the stairs from either side, uniting, spring from the centre of this vault to the floor beyond. The roof, though pierced largely with skylights, looks too heavy for the light, open iron-work trusses which support it, principally because the heavy window sushes are painted to count with the leans instead of with the ground glass. On whitish panels in the rooi are painted specimens of tree branches; while the large end window has a pattern of red leaves upon it, — an appropriate use of stained glass. Behind the great hall is another for the natural history of Great Britain alone, and beyond that from a long vestibate open a series of large and small gatheries. Two heavy square towers rise from near the rear galleries, without adding much to the beauty or utility of the design, though one is, I believe, to be used as a smoke shaft.

So much for the design and disposition of the building; spart from which it has still a great interest. It appears as if built of a yellowish sandstone, but near examination shows it is entirely of terra-cutta, backed with brick. Therein lies a strong claim to our attention, for it is the most successful application of terra-cotta in England, where

that material has thus far received its greatest development. The slabs vary from one to one half inch in thickness, and are moulded with flangus to be built into the brick-work. The length of them does not exceed eighteen inches, and generally is not more than a foot. A great secret lies in these short lengths, for with them the lines and mouldings can be kept perfectly true. The only place lines and mouldings can be kept perfectly true. The only place where there is any wavering in the mouldings is outside on the basement,—and that is very right. Here the slabs were two feet long, so the warning was heeded, and no others were afterwards used of that length. This defect in terra-cotts Mr. Waterhause has kept clearly in view, designing his mouldings and decorations for the most part in divisions or panels, so that any slight irregularity does not show. The Norman billet and zig-zag mouldings lend thomselves show. The Norman billet and zig-zag mouldings lend themselves easily to this: but more varied means are turned to account, such as the articulations of hamboo; and even those of the spine are formed into an effective moulding; which latter would seem far fetched in a building devoted to another purpose. A concave moulding attendible great staircase-arch is filled with them, and at intervals from this yast spine sproms a mankey! I expected to see a man triumplantly astride of the keystom; but the designer refused such homage to Mr. Darwin, evidently, for the series of mankeys comes grinning slown to the ground again, — which is keenly suggestive. There is true thathic flavor in this; for if we but knew local medieval traditions, how full of meaning would be the new senseless grotesques which emp out everywhere in Gothic cathodrals. The stone age procedes that of word, and the predecessors of Punch's wood-cuts were these that of word, and the predecessors of Punch's wood-cuts were these quaint satires in lichograph.

Another enrious concell is carried out in the main exhibition galheries. The ceiling of these is supported upon two series of square piers, which two thirds up are decorated with pilasters; just under these, there is a curved Greeian fret. If you notice some wavy lines below, it will task across you that the fret represents the scallar, and probably not till then will you notice that every three or four of the pier slabs have delicate reliefs of various tishes, and, nearer the bottom, of shells; while on the hase itself is carred a band of sea-weed. Jules Verne might well be in despuir as this walk under the sea, did these reliefs — barely raised from the surface — not look un-commonly like fossil prints, which destroys the sensational effect. Throughout, great art is shown in finding decoration drawn from natural history; and it is to some purpose that the difficulties of teren-colla have been overcome; for it has permitted an amount of this decoration in panels and dispers which would have been of labulous cost

if done in stone.

On the whole the building scenes peculiarly successful, and shows a marked advance since Mr. Waterhouse designed his Manchester Assize Courts, where, though the plan and masses are fine, the same cannot be said of the details. As a practical hint, some difficulty being at first found in cleaning the term-cutta after it was in plant, it was discovered that a little muranic acid, followed up with water, removed all stains. Gibson and Cambing were the contractors for the terra-vector. The whole cost of the boliding will be some £400,000, it is thought. Mr. Waterhouse has just finished two large hashness buildings in red brick with red terra-coun trimmings. both fine, but the last is in the same round arched style as the Musoun, and owing to the success of those two buildings, he told me he should probably design for the future in that style, rather than in that of the pointed arch, in which he did his earlier works. In one of the above buildings there is an ingenious cailing, which is formed eatirely of white tiles with colored pattern. The beams are eased in them, and the intervals between filled with square pieces; where the corners of four pieces come together, a joist from the floor above bolds them up with a flat cap, and over this is secured a tile resette, so the ceiling presents as clear a surface as if the tiles had all been besided in cement. As the walls are of light, enamelled brick, the effect is bright and fresh.

The other great building upon which they are at work here is the New Law Courts, by Mr. Street. These are being slowly pushed through the mass of houses crowding Holborn, and now ferminate at Temple Bar. As if to commemorate this triumph — as memora-ble as inworthy — over the denibilition of the most historic of London monoments, a massive tower rises just by its mutilated piles. No more forehoding monument could have been raised to launt the guilty iconoclasts than this grim tower, which frowns down on the busy street. It is as heavy and windowless as a donion, and I believe actually is to be used us a reservoir. However, if you do not like that tower you can shoose another tower, for though the building is not yet half up, there are three already in the completed part. It is unfair to criticise finally as unfinished work, but the design scens to be so terribly broken up in a frantic straggle after the pietarresque, that I fear the last trace of unity will disappear with the scaffolding—for that hinds together in some measure the parts. Throughout there seems a wanton climination of axes. Windows and divisions are hopelussly uneven, and by no chance is there cor-respondence or repetition of parts. The front, apon Holborn, is of a gray stone, which heightens the dryness of the architecture, already cold in the side and rear façade, where the stone trimmings are warmed with brick. This dryness is increased by a great deal of disper ornamentation, too deeply carved, which gives a cast-iron look. The building has disappointed the profession generally.

Far more successful, in quite a different style of Gothic, is the American Episcopal church, at Rome, which Mr. Street designed.

"St. Paul's within the Walls," situated in the new Via Nazionale, was the first Protestant church built in Rome, for it was begun just was the tirst Protestant church built in Rome, for it was begin just after the entrance of Victor Lamanuel. Although it has been open for worship some time, it is not entirely finished, as it was wisely begun on a scale which would leave it in the future open to memorial gifts and bequests. It was intended to be, and is, a fitting monument—the only one we have in Europe—of American religious zeal and liberality. In spite of their "Church and State" which the Euglish proverhially earry everywhere with them, their charches in Rome are insignificant chapels buside our basilica, which with apse and side aisles measures 138 feet by 62 feet in whith, and is 59 feet to the top of the open timber roof. It is in the early Gothic style of Northern Italy, built with travertine bands, —a style in which all who have read Mr. Street's work on the Gothic of Northern Italy will acknowledge him a master. From the apse itself, 20 feet deep, a choir projects 22 feet into the nave, and at its corners are two beauchoir projects 22 feet into the name, and at its corners are two beautiful authories with colored marble coloracties, in the style of those of the twelfth century. The fine marbles, so common in Rome, are termed to the best account, and the effect will be extremely rich when the conque of the apse is filled with the projected blazoury of musaics. Some capitals and other corving are onfinished, awaiting funds. The stained glass shows the best work of Clayton and Bell. A full peal of chimes has been given and is about to be lung in the tower, which, in spite of Rome's three hundred and sixty-five churches, adds a conspicuous and beautiful feature to the city. Its design was answered by the cruested ainth century campanile of Sta, Indenziana. suggested by the graveful ofath century campanile of Sta. Padenziana, and it rises directly from one side of the nave gable towards the street. Although it is to be regretted that so encoessful an American monu-ment should not have been designed by a countryman, all who are familiar with its history know that no small share of its success is due to the intelligent energy of its rector, the Rev. R. J. Nevin, D. D., who, as Mr. Street could pay but three or four flying visits to Remo during its erection, ably presided over everything which was done; and though a Swiss archbishop regulated the accounts of the contractor, and was clerk of the works. Dr. Nevin really had the chief responsibility, and decided many of the difficult questions.

R.

THE CHICAGO ACADEMY OF DESIGN - LECTURES ON ARCHITECT-URB - THE EXPOSITION.

Emeaun, October.

Tun Chicago Academy of Design, an organization ten years old or so, which has passed through many trying periods and numeror so, when has passed through many trying periods and mater-ons reorganizations, has recently added a course in architecture to the art studies pursued in its schools. This is one of the results of the last reorganization, which took place during the spring of the present year, infusing a new life into its torpid and neglected body. The academy, whike that of New York, is a mixed body of artists and anothers. It has been found that the artists here are as set tonweak to maintain an organization of their own. It differs also from that referred to, in that it is smalled to afford free instruction in art. But, with small fees for unition, its classes in all departments are well filled, and the students are enthusiastic.

For the present unthing further than a course of lectures in the architectural department will be attempted. The lecturer for this season is Mr. W. L. E. Jenney, practising architect, of this city. The lecturer will be free to students in the other departments, and will be open to the public for the moderate fee of our dollar for the course of five lectures, and twenty-five rents for single admissions. The first lecture will be delivered on October 3 at the rooms of the

academy, corner of State and Mooroe Streets.

The announcement says that "the subject of the lectures will be the history of the different styles of architecture that have arisen, flourished, and passed away, from the earliest period of which we have any knowledge, — the savage tribes, Egypt, Assyria, Greece, Rome, and the Middle Ages. — A knowledge of the architecture of a country at any speed is a knowledge of the people, of the religion, and of the government of that country at that open, and is of interest to the traveller, to the student of history, and to all persons of liberal education, as well as to those practising architecture as a profession. It is to those classes that these lectures are directed, and the lecturer promises to avoid technicalities and the dry details of construction, and will illustrate as far as possible with oft hand construction, and will illustrate, as far as possible, with off-hand erayon sketches.

ayen sketches.

The following is a list of the subjects to be treated:

I. October 3. The Savage Tribes and Egypt.

II. October 10. Assyria and Judea.

III. October 17. Greece and Rome.

IV. October 24. Mediaval Period — France.

V. October 34. Mediaval Period — England.

Each annual subscriber and life-member of the academy will re-

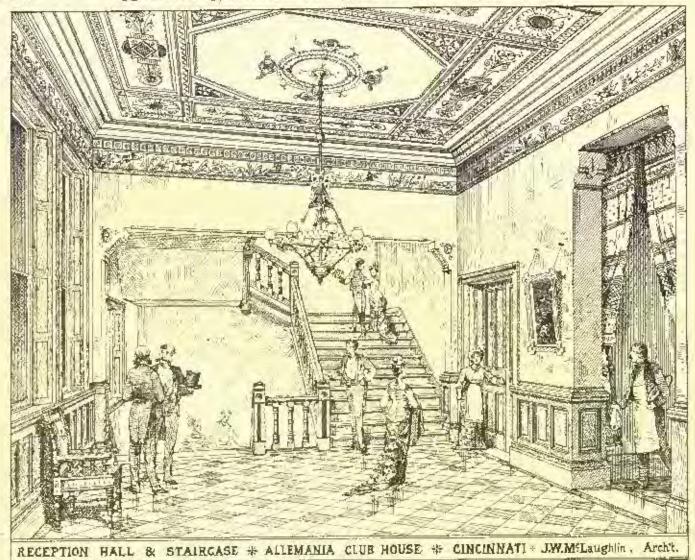
erive two tickets to the course.

It is also announced that upon the conclusion of these lectures, Thursday, November 7, an additional evening will be given to the architecture of Paris, to be illustrated by stereoptican risws. Following Mr. Jenney's course other lectures on the fine arts are

promised.

The annual later-State Exposition is now open in this city. The fine art exhibition is always an attractive feature of these annual displays of industry and art. The art galleries are in a separate

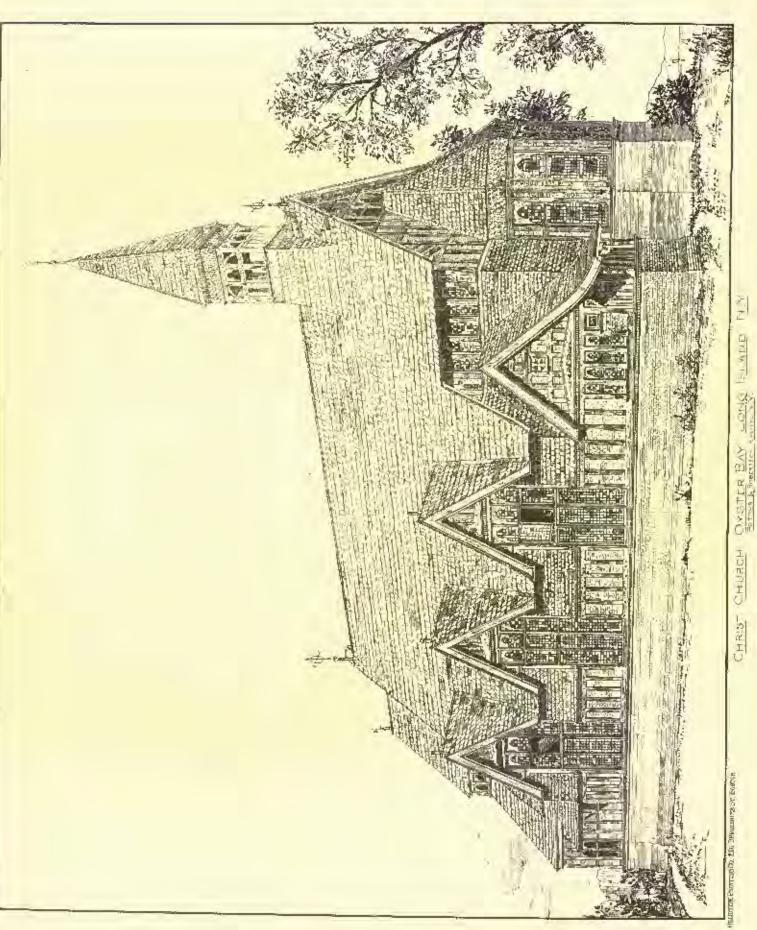


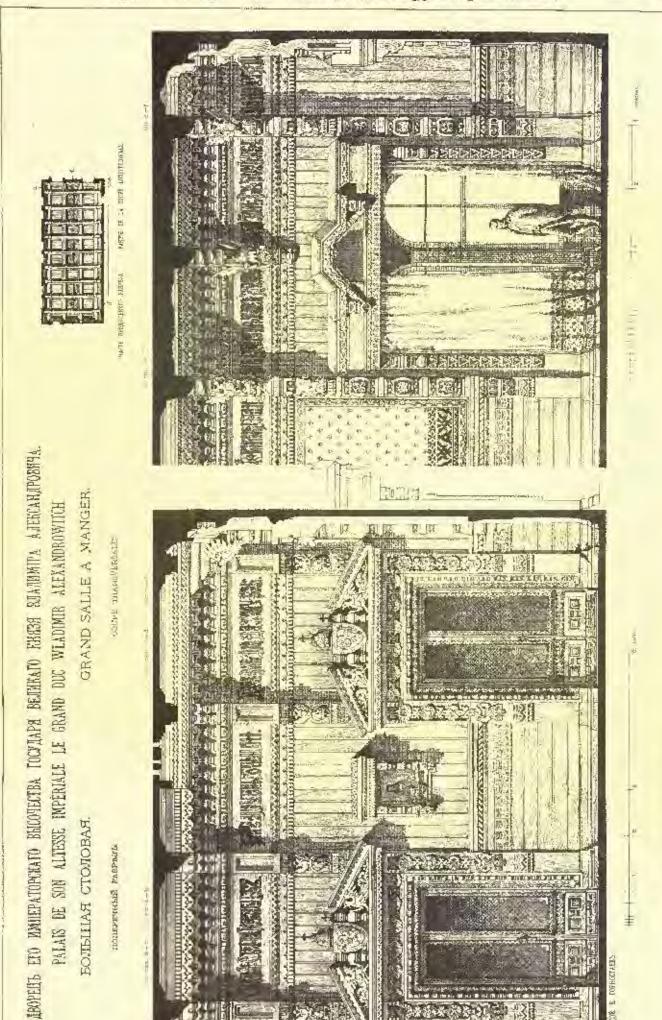




THE BEAUTIES PHOTOS (Co. AND DECEMBERS SE DESIGN

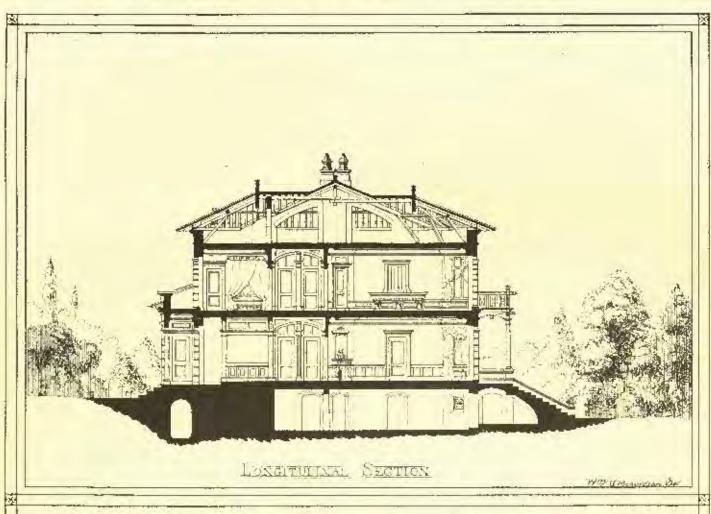






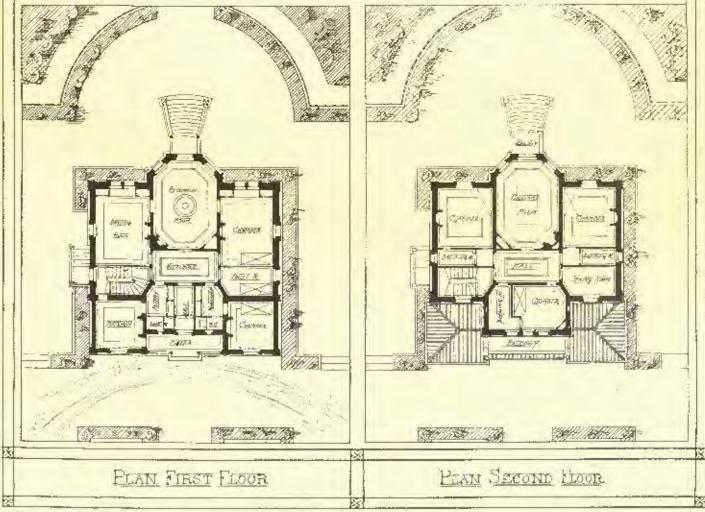
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HOUSE-AT-CHATEAU-LANDON FRANCE

E. LETANG-ARCHT, BOSTON



THE HALLTON PROVIDED. LEC DESCRIPT WE SHOULD



building, which might be called an "annex," to follow the present fashion in nomenclature. There are six rooms, which together equal in capacity the galleries of the Academy of Design in New York. One room contains paintings by local artists, and water-colors York. One room contains paintings by local artists, and water-colors mostly sent by Eastern artists. The second room contains a loan collection of paintings, and is probably the best exhibit ever made in this city. The best contemporaneous French artists and a few of the best Americans are represented. It can safely be said that there is not a bad picture in the room. Most prominent is Cabanel's "Phedra and (Enone," loaned by L. Z. Leiter, of this city. This is the first Cabanel, other than a few portraits, that has been exhibited in Chicago. The Exposition Company has recently purchased a very full collection of custs of well-known pieces of ancient sculpture, including some Assyrian bas-reliefs. It also has some examples of Renaissance carving. These fill two rooms. The Parthenen sculptures are admirably placed. Representative pediments have been constructed to show the position occupied by the originals, and the trieze bas-reliefs may be seen consecutively and in good light. As a popular educator this collection is of incalculable good light. As a popular educator this collection is of incatentable value, as it is seen by an average of ten thousand people daily. In one room is an exhibition of artistic photography. The pictures are all treated as works of art, hung by the committee and catalogued. No photographers' signs or advertisements are allowed.

The exhibit of Chicago's art manufacturers is not so good or extensive as in former years. The exhibits of artistic carpets, curtains, and tapestries by Field, Leiter & Co. are remarkable. These are mainly importations. Many duplicates of the finest contributions of the Glasgow looms to the Paris Exposition may be seen, and

among them is a set of the Whistler curtains of peacock pattern.

The Minton tile exhibition of Charles L. Page is an attractive and

artistic contribution, and in modern are pottery Burley and Tyrrell show some of the finest pieces that have been produced.

The interest of the masses of the people in matures of art is evinced by the fact that most of the visitors to the exhibition go circolly to the art rooms on entering. The rooms are crowded from morning to night, so that at times it is impossible to gain admission to them.

THE ILLUSTRATIONS.

CHURCH AT OYSTER RAY, L. D. MESSES. POTTER & ROBERTSON, AUCHITECTS.

DINING HALL IN THE PADACE OF THE GRAND DUNE, WEADI-MIR ALENANDROWTH II.

This illustration, a very characteristic example of interior finishing in the Russian style, is capital from the Russian building journal, the Zadreby.

HOUSE AT CHATEAU-LANDON. MR. E. LETANG, ARCHITECT,

The villa was erveted some four years ago at Chancau-Landon, near Paris, at a cost of about up thousand dallars (\$10,000). The garden front looks towards extensive vineyards, and beyond and about a hundred feet below upon a very prefty little stream. There are many trees upon the place, and a fine growth of shrubbery. The materials of construction are brick for angle quoins, a light brown stone for cornices and besement, with plaster filled in herween. The flaors are of iron construction, deafoned by means of plaster filling. Partitions of brick, having arches spring from them to stiffen chimneys, bely to support the roof.

RECEPTION WALL AND STAIRCASE IN THE ALLEMANIA CLUB HOUSE, CINCINNATI, MR. J. W. D'ACCULLE, ACCUSTECT.

We printed last week a perspective exterior of this club house, with a short description.

THE RATING OF DUILDINGS.

Among the natural results of the present state of the husiness community is a large increase in the number of buildings that are subjected to a change of use. This is especially the case with buildings put up as manufactories, and for trade purposes. Dwelling-houses, as a class, seldom change their purpose, but with buildings put up for business uses the asse is different. When the occupants of such a building change, the next use of that building will probably change also to whatever business it is supposed will pay, or happens to be seeking a domicile. The result is an unusually large number of eases where the building is not futed for its present use. These things were illustrated with emphasis by an accident in New York, not long ago, whereby one man lost his life, and others were more or less injured. In this case the building was originally put up for and used as a machine shop, for light work, the making of sewing machines. It was of brick with iron columns, and the floors were brick arches on iron heams; the whole only about twenty years were brick arches on from hearis; the whole only about twenty years old, and, if kept to its normal use, apparently good for another score. But in its original use the weight was naturally heaviest on the lowest floors; there would be the heaviest machinery, and there the heaviest accumulations of stock. Even there the weight upon any one square yard of floor would seldom amount to one half of a ton, and never average that over eight or ten configuous square yards; while in the upper stories a load of six bundled part would probably be the maximum upon any one source yard, and less would probably be the maximum upon any one source yard, and less would probably be the maximum upon any one square yard, and less than half that an average load. But the sewing machine company grew, and, leaving their building as the soldier crab does his shell,

moved to more commodious quarters, and a cabinet maker occupied the building. Of course a building strong enough for a machine shop and iron work was expected to be strong enough for cabinet making and light wood work; but what was the fact?

The necident was a break in the sixth floor, this floor was con-

structed of brick arches upon itso beams; these beams were about hive feet from centres, and rested upon girders stateen feet from centres; the girders rested upon the cap of columns twenty feet from centres, and were secured to the heads of the columns by bults passing through lugs on each side of the web of the girder, through which the holts also passed; there were three or four of these holts about seven eightles of an inch in diameter at each and of the girder, and it is to be noted that when the girder fell the lags upon the head of the columns and the boles stood, tearing out the web of the girder like pie-crust. The girder which broke was of cast iron, with wrought tie; the east iron was in form like a plain I-beam sixteen inches deep, six inches across the top flanges, three inches across the bottom flanges. At each end of the girder, and upon its lower flange, were lugs, forming sockets for the two inch wrought iron tie-rod. The upper member of this girder had about ten square inches of cross section, this was under compression; the lower part of the east iron had about seven square inches of cross section which was practically useless, as being about the neutral axis; while the real lower churd, the tie-rod, had about three square inches of section, which was numer leasion. Upon this girder rested the weight of three hundred and twenty square feet, or about thirty-five square yards, of the floor mentioned, with whatever lead neight be placed upon it, or hung under it.

This girder should have an ultimate supporting strength of about eighteen tons, and the tie-rod would be the weakest point. Out of this eighteen tons should be taken the weight of the thor, including this eighteen tons should be taken the weight of the hose, including the girder itself, in all about seven thus, having less than twelve tons as the carrying capacity of the floor; and this reduced by a factor of safety of two! would leave only six tons as a reasonable load on the thirty-five yards of floor, or aliont three hundred and lifty pounds per square yard, equal to forty pounds per square font. This is suppossquare yard, equal to forty pounds per square font. This is suppos-ing the fie-rod to be, as it would with material of uniform quality, the weakest point; and the fact that breakage actually occurred by the crushing and crumbling of the upper member, while the tie-roll was uninjured, only shows that the quality of the cast fron was helow the average; in fact, a soft metal, as was remarked upon the spot, better fit for sewing-machines than for building purposes. But it is seen that in no case would this floor be safe for more than forty pounds per square foot. It was loaded with stock. How much cannot now be proven; bur, indefing from the rest of that floor, as well as the rest of the building, it is fair to say that it was a common thing to pile bureau backs or drawer bottoms in close-packed piles six feet high, which would weigh near one hundred and eighty pounds per foct; and black-walnut stock was piled on these upper floors in close packs six and seven feet high, by eight or more wide, by twelve to twenty feet long count to three hundred manner one to a twenty. twenty feet long, equal to three hundred pounds per foot or twentyseven lundred pounds per yard, showing that the furniture-maker needed in his upper hoors three or four times the strength that the sewing-machine company required in their lower ones. In the above case some of the flours, as, for instance, the one im-mediately below the falling girder, were of stronger build; besides, at that particular point this next floor was not so heavily overloaded,

being occupied by the cabinet-makers' benches and men at work. Had the same break occurred at some points a few feet from there, it would probably have gone on to the cellur.

This is an example of the changes and risks often incurred in the

uses of a building, even if supposed to be strong enough for a manufactory under the building law.

This matter of change seems to need some more competent super-vision than the guess-work of the ordinary mechanic; something more marrly skin to the maritime rules, where a ship is inspected when marty akin to the martime rules, where a ship is inspected with built, and classed for a certain number of years in one grade, and then again inspected and rated for the next term in such grade as she seems fit for. And the class of earge permitted in each grade is specified; thus, a ship built for earrying heavy blocks of marble from Italy, while she holds that rating, may take almost any freight, but after that will be rated for light and dry freights, and still later for only lumber and non-perishable matters; while one built for light freight and passenger service will not be insured at all, mar, in fact, affected to serve workle blocks on a rate disciple in large counties. allowed to carry marble blocks, nor even pig-iron in large quantity, without especial inspection. In these cases the matter is not left to the judgment of the captain; but the ship's rating is expressed upon her papers and in the published list, to be seen and read of all men. Something similar seems to be needed in regard to buildings. Suppose that a commission of competent architects were created, whose duty, like Lieyds' inspectars, should be to rate the building for a given term of years and for a given service, with regular inspection and rating at the end of the term, and who should be made aware of all changes in the building during the term, and have power to change the rating accordingly. Let the rating show the maximum load to be permitted on each floor, and the number of years it should be permitted; and then make the manupant who overloads his floor responsible for all damages, including a decidand for personal injury resulting therefrom, and the result would be well for all. It may be thought that this would be an infringement of the rights of

owners; but public safety overrides private rights. Nor are ship-owners derirous to evade the Lloyds' rule. Until every man is com-persat to judge the strength of a hulding in all its parts, and until every man has sense enough to calculate the weight of his material and tools, some one who has this judgment and shility should be employed; and if the individual will not employ them, the public

It may be said that the ship carries the property of various parties who cannot be expected to examine and judge for themselves, and who, without the authorized rating, would be at the mercy of any captain either ignorant or unprincipled enough to take the advantage of them, and thus much property would be lost. But in regard to the manufactories, they are at this moment filled with men, women, and children who are at the mercy of ignorant and unprincipled employers; and the comparison lies fairly between the importance of saving property and of saving boman life.

Vivaetiaz.

FRENCH PAINTING OF TO-DAY.

We translate from L'Artiste parts of a long notice of paintings at the Exhibition, which gives a lively sense of some of the French artists' present tendencies:

Muc. Murie Collart has a third medal. This is honorable for those who have a record. I have no besitation in declaring that men of who have a recond. I have no hesitation in declaring that men of feeling will take pleasure in looking at Mme. Collart's orchards whom some of the medalled pictures of the Exhibition of 1878 are no longer valual except as emissitios. Very curious, in truth, is the machinery of Mesers. Mackart, Matejko, Padilla, Siemiradski. But all their art goes into their stage properties. No one personage in these huge envises has ever found hisself face to face with life, has ever loved or felt an impulse of emotion. I have nothing in common with this artilizal hometuity which does not speed to be hometon and life. this arthual homeonty which does not speak my language and lives in a world which is not nine. It is written in an archeological jargon, diffuse and pedantic, which has no more possible relation to the tenth of any epoch than the archaism of Alma Tutema. Thanks to this accommodating tendency, printing is sliding farther and farther down the declivity of dead things, substituting for the true and just representation of man, and the medium in which he lives, the findings of unwholesome exhauntions, —cosmisses, furniture, and gimeracks. Hence a harlegain art, which includes only an active and admit minority, well skilled in handling the wardrone of the ancients, and whose great eleverness consists in only painting enigmas of which no

whose great cheverness consists in only painting engines of which no one can get hold. Pure charlamaney.

But the great subject of art in all well-balanced periods is man. He fills the whole breazible of the stage with his aspirations and his pains. Yet I look in rain for this carrial manhood in the work of most contemporary artists. I find, it is true, a certain special manufacture, substantially abstract and conventional, which has an anatominstruction to be successful and the sum of the sum of

Here is an actual occurrence: A worthy tradesman one day bor-rowed my catalogue of the Solon. He, too, wanted to get an idea of the condition of the arts. He went back and forth half a day in the Sulon. He was interested chiefly in the great mechanisms. Historical painting attracted him predigiously, and, naturally, before each great

painting attracted him predigiously, and, naturally, before each great carvas be opened his book and read the title.

No. 928. This represented a personage in a pit, under a red and black effect of light. The man had a great beard, and litted his eyes to heaven with an expression of cestasy. The worthy man read in his book, St. Lagrence the Martyr. "Ah," said he, "if's before he was rossted." He stepped up to the picture and looked long at the face of the Saint, and said: "After all, it must have been afterwards, or else while it was doing."

He passed to No. 1058. On a had in confusion was stretched out the half-nude body of a young woman. A certain stiffness characterized her limbs, and her eyes were fast closed. It suggested a person in catalepsy. A torch three red gleams upon the bed and person in catalepsy. A torch three red gleans upon the bed and reddened the paleness of the flesh next it. The tradesman read, The Death of Catherine de Medici. He gave a start. "What?" said he, "did she die with so little clothes on as that? A queen, too!" And after a moment's reflection he added, "Perhaps they are going to lay her om." He stopped before No. 311, and saw a gray-halred man holding his head between his hands. He seemed boried in the reading of a follo which was spread upon the table. gray-haliced man holding his head between his hands. He seemed boried in the reading of a follo which was spread upon the table. The man was shown in full face. His eyebrows were contracted, his expression intensee and tragic. My friend read, The Last Day of a Condensed Pelon. He was greatly moved. How real that was; he rould imagine himself in the sufferer's place. Doubtless he was seeking a last consolation in the reading of the gospel.

A little farther he saw some pricess standing up, their arms raised before an altar. One of them, who were a mitre, was stretching out his hands toward a min and woman that lay prostrate, their faces in the dust. He opened his catalogue, not understanding, and read.

The Nuplial Eccellation.

"Exactly," he exclaimed; "they are great personages; the pope

is marrying them; but what the devil do the prices and choir hold up their arms for? However, I suppose it's part of the ceremony." And he went away, convinced and content.

"Unlackity," said I to him when he brought me the book, " you made a mistake. This carafogue"—

"Well, what?"

"Is last year's," and I put into his hands the catalogue which be ought to have taken.

He shook his head. "It is impossible," said be. "The pictures

he ought to have taken.

He shook his head. "It is impossible," said be. "The pictures correspond exactly to the titles in the entalogue."

He turned over the pages and fell upon No. 928. He read, The Miner's Prayer. He started. "What I this monk, this St. Lawrouce, a miner?"

No. 1056, which he had taken for The Death of Catherine de Medici, had for its title The Sleep of Innocence. That which he had taken for The Last Day et a Condenned Felon was A Philosopher sludying a Problem. Finally, The Nuptial Benediction was called in the catalogue An Anathema.

The good man was overwhelmed. I said to him, "You are experiencing the art of our day. The subject is no matter what. It is for the catalogue to tell you what you are to see and understand. You think you see a corpse. Not at all; it is a sleeping woman. A philosopher wears the head of a criminal; a pape enrising resembles a pope blessing, and so on. This comes from the fact that there is a limited number of enventional forms which are the general property of artists. They belong to everybody and serve all purposes. They are like the lasts of the village shoemaker."

AERIAL ECHOES!

BY PROF. JOSEPH HENRY.

BY PROF. JOSEPH HENRY.

Discover the year 1877, and also in 1876, a series of experiments was made on the aerial cobo, in which I was assisted in the litsal series by General Woodruff, engineer of the third lighthouse discrete, and in the second series by Edward Woodruff, assistant engineer of the rank district. These experiments were made principally at Block Island, but also at Little Gull Island. Especial attention has been given to this phenomenon, which consists in a distinct echo from the verge of the horizon in the direction of the prolongation of the axis of the trumpet of the siten, bucause the study of it has been considered to offer the cashest access to the solution of the question as to the case of all the appropriate phenomena of sound, and also

considered to offer the casis access to the solution of the question as to the cause of all the abnormal phenomena of sound, and also because it is in itself an object of much scientific interest.

In my previous notice of this phenomenon, in the report of the Lighthouse Board for 1874, I suggested that it might be due to the reflection from the crests of the waves of the occan; but as the phenomenon has been observed during all conditions of the surface of the water, this explanation is not tenable.

Another hypothesis has been suggested, that it is due to a floculent condition of the atmosphere, or to an accoustic invisible clottl, of a density in different parts differing from that of the general atmosphere at the time. To test this hypothesis experimentally the large trumpet of the siren was gradually clevated from its usual horizontal position to a vertical one. In conception, this experiment appears very simple, but, on account of the great weight of ment appears very simple, but, on account of the great weight of the trumper, it required the labor of several men for two days to the trumper, it required the labor of several men for two days to complete the arrangements necessary to the desired end. The trumpet, in its vertical position, was sounded at intervals for two days, but in no instant was an echo heard from the zenitk, but one was in every case produced from the cutire horizon. The echo appeared to be somewhat louder from the land partion of the circle of the horizon than from that of the water. On restoring the trumpet to its horizontal position, the echo gradually increased on the side of the water, until the horizontal position was reached, when the echo, as usual, appeared to proceed from an angle of about twenty degrees of the horizon, the middle of which was in the prolongation of the axis of the trumpet. A similar experiment was made with one of axis of the transper. A similar experiment was made with one of the trumpets of the two sirens at Little Gull Island. In this case the trumpet was sounded in a vertical position every day for a week with the same result. On one occasion it happened that a small cloud passed directly over the island on which the lighthouse is erected, and threw down on it a few drops of rain. At the moment of the passage of this cloud the trumpet was sounded, but no ccho was produced.

From these experiments it is evident that the phenomenon is in some way connected with the horizon, and that during the conlinu-ance of the experiment of sounding the trumpers while directed toward the zenith, no accoustic cloud capable of producing reflection

of sound existed in the atmosphere above them.

Another method of investigating this planemenon occurred to me, which consisted in observing the effects produced on the ears of the observer by approaching the origin of the echo. For this purpose, during the sounding at the usual interval of twenty secunds of the large trumpet at Block Island, observations were made from a steamer, which proceeded from the station into the region of the echo, and in the line of the prolungation of the axis of the trumpet, with the following results: with the following results:

As the steamer advanced, and the distance from the trumpet was increased, the loudness of the echo diminished, contrary to the effect of an echo from a plane surface, since in the latter case the

¹ From the Report of the Jaghthouse Board, 1977.

scho would have increased in londness as the reflecting surface was approached, because the whole distance traveled by the sound-wave and from the reflector would have been lessened. however, is in accordance with the supposition that the coho is a multiple sound, the several parts of which proceed from different points at different distances of the space in front of the trumper, and that is the and that as the steamer advances toward the verge of the horizon, it leaves behind it a number of the points from which the louder ones proceed, and thus the effect upon the ear is diminished as the distance from the trumpet is increased.

3. The duration of the ceho was manifestly increased, in one instance, from five seconds, as heard at the mouth of the trumpet, to

twenty seconds.

This would also indicate that the celo is a multiple reaction of varying intensities from different points, and that at the place of the steamer the fainter ones from a greater distance would be heard, which would be inaudible near the trumpet.

S. The arc of the horizon from which the cebo appeared to come was also increased, in some cases, to more than there times that subtended by the cohe at the place of the trumper. This fact again indicates that the role consists of multiple sounds from various points at or near the surface of the sea, the angle which the aggregate of these points subtend necessarily becoming greater as the

steamer intrances.

But perhaps the most important lacts in regard to the cello are those derived from the series of observations made in regard to it by Mr. Henry W. Clark, the intelligent keeper of the principal lighthouse station on Block Island, and by Joseph Whaley, keeper of the Point Judith Lighthouse. Mr. Clark was furnished with a time-maker to observe the duration of the velto, and both were directed to sound the trumpers every Monday norming for half and hour, noting the temperature, the height of the barometer, the state of the weather as to clearness or log, the direction and intensity of the wind, and the surface of the ocean. But perhaps the most important lacts in regard to the cello are

the wind, and the surface of the occan.

From the observations made at these two points, for more than two years at one station and over a year at the other, the columnsy be emsidered as produced constantly under all conditions of weather, even during dense logs, since at Block Island it was heard 106 times out of 113, and at Point Judith 50 times out of 57, and on the occasions when it was not heard the wind was blowing a gale, making a noise sufficiently intense to drown the sound of the celus. results appear to be sufficient to disprove the hypothesis that the phenomenon is produced by an accoustic closel accidentally situated in the prolongation of the axis of the trumpet. It must be due to something more permanent in its effects then that from a purifon of air differing from that of the general atmosphere in temperature or density, since such a consistent cannot exist in a dense fog embracing all the region of the heality of the phenomenon. Indeed, it is diffi-cult to conceive how the results can be produced, even in a single instance, from a florenient portion of atmosphere in the prolongation of the axis of the trumpet, since a series of patches of clouds of different temperature and densities would tend to absorb or still by

ent temperature and densities would tend to absorb or stille by repeated reflections a round coming from their interior, rather than to transmir it to the car of the observer.

The question, therefore, ramains to be answered: What is the cause of the aerial echo? As I have stated, it must in some way he connected with the horizon. The only explanation which suggests itself to me at present is, that the spread of the sound which falls the whole atmosphere from the results to the landers with whole atmosphere from the zenith to the horizon with sound-waves may continue their corviliusar direction until they strike the surface of the water at such an angle and direction as to be reflected back to the ear of the observer. In this case the cebo would be heard from a perfectly flat surface of water, and as different sound rays would reach the water at different distances and from different azimuths, they would produce the prolonged character of the scho and

its angular extent along the horizon.

While we do not advance this hypothesis as a final solution of the question, we shall provisionally adopt it as a means of suggesting further experiments in regard to this perplexing question at another 8413.5OB.

BURIALS AT ANCIENT ROME.

THERE were buried clubs at Rome at an early time, and the Christions availed themselves of the same means to bury their dead as their pagan predecessors; the transition was gradual, and in some cases there are pagen surcephagi and inscriptions still remaining in the Christian Catacombs. There is no need of the theory that they the Christian Catacombs. There is no need of the theory that were merely carried there as old marble, to be used again. subsoil of the Campagna consists of successive layers of tufa of different degrees of leadness. Roads had been made in the beds of softer materials to get out sand, and these subterranean roads formed convenient modes of access to the Catacombs, which were generally made in the harder had of tufa under that level. The churches outside the walls, grand busiliess as some of them now are, were originally chapels at the entrances of the Catacombs, of which Sr. Agus is the best example. The Catacombs are not under Rome itself, but two or three miles frum it. In an appear aity no one was allowed, except in very rare cases, to be huried within the walls, a wise practice to which we are returning. The paintings of the second and third centuries are quite simple; e.g., the cultivation

of the vine in the Catscomb of Predoxtatus; of the four seasons in of the vibe in the Calacomb of Fracturatins; of the four seasons in that of S. Nereus. There are no religious subjects before the time of Constantine: the carliest are those of the Good Shepherd and certain well-known Scriptural types. The history of Jonah is common in the fifth century; figures of saints or martyrs appear in the sixth century, and are common in the eighth. The inscriptions are the earliest and most gonnine things left; few of the dated ones are before the third contury; the larger proportion are of the fourth and fifth, with a few of the sixth and even later, for the family borialplaces continued to be in use as long as they were accessible. fortunately, must of the inscriptions have been removed to the museums or monasteries, and sometimes there is no record to say from what place they came. A picture in Dr. Northcote's "Visit," page 3, gives a good idea of the subterranean gallecies. They are about eight feet high and three wide, and their walls on either side are pierced with a number of horizontal shelves, one above the other, like the shelves of a bookease. Each shelf once contained a dead body, and thoy had been shut up by long tiles or slabs or murble, securely fastened by cement, and inscribed perhaps with the name of the deceased or with some Christian sudden. In page 5 there is a plan of the tally right of lines in part of the Catacomb of St. Agnes. plan of the ally ruth of lines in part of the Catacomb of St. Agnes. In St. Callistus, on the Via Appia, we can descend by a succession of staircases to five different galleries of these lanes, the fifth being only just above the level to which water rises. Many of the original entacombs were family burying-places secured under the Koman law which allowed tombs and burial-places to be exempted from the roles of succession: "heredem non sequitor" was the principle in such cases. Hence, when a family became Christian, it could easily many heavily along a star of the desire. open its burist place to other Christians, "ad religionem pertinentes meam" (Northcote, p. 19). The finest inscriptions belong to the time of Pope Damasus, the contemporary of St. Jerome: they are exquisitely engraved in marble. The fatal year 410, in which Alarie took Rome, brought the original use of the Catacomba in great measure. are to an end. Speaking generally, they censed to be places of burial, and were thenceforth mainly places of pilgrisage, and were irrestored "for that purpose. Vigilius, in 550, restored some of Pannasus' inscriptions which had been broken; but art had perished and the workmen were unskilful and ignorant. The inscriptions are perhaps the most valuable of the remains. The paintings of the age of Remain art, when "the walls of apartments was concord with agalastics and the reference of the first ways concord with agalastics and the reference of the first ways concord with agalastics, and the reference of the first ways concord with agalastics, and the reference of the first ways concord with agalastics, and the reference of the first state. were covered with anabesques, and the ruots were often in the form of arbors hung with garlands, interspered with fluttering winged forms." Dr. Northeute gives two of the Christain paintings on the Dr. Northcute gives two of the Christain paintings on the reed of St. Domitilla and that of Frederiches (pp. 67, 68). As Roman art perishes, the paintings become stiff and had. But the inscriptions are not dependent for their permanent value on the state. of gal ; it is their meaning that is important. De Rossi has studied more than filteen thousand Christian inscriptions that have come flown to us from the first six continues, but this only represents a part of what once existed. Alaric and Attila may be responsible for part of the loss, but friends are more destructive than enemies, and the murble tombstones were used largely from the eleventh to the fifteenth century, not only in Rome, but even in distant places, for the payment of churches. Tombstones are perishing among curselves every year by the hundred; the restorations going on are most selves every year by the hundred; the restorations going on are most destructive, and a copy of the inscriptions is hardly over taken. We can see by Weever and others who made collections of inscriptions how many of our tombs have perished within the last century or so. The Greek language is common in the carliest inscriptions of the Catacombs, the primitive Roma Church being composed mainly of Greeks and Hellenizing Jews. The Christian literature of early Rome is almost wholly Greek, and the Latin Christian literature comes from Africa. About fifteen hundred of the inscriptions are dated. There is but one dated inscription of the first century, two of the second, two dozen of the third, about five hundred of the fourth and fifth; the rest belong to the sixth. But of the undated inscriptions it is probable that a considerable number belong to the inscriptions it is probable that a considerable number belong to the second and third centuries. Each age has its fashion in the wording of such inscriptions, each country its peculiarity. De Rossi's long experience has enabled him to lay down rules on this subject, which are even more necessary than in the case of pagen inscriptions. The three names are not recorded in the old Roman fashion after the third century; even the mention of two names becomes rare; now Christian names some in, such as Adeodatus, Quodyuladeus, and so on, which almost remind us of the Paritan style. — The Academy.

AMERICAN INSTITUTE OF ARCHITECTS.

NEW YORK CHAPTER.

The first meeting of the season of 1879-1879 was held on the let justant, President R. G. Haufield in the chair. The reports of the officers were received and filed; on the election for the caming official the rearrange of the residents of the resident; R. M. Littell and G. B. Post, vice-presidents; A. J. Bloor, sucretary; and Henry Fernbach, treasurer. The standing committees on admissions, on library and publication, on education, and on examinations, were reslected. Messrs. Littell, Bloor, and Le Brun were appointed a complete of the resident of the Richard Little of the mittee to report suitable action on the death of Mr. Richard Upjohn, at the next meeting of the Chapter. Mr. Robertson, of Potter & Robertson, was appointed to represent the Chapter, and act in connection with Mr. Cady of the Board of Trustees of the Institute, in preparing for the Twelfth Annual Convention, to be held in New York, and to open on Wednesday, November 18.

NOTES AND CLIPPINGS.

TREMCHES IN STREETS. - The Commissioner of Public Works in New

The rough condition of most of our streets is due in a great measure to the many excavations made by plumbers, builders, and gas companies, for the purpose of connecting houses with sewers, water-pipes, and gas-pipes, the pavements over which are not properly replaced. These excavations in the three leaded and twenty-eight miles of paved streets are so immerous that the Department finds it impossible, with its small force of inspectors, to watch each one, and compet a countience with the ordinances and regulations, which vagnifer that the trench be illed with earth or sand in layers not more than six inches thirk, compactly cannot, and the pavement perfectly relaid, and kept in good condition for six months.

All persons are therefore requested to report to the Department every case of failure to comply with these requirements which may come to their mores, giving the location and, it possible, the nature of the excavation and the mands of the offending parties. This will greatly aid the effects of the Department to improve the condition of the pavements, and will confer a public benefit.

Commissioner of Public Works. The rough condition of most of our streets is due in a great measure to

Morocco at the Exposition. — The court of Morocco at the Paris Exposition has an indescribable air of romance about it. It is bring with must and searts of gay, were colors, and displays an colless earley of attractive kafek-kmarks, delicately embroidered side herebiels, eight and eigenrate cases and holders, brilliantly illuminated bracelets and necklaces made of an aromatic composition, factuatically embroidered slippers, delicate pastilles, and an admissing variety of gilt and timed bracelets eath branches. Everything seems to send forth the most delicious ofor. The air is heavy with Eastern perfumes and spices. Office wood sonventrs in the shape of cases, paper enters, paper weights, and sleeve buttons are spread temperingly below you. Strange-looking musical instruments, was transpose, balalants in very pramitive sort of pinnot, spears, gans, and queer-looking dirks and battle-axes appear. Then the tall, handsome Moors, with "hippidities of a languishing manners, looking like the stage Othellos in their phenoscopic red tarboneless and flowing many-spherel rubes, standing in the tont and around the court, add greatly to the romantic scene. Morocco at the Exposition. - The court of Morocco at the Paris

Barrish Sciences of Aur. — The progress of altracentry instruction is art in the British schools is indicated by a late report. The total number of persons taught drawing, painting, and modelling through the agency of the art and science department was, in 1875, 443,689; in 1876, 530,412; and last year, 610,620. The number of students ranght in art classes was 20,579; and 549,040 children were raught drawing in elementary day schools, against 460,361 in 1876. During the period of 1873-77 the number of institutions in which instruction is given in drawing or in higher art, with the aid of the department and subject to its inspection, has nearly doubled. The number of persons tought and of exercises and works examined has more than durished during the same period; while the ratal amount of the aid given by the department in the form of payments in the results of this instruction, as tested by examinations, has resen from £31,-918, in 1873, to \$49,360, in 1877, or acady sint per earl. The lectures delicered in the Lecture Theatro of the South Kensington Mayema were attended by \$4,227 persons; and 472 science tachers attended the special course of lectures provided for their instruction in the new science schools at South Kensington. The various scurses at heatures delicered in connection with the department in Dublin were attended by shout 4,500 persons. The total number of persons, therefore, who received direct instruction as students, or by means of hectures in connection with the serious and number of persons, therefore, who received direct instruction as students, or by means of hectures in connection with the serious at the art and educational libraries at South Kensington continues to increase. Kensington continues to increase.

Manufacture of Ralleone Ison. — The Director of the Bureau of Statistics furnishes the following: During the last four years we have been building railroads at the rate of 2224 miles per year. The importation of railroad bars, both iron and steel, felt from 595,321 tons in 1877; but the production of iron and steel bars in the United States increased from 2,953,441 tons during the five years from 1867 to 1871 to 4,056,340 tons during the five years from 1867 to 1871 to 4,056,340 tons during the five years from 1878 to 1877, an increase of 37 per cent. The supply of iron and steel railroad bars necessary to meet the demend of our seventy-sine thousand miles of softmad already in operation, for renewals of track and for the extension of stack facilities, in order to meet the necessary requirements of staffle, is now about three times as large as the supply requirements of staffle, is now about three times as large as the supply required for track-laying on new roads. This production of lars to supply radicouls in operation has, in fact, mailely sustained the iron and steel rail interests of the country in their present state of efficiency. of efficiency.

Tosterrise Square, New York. — The work of altering the Tompkins Square Parade Ground into a tawn and about park has been commended. Three gauges of workness, of twenty-five each, are now removing the toam and top dressing from the trench formerly used as a relicult, which is situated in the southeast power of the park. The loam is being taken out and will be used as a sub-soit in hydrog out the tawns in the centre of the park, which is now covered with solid concrete. The mound on the southwest side, formerly used by the regiments as a fort, is to be removed, and the earth and grass which now cover the top and sides will be utilized in filling and levelling the redoubts, etc.

Frence somewhat like the English factory aris, under the provisions of which no children under evelve years of age can be employed in mills and workshops. This law, however, is not very efficiently administered, and is, indeed, little bested by the manufacturers. The hours of labor in Eagland are 565 per week, against 72 in France. The French manufacturers thus have an advantage of 274 per cent, without reckning the benefit they gain owing to holidars being best aumenous in France, and from Bunday work. The wages of the work people cuployed in the woollen manufactories in France are on the average at least 25 per cent lower than shear paid in the United Kingdoom. It will thus be seen that as regards the relative east of labor in the two commiss the French have an advantage of 274 per cent in time worked, and 25 per cent in maney paid for wages, or together 524 per cent. But as a larger number of hands is employed in France than in England for a similar amount of work, and as it is underly other that English workspeople as a rule can produce more than the French, nide that English work-people as a rule can produce more than the French, it is estimated that these two advantages on the part of British labor reit is estimated that these two advantages on the part of British labor reduce the gain of the French manufacturer in time and wages by one half, or, say, 25 per cent. According to this estimate, labor in France costs and foorth less than in England. The proportion of the cost of labor to the cost of materials varies considerably in different articles; but, to show the effect of the additional cost the English manufacturer has to bear, it may be stated that if the total cost of labor for producing an article of falorities can fourth of the total cost, the French manufacturer would gain 64 per cent; if one there of the total cost, 34 per cent; and if one half of the whole cost, 121 per cent. The French manufacturer can, therefore, produce more thought than his English competitor. It is generally admitted that in many classes of goods the French already exact us, and that the French Industry is yearly making more progress than the English. In France, too, strikes in the woollen and other industries of this kind are almost anknown. — Patt Mall Hudget. most unknown. - Pall Mall Budget.

The Daries Cana. Project. — The friends of the Niestagusa interceous project are gathing messy lost England and Prance now scene control of the route, and the government of Niestagus is growing restless under the long delay of the United States government in deciding what it intends to do in the matter. The strength of opposition to that project in this country comes from the Pasama Rathead Company. This corporation succeeded is defeating the proposed could during Geograf Grant's administration, and is on the lookout and ready to appear any terival of the subject. An attempt will be made at the next session of Congress to interest that body in the work. If a failure follows it will be drapped so far as this country is concerned, and the execution of the work in left to the Estimate governments. — Washington Stat. The Darries Canal Product. - The Sciends of the Nicaraguan inter-

A Frontila Store Canal.—The people of Florida propose to build, or more probably to get the general government to build, a ship canal across their State from Managas inict on the Atlantic to Fort Wool or Chy brading on the Sawance River, in order to shorten the passage from New York to New Orleans. It would have, it is said, an excellent harbor at each end of the canal, and no distructions at either end. There would not have to be more than seventy-five briles of oanal ent on this court, and then it would reclaim at testat 1,000,000 acres of the best lands in the State This land, when reclaimed, would be worth the price of enting the sanal, and the whole runte would be will supplied with natural feeders.

"The distance from New York to New Orleans by this route would be much less than by any route farther South. It would be from 1,000 to 1,200 miles less than the rante new sailed, which would make a difference of 1,000,000 in the way of shipwreeks, and \$0,000,000 knowally in the way of extra baserance, over \$10,000,000 in freight, and several millions every year in the great heavenance, over \$10,000,000 in freight, and several millions every year in the great Mississippi valley for the want of a che ap transportation to the seaboard. The canal, when built, would Sring in a revenue of all lenst \$0,000,000 on \$10,000,000 ananally in the way of tolls, especially when the Darien Canal is completed, as it would throw a vast animum of shipping from California, Japan, and China through the Gu?f of Mexico, and through the Florida Ship Canal, to New York and Liverpool and other ports."

The Treasures of Craus.—A peasent at Michakuff, on the Duiester, is said to have just found, buried in the ground, a treasure supposed to be that of King Cyrus, conqueror of Cresus. It consists of a crown, goldets, classes oromorested with drugous beads, sceptres, etc., all of gold, and representing, in weight of that metal only, a same of 250,000 frames. They have been examined by the archivologist Praglowski, who declares them to be of Persian origin. He supposes them to have belonged to King Cyrus, and to have been buried there by his attendants on his defent in the battle of Massagates, in which, according to some writers, he fost his life.

Chorspen of Sr. Paul's. — In excavating in St. Pane's Churchyard, London, the foundation of the cloister and chapter house of the old cathe-dral have been discovered, the marble carvings of the fourceath reatary being in excellent preservation.

DR. SCHLIEBERN IN ITHECA. - Dr. Schliemenn is said to have obtained permission from the Greek Covernment to begin excavating at Ithaea.

A FORTUNATE ARCHITECT. — William II. Hume, an architect and builder in New York, who was severely injured in February, 1867, by the fall of an awning at One Hundred and Twenty-fifth Street and Fourth Avenac, New York, sued the city to recover \$15,000 damages. The case has been to the Court of Appeals, which remains judgment in Mr. Hume's favor. The judgment, with costs, amonate to nearly \$24,000, and was yesterday entered in the New York County Clerk's office.

An International Pakit at Niadana. - Tord Dufferin has proposed to the governor of New York that that State and the Dominion of Canada aball unite in buying up whatever rights as against the public may have been asquired by corporations or individuals in the land around the Palls of Kiagara, and shall hold the fulls and adjacent land as a public park wholly natural and assophisticated. CORRESPONDENCE!

BOSTON, OCTOBER 19, 1878.

CONTENTS. Summary:— Explorers vs. Archaeologists.—The Filgin Marbles and the Utilal Gailery.—Mr. Woodner and the Copyright Commission.—Arlistic Copyright.—The Boston School of Denwing and Polating.—The Liverpool Theatre Disaster.—Responsibility for Accidents.—The Mississippi Jetties The Olyn First Place. II. 131 The Industriantons: — Church of St. Paul's, Rome. — Kindergarten at Winchester, Mass. — Shops and Offices, St. John, K. B. — Mantefpiece . 132

Letter from Boston. - Letter from Chicago. - Letter from St.

COMMUNICATIONS: - The Ownership of Drawings Bow Church

THE reproach has more than once been brought against modern archæological explorers that they were too exclusively intorested in what they could carry away, and made too little account of what they had to leave behind; that the zeal of the collector overbore that of the investigator. It is doubtless true of the two most successful of recent explorers, Dr. Schliemann and General di Cesnola, that their explorations would have been still more valuable if they had taken as much pains to critically examine and record the architectural and structural remains among which their treasures were found, as to secure the treasures themselves. Some negligence in this respect is very natural in men whose archæological study is the fruit rather than the seed of their explorings, and who set about their work with the eye of an untechnical observer, to which swords and bowls are in themselves more interesting objects than walls or broken capita's, quite independently of their bearing on the special problems of archeology. Continental archeologists have brought a like complaint against some of the various English explorers - even Mr. Newton binself - who have been assisted by the British Museum, or have worked with an eye to it, alleging that in their engerness to increase the Museum they have paid attention only to such artistic movables as could enrich it, and have lost many opportunities to advance the world's knowledge by more thorough exploration; and even Englishmen, from Byron's day to ours, have cried out against Lord Elgin's highhanded plundering of the Parthenon. Thoughtful people have agreed that these complaints are more or less true, and angla to be kept in mind, in order that what is done hereafter may be more easily done, but they have consoled themselves by reflecting that the benefit of the moseums to act and science far out-weighs the errors of inconsiderate collectors; and that the Elgin marbles are both more useful and more honored where they are than if they had been left to clothe the l'arthenon or had found their way into the Greek Museum, where they would have remained, like many other precious relies, uncared for and maccessible.

Trus compensation also is doubtless real, but it appears in its turn to have its counterpoise. The zeal of conservation has often shown itself as formidable as neglect or even violence, used to this in architecture; the ravages of the restorer of paintings are proverbial, but it takes one by surprise to be told that the wonders of Greek sculpture are dying a slow death at the hands of their friends. A gentleman who was in England not long ago wished to bring home copies of some of the Elgiu marbles to form part of a collection for the use of students, and applied to have casts taken from them. He was told that he could have them made, but that he would do hotter to take them from moulds made thirty years ago, because the seulptures themselves had deteriorated since them. On careful comparison of the early casts, he found that this was literally true. It is the custom, it seems, to preserve these marbles from deterioraring influences by rubbing them once a week with cloths. This conservative process, which in the course of thirty years would give some fifteen hundred rubbings, has in that time visibly affected the sculptures. Pifteen hundred impressions, indeed, would tell on a copper plate; it is not surprising that they should have their effect on the marble relief. It appears that a similar care is taken of the pictures in the National Gallory. These - excepting the Turners, which have for safety's sake

heen put under glass - are wiped over with a silk cloth every week. This process, gentle as it may be, must tell upon them also in time, if it has not already; but the English conservancy is tenderness itself compared with what we see elsewhere. The French habit of scraping off a film from the sculptures of a building whenever they get darkened by time is well known, and it is not long since we quoted an account of the tooling over of the carving in the Cathedral of Florence. These things, too, are mild compared to the treatment which pictures may undergo even when they are not repainted. The pictures in the Uffixi Gallery, the most precious collection in the world, not long ago narrowly escaped a wholesale cleaning with soid after the invention of some ambitious Italian Fortunately a preliminary experiment was tried on a single picture; it was disastrous enough to arouse even Italian indifference, but there was same difficulty in checking the process.

THE English Royal Commission on Copyright continues its study of the question of copyright in works of art, and we find in the Architect of September 28 a report of the evidence given before it by Mr. Thomas Woolner, R. A. Some of Mr. Woolper's answers to the questions of the commission are noteworthy, if they indicate what are the common ideas of his fellow actists on this subject; and from his professional standing we may presume that they do. They lead us to infer, what we might have imagined, that while artists are auxious in a way to scenre for themselves a protection in their work like that they see secural to anthors, they really take little care to use the advantages that the law allows them, or even to inform themselves what these advantages are. Thus, Mr. Woolner, when reminded that sculpture could protect themselves against copies by registering their works, could not remember that any of his profession had ever done so in a single case. It would appear that English artists do not even care to acquaint themselves with their rules of registration, for the coninent semptor, whose works have been before his countrymen some thirty years, during which time the provisions have been changed by law twice or more, when questioned concerning these provisinus could only resor to what he had heard concerning them when a pupil. At present the English law provides that copyright on works of sculpture can be seenred for fourtien years, with right of renewal for fourteen more, on registration by means of a copy, drawing, print, or description, according as the registrar shall determine; but this gives security against copying only, and not against reproduction by engravings or photographs. Mr. Woolner argued that the copyright should be assimilated to that in books, which runs to forty-two years at least, or seven years after an author's death, and should be a defence against engravings and photographs as well as against copies. At the same time he acknowledged that such reproductions were rather a benefit than an injury to an artist, because they increased his reputation.

WE suppose it may be assumed that artists everywhere have much the same feeling as Mr. Woolner. They do not want, that is, to be troubled with registering; they want all that anybody has in duration of right, and they want to be protected against unauthorized prints and photographs, more, after all, as against an infringement of dignity than as against any pecuriary injury. The truth with them is that the business aspeets of the protection, to use the phrase of an old army officer concerning some special duty, do not suit the shape of their minds; yet it will be difficult to induce legislators to consider other aspects of it. It is not easy to see how any system of copyright can be made to work satisfactorily without registration, which, however, can be made sufficiently easy, as Mr. Woolner himself suggested, by filing photographs. Prints and photographs may fairly be forbiiden, not merely because actists feel themselves outitled to suppress them, - for this, though it be reasonable, will not appeal greatly to the average lawgiver, but because the right to make them, being a source of profit, and therefore merchantable, belongs of right to the artist who created it with his work. But it will hardly be best to try to extend this, as some favorers of architectural copyright would have us, beyond actual representations taken from the object itself, for the authorship of ideas in these days is a very inscrutable and slippery thing. As for the duration, there is not the same reason for extending the protection over works of art as

over books, for with the multiplication of these, if they are republished, the protection is a continued source of revenue, which it is not with a work of art. The proper analogy, if it could be made to work, would be in giving the artist, or his heirs, a royalty for a fixed period on the increase of value which time and a growing fame added to his works after they had passed out of his hands. This would not be unreasonable, and would eure many a case of ernel injustice; but we fear it would be difficult to make it prevail.

THE second annual report of the School of Drawing and Painting attached to the Boston Museum of Fine Arts gives a good showing of the progress of the school during the last year, while the new year begins with a larger number of students than ever before. The whole number of students received during the year was a hundred and sixty in the day classes, of whom a buildred and twenty were women; and sixty-three, men and hoys only, in the evening classes. The students in the painting class were ninety seven; whether all of these painted from the models, who sat every day, we are mu told, but the life classes have been naturally the principal feature of the school. The greater part of so many pupils being women, it is fair to infer that comparatively few will become professional artists; yet the whole curriculum and discipline of the school have been arranged with a view to professional training. The attendance of hist year, and the work shown to the public at the and of the session, indicated that the training at least was not slackened to suit the liking of amateur pupils, and the zeal of the sculents was shown in their forming a sketching club, which included the greater number of them, says the report, and occupied the painting room during off hours with voluntary work. The most interesting expariment of the year was the course of modelling which was introduced into the curriculum. Although this was confined to the figure, it was not arranged as a class for students in sculpture merely, but as part of the regular work of every pupil, in order, as the report says, "to give a more intimate knowledge of form and a readier perception than drawing about could give." We suspect that this is the first example whore the modelling of the figure has been made an essential part of the instruction of a large school of painting for both sexos, and we could wish it might have a thorough trial. We are inclined to think such a study a very important help in the tealning of painters of the figure, giving as it does a fineness of knowledge and conception that is only to be acquired by much longer labor in drawing alone. Unfortunately the teacher at the school, Mr. Dengler, an artist from the Munich school, whose work and instruction were full of promise, was obliged by failure in health to break off his course. The experiment, however, had lasted long enough — we quote again from the report — "to show that while the value of modelling as an educational and disciplinary exercise had not been overrated, there yet were difficulties which had not been counted on in the way of making it part of the regular work of the school. For while a certain number of the students greatly enjoyed the work, and others, though not earing much about it, highly appreciated the advantage they derived from it, to others in was positively distanteful, and to a certain number, particularly among the young women, it acmued to be injurious to the health, either from the fatigue of the unusual exertion or from the unavoidable dampness of the work-

THE horrible disaster at the Colosseum Theatre in Liverpool, a few nights ago, reminds us again that the things which crowds dread are not the things that injure them. It shows conspicufear itself is the faul thing to them. A mere squabble in the pit was emough to make some foolish person catch at the idea of fire and scream it out; then the audience at ouce grow frantic, and three dozen of them were trampled to death. The most perfect fire-proofing would not have helped the matter here, for no fire-proofing is so safe as the absence of fire. If a theatre should be built with absolutely no material in it but brick and iron, and planned as theatres are commonly planned, an alarm of five in it would still certainly be fatal. No doubt some adventur-ous managers will hasten to conclude from this calamity that fireproof construction is after all of little avail and not worth its cost, but there can be no doubt that an actual fire would have added enormously to the loss of life among the people - four or five thousand, it is said - who were in the theatre, as it did in the case of the Brooklyn Theatre. It only proves once more

that the greatest slunger is of panic, for it is that which adds the chief peril to fire, while without fire at all it is still itself a deadly Therefore while an incombustible construction is a sine qua non in a properly built theatre, the most unpardonable sin is difficulty of egress. The Liverpool theatre, we are told, while it was enormously large, was intriente in arrangement and hard to get out of. The exits converged into a narrow space, where hodies were piled up six or seven deep. A standard which divided the doorway so obstructed the crowd that they were blocked until it was driven away with an axe, - an illustration of a theory which has found some favor, that it is a good thing to put abstructions in the way of an oscaning growd, so as to pre-cent its injuring itself by going too fast. Unfortunately if there is one thing that the proprietors of theatres are more unwilling to provide than a propor construction, it is sufficient means of exit; the one costs money, the other both costs money and con-The desire for large houses and the call of the sumes space. multitude for cheap amusement are arguments which they cannot of their own strength resist. It is imperative then in the legal regulation of theatres to insist that they not only shall not harn easily, but shall be planned from the beginning with plenty of outlets expanding towards the exterior, and so arranged as to subdivide and distribute the audience as it retires.

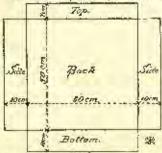
THE accumulation of faral accidents which are the results of carclessness in construction is beginning to make people realize that it does not do to slur our accountability for them. A coroner's jury, in the case of the man who was killed by the fall of an elevator in the building of A. T. Stowart & Co., New York, though apparently unwilling to directly ascribe the death to negligence, has duchared in its verdict its belief that the clevator was not in proper order, which amounts to the same thing. The evidence showed that the pawls of the elevator had manifeetly failed to do their duty in catching it when it fell, being probably clogged with congulated ail. There is every reason to assuibe this to neglect in not keeping the machinery in proper order, and every reason to suppose that a great part of the elevators in the country are in the same condition, since experience neakes it clear that appliances which are kept nursed, intended to be ready in emergency, are seldon in condition for use when they are wanted. The coroner's juries on the explosion of the builer of the Adelphi at Norwalk go further, and declare un-shrinkingly that "the boiler exploded because of overwork and overpressure, legalized by a United States statute, increased after shiftless inspection, and persistently used by the attendants in charge after there was sufficient evidence of its danger-ous defects." The Massachusetts Railroad Commissioners have indicted for manulaughter the conductor to whose mismanagement they have traced the fatal collision which happened a few days ago on the Old Colony Railroad. On the other hand, the enroner's inquest on three men killed lately by the breaking of a scaffold on the New York Elevated Railway has ended in a verdiet of accidental death, but with the significant recommendation that henceforth a competent person should be appointed to select timber for the scalfolds. We shall succeed better in these things when the public grasps the idea that the penalties which are to be jufficted in such cases are not vindictive, or of the nature of personal punishment, but necessary and merciful precautions for the general safety.

CAPTAIN BROWN'S report to the Secretary of the Treasury on the progress of Captain Eads's Mississippi jotties shows that the scouring action due to the jettles has lowered the bottom over about one and a quarter square miles in front of the South Pass by nearly two feet during the past year, which represents a scour of 24 millions of cubic yards. In this doepening process the curve of 40 feet depth has receded shorewards 117 feet, the 50 foot curve 228 feet, the 60 foot curve 190 feet, the 70 foot curve has advanced 16 feet, while the other curves out to 100 feet have recoded. The minimum depth of the channel has increased between July 28, 1877, and July 15, 1878, from 20.3 feet to 22.5 feet. The length of the shallow between the 22 feet curves at the one date and the corresponding 24 feet curves at the other remaining nearly the same, - from 150 to 160 feet; 12,500 colin yards of stone and 4,000 cords of willow have been laid in the east jetty during the year, and 5,500 yards of stone with 1,400 cords of willow in the west, to which are to be added 1,200 cords of willow and 200 yards of stone in the wing-dams.

THE OPEN FIRE PLACE. II.

PRACTICAL EXPERIMENTS ON THE WASTE DEAT AND ARR CUR-BEEN'IS.

In the fire-place represented in Figs. 1 and 2 (see page 116, ante)



the back measures 2,500 sq. cm., the sides 500 cach, the bottom 500, and the top 350, as per accompany-ing diagram, making in all 4,850 sq. cm., against 2,500 for the opening in front, so that the rays veemeson or, considering the ortion intercepted by the grate, to about one third of the whole, or less than

S per cent of the entire beat generared by the fuel.
To this 8 percent must be added something for the return radis-

tion from the brickwork, because, although a large portion of the radiated heat, striking the walls of the first-plane, is carried off by contact of the cold air entering the chimney under the influence of the draught, which as we have seen amounts to from five to fifteen hundred feet a minute, and part is absorbed by the brickwork, yet a certain portion is returned by radiation and reflection into the room. A simple calculation will give us the amount accurately enough for our simple calculation will give us the amount accurately enough for our purposes. The fire-place represented in our figures being small and blackened with smoke on its sides as well as lack, no reflected heat could be counted upon. Moreover the radiating power of these walls being inversely as their radiating power, what we lose in reflection we shall gain in radiation. The surface of the back, sides, and bottom measures 4,000 sq. cm. According to Peelet I sq. metre of brickwork radiates 3.5s units of heat per hour for 1° C. difference of temperature between the radiating and the receiving squares. Therefore 0.4 sq. m. would radiate 1.44 units per hour per 1° C. The temperature of the

TARGE TL.								
Time	Average Peor- perature of Such of Fire- place	Thermometer at 60 cm. fyom lire,	Thermometer at 110, from use.	General Beaustks				
8.377 8.477 8.477 8.477 8.477 8.477 4.102 4.234 4.244 5.531	215-2 210 190 185 185 115 100 90 70 40	192- 455 64- 155 97- 657 81- 81- 82- 24- 24- 24- 24- 24- 24- 24- 24- 24- 2	195 82 43 43 44 41 34 34 24 24 22 25 20	Five lighted Fail blace, Declines, Tire put.				

walls of the fire-place is shown in the second column of Table 11., thermometers being placed in different parts of the back of the fire-place and the average temperature being taken. While the fire is burning and the average temperature being taken. While the fire is burning brightly the radiation from the walls of the fire-place would be partially intercepted by the fire itself; but taking the average temperature of these walls during the first twenty minutes at 220° C., and supposing that only one half the radiation of these walls was intercepted by the fire, fuel, grate, etc., and finding 20° C. to be the average temperature of the objects in the room, we have $\frac{28-20}{141\times10^5} = 100^5$.

1dex to = 48 heat onlts,

During the next six minutes the average comparature per minute being according to the table 210°, we have 210 — 20 = 190°, from which we have, by calculating as before, 27.3 units radiated. Continuing the calculation in this way for each portion of the time, we have, for the total amount of radiation from the walls of the fire-

place, 270 heat units.

Of this we may assume that one half was radiated into the room and the other half lost, and we have 135 units (= $\frac{105}{1000}$ or $\frac{1}{10}$ of the radiated heat spriking the walls of the fire-place) return and interest and in room to be added to the \$26 units, or 8 per cent, of direct radiation. This gives 961 units, or a little less than 9 per cent of the whole heat generated, for our result. According to Peclet only 6 per cent is

realized instead of this 9 per cent.

As for reflected bout, under certain circumstances a small amount has far recents incent, under terrain circumstances a small amount may be added to the above results when the sides of the fire-place are kept white, or are tiled and of the proper inclination for reflecting the rays. We may take it for granted that the back, top, and bottom reflect only half as much as the sides. Supposing the sides reflect one third of the heat falling upon them, and that they occupy one fourth of the entire surface of the fire-place, as in our case, we have $\frac{1}{8} \times \frac{1}{4} \times \frac{3}{8} = \frac{1}{16}$ of the whole reflected heat, or in our case, we have $\frac{1}{8} \times 825 = 46$ units, or about $0\frac{1}{2}$ per cent. Add $0\frac{1}{4}$ per cent for the back and bottom, and we have $0\frac{1}{4}$ per cent of the entire heat generated as the amount which may be added for reflection. Inasmuch, however, as the radiation diminishes as the reflection increases, this may here be neglected.

Duelot's experiments show that the radiation from heated bodies is much greater in proportion at very high temperatures than at muderate temperatures. But we have not added anything to our figures for this, because we consider it more than balanced by losses in other ways, such as that due to imperfect combustion of the fuel, for which we have also made no account. It is estimated that with the ordinary fire place, about one eighth of the fool is wasted in unconsumed smoke.

Our 9 per cent so far found must, however, again be modified, in consideration of the beat taken from the room by the cold air en-tering the doors and windows under the influence of the draught.

In our case we have by Table I, an average of 883 cubic metres of air, which must have passed through the room and into the five-place from the outside. The average temperature of the room and objects from the outside. The average temperature of the room and objects from the outside. The average temperature of the room and objects contained in it having been raised one degree by the combustion of our three kilograms of word (the doors and windows having been kept close) during the experiment), we have $855 \times 1 \times 1.29 \times .24 = 256$ units, or $\frac{355}{16} = \text{about } \frac{1}{3}$ of the whole. Dichetting 258 from 961 we have 703 units, or only 6 per cent of the heat generated by the finel, for the total amount of heat which can possibly be utilized from each lines under the best conditions and most perfect form of ordiwhold fires under the best conditions and most perfect form of ordinary fire-place, to say nothing of the fact that where the rooms are provided with the so-called yendilators near the eciling, oven this little heat is carried off almost as fast as it is formed!

12 ducting from the 10,770 units generated by the fuel the 703

Deducting from the 10,770 units generated by the fuel the 708 units utilized by radiation and the 5,070 units escaping through the chimney mouth into the amosphere, together with the eighth lost in uncountined smoke, capable of generating 1,540 units, we have 3,660 units for the amount absorbed in the brickwork. Of this nearly 1,000 units were absorbed in the upper half. The remaining 2,660 unit have been taken up by the lower half. In these experiments, however, the flues were cold at the outset and the absorption on the part of the masonry was at its maximum. In winter, when the flues are kept constantly heated, but little is absorbed by the brickwork, its power of absorption being limited by the low conducting power of the insterial, and the amount lost at the top of the chimney is correspondingly greater.

s correspondingly greater.

With goal fires more of the heat of combustion is utilized. Suppose ing that, under the best of circumstances and with coal having the greatest radicting power, we adopt the figure of Poelet of 50 per for the radiating power, we have, as before, $.50 \times \frac{1}{4} + (\frac{2}{3} \times \frac{1}{4}).50 = .24$. From this 24 per cent deduct, as before, one quarter for the amount returned up chimney by the draught, and we have 18 per cent for the total amount utilized, under the lest possible circumstances with the best possible fuel. According to Pedlet only 12 per cent instead of 18 per cent is realized from a coal fire.

RESULTS OF EXPERIMENTS.

Our experiments present the following eurious results; -

1. Our three kilograms, or 6, penals, of wood served to raise the average temperature of our room less than one degree Configrate, although the heat generated by the wood was sufficient to raise the comperature of 14 rooms of equal size from freezing to 68° Fahren-Left. (The room measured 20 × 20 × 10 feet.)

2. While our fire-place was only sufficient, with three kilograms of

they wood, so maintain the temperature of the room at 1° C. (suppor-ing the outside air stood at 0° C.) for a few minutes, the heat newully generated was sufficient to maintain the temperature at a little below 200 C., or 680 F., and to pass fresh air, raised from freezing to 68° F., through the room for ventilating purposes at the rate of one cubic matre a minute for two days of twelve hours each."

3. Supposing again that the outside air stood at the freezing point, we shall see by consulting the third column of Table II, that a person or object standing 50 cms, distant from the fire would have been heated by radiation up to $75^{\circ}-20^{\circ}=53^{\circ}$ C, or 131°F , while the air flowing by him into the fire would have stood scarcely a degree above the freezing point. At this distance three men would intercept nearly all the heat of the fuel, and all other parts of the room would fall to the freezing point. This radiated heat itself would last at 55° only about five minutes, when it would fall 15°, after which it would continue to fall as shown in the table.

At a distance of one metre, a person would be warmed only to 48 — 20° = 28° C., and six men would appropriate the greater portion of the heat of the fire, which would last, say, five minutes, and then fall 9°. At a distance of two metres a person would be warmed (according to another experiment not here recorded) only ?° C., and at a distance of four metres only about 2° C. But if he happened to stand anywhere in the room sheltered from the direct radiation of the fire, he would onjoy a temperature scarcely half a degree above

the freezing point of water.

4. According to our table three kilograms of dry wood cut small served to give a bright fire only ten minutes, and burned out entirely in twenty minutes. To keep a bright fire harning, as in this experiment or as is done in many houses in cold weather, for a day of twelve hours would therefore require 144 kilograms of wood, which twelve nours would interester require 144 kilograms of wood, which according to Rumford are capable of producing $10,770 \times 144 = 1,550,880$, or one and half million units of heat, which, if all were utilized in the proper manner, would be enough to keep the temperature of the room up to 68° F, in freezing weather for about ninety days of twelve hours each, equal to three months, or all winter, and give a change of pure air equal to one cubic active a minute, heated, say, up to 60° F., for ventilation, during the whole time, it being supposed that the adjusting rooms and those above and below were in-habited and maintained at the same temperature, that the outside wall was double as well as the window, and that the door and window fitted well and were kept closed.

THE IDEAL FIRE-PLACE.

What now would be the action of a fire-place and flues ideally perfect?

bleaf perfection would haply :-

That all the heat generated by the combustion of the incl be ntilized in heating and ventilating the house, and that the combustion

of the mel by complete.

2. That the supply of fresh air introduced into the house to take the place of the fool air removed be guaranteed perfectly pore; warmed in winter to a temperature somewhat below that of the room; moistened enough to give it its proper hygrometric condition; abundant enough to supply analy the fire and the occupants; so distributed and located at its entrance as to cause no perceptible draught at any point; the gentle air current so directed that it should reach every part of the roun; so steady that no part of it should pass over the same spot twice or be twice breathed by the occupants; and so regulated by simple valves as to be under perfect control.

3. That the flues include a succist gas ventilator so arranged that all the heat generated by the combustion of the gas should be rerained in the room and offlized, while the injurious products of com-

bustion should be carried off.

4. That a complete reurilation of the rooms be effected, both in

5. That the chimney never snoke,
6. That the chimney never snoke,
6. That the construction of the fire-place and thus he simple, durable, inexpensive, safe, and unobjectionable in appearance.

The open fire-place as ordinarily constructed, so much overestimated as a ventilator, satisfies the requirements above enumerated, to the chloribus artists.

to the following extent: —

1. Only from five to fifteen per year of the heat generated by the fuel is utilized in heating and ventilating the house. It must be borne in mind that that is not ventilation which provides only for the outlet of the air ambignores the julet, and that a hundredth part of the heat of the fact would be ample to abstract the bull sir far more efficiently, if properly applied, then is done by the eighty-five or ninety-five per cent now used.

or ninety-five per tent now used.

2. The air introduced to take the place of the foot air removed is not guaranteed pure, but its purity or impurity is left entirely in chance. If the windows are tight, the fire draught will be supplied from the hulls, neighboring chambers, or even water-closels and teilet recens, or, in other words, from soil and drain pipes, bringing poisonous gases and perhaps disease into the house; or, if disease he already there, distributing the nextons air from the sick-chamber into other parts of the house. other parts of the house.

If the windows are not tight, the air entering will be too cold in

dampiess, or impurity may happen to be in the outer air, to the detriment of the impacts, as well as of the innitiar of the impacts.

Or, finally, if both doors and windows are closed and tight, as may sometimes happen with exercise corporate and especially at night in bed-mone, either the air must come in through the chimney itself. causing the fire to smoke, or else no air is admitted, and sufficention is the result.

Is the result.

The history of ventilation furnishes numerous sad cases of such sufficiation, eases where the smoothering fire and the storper, rendered insensible by smoke or gas, have evidently long struggled for life before either or both succumbed to the want of air.

We may add here that even when the supply of air chances to be pure enough, and abundant crough, and warm and moist enough, and otherwise satisfactory in its quality, it is still mable to ventilate the apartment properly because it is drawn directly up the chimney before it has had time to receive the necessary amount of heat to cause it to rise to the level of the heads of the occupants; while the impure air formed above the level of the mantel, and heated by the impure air formed above the level of the munici, and heated by the longs and by the gas burners, rises to remain a long time in the room and be breathed over and over again. Or, if special openings are provided above to carry off this upper stratum, what little pure air warmed by confact with the walls, heated by radiation, manages to rise above the mantel, is, as before said, carried off with the impure air almost as fast as it is formed. Thus it often happens with large fire-places and fluor that the cold air onters faster than the warm air is produced, so that the more the fuel is piled on and the fierces the fire the more nowerful become the freezing draughts and fiercer the fire the more powerful become the freezing draughts and the lower the temperature of the room.

3. The gas burners are soldom properly ventilated and sometimes not at all. Breathing foul air is as injurious as drinking foul water, yet, while we would shrink with disgust from the idea of drinking. water into which the drainage from our houses was known to flow, we allow our gas corners to pour forth a continual stream of carbonle we allow our gas corners to pour forth a continual stream of carbonic acid and other poisonous gases into our small reservoirs of breathing air, already sufficiently polluted by the exhalations from our bodies and lungs, without giving the matter a passing thought.

4. Complete ventilation in summer as well as in winter is, under the average construction, impossible without opening doors or window.

daws.

5. The chimney often smokes.

6. In one respect our fire-places and flues appear to approach the ideal, and that is in their simplicity, but is it not the simplicity of

ignorance rather than that of science

In order to be able to judge as to how for we may expect to approach our ideal, it will be necessary first to familiarize oursulves with some of the most important devices already tried or recommended by those who have given the subject most attention, and to study the causes which have thus far rendered their adoption so

Many of these devices appear so excellent that it is hard to understand why they were not seized upon at once. But we must bear in mind that the majority of the public are aware neither of the waste mind that the majority of the public are aware neither of the waste of fuel they actually experience, nor of the importance of good ventilation. The style and color of the grate and mantal are of more importance than the construction of flues and all parts which are out of sight. That the pattern and color should be in accordance with the latest fashion is more important than either; and to expect lashion to yield to mere sanitary considerations would be speak ignorance of one of the most marked peculiarities of liming nature.

Then the way knowledge group versus Yarkes builded in the construction.

Then too we know how prone every Yankee builder is so avail himself of his liberty "to follow his own nose by way of a guide post in the matter of a little science," and how loath he is to leave the

beaten track.

These considerations, and the fact that many reject on principle all novelties, on account of the difficulty of distinguishing the good from the ball are sufficient to render any persistent effort to improve our time-honored forms of building construction most ourrous and discentraging, and it would be fully to expect even the most critical improvement, in a matter of this kind, to meet with anything mure than a slow and partial reengnition.

THE ILLUSTRATIONS.

CHORCH OF ST. PAUL, ROME. MR. G. E. STREET, R. A., ARCHI-TROT.

Turs illustration, which we reproduce from a past number of the Architect, is a view of the chorch which Mr. Street designed for the Americans in Rome, a description of which appeared in the letter from London which we published last week.

KINDERGARTEN AT WINCHESTER, MASS. MUSSES, J. P. ORER AND GRO. D. RAND, AUCHITECTS, BOSTON,

This building was recently erected for Mr. D. N. Skillings on his estate of Rangely Place, and is known as Rangely Hall. The schoolroom is 28 by 36 ft., and is finished into the roof, the gable windows being filled with stained glass. The five-place, including the whole breast, is laid with face brick, and is made an effective feature of the interior.

SHOPS AND OFFICES IN ST. JOHN, N. H. MESSES. MEKEAN AND PAIRWEATHER, ARCHITECTS, ST. JOHN.

This building was begun in the fall of last year and completed in the winter months. It is built of brick and faced with red pressed bricks, almost according to a medient bricks being introduced in patterns. The string courses and bands are of freestone. The whole building is now used as the Custom House of the city.

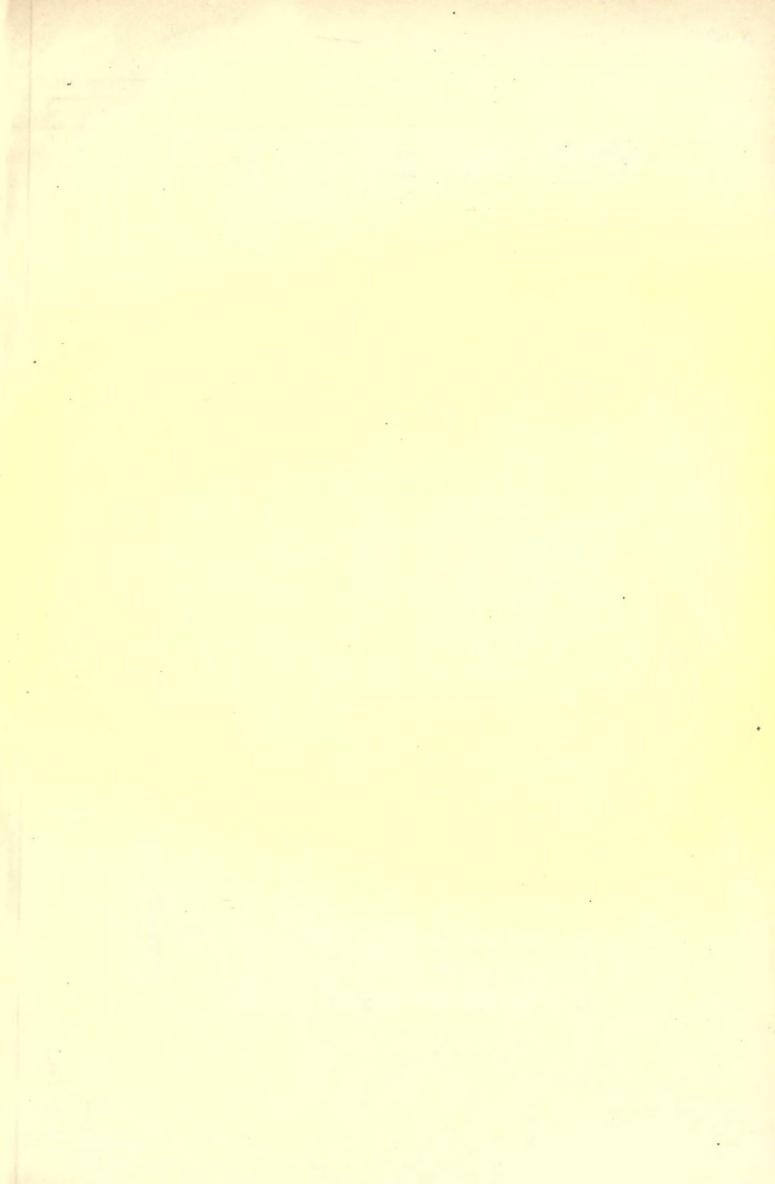
MANTELPIECE DESIGNED BY MASSES. FICHEN AND SMITH, ARCHITECTS, NEW FORK.

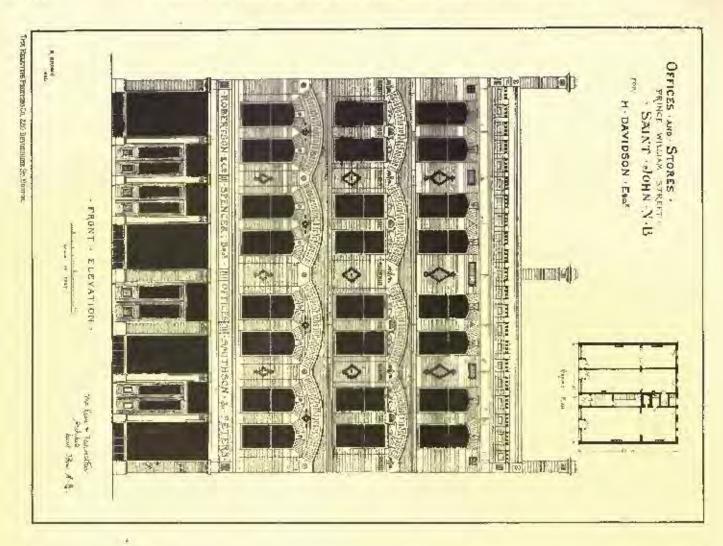
This mantel was highly finished in walnut, carved with especial care. Revelled glass and polished brass were used to lighten the dark color of the wood.

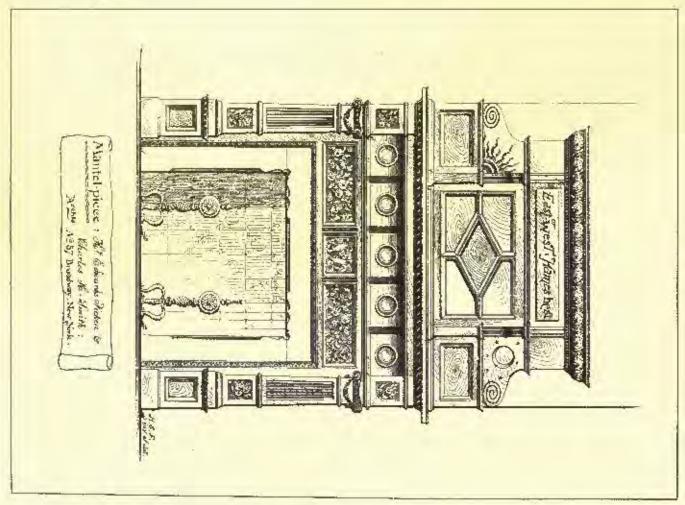
CORRESPONDENCE.

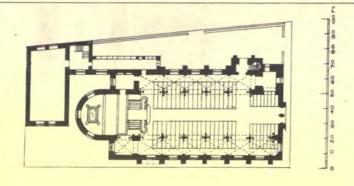
THE MASSACHUSETTS CHARITABLE MECHANIC ASSOCIATION'S EXUIBITION.

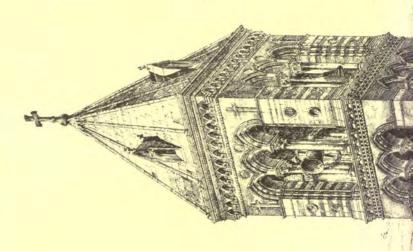
"THE Mechanics' Fair is at first sight rather disappointing. the last fair was held, now four years ago, the Centennial Exhibition at Philadelphia has shown to all classes of the people what may be done both in the way of getting together a great and full display of prod-nets of art and industry and of showing them to the best advantage. It was out fair to expect that the influence of that exhibition would It was out fair to expect that the influence of that exhibition would be seen, if not in the quality of the things exhibited, at least in the arrangement and display of them in a building erected by the association for the purpose. The contrary is the ease. I am disposed to think that in no one of the previous fairs of this association have the goods been thrown together with less apparent regard for the effect they would produce on the virior. This is partly due, no doubt, to the crowding of the building. The aisless and passages are all extremely parrow, and quickly choked by a very moderate crowd of visitors. But it is due in a much greater degree to a certain incapacity in the average exhibitor to select and combine his rough and arrange thom with that harmy and instructive med took goods and arrange thom with that happy and instrictive good taste and ingenity which characterizes the artisans and shopkeepers of foreign lands, and to a less extent those of other parts of our own. The government of the association, also, or that one of its committees having charge of the disposition of the floor space, has its share of the responsibility to bear, in assigning the space to the various applicants evidently without regard to the character of the exhibits, or to the way in which one class of goods was to set off another next

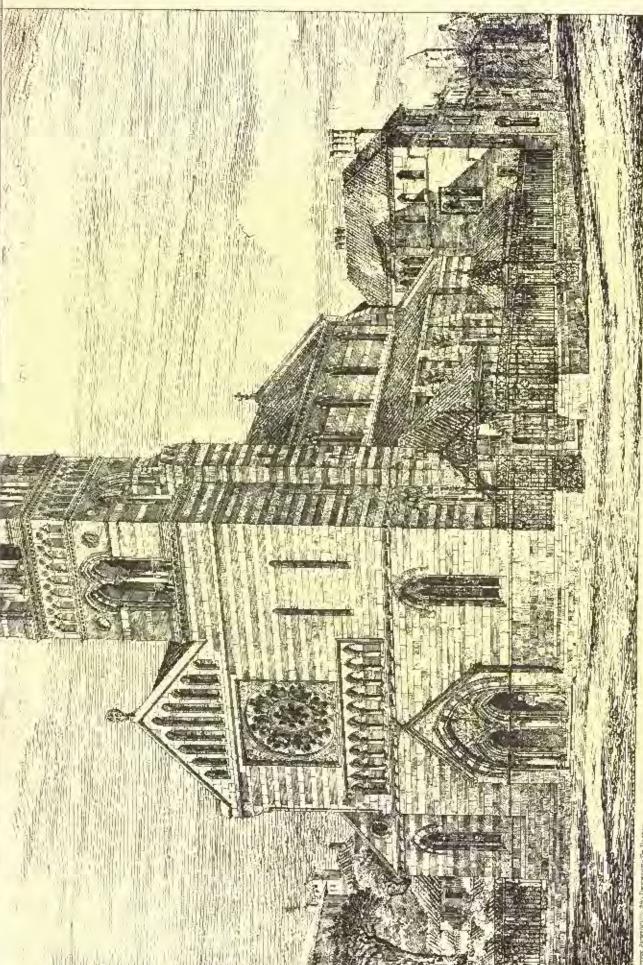








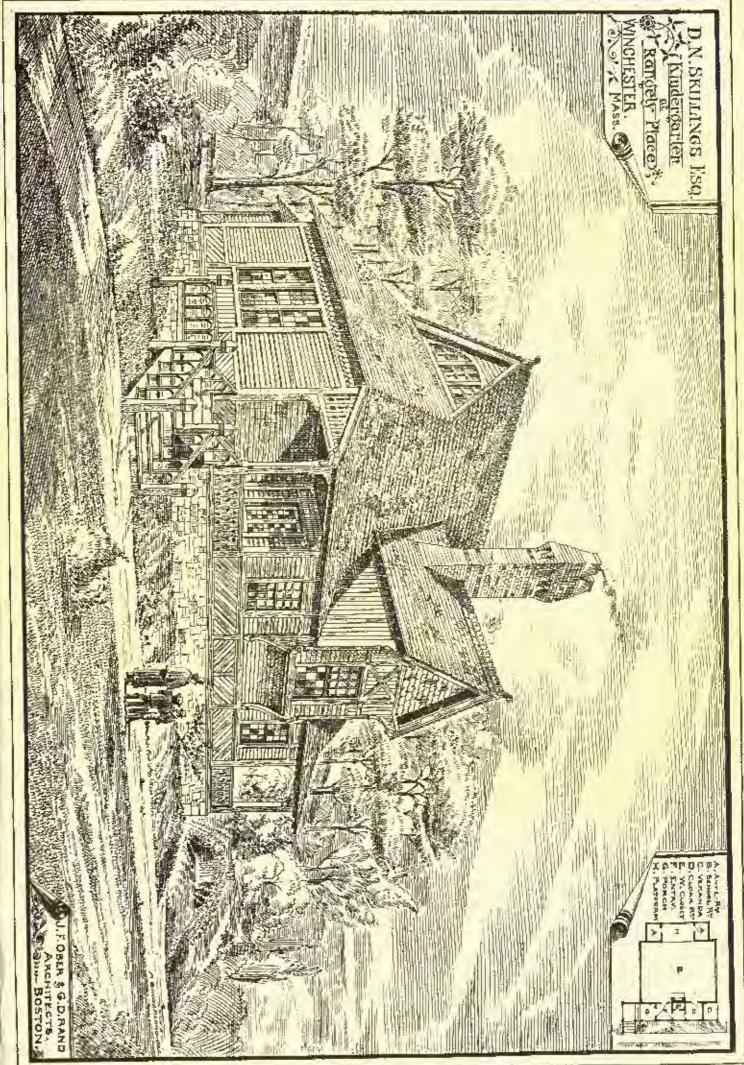




MURCH OF ST PAUL AT









it. Accordingly, we find a tremendous pile of somewhat dowdy calices overtopping, on the one hand, a shiring case of silverware and jewelry, and, on the other, an exhibit of Portland coment and fire-brick. The machinery, which in the old fairs, if I remember rightly, used to occupy a distinct partion of the great hall over the Quincy Market, is here massed on the centre of the principal exhibition and there is no security in the centre of the principal exhibition. room, and there is no escaping the thunder of the rock-drill, or the deafening clutter of the great woolen luom. But apart from the unfurtunate absence of arrangement, one is struck by the commonness of the things exhibited. Hardly anybody seems to have thought it worth his while to produce anything of more than ardinary excel-tence or beauty for this display. Many of the exhibitors make every day a more interesting show in their shop-windows than at this fair. Add to this that the building is rather barn-like (which of course it must be in the nature of the case), that it is painted in somewhat dull and dusty tones of color, and is almost entirely destitute of decorations, and the result of a general view is apt to be a little tritle and

OCTOBER 19, 1878.7

depressing. A more careful inspection, however, will modify this first impression. If we can't be greatly amused we shall do well to allow ourselves to be instructed. 'The practical side of life is after all of the first importance, and at a Mechanics' Fair it is unreasonable to adopt the view of that modern epicorean who said, "Give me the luxuries of life and I will dispense with its necessaries." The characteristic of all these fairs has been the elever devices for improving and cheapening manufacture. Here we have the Yankee mind at its best and impolese; it is in this field that all our modest triumples have been won abroad, and are likely to be, for a generation or two longer at feast. In all the departments of art, great and small, we do but follow, however worthily; here we lead. The closeness with do but follow however worthily: here we lead. The closeness with which the mind of the inventor follows the working or every piece of machinery, detects every weak point and strengthens it, perceives every opportunity for saving a minute of time, or a strake of labor, and keeps the machine always abreast of the requirements, or contrives a new one which will do the work of half a duzen of the old, is a national characteristic. On the floor of the main half, side by side, each in its small glass case, are two very striking examples of this passion for contrivence, and for making machinery do the work of human fingers, which is year by year bringing this country into the place so long occupied by England at the head of the manufactur-ing nations of the world: the Mosely watch-makers' lathe and attach-ments, made at Elgla, Hinois, and a complete set of watch-makers' there is the Hopkins Watch-Tool Company of Waltham. The extreme beauty and dedicace of these little tools makes it easy to believe in the precision and uniformity of workmanship which has carried despair into the hearts of the Swiss watch-makers since the report of their representative at Philadelphia two years ago. In most contrast to this small engineer is the foreigns ready most complatic contrast to this small enginery is the ferusious rockdrill, which under the impulse of its air-enupre-sor alongside delivers its sharp and solid blove on an unresisting block or grante with a force which makes them felt as well as heard throughout the build-

Probably there is no single invention on which so much of incessant labor and ingenuity have been expended in improving, lightening, simplifying, and perfecting it, as the printing-press. There is, I believe, no specimen of any of the great power presses in this exhibition. which are fascinating in the celerity, smoothness, and accuracy of their performance. There is, I presume, no doubt that the world their performance. There is, I presume, no doubt that the world would be better off if half or three quarters of the printing presses could be destroyed, but our faith in this proposition need not make us this anch abused instrument to its present perfection. The little type easting machine hard-by is a worthy coadjutor to the present perfection. The little type easting machine hard-by is a worthy coadjutor to the presses. I believe all the machines for this purpose have been American inventional transfer. tions, and all, with perhaps a single exception, the work of a single man, David Brace, of New York. We miss the type-setting machine, which ought to be here to complete the course of instruction.

The neual array of machinery, heavy and light, is brought together on the eastern half of the floor of the main building, and in the gal-The sewing-machines carry the day as to number and variety, but in size and intricacy the great cassimere loom is the most imposing, doing the work of half a dozen hands with a quickness and regularity of which no human hands are capable, and yet under the easy control of a single woman. The power for all this machinery is turnished by a Brown engine of great heanty, and behind this again we find two great steam-boilurs made by the Whittier Machine Co., and set with the remarkable Jarvis Patent Gas-Consuming Furnace, which appears to be a triumph over obstacles which have here-tofore been considered insuperable. The advantages claimed for this furnace are, in brief, that by the admission of het air to the interior of the furnace through a number of small duets, the combustion is rendered much more perfect than by any other furnace, insumuch that not only are the gasts consumed, but cheap and even wet fuel can be successfully used, such as undried peat, wet sawdust, coal screenings, wet brewery hops, green wond, and various other classes of otherwise impracticable fuel. On one or two days in the week the furnace is fed entirely with wet peut taken directly from meadows in Roxhury, and the usual fuel is anthracite screenings.

A variety of exhibits, more or less especially interesting to architects are grouped around the entrance of the main halt. The

Scientific Coment Company shows samples of this coment, which seems to be growing in importance to the profession, but one is bardly helped in any judgment as to its qualities by what he sees of it here. The testimony of well-known architects and builders of England seems to be altogether in its tayor as an excellent and economic material. Many Wintersth & Co. nomical material. Mesers Wentworth & Co., and Bowker, Torrey & Co., present rather indifferent examples of marble mantels, and the usual collection of hand specimens of domestic and foreign marbles. The latter firm exhibit, in addition, some fine pieces of the red Bay of Fundy granite, and of the Calais granite, polished. Two or three of Fundy granite, and of the Calais granite, polished. Two or three of the prominent dealers in line; wood exhibit heautiful collections of specimens, — notably Messrs, Palmer, Purker & Co., of Portland St., who show a most faccinating variety of native and fureign woods, not in small bits, but with fair broad surfaces of each, polished a rowin. and arranged with great good laste. Among these woods are some which we rarely see, as the Cornboln, the Ambaine, and the Spanish Cedar, and which glow with a sumbre splendor of color. The pot-ters are all brought together in this neighborhood, and their displays are, on the whole, promising for the future of this interesting and important manufacture among us. The New England Pottery Co., of East Boston, send a lot of common white china for table service. and chamber sets, mostly plain or very simply decorated, and in very unobjectionable forms, though with no attempt at elegance. Hows & Co., of North Cambridge, reproduce very successfully many of the classical forms in vessels and vases of many kinds, mostly in red clay, with figures in a creamy white. The Portland Stoneware Co. send a great variety of ware of all forms, colors, and uses, from a small match-box to a hig garden vase, among which the plain white clay, undecorated and waiting for decoration, appears the best. Boston Fire-Brick Company exhibit, besides their chief product, an assortment of terra-cotta work from Mr. Loring's works which is very good as far as it goes, but might easily, one would think, have been carried further. I saw nothing from the Chelsen or Beverly

The virtues of Portland coment are popularly illustrated by a workman who sits with a little pile of damp cement before him, and workman who sits with a fittle pile of framp centent believe him, and with a couple of smal, moulds and a famper speedily then our flower-pots and match-boxes of comeon, ready for instant service. Messrs, Bornman & Co. had here at the outset of the fair an exhibit of fire-prouding blocks, tiles, etc., which was interesting and instrutive to any visitor of a turn for building, but it was judged by the management to be reaviers to the general. I and was sent to the celiar. It still has good company, however, and, if it meets fewer eyes than in its old position, will doubtless be reen and marked by those who will most appreciate its merits

On the right of the main hall Mr. Soth W. Foller has a very full and worthy collection of his various appliances in the way of bells, tubes, assumedators, etc., which is a striking example of the progress of the age in luxury and the power to provide the small convenionees which obvinte trauble.

Of small inventions which make one smile by their simplicity and oleverness, there are perhaps less than the usual variety. The two which I specially remember are a contrivance for so hanging an ordinary pair of outside window-blinds that they may, in the twinkling dinary pair of outside window-blinds that they may in the twinkling of an eye, be closed, fustened together, turkinged at the bottom, and swing out from the top like an awning,—and a new form of window sash-halder and lock, consisting simply of a small iron rod behind the pulley-stile, on which slides a pieceed disc, running free and holding the sash. When the sash is in motion the disc is held horizontal by the band and slides easily on the rod; when the hand is removed the disc cants a little and binds, holding the sash immovable. The cost is brilling, and the device seems an admirable one. A third incost is trifling, and the device seems an admirable one. A third in-rention, which might come under the same head, is the machine for measuring leather. All leather, except sale leather, is sold not by weight but by the square toot, and as the shape of a skin is very ir-regular the measurement by the ordinary method is difficult. By this machine a frame holding a multisude of upright from pine is low-ered upon another frame, upon which is laid the skin to be measured. All the pins which are over the leather are stopped by it, while all the pins outside the leather drop through holes beneath them on to a platform just below, which forms part of a balance; a dial above registers the difference between the weight of the pins so dropped and the whole number of pins in the frame. This difference is of course the weight of the pins which are stopped by the leather. The weight of the pins is translated into area, sixty-four pins meaning one square foot superficial.

The furniture men all appear with liberal contributions, but their warerooms are very much more interesting. The space allowed to each is ridiculously small, and the hulky cabinets and hedsteads and sideboards are huddled together in a way that makes it impossible to see them to advantage. I remember nothing here that seems to invite special mention.

LECTURE ON ARCHITECTURE. THE NEW THEATRE ORDINANCE.

CHICAGO, Uctober 4.

Last evening Mr. W. L. B. Jenney delivered the first lecture in his course before the Chicago Academy of Design, his subject being "The Savage Tribes and Egypt." Your representative entered the hall not without much entiasity to see how far the architectural fraternity, so largely represented in this city, might feel inclined to

patrunize and encourage the efforts of the management of the Academy to disseminate information on the subject. When the lecturer was announced a survey of the audience showed that not one architect was in the room. A sprinkling of eager and carriest young men indicated that perhaps they might be assistants or students. But the greater part of the audience consisted of halles and gentlemen entirely without the pale of the profession, while the art students from other classes were very few indeed. In view of the fact that Mr. Jenney gives his services granuitously to the Academy, the want of encouragement on the part of the profession most interested in the subject places it in a most ungraceful light. The secretary of the Academy took great pains to send full information of the scheme to all the architecis and draughtsmen in the city. It is an experiment which needs substantial encouragement, and if the architects do not at least patronize it by buying course tickets for themselves and their assistants, it will be mainly their fault if it is not repeated or continued. patronize and encourage the efforts of the management of the Acadcontinued.

Mr. Jenney commenced with the statement that the art of architesture is the outgrowth of structural form. Its relation to engineer-

ing was clearly explained.

Hissarations were rapidly drawn on paper with charcoal and colored chalks. The first showed three plain arches supported on square piers. Taking this as a form of simple construction taken square perra. Taking this as a torm it simple constraction taken from the Roman type, he are rubbed out one pier and explained how the column was developed from the pier, with enp and base. Then the outer line of the arch was accented by a label monthing and the intersections decorated with carved bosses. Then the nucles were moubled and decorated with dog-tooth and obeyrup ornamentation, showing how the construction was retained without cleange during all these decorative developments. Hence the justification of the statement that architecture is ornamented construction, the decoration being the accentuation of structural features, and worked in the constructive material.

He then gave a short sketch of the condition of man in primitive times, and how cationally the savage used constructive undertals. The second illustration was a Malay but, the style of which has continued to the present day. He then gave a description of the development of the carliest known stone architecture in Egypt, and a sketch of Egyptian history according to the latest Egyptologists. Speaking of the paramils he said that it but been discovered that the Speaking of the pyramids be said that it load been discovered that the step-shaped pyramids were the oldest, while the great pyramid of Saphia was a more recent structure, being the largest specimen of

that kind which is distinguished by a smooth exterior facing.

The third illustration was an explanation of the nature of Egyp-



tian hieroglyphics, and Mr.Junneyshowed great skill in explaining the different kinds of writing on stone that had been used. Your read-ers may be interested in the following represen-tation of a familiar word.

Of this his explana-tion was, "The hieroglyphic designating an architect, seems to represent him as having finished a plan of a temple, and to be kick-

Over his head is a gallows, to hang him on ing it out of his office. In case the building should fall down, and on one side are three stones to be thrown at him in case the cost of the edifice should ex-

cord the estimate."

The three classes of Egyptian buildings — pyramids, touts, and temples — were then described in detail, and illustrations of cach were drawn. The method of constructing a pyramid as described by Diodorus and Marriette was minutely described, with drawings made Indorus and Marriette was minutely described, with drawings made before the audience. In describing the rock-cut tombs Mr. Jenney made a drawing of a queen's head in colored chalks, describing as he proceeded the methods pursued by the Egyptian artists, in which drawing, stone-cutting, and painting were employed. The lecture concluded with a description of the great Temple of Karnac.

Altogether the lecture was a greater sucress than the audience, one of the Academy galleries being only moderately filled. Some excellent examples of life school work by the students are displayed on the walk.

The city council of Chicago passed a very important Theatre Ordinance on the 14th of June last. This is the result of the most persistent efforts of Boilding Superintendent Cleaveland, who has been working at the matter ever singe the Brooklyn Theatre fire. Unfortunately our theatres are all built, and there will be but little to do under the law except to enforce the provisions which relate to the management of existing buildings. Two new theatres, The Academy of Music and Hamlin's, have been built this year, too early to be covered by the provisions of the law relating to new structures. and one, Haverley's, has been reconstructed to a large degree. But none of these conform to the requirements of the new ordinance. remains to be seen now what the superintendent with the conjectation of Fire Marshal Bruner will be able to do in procuring its enforcement in existing buildings. NEW BUILDINGS.

SAIST JOHN, N. B.

We have again reached the season when few new huildings are begun, and those in progress are hurried on so that they may be roofed in before the severe winter nomes. During last winter, which was unusually will, a considerable amount of building was done, but it is not expected the next will be like it.

The most important public work, the Custom House, is still undecided, more than a month baving passed since the tenders were received at Ottawa. In the mean time the east wall is being built from the foundation to the level of the street, a height of about twenty-one feet, with large blocks of granite in courses from three to four feet in thickness, the wall extending 200 feet on Prince William Street. Mr. Mooney is carrying out this work. Another instance of delay on the part of the Government is the Savings Bank. This work was tendered for in May, and the contract has only recently been awarded to Mr. Geo. J. Grant in place of another contract who had conversed the next tractor who had commenced the work.

The Provincial Government, finding that increased accommodation was needed for insore persons, is now enlarging the lunatic asylum at Fairville by adding a new wing. The plans have been prepared by Messes. McKean and Fairweather, architects, who are also superintending the work. The addition is three stories high and covers a space of ground 106 feet by 55 feet. The design is made to harmonize with the old work and will be executed in the same materials,

brick and stone.

The amount of money spont on churches speaks much for the religious zeal of the inhabitants of this city. Eleven of the old churches remain, and there are twelve new churches, some completed and others building, in all twenty-three, a large number in proportion to

the population.

The Church of Saint James, by Messrs, Croff and Camp, cannot be The Church of Saint James, by Messra. Croff and Camp, cannot be booked upon as a successful adaptation of Gothic work, but the Centenary and Methodist churches, by Mr. Welch, have good detail, in both these huildings the walls are built of rubble work, the jambs, modions, and tracery being formed of artificial stone. The Reformed Prestyterians are building a church by days' work, instead of contracting with a builder in the estal way. The building, which is Gothic, is about 66 feet by 46 feet, and will accommodate about 400 worshippers; there is also a school-room for 300 children under the church. Brick with stone finish is the material employed. Mr. F. Kain has prepared the plans and is superintending the work. In the recent competition for Trinity Church the design of Mr. Thomas, of Montreal, was accepted. His drawings illustrated a long, conventual-looking building with semicircular apse, the windows

conventual-looking building with sentetresiar apse, the windows single, lancet form, long and narrow. It is hoped this design will be more satisfactory as regards cost than that propared by Messra.

Potter and Robertson.

There is a probability that our local architects will once more meet in competition, but this time there are nominally three pre-niums offered, the first, as usual, bring merged in the commission. In the munth of June the Provincial Government advertised in the Royal Gazette that designs were required for new Parliament Buildings, notifying that on a certain date a plan of the site and particulars could be obtained, but the time has long since passed and expectant architects still wait for particulars. Conflicting rumors are affort respecting the work, some to the effect that it will be abandanced. doned.

Of important buildings in progress elsewhere the Exhibition Building at Fredericton and the Acadia College at Wolfville, N. S., may

be mentioned. The latter building is of wood, and of Italian design-Mesers. Dumaresque and Wickenden are the architects. From various sources of information I am inclined to think there is a lack of moderate-size dwelling houses in this city. The prevail-ing system of letting flats, with one cutranee and the back yard in common to all the tenants, is not without its disadvantages; and al-though the houses hult since the fire (for which architects have been employed) show better planning than the old ones, there is still mom R. B. for further improvement.

THE BOULOGNE LIGHTHOUSES.

The projected new harbor of navigation and refuge at Boulogue The projected new harbor of navigation and resuge at Boulogic promises to be one of the most splendid on any coast of France, notwithstanding some apparent paradoxes in the scheme of its construction. Its group of lighthouses, however, may be regarded as of even more general importance than the contemplated haven itself, because they will afford an infallible guide to the mariner exactly where he is most liable to mistake his way on the Channel waters. They are to be four in number, furnished with the most powerful light areas the host because windides, and appeals of sections. lights, upon the best-known principles, and capable of casting a gleam at least of their radiance upon the opposite shore. No similar cluster, supposing this to be completed, exists in the world, the utmost bitherto attempted having been the establishment of two, generally at the extremities of an extended bay in which vessels were in the habit of taking shelter, or where the business of the sea was customarily carried on by night. But it by no means follows that the quartet of beacons at Boulogne will be without a parallel in point of number, different though the arrangement may be. There are no fewer than eleven illuminated signals of the first, second, and third

class, flashing their rays upon the river approaches of the Gironde. At first these were no more than from baskets of burning coal or wood, suspended on losty poles: then lamps were substituted, fed with coarse oil, and supplied with round or tlat wicks; next, the inventions of Argand came into use, with Careel following them, whose mechanisms, indeed, have not yet gone out of use, though greatly improved by the combinations of Arago and Fresnel, with whose names the lifstory of the French lighthouse system will always be connected. The catoptric system, with which mitrors or reflectors were intro-duced, was an improvement, perhaps, though nearly parallel with the dioptric applied by Fresnel to his famous "tower" at Cordonan, al-most in the very month of the Garonae. This was succeeded by a lighthouse at Mount Agria, on the Mediterranean coast, and another at Cape Beam, visible to one another at a distance of more than at Cape Bearn, visites to one another at a distance or more than severity miles. At present, aided by peculiarities of apparatus, the lighthouses of the French coast are nearly all illuminates with color oil, though the electric element is expected to displace it in hanterns of the first order, and at the greater height. Petudeum was used, in several instances, with no great success, as at St. Gaubsin. But it will be less with the kindling power than with the datability of the sulfaces constructed by them that the marine architects of floulogue

may be expected to principally concern themselves.

The loftlest structure of this class on the French coast, at present, is that of Cordonan, more than two hundred feet, or about the height of the towers of Notro Dame, and followed by those of Dunkirk, Calais, and Baleines, on the western extremity of the Isle of Ré. Originally, it was not much more than half its present height, which is calculated from the level of the highest possible tide. Among its singularities is that, while the exterior suggests the idea of a fortress the interior recalls that of a palace, eighorately sculptured and adorned. Isolated in the midst of the waters, it has nevertheless, far above them a vast platform, on which the habitations of the assistant keepers stand in comparative safety. Somewhat similar is the position of the great Pharos of Henri de Brebat, on the Brittany coast, reared more a large non-horse rock formerly the solider. Toront

coast, reared upon a huge perphyry rock, formerly the sailors' terror, commenced in 1836 and completed in 1839, in defiance of extraordimary difficulties, occasioned by the violence of the lides acting upon a multitude of formidable shouls and reefs. It was here necessary, a maintade of formulable shouls and reels. It was here necessary, not merely to construct an edifice, but also to hew out or blast a little port among the rocks, where the craft employed by the construct ors might lie in safety. As the slim though solid tower grew up, every course of mesonry was, twice a day, covered by the waves, until a certain elevation had been reached; being thus bestrewn with slime and sea-weed, which as will be well understood, were no facilities and sea-weed, which as will be well understood, were no facilities.

stime and sea-weed, which, is will be well understood, were no tacilities to the builder. Sixty workmen, however, under the direction of the engineers, performed their tasks so well that their platform has scarcely ever since needed a repair. They squared, gruoved, and dovetailed every separate block, employing cement which, as they declared, and as it seemed, acquired in a few hours the durability of stone; but whatever the truth in that respect, the result has justified their confidence. Since that period, however, French light-house architects have arforemently here acquired with foundation.

bouse architects have unfortunately been content with foundations of fees Roman solidity, and the lighthouses themselves have been constructed of less massive materials. In fact, the manufacture of these edifices in iron for trans-occanic ports has become almost a distinct branch of French industry, and some of the perilous points

on the French coast itself have been thus supplied, as at Pontaillac, near Royan, which indicates an entrance, and thick-set cand-banks, to the Gironde; and at Walde, which points out a dangerous

stretch of the same chatructions, fronting the port of Calvis, which, searcedy less than Boulogne, requires a new port, a new pier, and a new set of warnings to navigators.

It is interesting, however, to note, now that so much attention has been attracted by the Boulogne project, that about the middle of the seventeenth century there was near the existing jetty a lighthouse of Roman construction, reputed to have been creeted by Caligula, when upon his expedition against the Gauls. Montfaucon affirms that it succumbed in 1644, in consequence of the cliffs below giving way, and he supplies the design of the building, which has every appearance of anthenticity. The ground plan of this tower was octagonal, and the fower itself was composed of fwelve stories, diminishing, like those of a Chinese pagedla, each by a step, as they rore one another, and each also having a broad cornice, constituting a sort of mallery, like that of the rore famous but highest halters. gallery, like that of the more famous but kindred building at Alexandria. Each of the eight sides was twenty-five feet in width; but with reference to the height, concerning which no exact details remain, it is calculated that if the measurements of Montianeon were estimated with any approach to accuracy, it must have approached to that of the structure at Cordonan, or slightly over two hundred feet. The walls were carried up in irregular courses, following, how-ever, a systematic plan; to three layers of Boulogne greystone sto-ceeded two layers of a stone softer in substance, and in color yellow; then two layers of a stone softer in substance, and in color yellow; then two layers of immense dark red bricks, followed by the greystone, and so forth to the end. This lighthouse would appear to have been restored by Charlemagne, who rekindled the henco-firms which his harbarian predecessors had permitted to die out; but after his spech it was abundaned, in what particular period is not known. Curiously enough, however, as M. Reynaud points out in his exhaustive work, in quarto and folio, upon the whole subject, there have been discovered near Dover the remains of a tower, built apparently upon the same lines with that at Bonlogue, evidently designed to an-

swer the same purpose, and, moreover, so far as may be ascertained, belonging to the same period. The architects of Boulogne, therefore, may in some measure take unto themselves the credit of reviving a Roman work. The longevity of some among these structures has been remarkable, notwithstanding the furious weather to which their invalidable cleans. inevitable elevation and the very purposes they serve expose them. That of Genoa, lofty as it is, dates from early in the sixteenth centary; and many others, still in use, are equally succent. - The Builder.

THE OWNERSHIP OF DRAWINGS.

NEWPORT, R. T.

TO THE EDITOR OF THE AMERICAN ARCHITECT:

Dear Sir, -I have read with interest your remarks on the subject of the ownership of architects' drawings and judicial decisions hear-

ing upon the same.

This subject was very fully discussed by the R. I. Chapter of the Institute in connection with the preparation of a form of contract.

This form, which has since been adopted, contains the following clause: "10. All drawings, plans, and specifications shall be returned to the architect before final payment is made." This clause has been found to work advantageously, the contractor usually making his appearance at the completion of the work with a large roll of details, etc. I have never had a case where the owner claimed any portion of the drawings; but, if a clause similar to the above were inserted in all contracts, it would meet such claims on the part of owners as well as contractors; the contract being carefully read and understood by both pactics before signing. heiore signing. Very re-pectfully, Geo. C. Mason, Jr.

BOW CHURCH.

For some time past this famous peal of bells, one of the finest, if not the finest, in the city of London, has been undergoing examination in the public interest, and before long the familiar chimes which captivated or consoled a Whittington, and have since charmed many

more from time immemorial, will ring out as before.

The Church of St. Mury le-bow, which, it not originally a Roman temple, as generally believed, was one of the earliest churches built by nor Norman compactors, has been destroyed more than once by storm and fire. It was at one time garrisoned and besieged, and was afterward the seene of an assassination. It was first mentioned as a Christian church in the reign of William the Conqueror. Snow says it was the first in the city built on arches of stone, and that it was therefore called St. Mary de Arenbus, or the Bow, although he elsewhere says, but with less apparent probability, that it took its mane from certain stone arches supporting a lantern on the top of the top of The Court of Arches was formerly held in this church, and

derived its name from that circumstance.

During the reign of William Rufus the roof of the church was blown off by the wind, and four of the ratters were driven into the ground with such violence that, although they were each twenty-six feet long, little more than four feet of their length was visible, the ground in the neighborhood being then a niero fen. About one hundred years after this event a turnult of a serious nature nearred in the city, which led to the assent upon the church before alluded to. The ringleader was William Fitz Osbert, surnamed Longbeard, who The ringleader was William Fitz Osbert, surnamed Longuegro, who was almost worshipped by the lower orders on account of his exertions as a professed advocate of the poor against the oppressions of the rich. An attempt being made to serze him, he took refuge in Bow steeple, together with various followers, and, being well provided with ammunition and provisions, was able for a long time to dufy the authorities. In order to drive him out, the steeple was fixed. This had the desired effect; the rioters were made prisoners, and, after a hasty trial, were hanged at the Elms in Smithfield, at that time the usual place of execution. It appeared that Fitz Orbert did not lose his pract of execution. It appeared that Puz Orocut did not lose his reputation among the people with his life, for it is said that after his death wast numbers of persons resorted to Smithfield, expecting that miracles would be performed, and that they carried away as holy relies pieces of the earth on which his blood had fallen. — London Times.

NEW PUBLICATIONS RECEIVED.

INDESTRIAL SCIENCE DRAWING. Elements of Plane and Solid

INDUSTRIAL SCIENCE DUAWING. Elements of Plane and Solid Free-Hand Geometrical Drawing, with Lettering, and some Elements of Geometrical Ornamental Design, including the Principles of Harmonic Angular Ratios, etc. For draughtemen and artisans, and teachers and students of industrial and mechanical drawing. By S. Edward Wacren, G. E. New York: John Wiley and Sons.

The Artisan. Hustrated by forty Plates of Geometrical Drawings, showing the most Practical Methods that may be applied to Works of Building and Other Constructions. By Robert Riddell, late tracher of the artisan class in the Philadelphia high school; author of "The Carpenter and Joiner," "Elements of Handrailing," "Mechanics' Geometry," "Lessons in Handrailing for Learners," etc., etc. Philadelphia: Claxton, Reposen, and Haifelinger.

- The Cambridge Boiler Explosion. An Examination of the

- The Cambridge Boiler Explosion. An Examination of the Attack in the Columns of the Easton Daily Advertiser upon the Judi-

cial Decision. By J. R. Robinson. Boston: A. Williams and Com-

ILLUSTRATED PRICE LIST of Prison-Locks and Prison Equipments made by the Yals Lock Manufacturing Company, Stanford, Conn., and 58 Chambers Street, New York.

NOTES AND CLIPPINGS.

NOTES AND CLIPPINGS.

Lean Exhibition — The Society of Decorative Art, New York, was to open its Lean Exhibition on Munday last. Among the pointings promised for the picture room are four magnificent works recently callected in Europe by Mr. J. R. Stebhis. One, by Alma Tudema, valued at \$10,000, represents Queen Clothle, wife of Clovis, first Christian King of France, instructing her children in arms. Another, by M. Gérone, pupil of Paul Behavoche, is a representation of Molièro breakfasting with Louis XIV, at Versailles. Among the nodes present is Cardinal Magarin, who, with clinched dist and scowling brus, expresses his angar with the young dements for daring to sit in the presence of the King. The owner values this painting at \$18,000. A third picture is the portrait of a Spanish lady — the beautiful wife of the Spanish Screamy of Embassy at Rome — by Parluny, valued at \$10,000. The fourth is by M. W. Bonguerean, a pupil of Picot, and is cutifled, "Hesitating between Love and Riches." Mr. Stebbins estimates its worth at \$6,000. Some fine works by other foreign artists have been contributed by Mr. John Wolf, Mr. Marshall O. Roberts, Mr. William H. Vanderbilt, and Judge Hilton, but the titles have not ret been unnounced by the Committee on Pictures. Mr. Laffurge has come from Baston to search the studios for the latest specimens of American art not heretofore publicly exhibited, and bas been successful in obtaining some fine paintings. The ladies of the society have accepted the offer of the Fifth Avenue Band to furnish music, and also those of the flories who indimuted sheir readiness to embellish the rooms with rare exotics. rooms with rure exotics.

The Injuries of Gas. — Some handom warehousemen having returned goods to the manufacturers because the colors had caded an inquiry was made as to the cause by Dr. Wollner, of Glasgow. Londom store-rooms are usually like by gas, and in many cases the goods are exposed to the products of gas combustion during the whole working day. The cause of the bading is found in the action of the sulphurius acid, many of the pieces of the course goods remained having absorbed that substance in notable quantity, while in some the fibre itself was actually described. Dr. Wollner suggests, first of all, thorough ventilation, to remove the functs of the gast; such secondly, the use of lime-white on the walls and scalings, renewed frequently enough to enable the acid super to find lime with which to combine. with which to combine,

MRDEAVAL ARCHITECTURE IN CYPRUS. — During the reign of the Lusignans at Cyprus, Mikusis, the royal residence, contained many monasteries and about three hundred Greek and Latin churches once possessed. The Gothic lowers have been torn down, their mere sample left standing, and the tracery of the window over the recessed doorway has been rent away in patches. Alongside the booken stamp of each tower case the incongruity of a Moslem minuret, built with the decorated bewn stone of the towers. The slab on which once rested the efficy of a Christian kinght, the inscription vert visibly on its site, has been presultated to form a threshold. Another ancient Christian church is now orangied by the Turks as a granday. One little church used by the Armenium has esemped descretaion. Every flagszone of the flaor is the tomostone of a Christian. On most of the stones are grayen full-length portraits of those who lie beneath them. The haights wear long, bushy hate and full, short bluff beards; they are clad in armor, and went appers on their hocks. The ladies, whose faces are for the most part broad and short, of the Italian type, have the hair rightly braided mader close-tiding caps, whence descend long veils that enverap the body to the feet.

A Gas Crook. — There is a clock in the Guildhall Museum, London, of which the motive power is hydrogen gas, generated by the action of diluted sulphuric acid on a ball of zine. The clock itself resembles a large colored glass cylinder without any cover, and almost half full of sulphuric acid. Finating on the top of this acid is a gases hell, and the gas generated forces forward this concave receiver until it nearly reaches the top of the cylinder, when, by the action of a delicate lever, two valves become simultaneously opened. One of these allows the gas in escape, thereby reacing the receiver to descend, and the other permits a fresh ball of zine to fall into the acid. The same operation is repeated as long as the materials for making the gas are supulted, and this is effected without winding or manipulation of any kind. The dial plate is fixed to the front of the cylinder, and communicates by wheels, otc., with a small glass perpondicular shalt, which rises with the receiver and sets the wheels in motion. A Gas Crook. - There is a cheek in the Guildhall Museum, London, of

Longevity of Artists.—Artists as a class are remarkable for impovity; a list comprising 1,122 artists was made some years ago, which gave the following results: Duck moder sixty years old, 474; sixty years and under seventy, 250; seventy years and under cighty, 243; eighty years and under vinety, 184; rinety years and under one hundred, 19; and above one hundred, 1,—the mean age at death of the whole mumber being fifty five years; from which some infer that the parents of fine arts has a tranquilizing effect upon the spirits and a tendency to moral refinement in the habits and manners of its professors, extremely favorable to longevity.

WILLIAMS AND RALLMAN LANDANAMENTS.—On one of the Pression railroads willows have been grown with advantage on the slopes of recevations and embankments. It is surprising that a similar method of headilying and strengthening the readways of milroads is not more generally adopted. A perfect network is formed by the roots, binding the whole surface firmly, and preventing washouts; and the thick green growth covers agly gashes in the earth, and unsightly elevations, with an agreeable, eyesthicking thicket. Almost any of the varieties of willow can be used with success, but that which is recommended as the best is the Saliz amygdatine. In dry soil the entrings should have a good length underground.

Hydraelic Salt-Mining in Bayaria, — A correspondent of the World describes at great length the process of salt-mining in use at Berchlesguden, Bayaria. At this place the soft does not occur in deep rocky strain, as at the Polish mine at Wieliczka, but in a thick layor of saliferous earth in the heart of a mountain. The mine is entered by horizontal shafts, and the salt ingeniously removed by the colvent action of water working upward. At the end of each shalt a chamber inflect, and when it is large amongh the entrance is dammed up and the chamber filled with fresh water through an opening at the top. The water is to dissolve out the salt from the roof of the chamber; hence is is nocessary that the chamber be kept entirely full. At first, the water acts also upon the bottom and sides of the chamber, but soon there is left a passy water-proof covering of clay, which prevents further action. At the top, however, the overlying earth falls away as a time actiment as tast as the salt is dissolved, leaving always a fresh surface for the water to act upon. The falling sediment forms, under presente, a water-tight thoor to the chamber, which rises leaving always a fresh surface for the water to act apoa. The falling sediment forms, under presence, a water-right floor to the chamber, which rises as the solution of the roof goes on, so that the chamber slowly climbs from the bottom to the top of the salt-yielding stratum. The solution has to go on with the atmost quiter, and not too rapidly, or clee fragments of the roof will full to the bottom, where the water is saturated with salt, and be lost. To keep the water constantly pressing against the roof, a proper supply of freels water is continually added from above. Complete saturation of the water is effected in about three weeks, when it is pumped out and carried in pipes to Reichenhall, twenty miles distant, for evaporation. Fresh water is then pamped into the chamber, and the process repeated until the upper limit of the suit deposit is reached. In this way the mountain is leing slowly washed, and its Saline treasure scolen away, without removing the clay with which it was associated. The saliferous carth removed in tunnelling is refused in the usual way. nelling is refined in the usual way.

INDIAN MOUND AT FORT LEAVENWORTH. — Major F. G. Adams, Secretary of the Sture Historical Society, was in the city on Thursday, and in company with Dr. R. J. Brown visited Fort Leavenworth and found six mounds on Sheridha's Drive, a short distance west of the post, one of which was II feet high, with a dismeter of from 12 to 15 feet. After the discovery was made the gentlemen called on Dr. Fryer, and secored assistance in making the excavations. Vesterday Major Adams, R. N. Hershfield, C. A. Peaper, Rev. W. N. Page, and Dr. E. J. Brown visited the mounds, in company with Dr. Fryer, baring two men with picks and spades. They dog a hole four feet square in one of the mounds, and cound it walled up with regularly laid stone, arebed, the walls being about one foot thick. They also found two parallel walls about six feet in length. Appearances indicated that five liad been used, apparently for the purpose of cremation, but no bones were found. The mound was not, however, fully explored. Next week further examination will be made, and a force of men couployed in the excavation. In 1830 a government surveyor named McCoy wrote a hook, in which he stated that a number of mounds were in existence just west of Fort Leavenworth. This book accidentally found its way into the hands of Major Adams, and led to the exploration. The location of the mounds was so well described that no difficulty was expecienced in finding them. The number was not specified in McCoy's report. Trees are growing around ble mounds, but none upon them. Thuse are the only Indian manuals ever discovered west of the Mississippi. — Omaha Republicata.

Status of the Tipe Emperon Valentinianus L.—The remnants of the

Status of the Euregeon Valentinianus I.—The remnants of the bronze status recently found in the bed of the Tiber at the Sisting Bridge Rave been placed in the small mustana at the Palace of the Catars. They bronze statue recently found in the bed of the Tiber at the Sistae Bridge have been placed in the small museum at the Pulsee of the treases. They are a series of fragments of githed bronze, the most part representing drapery. The feet, anached to the murble plinth, and shed in the sandals, are well executed. The arms, with the marks of sword and axe, have also a historical, but not much of an artistic attraction. The identification of the statue has been made, and Baron Viscuati the Papal archesclogist, has published the feets in a note to the Descriptor Romans. The course of information is the biscription out in a markle slab, which formed the pedesial of the statue. This indicates that the statue was creeked by the Sonate and the Roman pulph, in grantinde towards the Emperor Valentinianus 1., praising him for the providential work which he, with his brother Valene, did for the advantage of the Eternal City. It is known that the bridge bore the name of Valentinianus, after having borne than of Probus, as the Regionaries record. It remained until the present without any historical record. Animianus Marcellinus relates that the work of the bridge was concluded by Aurelius Symmachus, Prefect of Rome. This was supposed to refer to the Cestian Bridge. But the new inscription shows that the passage refers to the present Ponte Sixto. The date of the statue and the bridge is therefore between 364 and 365. This is the first result that follows from the disnovary of the inscription. A second is that the statue, which was supposed to belong to the best period of Green-Roman and, is only a specimen of art in its great decline, though some good qualities are still retained. — The Pilot.

The Gibbardar Tunner.— The proposed monel between Spain and Africa is still before the public. This tonned, according to the plan at present contemplated, is to extend from within a short distance of Algicinas, on the Spanish side, to between Tanguer and Centa, on the African side. The tength of the submarble tounel will be nine miles, with an inclination of one foot per hundred, and the approaches will have an extent of six or seven miles. The greatest depth of the sea is 3,000 feer; and, as it is intended to have a thickness of some 800 foct of rock left hereven the roof of the round of the round of the transle will. of the tunnel and the see bottom, the greatest depth of the tunnel will thus be 3,000 feet below the level of the see.

A Corner's Thren. - Professor B. Sillinan mentions a curious case of A Copper's Tracer.—Professor B. Sillinan mentions a curious cuse of debased coinage. A large number of spurious doubloons were untered by one of the Penjamlar governments during the late civil wars, the nucleus of which was a disk, or blank, of plannam, which was inclosed between faces of cold, the blaw of the coining press conventing the fraud, while the weight of these spurious pieces was identical with the genuine coin; the value, however, of the plannam blanks had been prepared by the Russian government for use in the suppressed coinage of that metal.

BOSTON, OCTOBER 26, 1878.

CONTENTS.							
SUBBARY:— The Indiana State House Competition aga Compositor.—The Use of an Architect's I Chicago Theatre Law.—The Fall of the For Tunnel.—The Spinola Steam-hearing Schem Workman's Exhibition	ty-	win sec	gs. one	I S	lre em	ho es ch	
ABERICAN ARCHITECTURE - WITH PRECEDENT AND							
MODERS PLYNBISG IX			-				140
The Incestmations: — The Church of St. Michael and all Angels, B Courages at Berkeley, Cal. — Church of St	H	dui	TC.	Re	ne	u,	
Prance	2				-	5	141
THE MURAL PAINTINGS AT ASSIST		0	40			+	141
Correspondence: Lener from Boston Communication:	×	×	di.		*	+	142
Archieology and the Vernaenlar Architecture	3		4				743
THE CHICAGO THEATRE CEDINANCE	-	-		-			143
Notes and Chargeness	00	1		A	5	(2.44

WE are not yet, it seems, at the end of the quarrels over the Indiana State House competition. The latest phase of them is remarkable. Mr. E. E. Myors, one of the disappointed competitors, has entered a suit in the United States Circuit Court against the State House Commissioners for damages to the amount of farty-five thousand dollars, on account of their use of the plans submitted by him in the competitions. After alleging in his complaint that having been one of the four competi-tors in the original competition he submitted in the second a new design with complete and trustworthy plans, specifications, and estimates, the preparation of which cost him in second expenses ten thousand dollars, and employed his own labor and professional skill to the value of thirty thousand dollars, and that they were returned to him so mutilated as to be worthless, Mr. Myers complains that the accepted plans, submitted by Mr. May, were imported and ansuitable, and that the building as designed by him would have been in danger of falling by its own weight, facts of which the commissioners were advised by the experts called in for the competition; that the specifications and estimates furnished with Mr. May's plans were imperient, and insufficient to enable the experts to test the estimates, as required by the law; that the commissioners, knowing these plans, specifications, and estimates to be missitable, took arivantage of their opportunities to have Mr. Myers' plans photographed, and to use them, with his specifications and estimates, to supply the deficiencies in Mr. May's in order that this plan might be adopted, and thereby converted them to their own use, for which reason he demands the amount of two and a half por cont on the estimated cost of the building, as usually allowed to architents for plans and specifications, or, as we have said, of forty-five thousand dollars.

It is always a matter for regret that a losing compositor should feel called upon to publicly attack the plans of his succossful rival, and in the present complaint the criticisms of Mc. May's plans are apposite only as they support the charge of the appropriation of Mr. Myers's plans by the Commission. We do not suppose that the choice of the Commissioners can at this day be overturned by any complaint that they have chosen a had design. The charge, however, that they photographed Mr. Myers's plans and took advantage of suggestions in them to amend the accepted plans is a very serious one, and would, if it is proved, justify their dismissal. The more photographing of unaccepted designs without permission is in itself an act of had faith and a flagrant usurpation, which raises a presumption that it is done in order to make use of the plans without adopting them. It is a recognized rule, and has been confirmed by judicial decision, in Massachusetts at least, that whoever makes use of any feature or device borrowed from plans or designs submitted by an architect, is bound to pay him for the use of them, even though they be returned to him unaccepted. And we have no doubt that the court will in the present case decide that if the Commissioners have in this way used Mr. Myers's plans he is entitled to compensation oither from them or from the State they represent. The photographing of his drawings, even if the photographs were not for architectural use but only, as the Commission is said to have unofficially declared, to be preserved as records for use in case of future dispute, also clearly entitles

their author to a compensation, though it might be difficult to fix the amount of it by any established rule, no provision for such an infringement being provided in the usages of practice. Though this should be the only thing proved against the Commissioners, it is desirable that they should be brought to book, for the sake of future competitions and for the recognition of the principle that an architect's drawings are inviolable until be has distinctly assigned them for use. It is as much for the good of the public as of the profession, in the long run, that commissioners and committees should be taught not to take advantage of the architects whom they entire into competitious.

It might be wished in the interest of the profe-sion that the questions of drawings, and design or professional service, should he kept visibly distinct in such a case as this; for the public is too apt to regard the drawings as the whole measure of the service, if not actually to confound the two. If, for instance, the Commissioners took advantage of Mr. Myers's ideas, they are liable for the proper professional fee. If they simply spoiled his drawings, as he alleges they did also, this is a matter entirely distinct from the question of two and a half per cent, or what-ever may be awarded him for appropriation of his design, and the payment should reasonably be the cost of reproducing them. It would be doing good missionary work to have the actual cost of a set of drawings for such a building made publicly known. A dozen years ago, when the competition for the new Law Courts in London was arranged, the English Government allowed to each of the twelve invited competitors about four thousand dellars (£800) as a return for his expenses, and it is said that they were all out of pocket. The drawings in this case were nonsually alaborate, but no estimates were required, or at least none in detail. Mr. Myers claims that the actual cost to him of the plans, specifications, and estimates was ten thousand dollars. This looks very large, but we have no means of judging of its reasonableness. The amount of work demanded by the conditions of the competitions if thoroughly carried out was enormous, since they required the design to be practically ready for contract. The conditions were indeed so oppressive that, as we took occasion at the time to say, it was not creditable to an architect to enter the competition, a fact which diminishes the sympathy to be felt for those who entered and were disappointed. It did in truth domand, not the prediminary labor which is rated at one per cent of estimated cost, but the complete preparation for actual execution of work, for which the usual fee is two and a half per cent. It is not a bad thing to have the whole cost of such a competition proclaimed, and we could wish the public to take it home; but the architects who took part are shown to have had to face the alternative of rating their professional performances for below the accepted standard, or of risking many thou-and dollars apiece in the most hazardons kind of lottery We should not suppose that either born of the dilemma would be an agreeable soat.

The late disaster in the Colosseum Theatre at Liverpool gives point to the Chicago theatre ordinance, passed last summer, which we print in another column. Its provisions are an enquestionable improvement on the common habits in building and administering theatres. The requirements of a proscenium wall of brick, and the multiplication of exits, the arrangement of stairs, and the position of the amiltorium are excellent, as far as they go. At the same time, to a proper togulation of theatres several more things are essential. No written description of requirements can make it sure that the exits of a theatre are what they ought to be; security in this respect will depend on the judgment and rigor with which the plans of the theatres are supervised by the inspectors of buildings. A brick proscenium wall is a good and indeed indispensable thing; but it loses half its efficacy unless the arch and boxes of the proscenium and the adjoining ceiling of the amiltorium are also made incombustible. The method proposed of "fire-proofing" floors invites a smile, though it is better than nothing: the covering of stud-partitions with iron lathing is only a pallianive. The principal partitions, at least those that enclose the stairs and the corridors, ought to be of brick. We see no mention of a fire-proof curtain, a thing which has its value, although like other appliances kept only for extraordinary uses, it is too likely to be mishandled or out of order when it is needed. There is an impression, no doubt, that a large ventilator, or

vent, over the stage will make a five-proof curtain unnecessary, but this impression we take to be more or less delusive, for, at least in cold weather, the draught in a theatre is constantly from the stage to the additorium, and before it could be reversed irretrievable borm is likely to be done. The only assurance of value in the curtain, on the other hand, is in using it constantly whether it is needed or not, as is the habit in the French theatres. As for the limitation of the number of spectators, it would be an admirable provision, but it is not easy to believe it will be adequately enforced in an American city, any more than it is in American waters, where ferry-bouts and excursion steamers are constantly louded with four or five times as many passengers as their certificates allow them to carry, and where no-body is ever refused passage.

The vault of the Forty-second Street tunnel in New York, which killed two men in June last by folling in part, has given another warning. The vault, it may be remembered, was built in successive sections of seventy-five feet long, and it was directly after the centering of the second section was struck that this section fell. It was a vault of preposterons construction, being of very flat section, forty feet in span with but ten feet rise, -- a brick shell of only six courses of headers, to be leaded at the crown with twenty-live or thirty feet of loose earth. Moreover, it was shown that the bricks were very carelessly laid, in mortar of no cobesion. Nevertheless an intelligent coroner's jury decided that the trouble was simply in loading the arch cardlessly after it was built, and consured the contractor for this. quiry went no farther, and since the first section of the vault did not fall, the second was rebuilt and the work went on as before, the inspector only ordering that the shelf should thence furth be built in seven courses of headers instead of six. Lately the first section, which had survived the earlier disaster, has been seen to be sinking at the crown, and on Sunday a large patch of it, about thirty-five feet across, fell down. Luckily no one was beneath this time, it is believed, the public having been warned off. The stone retaining wall on the face of the turned, where it emerges on First Avenue, is reported to be also in a dangerous condition. It is intended to support a hank of earth one bundred feet long and sixty feet high, yet is said to be only four feet thick at the base and two at the top, the batter being on the inside, and is built without even drain-holes to let out the water which may accumulate behind it. We shall probably not hear anything this time about uneven loading by the contractor : it is not easy to see how the responsibility can be again diverted from where it belongs, - in the office of the Commissioner of Public Works, where the work was designed and superintended. The people of New York are to be congratulated on this second accident. It their city improvements are at the mercy of an ignorance of construction and workmanship which would discredit a bey at an augmeering school, it is a good thing to find it out as early and at as little cost as possible.

THE New York Board of Aldermon has passed the ordinance in favor of the Spinola scheme for applying the Holly system of steam-heating to the city, without the restrictions that the more cautious of the board tried to fasten upon it. The experience of Lockport seems to show that the system deserves trial on a large scale, and there is no reason to doubt that it may be as practicable and useful as the common system of gas-supply. At the same time it is too serious an innovation to be tried in a city like New York except by the most trustworthy hands, and under the most careful saleguards. These do not seem to be the conditions of the present scheme. For this reason it is thought that the Mayor is likely to vote the ordinance, and again it is threatened that the Aldermen will carry it over his vote. One proposition, which has been pressed with some persistencethat the Spinola Company should be made to pay for its privilego, or the franchise be sold to the highest bidder—seems to us peculiarly ill judged, for two or three reasons. First, the only pessible proper reason why a city should grant such a privilege, which involves a considerable sucrifice of general convenience, is that it will be for the benefit of the mass of its citizens. For a city to full to speculating in attempts of such a kind would be altogether out of place and demoralizing. Second, the idea looks like a foolish economical juggle, for whatever is paid to the city in this way is simply so much added to the cost of the undertaking, which must in the long run he provided for by the tells of the company; that is, it must come out of the

pockets of the consumers, the citizens for whose benefit the tranchise is conferred, and for whose sake the original payment was exacted. Finally, the imposition of such a tax gives the greatest possible inducement to save money by doing the work as cheaply and slightly as possible; whereas it is a thing which if done at all needs to be done in the most thorough manner. We should be glad to see the whole thing held in reserve till the question of subways under the streets has been day considered and decided, because subways must shubtless in time come to be considered as necessities, and the wholesale undermining of the streets for a new strips of conduits gives the lest possible occasion for introducing them.

Ourside the great exhibition of the Champ de Mars at Paris is a subsidiary one, of which newspaper correspondents do not say much, and of which probably not a great many persons who have stayed on this side the water this summer have heard at all, but which nevertheless is one of the most significant things to be seen there, not so much because of what is in it, as because of what it aims to be, and of the men whose work it is. It is the French workmen's exhibition. A plain building near the Porte Rapp, the main entrance of the principal exposition, contains the exhibits, which the workmen of the different unions, quassisted by their masters and employers, have got together, and the contributions of enterprising individuals. It displays a good share of the bandiwork of various traders, with ornamented work of various kinds, and, what is more interesting, a large collection of inventions made by the workmen. It may be supposed that the amount of money at their command was not great; there is something a little pathetic and very admirable in the quiet perseverance with which they have carried out their purpose in the face of many difficulties, and have built up their medest display beside the great one. Their first application was for space in the great exhibition, which the government at that time, under the traditional dread of combinations of workingmen, refused to give, Under later and more liberal ministers the government relented, and gramed them a space apart. The city of Paris allowed them lifty thousand francs, and the Department of the Scine twenty thousand, toward the expenses of the exhibition, which was opened by the Minister of Agriculture and Commerce in person. There was difficulty at first in the reluctance of many of the inventors, - who had not been able to bear the cost of taking out patents. - to exhibit their contrivances, lest they should give opportunity for pirating them; but the government again came to the reseme by issuing an order which protected all the inventions exhibited from imitation during the time of the exhibition and for three months after. It has been the habit to commiscrate the oppressions of the French workingman, who is forbilden to combine in organizations and hold general assemblies, though allowed to meet in his local trades-union. Yet one cannot womder if French legislators remember, that when the workingmen of France did unite and assemble, it was under the guidance of reckless leaders, to conspire against the peace of seciety, and that their means were bleed and petroleum. How much is cause and effect, it would be dangerons to say, but that these French working men do more to bring homor on their calling than those of other nations, whose attention is swallowed up in agitation for class privileges and the remodelling of society, appears from a good many signs, among the most significant of which are their embassy to our Contennial, and this summer's exhibition at l'aris.

AMERICAN ARCHITECTURE — WITH PRECEDENT AND WITHOUT.

A contribute ago we spoke of the independence of archæology which is one characteristic of American architecture, — not without regret that, while our countrymen are by this independence delivered from many restraints, they have no equivalent for the wholesome discipline which a regard for precedent, and especially for style, can give them. These things call to mind the question asked not long ago by a correspondent who criticized somewhat incisively the drawings submitted in our competitions: "Whither are we tending?" and the question is answered independently and not inaptly by the general criticism of another person: "The tendency of American architecture is to the fantastic."

We may coufess that this last saying is not more severe than is just, if we take into account the whole body of our architecture, the vertucular, the cultivated, and all the intermediate grades

together. Eliminating from the architecture all its imported characteristics, we shall have to acknowledge that in the American residuam there is a prevailing element to which the disa-greeable title we have quoted fairly belongs. It varies in degree, being on the whole most prominent in the most purely native work, the least sophisticated by any foreign or other tradition, but cropping out as a tomlency even among our architects of stondiest training; occasionally we see it assert itself in the irrepressible bizarreries of Americans whose artistic nursing is wholly European. That it should be an American characteristic is, after all, not strange. It is the natural thing for a peo-ple restless, inventive, restrained by no artistic scruples or diffdence, fond of positive and oven startling effects, and given to When there is put into the hands of such a people an unlimited supply of architectural forms from a great variety of outconnected sources, many of them originally striking, picturesque, or splendid, with no respect for authority, association, or original purpose to govern the use of them, the result can hardly be anything else than extravagant. If a company of simple persons, with no rules of dress to suit the occasion, were suddenly to break into the costume room of a theatre and full to adorning themselves at their wills with all its therry, fantastic is probably the only word that would fit their attire. Something of this sort has befallen American architects. They have been let into the possession of a huge wardrohe of architectural properties, and while some of them have a fair knowledge of the traditions of the stage to guide their choice, and some a sense of natural fitmess, a good many have nothing better than the whim of the moment, or the opportunity to take what they first lay hands on. The necessary result is all degrees of propriety and absurdity in attire, some being cleverly dressed, and others as growsque as the savage who crowns his tattooed body with a stovepipe hat, or hangs a string of slippers about his neck. To make succonstul use of such unlimited opportunities is one of the most difficult things for an artist to do. For one person who can come out effectively attired from a misechaneous wardrube, there are a score who can dress with credit by a provailing fashion. The power of parting into satisfactory combinations forms which belong together, and with which one is thoroughly familiar, is reasonably easy to acquire; the power to seize unfamiliar and unrelated forms and constrain them into an artistic union is one of the most inusual, and one of the latest that a man comes by. As a ration deliberately eclectic and without much training, we have set ourselves artistically a premy hard task.

The American architect then, where he differs in his ways from his European brother, has attacked his work at the most difficult point. A generation or two ago he designed securely by the well-understood traditions of an old style, and produced work which was at least sober, comely, well-bred, and never offensive. Then the ochors of the English revival came to his ear; the loosing of the old honds followed, with the stimulus of a great array of new examples, and without the restraining grace of archicological reverence; Mr. Downing summed his trampet call, and henceforth repose was impossible and disci-pline distasteful; then came the "French roof" and the jigsaw, and the vernacular architect was emancipated. The result was naturally a series of extraordinary experiments. For the average American is as sure of what he likes and as self-reliant in matters of art as in politics or business. He has before him no remains of a better period — at least none of a period which be will acknowledge as better — to convict his work of inferiority; no consocrated standard by which to estimate it; no respect for any authority which tells him it is not the best. He thinks to conquer art as he conquers material progress, forgetting that all the enterprise that ever drove railroads through a mountain or built up cities in a year will not in itself attain it. Such being the character of his constituency, reflected more or less in himself, and his opportunities so unlimited, it is not wonderful that the architect's performances should be too often fantastic. What wonder if he presses into his service whatever takes his fancy; if his works are a combination of odds and ends picked up here and there because of their conspicuousness, his buildings bristling all over with turrets and dormers and gables and pediments and buttresses; if artistic quiet is impossible to him, and his most modest cottage contains architecture enough for a

For all this it has been a habit, and people still continue it, to call upon us for originality, and to clamor for a new invention, a distinctively American kind of architecture. People of abstract tendency have demanded the expression of American

ideas and characteristics in it; more positive people have offered samples of decorative material out of which it should be made, - cagles and striped shields, stars, stalks and ears of Indian corn; and a few architects have, with patriotic fervor, addressed themselves to carry out these recommendations. here occurs the question, what kind of originality and what kind of expressiveness are required in American architecture? If originality means simply that American buildings shall be recognizably unlike other buildings, we have enough of it and to space. There is nothing anywhere else in the world that is much like the vernacular French-roofed villa, or our ordinary builder's country house; if we consider our more pretentions city architecture or our public buildings, though they contain ideas gathered from all sources, there is not a city in Europe where the most of them would not look conspicuously foreign. As for expression of character, if we consider the qualities which persons who do not love us are apt to dwell upon. - vainglory, ostentation, restlessness, irreverence, haste, commercial ausoundness, and a general want of substance, - are they not written on the fronts of a million of our buildings? and the qualities which friendlier critics ascribe to us, - enterprise, invention, energy, independence, progressiveness, — are they not also everywhere displayed in our work? If, on the other hand. we look for the accistic qualities of a good style in hailding, harmony of parts, and the predominance of leading architectural ideas, for a distinct body of forms, individual and thoroughly adjusted to each other and to these leading ideas, assigned each to its definite place in a harmonious system; this is demanding what is not to be invented in a day or in a generation, and what really never has been reached by a predetermined effort.

What is needed is not partitotic inspiration, not eagles or maize. not originality, but agreement and skill. If we were given to-morrow a thousand new elements of form and decoration we should be no house off; we have already a thousand more than we know what to do with. How we are to be made to confine ourselves to a number of forms small enough to be worked into a coherent style no man knows. If this ever arrows it will be by natural selection, not by force of preaching or of votes. As for skill, the most rapid way of securing it is to work as we have some others work, until we acquire it. Skill comes by discipline, and discipline is maintained by precedent. Originality and the development of style, in architecture at least, have never sprung from anything but adaptation to new wants; the combined of their success is skill. When a people has new and well defined wants to diesate the form of its buildings and new materials to encourage the development of a possible treatment, it has all the outward circumstances which any people ever had to incite it to occare an architecture. So far as there is anything of real interest in the novelties of American archimeture it has come by mere provision for practical needs or mechanical convenience. and this has been the way of all worthy architectural progress. The wooden architecture of our houses, slight as they are; their plans, which have developed distinct types both for city and country unknown elsewhere; our manner of using iron in ar-

chiceenral construction, - these are examples.

It is safe to say that as a rule the men who have been most successful in originality have been those who have been most studions of precedent and most rigorously tenined, because thus they have gained the sureness of hand which has saved them both from timility and from disaster when they were at their own guidance. This is true in a greater degree of nations. The architects who in this century have shown the most original power are unquestionably the most systematic, the most academic in training. - the French. It is because they have acquired their power by the best means of discipline the world new af-fords architects, and the discipline is of the most formal, being based entirely on study of the antique. It is particularly noticeable that they have been bolder, more characteristic and straightforward, less conventional and more successful artistically then any others in the handling of the untried material, iron. The unconventional American has thus far found nothing houser to do with his iron than to work it into clumsy and shamefaced imitations of stone and wood. The Frenchman, slave of his schools and his precedents, develops it into forms unseen before and clearly expressive of its exceptional qualities. In like manner, it is not the engineer or the mechanic, when he undertakes to add decoration to his work, untrammelled as he is by artistic prejudice, who shows most originality or straightforwardness in ornamontal treatment, to say nothing of other excollences. It is the well trained designer; and this because be

only has acquired by discipline the artistic sense of fitness which can show him the incongruity of old forms in new materials and teach him to modify or replace them for new conditions. We can see no reason, then, why Americans should feel concern about originality. It is one of the qualities which always disappoint a direct pursuit. From a disciplined hand it comes without direct effort, if it comes at all: from the audisciplined it is 100 likely to mean only the fantastic.

MODERN PLUMBING. IX.

SLOP SINKS- KITCHEN SINKS- WASH-TRAYS,

Stor sinks are simply small and deep iron or percelain sinks, with a culti-water supply only. They save the water-closets from a great deal of rough usage and unnecessary foolbess, and their water allows the waste for filling pitchers. The best shape is that which allows the waste to run off most quickly and exposes least moistened surface, but the sink should be large enough to allow water to be drawn for filling poils and pitchers without danger of the drippings fulling on the floor. A very good, though rather expensive pattern is the Junthe floor. A very good, though rather expensive pattern is the Jennings Housemaid's Sink, which consists of a state sink with a pocce-bin hopper and trap set in at the lower end. Over this hopper is a ground cover, which can be turned up to allow a pail to be cappied directly into the hopper, and when let down serves as a draining shell for setting things waiting to be washed at the other end of the

Sometimes a porcelain hopper alone is used, like that of a withircloset, and supplied in a similar manner through a side arm. A strainer is formed in the poredain at the bottom, and the hopper is set into a three-inch waste-pipe with trap. Some of the fron slop sinks, as Merry's patent, made by the J. L. Mott fron Works, New York, and several similar forms, have an open hopper in the middle, with a four-inch outlet. These carry off a large quantity of water with great rapidity, and are very useful where a considerable amount of liquid is to be disposal of.

The slop sink waste soon becomes very offensive, and the trap should be placed close under the sink, to reduce as far as possible the exposed pipe surface between it and the sink. A ventilated Sthe exposed pips surface between it and the sink. A voluntative strap is the element, but the ventilating pipe must be as large as possible, even to the whole calibre of the trap, and the waste-pipe beyond the trap must not run more than two or three fact before entering the larger vertical soil-pipe, or siphonage will constantly take place, from the large quantity of liquid thrown down at once, and the rapidity of the discharge. Where there must be a considerable length of nearly horizontal pipe beyond the trap, even a ventilating pipe cannot be relied upon to prevent siphonage, and a reservoir trap must be used. This should be selected so as to be proof against siphonage conter any circumstances, and to contain as small a quantity of liquid as is compatible with this requirement, and there should be no sharp edges or reëntering angles to collect deposit. Perhaps

the Bower patient comes the nearest to fulfilling these conditions.

Of kitchen sinks there are many varieties: wood, either plain or lined with lead or copper, iron - plain, galvanized or onamelled-

roapstone and slave are used.

Plain wood, if well made, constantly used, and kept clean, makes a tolerable sink. Two-inch pine planks should be used, either tangued and grooved, or with both edges grooved and a hard wood tongue inserted, and the joint should be painted with white lead and oil, and tubbed together. A bell trap with brass strainer is generally screwed in over the waste place. Unless kept constantly meest, however, the woodwork shrinks away from the joints, and a good fron slak

is quite as chosp and much to be preferred.

The principal difference between the various makes of iron sinks is in the arrangement of the strainer and trap. The old-fashioned sinks, and many new ones, have a hell-trap attached to them. This is not the best arrangement, but as it is cheap and very common, it may be well to notice some of the different kinds. The worst is may be well to notice some of the different kinds. The worst is that which has the inverted cup attached to the under side of the strainer, and the strainer either altogether removable, which is the usual way, binged at one side, so that on raising it to remove the obstructions which rapidly secumulate under the edges of the bell, or for the purpose of putting down solid refuse, the mouth of the waste

for the purpose of putting down solid refuse, the mouth of the waste pipe is exposed, and the air of the room is quickly contaminated with gas from the cesspool or sever. The majority of kitchens are never free from the smell of the drains, principally for this reason.

The Mages Furnace Company, of Boston, make a sink which has a bell immovably fixed over the waste-pipe mouth, and a separate strainer, hingel, so that it can be turned back and the edges of the bell cleared without breaking the water seal. This is an improvement on the common form, and it has the additional advantage that

ment on the common form, and it has the additional advantage that apple cores and such rubbish cannot possibly be put down the pipe.

Another good feature is found in the sinks made by the Miller Iron Company, Providence, R. I., which have the bell attached to the strainer, but this is surewed down, and the bell, which has small projections cast on it, can be turned round by a thumb-piece above the strainer, and the projections scrape up the deposit around the edges of the bell, so that it can be washed down the pipe.

A more elaborate affair is Carson's Kitchen Sink, made by J. M. Carson, Louisville, Kentucky. This has a removable strainer and

beli-trap of considerable size in the middle of the sink, but the belitrap, instead of connecting directly with the waste-pipe, opens into an iron elstern, holding some ten or twelve gallons, the only outlet an iron eistern, holding some ten or twelve gallons, the only outlet from which is through a pipe entering near the top, and turned down nearly to the bottom of the eistern, thus forming a very deep water-scaled trap. Unless sufficient water should suddenly be thrown down to fill the bore of the discharge pipe and convert it into a siphon, the water in the cistern will stand always at the lovel of the top of the pipe, and the grease which passes through the strainer will collect at the surface, and can be readily removed from the strainer with the brilling to the be time to time by lifting out the strainer and bell trap which serve as a cover. This device has good points: the waste grease is prevented from getting into and choking the drains, and is of some value for somponaking, and the deep-water trup in the eistern shots oil gas from the sewer; but the eistern itself forms a small cesspool which in had weather, or when not much used, may got very affensive, and will make itself an impleasant occupant of the kitchen, in spite of the hell-trap in the cover; and the clearing out of the grease, especially after long neglect, is a most unsavery operation.

The grease-collecting reservoir is, however, a very useful appendage to a kitchen sink, and can be used without offence by placing it out of doors, as near the sink as possible, so that the grease will not congeal on the sides of the waste-pipe, burying it in the ground below frost, with a removable rover for cleaning out. Pield's flush tank unswers this purpose very well, independently of its other special merits. The common form consists of a small tight cosspool, just nutride the house wall, of brick laid in coment, and with a stone cover. The outlet pipe turns flown inside the reservoir nearly to the bottom, so that the surface of the water is always above the mouth of the nutlet pipe,

and the floating grease can solulify without obstructing the pipe.

Instead of the sink with bell-trap, the best plumbers prefer a plain iron or sompstone sink with only a strainer screwed in, and a coupiron or sampstone sink with only a steamer strewell in, and a coupling for the waste-pipe, and with a separate trap at a little distance below the sink. An S-trap will keep itself clean, though very liable to siphonage even when ventilated, but the grease which passes through it in a nuclted state congests in the drain beyond and soon closes it. A grease trap outside the wall will prevent this, and should always he used in hotels or with large families, but with small establishments and careful housekeeping it is sufficient to use a large round-trup in place of an S-trap furnished with a trup-screw of sufficient size to admit the hand for oversional cleaning out. A six-inch round-trap with a four-inch brass trap-screw will answer in most The round-trap should have a ventilating pipe, for the scenmulation of grease may reduce the waterway so much as to cause it to siphon out like an S-trap.

Iron sinks without bell-traps may be had plain, gaivanized, or enamelled. The enamelling looks much the best, but it is liable to crack off to time from the saidlen expansion caused by hot water, assisted by blows from hard substances dropped into the sink, and it trebles the cost of the sink. Galvanizing is less expensive, but not durable. The plain iron cases about half as much as the galvanized, and a little black paint outside and soap and sand inside will keep it in pretty good condition antil the iron wears out.

Socuetage, which is frequently used in the less houses makes a

Sozystone, which is frequently used in the best houses, makes a strong and durable sink. It soon becomes black with the snap and grease, but the discoloration is superficial, and can be easily removed

by rubbing with a flat stone and a little sharp sand.

When it is desirable to set a stak for occasional light use, wood lined with lead or copper serves a good purpose. Lead is now much less used than formerly, tinned copper having superseded it for this and similar purposes.

The supply to ciaks is generally through & inch or & inch couks, according to the pressure. Bither compression cocks or the Fuller patent are much more durable than ground foncets, under the rough

asage to which they are exposed.

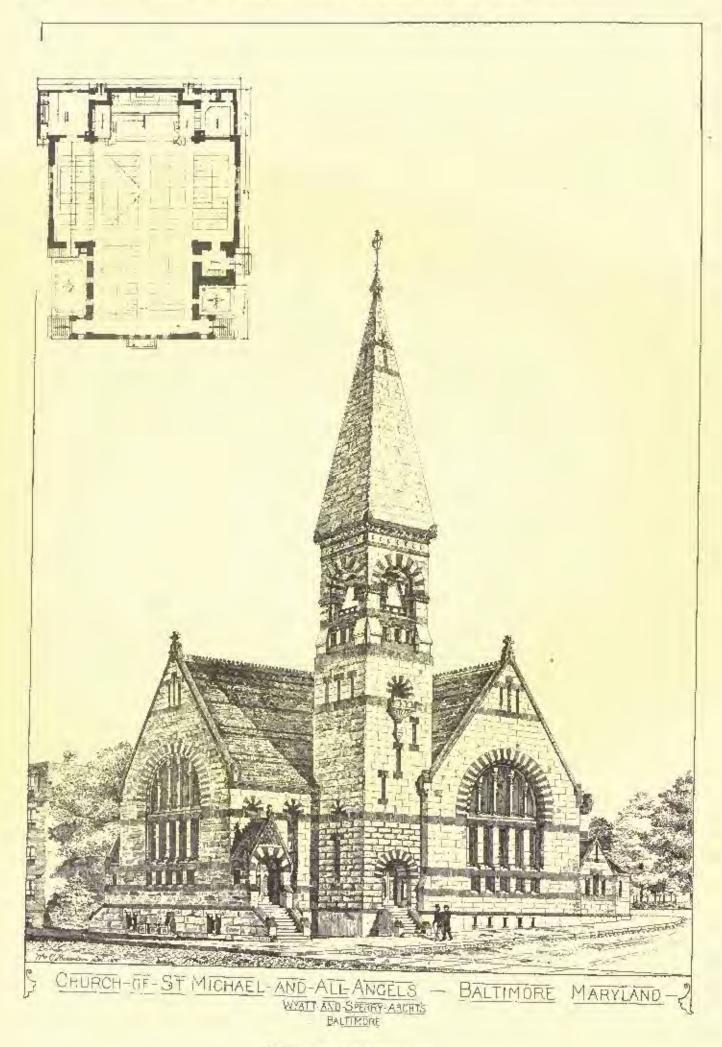
It is a common but unwholesome practice to enclose the space below kitchen sinks with boards to form a capboard. The air of such a place is constantly saturated with moisture from the wet cloths and brushes which are thrown in, and the dampunss rusts the metal of iron sinks, and condensing on the cold water-pipes runs down and keeps the thor wet, while the warmth of the hot water and waste-pipes adds to the general steam, and attracts swams of water-bugs and cockronehes. The coupboard, if one is needed, should be placed where it can be kept well aired and dry, and the sink should stand where it can be written on a wooden frame with four logs, or on brackets, or it may be held at the back by a clear fastened to the wall, and in front by two iron legs which fit into places cast for them on the sink. The round trap may stand on the floor under the sink.

Some patterns, as the McKenzie and the Demarest, have the legs hollow, one of them serving as a waste pipe, but this, although neat in appearance, makes it necessary to put the trap below the floor, or to use a bell-trap is the sink, either of which is objectionable.

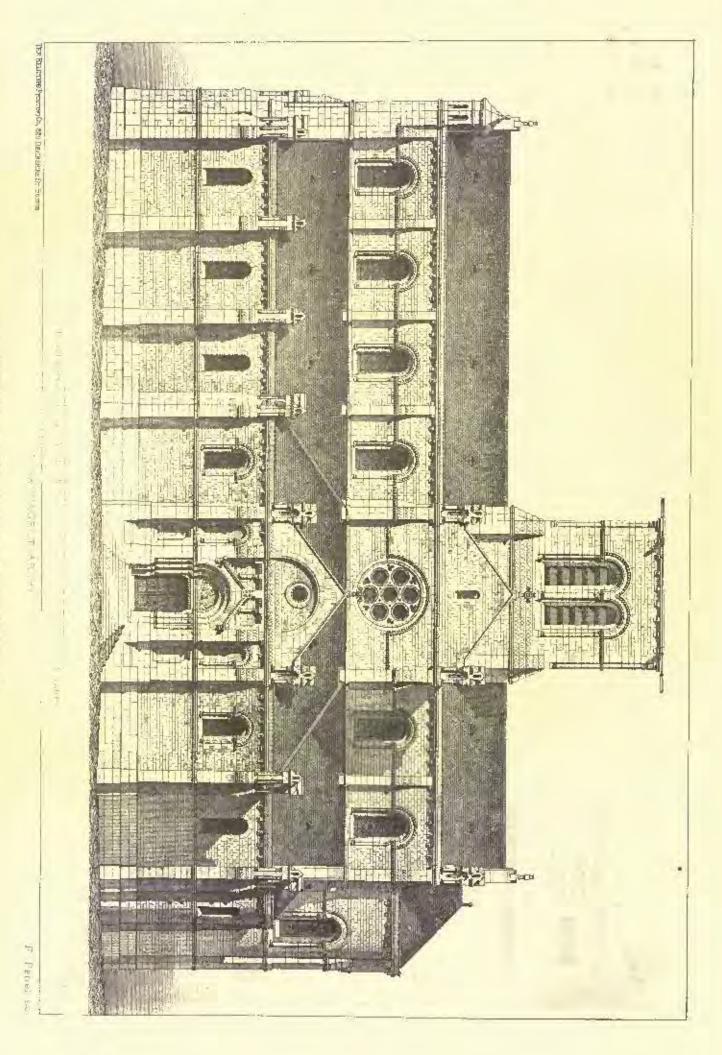
In general, all plumbing work in kitchens should be entirely exposed, so that the fetial moisture which collects upon the pipes caunot run down behind plastering or sheathing and soak the woodwork into rotlenness.

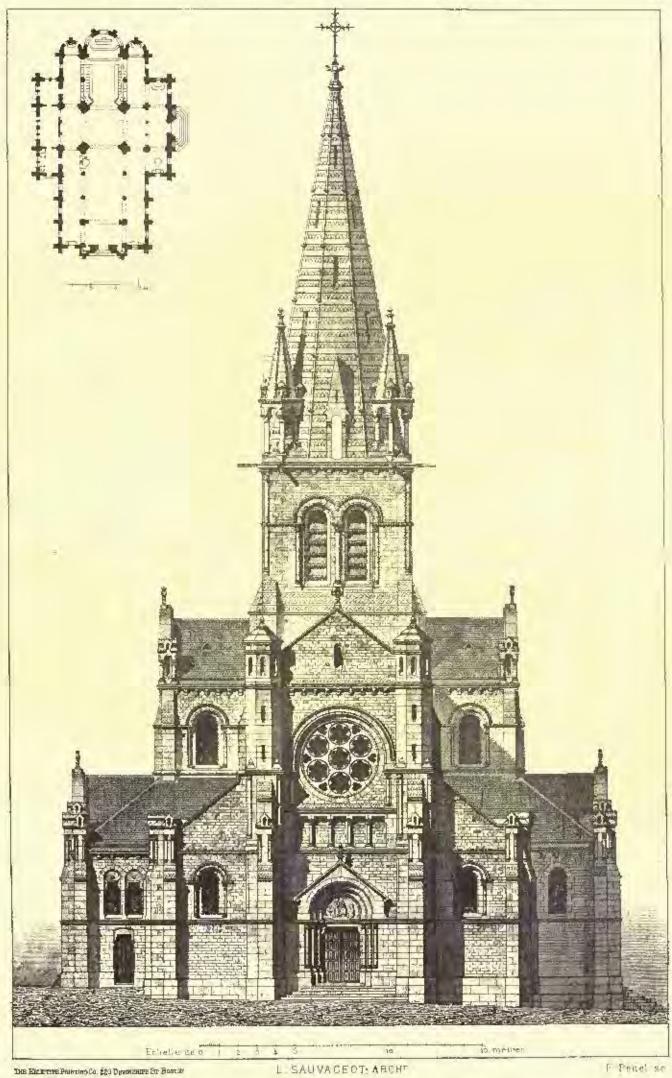
Wash-trays are usually made of soapstone. Wood will not long resist the alternate roaking and drying to which they are subject. The common arrangement is to make them in sets of three, two for the washing, and the third for the final rinsing, or sometimes one for





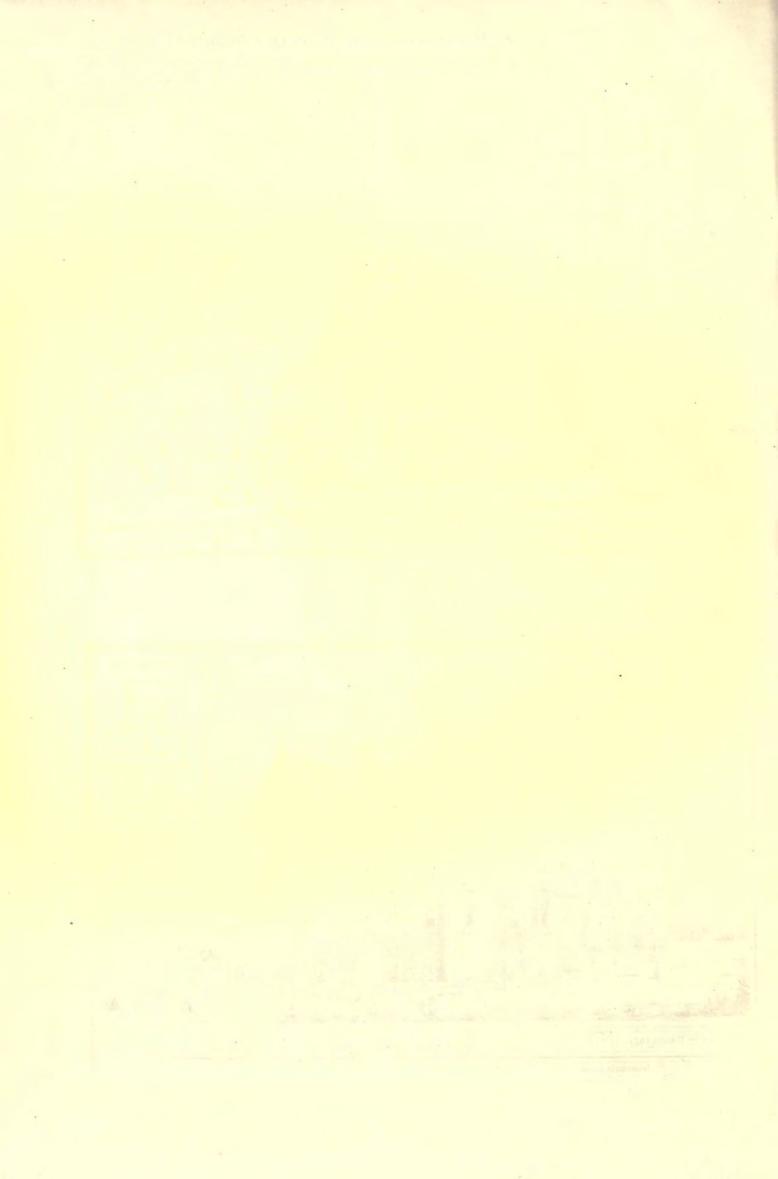


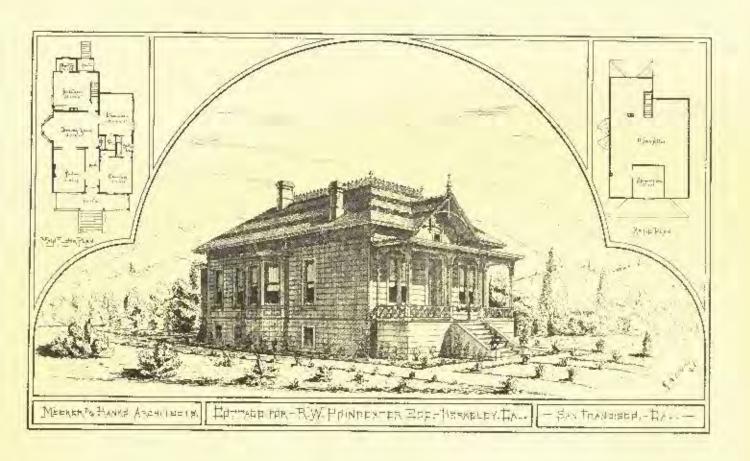


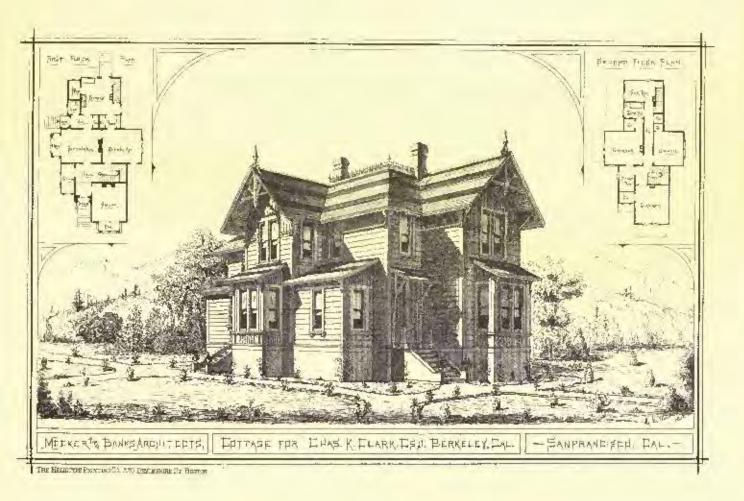


L SAUVACEOT: ARCH

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the coarse washing, the second for finer articles, and the third for rinsing; but sets of two can be had. Exacting housekeepers, however, demand four. They are supported on a wooden frame, which should be open beneath.

Iron wash-trays can be had, either galvanized or enamelled, for about the same price as the soapstone, but are not much used,

The plumbing required is very simple, consisting of a line of hot and of cold water pipe, each with a cock over each tray. Compression or Fuller seeks are best adapted to the rough usage they are likely to receive. A strainer and plug, with coupling for waste pipe, is fixed in the bottom of each tray, and one trap serves for the whole set.

An S-trap, even if ventilated, can hardly be depended on to retain its seal against the strong siphon action caused by the large quantity of water discharged, and a reservoir trap is better. A six-inch round trap, with a four-inch trap-serew, is as good as any, and has the advantage that all the three waste-pipes, and even a fourth, can be emered beneath the water level.

The plug is generally put in loose, without any chain, which would be in the way of the washing. If a chain is thought necessary, it should be silver-plated, as either brass or nickel will stain white

elothes.

It is very common and convenient to supply the wash-holler, or caldron of tinned copper in which the clothes are boiled, with cold water only, and to carry a waste-pipe to the trap of the wash-traps or some other connection. This waste-pipe should have a cock outside the boiler, as a plug inside would be very inconvenient in use.

THE ILLUSTRATIONS.

CHURCH OF ST. MICUAEL AND ALL ANGELS, HALTIMORE, MD. MESSIG. WYATT AND SPERRY, AROUSTECTS.

The transepts and tower of this church are now being built, on the northeast comer of St. Paul and Denmead streets, Baltimore. The exterior wills will be of Falls blue stone with thirls of a reddish brown stone from Lunguicadow. The interior will be finished with open timber roof, the walls will be detorated with painting. The archae and bant courses will be of colored with painting, with corbels, etc., of Amherst stone.

COTTAGES FOR R. W. POINDENTER, ESQ., AND C. K. CLARK, ESQ., BERKELLY, CAL. MESSES. MEERER AND BANKS, ARCHITECTS, SAN FRANCISCO, CAL.

CHURCH OF ST. BILAIRE AT BOUEN, FRANCE. M. L. SAUVAGFOT, ABCHITECT.

This church, of which we copy the two elevations from the Eucyclopedic d'Architecture, received the first prize at the great exhibition of this year.

THE MURAL PAINTINGS AT ASSIST.

[Frame The Academy.]

The unhappy alterations made to the Upper Church of St. Francis at Assisi are calculated to confirm the views of those who are conscientionally opposed to the new regulations, which place occlesiastical edifices and the mural paintings and other works of are which they contain under the supervision of the civil power. It is manifest that a change in their custody was necessary, and that no government worthy of the name could stand by and witness the dilapidation which has been the rule without an effort to arrest it. The undertaking is surrounded with difficulties. There is the opposition of the clergy, weakened, however, by the fact that they have long been more destructive than conservative. Under such guardianship the frescoes of the Sixine have been rained, as well as the mural paintings in the Upper Church of St. Francis, and in numerous churches and chapels. Many wall paintings by masters of eminence have been whitewashed over; innumerable painted windows have been tooken to fragments; pictures, illuminated MSS., and other precious objects have been secretly sold. The latity have been as much to blame as the clergy, with the exception of a few devoted friends of art; but the majority are indifferent, or fond of the tawdry clurch frippery and illuminations, which have inflicted irreparable injury on the finest freecoes. These vulgar trappings are now preferred to the noble and decorous ornaments and instructive illustrations of the great masters of art. Popular religious semiment is gratified by attaching coronets, car-rings, necklaces, and other jewels to pictures and readers, and would affix these to the "Madonna di San Susto" or "di Foligno" if there was a chance of doing so. Customs older than Christianity itself, which have survived all changes, and which have been long encouraged, are not easily eradicated.

The Italian Government has removed valuable altar pieces from churches, and has replaced them with good copies, which are regarded with just as much reverence, and do quite as well as backgrounds for candles and actificial flowers. Some may think such removals irreverent, but government has not acted without precedent of the highest order—not only that of its predecessors, who could be accused neither of liberalism nor of irreligion, yet who did not hesitate to save precious pictures in churches from the sacristan and the populace by transferring them to places of safety, where the only

worship would be that of the lover of art; but also that of the Vatican itself, which gathered into its famous gallery and so saved the "Transfiguration," by Raffael; the "Madoma di Foligno," by the same immortal artist; the "Communion of St. Jerome," by Bonnen-chino, as well as other invaluable abar paintings. Frescues, unhapplly, it has been impossible to rescue except by an interference, which till now has apparently been thought out of the question; but with more courage the present government has resolved to preserve the fragments of interesting works, which but for ignorance and neglect night have been transmitted to the present time in good condition. An attempt is now in progress at Assisi to prevent the final disappearance of the greatest works of painting produced in the thirteenth ecotory, which are not only invaluable in their connection with the history of art, but which pussess merits of a high order. To know how really great an artist Giovanni Chnahue was, it is necessary to study the remains of his work at Assisi. Some have questioned his presence there. If they were right, then there was another great artist, his equal in all respects, whose name and history are forgotten. Since my late examination of the Church of Si. Francis it occurs to me foreibly that the architect built it without reference to the painted decorations. These, I am persuaded, were an afterthought, with the exception of those on the raults. He finished the wall internally with regularly-coursed line masonry, which he would not have done had be known that it was to be platered for painting; and the projections of the mouldings and string courses are fixed without reference to subsequent plastering. The mural painters were, therefore, under the recessity of limiting the intones to be painted upon to little more than one-eighth of an inch, that they night not bury the neothlings or injure the proportions of the piers.

The church exhibits peculiarities of construction of great interest. It has been made an objection to medieval architecture that above the stone or brick vanifed coverings of nave and sistes there are wooden roofs. This building suggests in its structure that this fault, if it be one, might be got rid of, for shove the grained vaults rise roof principals of brick, which support purlies and rufters of wood, but so mighty are they in strength that the thought occurs, might not the entire roof have been of the same material? The thrust, out only of the vaults, but of these prodigious arches, is such that it could be met by no ordinary abutments; and, in-tend of buttresses of the usual form, circular towers lank the walls, which answer their purpose but are deficient in architectural beauty. The roof was tiled in the usual manner; but the monks in charge allowed it to get into complete disrepair, so that the heavy rain passed through it freely, and, the conduits below being in a state of rain, the water must have tain in pools in the hollows between the groined vaults. souking the painted walls and detaching the intonnen, while a growth of black fungi on the humid surfaces of the pictures added to the general destruction. In the walls thus recklessly exposed for ages to the action of damp the time has been reduced to powder; the sand with which it was mixed therefore, presumably contained earthy matter. Lime and sand of quarts is involuble, and it may be remarked that such a mixture is the only safe one for frescu painting. At Assist the interacto is of two qualities—of lime mixed with sand, and of lime mixed with marble dust. The beautiful whiteness and smoothness of this latter, and the fact that it was preferred by so many renowned artists—such as Michelangelo, Raffael, Correggio, and others — must naturally influence the practice of modern fresco-painters; but it is very soluble, and is especially subject to the formation of saluitre on the surface, which eats out the colors, as may be seen in the works of Giotto and his followers at Assisi. Another source of injury to these venerable paintings, entirely new in my experience, was pointed out to me. Lightning has entered the church and rippled ever the surfaces of the paintings on the vaults, leaving its traces in the blackened colors, and then escaping without doing further damage.

Apart from all those causes of decay there were others connected with the technical processes, not only of the early mural paintings, but also of actius of later times. Having lately finished a history in detail of the methods of execution common in wall painting from the thirteenth to the sixteenth contury. I will merely state at this time that the paintings at Assisi were commenced in fresco, but were invariably finished in temperar, that this last process contained in itself the elements of deterioration; and that these, in combination with the action of damp, the result of ruinous carelessness and gross ignorance in the custodians of the church, have produced the effects

which we now see.

Where the interace had fallen I saw in various places the vestiges of the outlines of the subjects which Giunta Pisano and Cimabne had drawn with free, bold hand upon the ashiar wall. They have a weird, the any look. This ancient method of preparing the outline of mural paintings has been noticed and speculated upon by the late Sir Charles Eastlake; but he was only acquainted with the example of it which remains at Pisa in a work of Pietro d'Orvieto. The process is minutely described by Cenniuo Cenniui as that followed by Giotto and his school. I have no doubt that it was common to all fresco painters from the time of Giunta Pisano to the last quarter of the lifteenth century. On careful examination I have traced it in various works down to those of Benozzo Gozzoli, who died about 1485, and who was heir of the method of wall painting of Fra Beato Angelica. Happily, I have seen no outline of his, for that would imply the fall

of the intonuce. I have no doubt, however, but that he drew his works in the same way, for he was especially conservative of the methods of the area of massers. Thus, then, it may be inferred that the famous cartoons by Liouarde da Vinei and Michelangelo, pre-pared with such care and high finish at Florence, and which excited such wonder and admiration, were the first of their kind. I do not mean to say that full-size working drawings were unknown, - they are mentioned by the mank Theophilus in connection with glass painting, and in the archives of the cathedral of Florence there is a statement of a payment made to Lorenzo Gliberti for a drawing for a window on carta di bombagia (which probably means a cartoon). — but these were of a very different size and character from the magmistance were or a very innerent size and character from the magnificent works described with such couplings by Vasari. It is reasonable to suppose that they were a novelty, and a great stride in the nature of the preparations for mural painting. In the traves which I have been able to follow of outlines upon the wall or rough plaster, from the beginning of the thirteenth to at least the middle of the fifteenth centuries, or about two lived and offer normal characters. fitteenth centuries, or about two bundred and fifty years, the deawing is free but rough. Delicacy at manipulation, minute attention to form were, of course, impossible, and clearly never were thought of-It was very different when cartonis were prepared, and genius could express its inspirations on a surface which admitted freely both of the perfect representation of every detail of form, and also of a thorough creatment of chiaroscaro. In important respects no greater improvement was made in the figurenth convery than that from sketching on the rough plaster to drawing on the carton, and to this day it is abservable that in schools of actists where the liabit of designing upon cartoous is still reengnized, the most masterly draughtsmen are found.

Having a favorable opportunity of elimbing to the level of the mural paintings, on some of thom, now black as ink, I truced the presence of a mordent, which showed that the lights were hatched with gold, and that the organizate, embroideries, and our ines of the folds of drapery were gilt, as well as the aureoles, in imitation of the usages of the mosaicists. Always taking into consideration the provalent ideas of art in the thirteenth rentury, and its conventionality, alent ideas of art in the thirteenth rentury, and its conventionality, which, however, was combined with much dignity and even granteur, we can imagine how great must have been the splender of the interior of this molde church. I have already remarked upon the perfect harmony which existed between the colors and the ornaments of the interior and the painted glass. We are taught that the windows ought not to be blank where all around them is decorated; but we also learn that the style of the windows must be in perfect harmony with that of the frescoes, and that nothing can be in worse taste than to combine mural paintings in one style with painted windows in

some other.

The piers in the apse and transcots are grained, in imitation apparearly of granite; thus could our fathers in art of the thirteenth cententry of gramte; time count our tarners in art of the increents century offend against principles of taste which we, so much their inferiors, advocate. This love of such imitations is very old. In one of the tombs at Beni Hassan the limestone rock is dashed in mockery of red granite. Roman art was full of such initations, which suggest that even the Greeks had their grainers. Raffael lent his great name to the practice; but in spite of this array of authorities, and of the tart that we excel all who have gone before us in this length to a great and accepted.

this initiation of woods and marbles, it would be well abandoned.

The processes now in operation at Assisi for the preservation of the remains of the murat paintings are eminently judicious. A new roof of admirable construction will in future prevent the walks from being scaked with rain water; where the intance is besse, it is earefully refixed, and made as solid as when it was first spread by the excellent thirteenth-century plasterers; where it has disappeared, the wall is cleaned, covered with a waterproof mixture, and then replastered to the level of the old paintings. Nowhere is any retouching allowed, and the famous but sadiy-injured wall-pictures will be transmitted to posterity in the state in which they will be left by the able and conscientious operator who is now zealously occupied in a task of great difficulty under the supervision of Signor Cavaleaselle. The sorrow with which we regard the condition of these frescoes, to give them their familiar name, is intensified by our present knowledge of the durability of the art. Long ago Vitruvius said that fresco painting, which he so clearly describes as painting on wet plaster, "would last forever;" and the expression is hardly over-The works of Cimubue, Michelangelo, and other great mural painters might, with ordinary reverence and care, have been transmitted to the present time in excellent order, the only decay being that arising from the use of tempera, which is so universally adhered to, and is so susceptible of change from the action both of damp and of impure air.

A spirit is now awakened which will save the remains of great works of art wherever the power of the Italian Government extends. and it is but fair to state that among the clergy also may be found

and it is our thir to state that among the deepy also may be found zealous conservatives and intelligent illustrators.

Let us hope that a judicious Minister of Public Works will listen to the representations of his cultivated countrymen, and restore the choir of St. Francis to its former enablition, and that this will be the last instance of a spirit which, since the seventeenth century, has worked such mischief in the greatest monuments of Italian art.

CHARLES HEATH WILSON.

CORRESPONDENCE.

THE MASSACHUSETTS CHARITABLE MECHANIC ASSOCIATION'S EXHIBITION.

WHATEVER I may have said in my last letter of any lack of interest in the exhibition, or of any clowsiness or lack of taste in the arrangement of the vactous exhibits, must not be held to apply to the department of fine arts. The building devoted to this department contains unquestionably the most interesting collections which have been brought together at any fair in this city, and they are arranged for the most part in a way which calls for nothing but praise. In the plan of the building Mr. Preston has, I think, used the irregular space at his disposal with great skill. The great picture gallery on the principal floor is specious and well lighterly, and the small ground are the small ground. opening from it afford a great amount of wall space also, in the main very well lighted, and enable one to keep the pictures well in board, so to speak, and to know where he is, and, what is more to the purpose, where the pictures are which he wishes to see or to avoid. The same may be said of the corresponding series of small rooms below. which are arranged the water-color drawings, engravings, and

The committee have brought together an unusually large and fine collection of painings. I hope it will not fail of doing the work for which it is so well calculated.—of showing the community the best features of a school of contemporary art which stands confesselly at the head of modern effort in this direction. This collection is a very curious and striking example of the completeness with which Prench school of art has established itself, not only in the mind of this community as the only school whose pictures are worth buy-ing, but also in the minds of the artists as the only school whose principles and nethods are worth following. With the picture-buy-ers it is doubtless chiefly a matter of fashion. Nathing also would account for the fact that of the large numbers of wealthy gentlemen who come home every season from the grand tour, beinging their trophies in the way of fine art, we never hear of one who has by any chance purchased an English picture : or for the other fact that while the picture-dealers are unking their little or large ventures in bringing over for sale the latest products of the French studios, we are never beckened mysteriously into the ingermost recesses of their establishments to see any masterpiece of an English artist. One hears occasionally of this or that fortunate conneissant who has been permitted to purchase, at an extravagant figure, the last Daubigny or Corol or Dupré. But if it were not for the English newspapers we should scarrely once in a year be continued of the existence of an English school of landscape, which, if it is not marked by characteristics as definite and striking as the French, is at least its worthy rival in tradition and achievement. In the present large collection there is, I believe, not a single picture by an English artist.

The ananimity with which American painters adhere to the printhe thanning with which American painters athere to the principles and methods of the French school, and copy it, not only in their rendering but also in their choice of subjects, is not less resemble than the exclusive recognition of that subsot by the buyers; and the most unfortunate but most natural result of such following is that they pass by, either unseeing or neglecting, some of the most characteristic and interesting features of American landscapes. So much said, it must be admitted that the display of French art on the walls of the large gallery at the fair is imposing, and the managers are to be congratulated on having got together in the heats of summer so many masterpieces from the shut-up langes of their

The most prominent picture in the room, as well by position as force of rendering, is "The First Step." by Bonnat, a prodigy of execution, like his picture exhibited at the Art Club two years ago, but less interesting than that, as it seemed to me, in the faces, -the child being particularly stolld and unattractive. Ronnat's pictures, however, ascouls rather than charm, in spite of the domesticity of however, astonish rather than charm, in spite of the domesticity of their subjects. Compare Frère's treatment of peasant life. The corresponding place of honor, on the opposite wall, is occupied by Landelle's "Salmacie," a conscious nymph who naturally draws the gaze of the visitor, but will hardly hold it long. Grouped around these are a noble company of pictures by Daubigny, Teyon, Rousseau, Dupré, Corot, Lambinet, Jacque, Diaz, and others equally content. The Daubigny, Ko. 227, a view on the banks of the Oise, seems to be one of his most agreeable pictures. The small Rousseau, close by, is a ringularly simple and strong painting, so rude as to seem scarcely more than a sketch, of a hit of brown, rich woodland, ander a white sky. Jucque is more known here by his redsines than seem scarcely more than a sketch, of a bit of brown, fich woodland, ander a white sky. Jacque is more known here by his erchings than his paintings, but here is a fine (andscape, with sheep, somewhat cold in color, but very interessing. The Schreyer, No. 223, is admirable. Two Algerian scouts, alarmed, have dismoutted, one gazing with anxious intentness in the direction of the enemy, holding meanwhite with difficulty his startled horse; the other, of different stoff, covering behind his fired boast. The action is line, the color very rich ering behind his tired beast. The section is line, the color very rich and strong, the costume of the scouts and the trappings of the horses giving ample opportunity for brilliancy and variety of color.

No. 216 is a beautiful picture by Chaigneau, a name to me hitherto unknown, marked as having taken the Salon medal the present

year: an antumn landscape, the warm, hazy mellowness of the season remarkably presented, yet without the aid of any striking trilliancy of color. No. 214, a picture by Diaz, of a group of children playing blind-man's-buff, is a delightful piece of color, but the faces

of the children are as it modelled in wax, with an indescribable hollowness about the eyes, which gives them a queer, artificial look. There is no fun in the children wither.

No. 154 is a superh Ziem, - the old harbor of Marseilles, ofty lying in a hot sunset glow, a confused mass of houses on a hill-side, enclosed on the one hand by a low, square tower, and on the other by the sweep of a round bastion; the golden waters of the har-ber filling the furuground, bearing a pleasure boat with two figures under a crimson awaing, rowing transpilly over the still tide, and a single tall ship with furbal sails, whose copper hottom, just seen in part above the water, reflects the light like an emerald. Its invuseness of color makes the placid Lambinet alongside look very cool and gray, but does not destroy its charm. There are three Corots, the one numbered 145 securing to me the most agreeable picture, with less than the usual flimsiness of color, but with all the characteristic

cool freshness which makes the chief beauty of Corot's landscapes,
[To be continued.]

ARCHÆOLOGY AND THE VERNACULAR ARCHI-TECTURE.

BOSTON, October 14, 1878.

To the Editor of the American Architect:

Sir, —In a paragraph of your summary for August 10, after re-ferring to the sub-cryience of modern English architecture to the influence of antiquarianism, it was remarked: "We are not permitted to forger that we are Americans and not Eurlishmen, and that our comparative freedom from the tyrancy of archaeology is a national privilege. We may muster it, but it cannot master us. It is national privilege. We may master it, but it cannot master us. It is too far off." Your leading article of week before last (October 5) drew attention to the fact that your English contemporary, the Archiect, of August 1, recognized the importance and interest of the question thus raised, and made this remark the text for an article, in which it is claimed that, notwickstanding our distance from the Old World, we cannot be emancipated from its induences, and that in act and letters, though free from parental control, we are still the daughter of England, and still retain a strong family likeness to the mother country. The article acknowledges that when classical antiquarianism passed into mediaval archaeology in England in the first half of the century, the national instinct seased upon the national relies with an avidity never before witnessed, and the famous Cathie revival which followed upon this sugerness of appreciation was a phenomenou unparallelied in the history of architecture. In like manner in these more modern days, if the shuest comical efforts of the Queen Anner style to trip up the old Gothic altogether on it sawn ground of picturesqueness, and to substitute Low Dutch, secon to the American mind, which is less beset by traditions and monuments of the past, absurd and corressonable, these successive revivals are indicative of a powerful national conservation which, in the absence of an academical art like that of the French schools, or of a rigid scientific sys-tem of instruction in the styles such as prevails in Germany, is con-tent to gather architectural inspiration from its own abundant historical past.
The Architect promouls to express its belief that, in the absence of

a venerable and suggestive past of our own, our natural affection for the mother country leads as unconsciously to follow in the tracks of the English architects, and to yield to the influence of old English traditions and relica; that, with all our undoubted freedom from the "tyranny" of archeology, every attempt to dispense with the influence of old art must, whenever made, inevitably lead to disap-

pointment.

In like manner, it may be remembered, the Architect of Decom-ber 15, 1877, in referring to this question of originality in modern-art, endeavored to prove that in this country, where such originality is to be discovered if anywhere, there had not been the slightest evidence of our ability to strike out a new path in architecture, that secondingly our State Houses were, for the most part, showy and feeble renderings of bastard Italian, our country homes questionable reproductions of the suburban villas of London, our churches vain efforts to imitate English Gothie monuments; and that every effort after originality in this country had been transic and undisciplined, and the artistic qualities of such work had been always in an inverse

proportion to its novelty.

In your paper of January 5, 1878, you explained in reply the danger of making general statements regarding the arts of a country so widely spread as this, and subject to such various degrees of ouli-ure and discipline in its various parts, and maintained that though it was difficult to tell in what exact direction our act was tending, it was very for from being a mere reproduction of what was done abroad, and that one best work was by no means frantic in its deviaabroad, and that our nest work was by no means traine in its devia-tions. On further reflection I see no reason to mulify what you then stated regarding originality in American art; that the only sort of originality worthy of any consideration is that which results from the cumulative efforts of successive generations of artists; we have only just begun this cateer of progress according to our opportunities, but our advance within the last few years especially and in our larger cities has been marked, decisive, and characteristic. Doubless the long-sought-for original art is even now in process of growth; it is not yet forthcoming, of course; indeed, there is no need

to be in haste about it. Out of our necessities and intelligence new expressions of art have already been developed here and there, more or less successfully. You have often had occasion to show that there is already a certain crude and imperfect but numistakable vernacular style existing among us, varying in various localities according to local differences of climate, materials, labits, and traditions.

— healthy but rule developments of the historical forms of the Ohl World, subjected to all the errors of baste, ignorance, and octentation. but nevertheless fundamentally gennine and true.

In the progress of American architecture our freedom from the In the progress of American architecture our freedom from the typromy of archeology — to use once more the expression which is the text of this brief bourly — is of course only compactive. We are the heirs of all the treasures of the Old World. If England claims our first natural affections and interest, the other comuries, with all their wealth of art and inspiration, are hardly less our own. We are not so overshadowed by any particular national series of traditions and monuments that, like our English relatives, we cannot expense from their influences. escape from their influence, and we are consequently not confined in association their innumers, and we are consequently not confined in our invention, as they are, to a certain range of Inrus connected by association with one national history. Our homoless heritage has its dangers, no doubt; we have not learned how to classify and how to use it with discretion and due respect, how to adjust it to our new materials and new conditions of like. We are yet sowing our wild outs with a fruitiess expenditure of resources. The civil architecture of our servers reflects the characteristics of all known styles. But the our streets reflects the characteristics of all known styles. cipline, reserve, refinement, self denial, and the other rostly results of education and experience will come in time; moreover, we shall presently see that out of the natural influences which, not with standpresently see that out of the natural influences which, not with standing this large appropriation I all the architectural forms, still manage to give to New York, Chicago, Cincinnati, Philadeiphia, Boston, Baltimore, and St. Louis, to each a distinctive architectural character of its own, and in a larger sense have already conferred upon the architecture of the whole republic rectain characteristics of nationality, that out of these active influences will grow a style expressive of our civilization and commensurate with our resources. Our educated architects will of course continue to follow, with more or less of exactness, the style and fachigus of the interestics and architects and fachigus of the interestics and fachigus of the interestics and fachigus of the interestics and fachigus of the interestic and fachigus and fachigus of the interestic and interestic and interestic and interestic and interestic and inter educated architects will of course continue to follow, with more or less of exactness, the styles and fashions of designing which are conveyed to us from the Old World in the illustrations of your contemporary journals; but these essays will continue to be mere placonnena; whatever in them is applicable to our needs will be adopted and absorbed into our vernacular. There are indisputable signs that the termeolar architecture, even in the new cities of the far West, has begun to exhibit the results of the sound training which may be obtained in some of our higher technical schools. There is something in our nature which makes us unjust judges of contemporary architecture; but the carginass of our young men to learn, and architecture; but the engerness of our young men to learn, and their peculiar facility in unbibling the best results of edication in art, vertainly seem to give good promise for the fature.

THE COICAGO THEATRE ORDINANCE,

(The following in the text of the ordinative to control the building and management of theorems, largey jossed by the city council of the city of thicago, wall mentioned by our Chimzo correspondent in our fact bases;

Be it ordained by the City Council of the City of Chicago, as follows;

Section 1. Every theatre, opera house, hall, church, or other building intended to be ased for public assemblinges shall be deemed a public hall, within the meaning of this ordinance.

within the meaning of this ordinance.

Sec. 2. Any person desiring a permit in creet any public hall shall make application to the Superintendent of Reildings, in compliance with Section 58 of the brilling ordinance.

Sec. 3. No stairway to any jubile hall or part thereof shall rise more thin ten feet without a photoine; no winders, wheeling or circular superial be used. Each stairway and passageway shall have a strong handrall on cach side thereof, through its entire bringth.

Sec. 4. Every public hall, with accommodations for five bundred or more people, shall have at least two separate and distinct exits, to be as far apart as may be found practicable. Public halls accommodating seven hundred or more persons shall have at least three separate and distinct exits. The exits from all gaileries to be independent and separate from the exits of the main floor.

Sec. 5. Every public hall not used as a theore, with accommodations for five hundred persons, shall have no portion of the main floor obeysted to a

FRE. 5. Invery pinder hat have used says the first, with necessions for the hundred persons, shall have no portion of the main floor olevated to a greater height than thirty five feet above the street grade. Public builts with accommodations for one thousand persons or more shall have the main floor not over twenty-live feet above the street grade; no portion of the main floor of any theatre with accommodations for five hundred or more persons shall be more than ten feet above the street grade.

In all such theatres, the prosecution wall shall be of brick-work, not less

In all such theatres, the prosecution wall shall be of brick-work, not less than sixten inches thick, extending from the ground through and four fear above the roof; this brick wall to extend emittely across the building, from the flour of the stage to the ground. All openings required in any part of the wall (except principal opening) shall have proper area doors. Sec. 6. All auditorium flours in theatres shall be fire-proofed, either by deplening the same with at least one fach of mortar, or have the under sub-of-joist lathed with iron, and plustered with at least one heavy cost of mortar.

All partitions for rooms or passages in theatres, if not made bodily fire-proof, shall be plastered on both sides on iron or wire tailing.

The preceding Sections shall apply only to theatres or public halls that may bereafter be excelled. The following sections shall apply to theatres or public halls that are now or may hereafter be exected or constructed. Sec. 7. All egress openings as public halls shall have the word "exit" conspicuously placed over them, and shall otherwise conform to the require-ments of Section 39 of the building ordinance: "The sistes or passages in

[•] We regret that an error in the nake-up of our last week's issue has caused a delay in the pithlication of this tetter. — Run. Am. Aucustur.

such halts shall at all times be kept unobscructed. Camp-stoals, chairs, or other seats shall in no case be placed in such aists or passages.

Sec. 8. The term "theatee" deall, for all purposes of this ordinance, include all jublic halts containing murable scenery or fixed scenery, which is not made of the left, plasser, or other incombustible material.

All material used for scenery shall be goated with such paint, washes, etc., as will make it, as far as possible, incombustible.

Sec. 9. All theatres or other places of public nanosement having a scaning capacity of over five hundred persons, having a platform or stage, and which are drop curtains or shifting scenery, shall have a saitable remiliator placed upon the root, and opening to the space above the stage. Such ventilator to be arranged with valves or shutters that can be readily opened in case of fire, so that a current of air will pass over the stage and unrowed through such remiliator. Any other contrivance having the same effect, and approved by the Superimendant of Buildings, may be used instead of the rentilator above described. All such buildings in hars a water stand-pipe and water plug to be placed in or on the stage or platform, or in its immediate vicinity, which shall be connected with the water-pipes of street mains of the city, and shall be connected with the water-pipes of street mains of the said stand-pipe, of such size as may be directed by said Murshal, to have nozzle and shall be the farthest limits of such building or place of amuscinent, and shall at all times he kept in good order and repair, filled with water under pressure, and ready for immediate use.

Sec. 10. All public halls with accommodations for one thousand or more persons shall have at least one stand-pipe in the street or alley on the outside of the building, from ground to root, with tops intachments close to a window or door at each flour or gullery. Such hall shall also be provided with a fire alorm telegraph apparatus, connected by the onesent of the city fire-alar

shal shall direct.

Sec. (1. It shift) be the duty of the owner, agent, lessee, or occupant of any thenthe with accommodations for one thousand or more persons to employ one or more competent, experienced fromen, approved by the Fire Marshal, to be no duty at such theatre during the whole time it is open to the public; such fireman shall report to and he subject to the orders of the

the public; such firement shall report to and be subject to the orders of the Fire Marshal, shall be in uniform, and shall see that all fire apparator regated is in its proper place, and in efficient and ready working order.

SEC 12. The ferrise for each public hall shall state the number of persons if has accommodations for, and no more than that number shall be allowed to enter such hall at any one time.

This another shall be governed by the number of feet of exit of the doors and passages, and shall be approved by the Superintendent of Buildings.

SEC 13. The Superintendent of Buildings, or the Fire Marshal, shall have the right to enter any public hall and all parts thereof at all reasonable times, especially when occupied by the public, in order to properly judge of and discharge their duries.

Sec. 14. Any person falling to country with, or guilty of a violation of

See 14. Any person failing to comply with, or guilty of a violation of any provision of this ordinance shall be subject to a line of not less than twenty-five nor more than two hundred dollars. Every such person who so fails to comply with, or is guilty of a violation of any provision of this urdinance shall be deemed to have been unity of a separate offense for each day the same continues, and shall be subject to the penalty imposed by this meeting. section.

NOTES AND CLIPPINGS.

Ansarran Awards at Paris.—It is now officially known that the meants to American exhibitors at the Franch Expection number 750; namely, 10 grand prizes, 20 diplamas of honor, 134 gold medals, 200 mones metals, and 156 honorable mentions. The aggregate is larger than the whole number of American exhibitors at the Paris Expection of 1873, and a larger proportional award than to any other nation represented at this Exhibition.

Tun Holler Hearing System in Detroit, — The Detroit Steam Supply Company has secured a building wherein in place in first battery of boilers, lifteen in number, and intends to by about two niles of pipe at once. The right to introduce the system was purchased for thirty thousand dol-

Parios.—On the tech instant a panic took place in the colored Baptiste' church at Lynchborg, Va., which was in many of its Incidents a repetition of the Brooklen Theorie disaster. During a marriage electionary a piece of plastering fell from the ceiling, and instantly caused a stampele among the congregation. The nervice was performing in the second story, and the frightened throng in its attempts to escape overthrew and trampled on those who first reached the stairs, and who had not thin to descend before the crowd behind was upon them. Nine women were killed outling, and the seriously injured number shirty or more.—On the following day, the pupits in the grammer school on Bast Bouston Street, New York, were overcome with panic at a felse alarm of fire, raised within the building, and raihed from the school-house in spite of the efforms of the teachers to control them. Strangely enough, out of nearly two thousand children who were in the achool-house only one, a child of eight years, was cariously hure. ously hure.

A Tensesteral. Balance.—At Ortali, a small township containing a few houses, near Quarata in the province of Aresza, the earth has gradually fallen until it is now twolve or fifteen feet below the original level. The houses of the village have lost their equilibrium, and threaten to full mannder. The authorities have ordered the inhabitants to remove to huts which have been set up in the fields, and thicker they have field with their families. On the other hand about 200 yards from Ortall the carsh has theen, an that the rising of the ground has been visible at times.

Ms. Millars is shoul to palet a portrait of Lord Beaconsfield. - The

The Costeact for the St. Gothand Tunnel through the Alps, unbing Switzerland and lindy, must be completed, or the contractor, M. Favre, will have a heavy penalty to pay. Under the truns he must pay \$1,000 for every day later than October 1, 1880, on which it remains unfinished. It six months afterward it is still uncompleted, he lesses \$2,000 per day, and it twelve months go past without its being turned over, he forfeits everything, including his bond of \$1,800,000. The undertaking is a rigentic one, and some engineers doubt if Favre is test badly bearen at last. The nation than the first provention of the work on it is only prosecuted under tremendous difficulties. All the power used in drilling is furnished by compressed air, which is prepared outside by powerful pumps and stored up in vast tanks. The locomorives which draw from the tunnel the blasted rocks are also run by compressed air, as the use of steam in such a hole would be impossible. As it is, the men at work often suffer excessively from the foul vapors, purily natural and parely produced by the excessively from the foul vapors, purily natural and parely produced by the exceptions of dynamite, which are so constant that an observer compares them to cannon firing in a battle. These guses would collect and be fatal, except that the exchange air from the drills is employed to drive them to cannon the of the excavation. Favre is laboring with splendid energy, and the working force is as large as can be put on. It is reastly to his interest in heavy, for he will receive a bonus of \$1,000 for each day previous to Ortober 1, 1880, on which he has his task finished. The unusual will not about \$55,000,000, although when it was first andertaken the estimates were some twenty millions less than the above figures. The discrepancy was uccusioned by engineers' matakes, and when it was found that the enterprise would be much more expensive than originally announced, the discovery nourly discouraged all concarned. But the Swias, Italian, and German governments in

Dr. Schliemann's Recent Discoveres. — Dr. Schliemann has telegraphed from Ithaca to Athens: "We have made a great discovery. On the plantan which extends lowerd the western shore of the sominent part of the island we have found in digging attenty houses of cyclopean construction, belonging to the Homeric city of Ithaca. Impossible to express here the methodical result of nor excavations. The winter rains have washed into the rea all the ancient treasures. Nevertheless, the discovery of these rains constitutes a voluntial treasure for the Island. All the lovers of antique sourcuits will hasten to visit the city of Homer."

This Bells of St. Paul's. — The cost of the twelve new bolls which have been placed in the northwestern lower of St. Paul's Cathedral, London, together with the work of mounting them, has been about \$100,000. The largest bell weight 6,500 pounds and the smallest 500, while the weight of all is nearly 40,000 pounds. No. 12, the largest, was given by the corporation. London has waited more than 200 years to bear a choice of bells from its cathedral bulley.

Under-Ground Telegraph Wikes, - The city council of Philadel-Under-Ground Telegraph Wires, — The city council of Philadelphin have ordered the removal of telegraph poles from the atreets of that
city, and experiments have been making to produce a wire that could be
laid under ground and worked satisfactority. The McKeesport Times
gives an account of some interesting experiments made at the tube works,
in manufacturing "insulated wire." The wire is now being made in sertious of on feet, but can be made as long as thirden feet. To make the
wire a copper telegraph wire is inserted in a glass tube of the same length,
and sufficiently large to admit the wire easily. The glass tube is then in
sected in an iron tube just large enough to admit it. They are all then
placed in the farnace and heated to a red heat, and then run through the
rolls, which compress copper wire, class and iron tubes, all into one mass. places to the farmace and header to a real real, and headen introduce the rolls, which compress copper wire, plass and from tubes, all into one mass, but without crushing them. The ends are then ground to a convex surface, and the ten-feet sections coupled together like gas-tipe, the convex ends allowing the centres to surface first, thus establishing the electrical connection. The pipe will be snumefled before being laid.

PERVENTION FOR LEAD POISONING.—A remarkable case is given in the Journal de Médecine of the effect of the habitual use of milk in white-lead works. In some French lead wills it was observed that in a large working population two men who drank much milk daily were not affected by lead. On the general use of milk throughout the works, the colic vanished entirely. Each operative was given enough extra pay to buy a quart of milk a day. From 1866 to 1871, no coses of colic had occurred.

Spicort Iron.—A company for the manufacture of splegel from has taicly been incorporated at Chester, N. J., with a capital of \$100,000. The manganifarous one from which tills spiegel from is no be manufactured is found in New Jersey, though the company will not rely strogether upon that reachine, but will draw a portion of the supply of one from Spain, when it can be obtained at a criffing cost. Already a number of vessels which would otherwise have been chartered from the Mediterranean and Spanish ports in bullant have been chartered from the Mediterranean and Spanish ports in bullant have been chartered to bring this ore from Santander to Perth Anthop at the low rate of five shillings per not. It is not the intention to attempt the manufacture of anything of a higher grade than twenty per cent spiegeleisen until such a time as trustworthy data shall have been obtained that will warrant venturing further. France to-day and stands at the bead of this manufacture. She imports all her over from Spain and Indy, and makes high grade spiegeleisen so successfully and cheaply that the lengtish makers say they can hay cheaper than they can make. England stands next in the list, and also imports all her own over from Spain and Indy. Germany, which is the larguat maker of low grade spiegeleisen, which she makes from her own spathic ores, is dependent upon Spain for rich ores in the manufacture of high spiegeleisen. The dary on spigeleisen is only seven dollars per ton, exactly the same as ordinary ply iron, it coming in fact ander that head, and not heing classified in the tariff as a separate article of manufacture.

BOSTON, NOVEMBER 2, 1878.

THE fall of the vaulting of the Forty-second Street Tunnel in New York, has stirred up a great many complaints of the careless inspection under which work is allowed to go on in that city. No doubt the complaints are justified. There is no reason to question the statements that were published, when the first part of the vault fell, - that the bricks were inferior and carelessly laid, and that the mortar did not stick together, statements which are repeated by pursons who have examined the rains of the part that last fell. The officials of the office of Public Works, driven to choose between an acknowledgment of faulty design and of bad work, naturally say, but work; but bad work means lad inspection, for the object of inspection is to secure good work. The Department of Buildings is, apparently, no better off in this respect. It is only a month or two since the fall of a new huisling at the corner of Broadway and Fifty-second streets showed that the inspectors had allowed it to go up with walls thinner than the building laws prescribed, improperly bonded, and without anchors to hold the floor timbers to them. Not the least painful phenomenon in these cases is the audacity with which the culpable persons meet them,—like the examiner of buildings, who in this very case is said to have argued that thinner walls were safer than thicker, because when they fall two bricks might not kill a man, while three would. All this is natural enough in a city where these officials, being appointed simply for political reasons, may be presumed to be inexpert and without interest in any but their political functions. If the people of New York are willing to pay in lives as well as in spoliation for the privilege of this sort of policies, we may hope that their experience will at least look uninviting to other people.

Bur while there is no danger of condemning too severely such slovenly workmanship and inspection, it is not well to let the dust that is raised over these faults conceal the carolessness or the incapacity of the original offenders. At present, attention seems to have been diverted from the faulty design of the fallen tunnel vault. After the first fall the coroner's verdict was, that careless loading by the contractor caused the disaster, and the work was continued substantially on the same plan as at first. Even since the second fall, it is said the engineer in charge derides the idea of faulty construction. He has been dismissed, but unless the essential vice in the design of the tunnel is made known, the lesson of careful construction that the disaster ought to teach, which is at least as important as that of careful inspection, will be lost. The curve of the vault is not only one of small rise, but is of the weakest possible form for its purpose. It is a flat semi-ellipse, or rather a compound oval, a curve that would do very well for a bridge, but is unfit for a vault with a heavy vertical load, the strong curvature being at the haunches, where from the peculiar conditions of the load the pressure is least effeetive, and the crown being much flatter than the height alone would indicate, while the shell is dangerously thin. We have not within reach such an accurate record of the vault section as would enable us to compute its curvo of equilibrium with precision, but a simple calculation will be enough to give an approximate idea of the conditions. The height of filling above the vault is so great, and the additional weight on the haunches so slight, that it would be safe to consider the load as uniformly distributed. In this case the strongest form of vault would be

one of which the curve was a parabola. With the given span and rise a segmental arch would have answered if the shell had heen thick enough, but the curve adopted was weakest of all. Taking the parabola, as the strongest, we may compute what would have been the horizontal pressure on the shell at the crown, by the common formula $H = \frac{p^{\omega}}{2\sigma}$, where H is the horizontal pressure required, p the load per unit of horizontal surface, a the span, and y the rise of the vault. Assuming 100 pounds percubic foot to be the weight of twenty-five feet of filling above the vault, p will be 2,500 pounds. Then for a span of 40feet, and a rise of 10 feet, we have for each foot in length of the tunnel, $H = \frac{200 \times 100}{88 \times 10} = 50,000$. This would have been the horizontal pressure on each linear foot of the shelf if the vault had been of the strongest form. The shell being of six courses, or two feet thick, the pressure on the brick work would have been 25,000 pounds per square foot. At the springing it would have been over 35,000 pounds per square foot. Twenty thousand pounds, or ten tons per foot, would be all the presence with which a excelul constructor would have dared to load the brick work which he could expect to get in ordinary contract work under watchful inspection. But with the form adopted for the yault, the pressure must have been much greater than on the parabolic vault we have supposed. In other words, a vault of weak form and bad workmanship was apparently loaded with a greater weight than would have been safe for the same thickness of shell in the strongest form of arch with good workmanship. This allows nothing for the danger of the curve of equilibrium passing outside the safe position, for of that we have no means of A slight yielding of the weak mortar in the joints was enough, under the pressure, to let the flat crown of the arch sag, till, as the earth souled down upon it, it fell through altogether. Here then was an important structure intended to carry a tremendous load, and built in a manner which a little simple figuring would have shown to be foolishly inadequate to its use. But it was doubtless built by rule of thumb, and probably it never entered the head of anybody concerned to use the established means of finding out whether it was fit for its work

Ir is the lesson of all this, as of many like disasters, that it is not merely careless building, though that is had enough, but ignorant building that brings us into trouble. The latter fault is really the more dangerous, because while it is more insidious than the other, it is one great cause of it. The efforts of the people who are responsible for it to put it out of sight aught therefore to be strenuously resisted. The danger is the greater because, while we are venturing on all sorts of new constructions, we have taken leave of the old-fashioued habits of solid huilding, and competitions and the system of contract work are foreing the method of building down to the cheapest possible conditions. "Practical" constructors are continually trying to do things they have not done before, and to do them in the quickest and most economical way possible, while they are as innocent as children of the scientific knowledge by which alone such experiments are made safe. In a generation which is covering the country with more important constructions than any before it, the greater part of the persons who are responsible for these constructions may be said not to know that such safe knowledge exists; and the mass of the people whose property and lives are risked by them, are disposed for this reason to deride it as oupractical. It is an injury to the community, then, when complaint of the bad execution of a piece of work, especially if it be public work, is allowed to divert attention from the fact that it has been ignorantly and hadly designed.

The recent gale has taught in Philadelphia something of the same lesson of the danger of ausubstantial building that other cities have been learning from fires and downfalls. More than seven hundred buildings were more or less torn to pieces by the wind, which after all, though a violent gale, was not a hurricane; and in the newer and more slightly built regions whole rows of brick houses were blown down. Such wholesale destruction shows that Philadelphia must have its good share of the bad building that infects all our large cities. It is true that the wind blew very hard, its velocity measuring seventy miles an hour or so; but one of the chief uses of building at all, is to shelter people in rough weather. It is quite possible to make sure in every city, by proper laws and inspection, that all buildings

shall be capable of standing in any weather that is not abso-Intely unprecedented, just as they can all be made practically incombustible. Philadelphia has the repute of being a more substantial city then most in the country. It has been ber boast that more families lived in their own bouses there than in any other city, and that tenement houses were almost unknown. This characteristic has some admirable results, but some that are not quite so good. It has accouraged building enormously, and has developed the system of "bonus" building, which was described by a correspondent in this journal not long ago, and than which no greater provocation of cascality among builders has over been contrived. Philadelphians have been able to rely longer than most of the neighbors on their old traditions of solid workmanship; but no city can live by its tradicious in these days, or do without the safeguards of careful laws and stringent inspection. The real trouble here is what it is everywhere, as we have argued above, - a growing ignorance of bow to build. Thousands of men are having houses built without knowing what good huilding is, thousands of mechanics are building houses without knowing how to build good ones. This is due partly to the immouse increase of hasty speedlative building, partly to the demoralization of the trades, through the influence of trades-unions, the loss of apprenticeships, and other evils. The whole community is getting used to poor work, and a large part of it, the country over, has come not to know that there is any other. A complete remedy is hard to find, but good building laws and good inspection are a considerable part of it.

Mr. Thomas Walsh, to whose troubles as superintendent of the U. S. Custom House at St. Louis we have before alluded, has lately written a long letter to the Cincinnati Cazette in answer to the various accusations which have been published against him. The maswer consists of general denials of the charges of dishonest dealing in his superintendence of different public works, supported by letters from the persons with whom he was said to be implicated, and what is of more account, from the judges of the County Court, whose architect he was, and from the bench of the State of Missouri. To the principal charges, of collusion with the contractors for the Custom House building which he superintended, his answer is, that after the technical failure of the first indictment against him the matter was dropped by the District Attorney, and no second indictment was ever prepared. The strongest testimonial in Mr. Walsh's favor is the letter subsequently sent to the Secretary of the Treasury, asking for his restoration to the position of superintendent of the Custom House. from which he had been removed pending the trials, and signed by the Chief Justice and Associate Justices of the State, the Circuit Judges, and several other prominent officials. The only things in his case with which the public is concerned, are the accusations about the Custom House; but it is fair that where the complaints against him have been published his answer should be made known. Since the charge of conspiracy with the contractors was not followed up, it may be inferred that the District Attorney decided that be could not sustain it. The question of the superintendence still remains, and we have seen no dispreed of the complaints of bad work done or accepted under his supervision, nor does it appear that even the strong request which we have cited, moved the Secretary of the Treasury to reappoint Mr. Walsh.

PERHAPS no building of our day, not even excepting the Washington Monument, has shown anything somearly like a human instinct for getting into trouble as the Chicago Court House, the divided structure - half city building, half county building - of which our readers have first and last heard so much. After the question of the divided dome had been set at rest, for the present at least, the two architects at last turned into one, and the one material into two kinds of stone for the two halves, - financial troubles have set in heavily. The county having been too embarrassed to furnish money to continue its half, the city has had a chance to try to overtake it, but finds difficulty in provid-ing funds; and now there is talk of reducing the cost, on the city side, by leaving off the upper story, which many people think will be useless. The opponents of this change insist that it will only be putting more money into the contractor's pockets without a proportionate saving in the whole cost; for the builders having contracted for the whole work, will have an additional opportunity to increase their profits by under-estimating the deductions to be allowed for the changes. There are two ways, say they, of increasing a contractor's profits beyond what his contract allows him, - by extras and by deductions, - and the extras having been tried as long as is safe, the other means will now be a welcome one. It would be bazardons for an outsider to express an opinion on this question, but architecturally, at least, we might expect the city to suffer by the change; the architecture must be very offensive if the suppression of one story of it would atone for the anomaly of making the building, intended to be perfectly symmetrical, a story lower in one half than in the other.

Excusin papers tell us of the death of the president of the Royal Academy, Sir Francis Grant. The younger son of a Scottish laird of Perthshire, and educated as a gentleman, he seems to have owed his position as much to circumstances and to a natural elevernoss as to the special talent of a painter. He was born in Ediaburgh in 1803, and was at first brought up to the law. A passion for field sports divorted his energy from study, and he is said to have deliberately announced his plan to spend his inheritance of fifty thousand dollars in the field, before he set to work to make his fortune as a lawyer. When this was done, however, a natural bout or native astuteness taught him that he could do better as a painter, and at twenty-seven he began painting the portraits of his friends, who were many and influential. His work soon became popular, and he went to London, exhibiting his first picture in the Academy in 1834. In 1842, he was elected an Associate of the Academy, in 1851 a Fellow; in 1866, he succeeded Eastlake in the chair, which had been declined by Landseer, and was knighted in due course. He was an honorary member of the Royal Scottish Academy, of the Société d'Artistes Belges, and of the L'hiladelphia Academy of Fine Arts. He was a facile and brilliant painter of portraits, but apparently painted little else. The only two other works that we find recorded are two sporting pictures, the "Hunt of his Majesty's Sing-hounds" and the "Melton Hunt." The first of these brought him much distinction and gained a gold modal at the Paris exhibition of 1855; it contained portraits of forty-six noted sportsmen of its day. Except for these his works seem to have been almost exclusively portraits. His gentlemanly address and savoir faire lent their character to his painting, and joined with his social position in making him popular, both personally and as an artist, especially as a painter of women. The same qualifies won him the presidency of the Royal Academy, a position which, since its duties are as much social as professional, is more apt to be the reward of worldly success than of artistic greatness, as is perhaps illustrated by the fact that four out of six presidents have been fashionable portrait painters. Sir Francis Grant's social that and popularity shone in his administration of the Academy and in his public hearing as its representative. Mr. Leighton, says the Philder, is much talked of as his successor. Mr. Millais, Sir John Gilbert, and Mr. Calderon are also men-

THE OPEN FIRE-PLACE, III.

It is remarkable that, while the open fire-place was one of the earliest contrivances invented to contribute to the health and comfort of man, the upright the for carrying off the injurious products of combustion should have remained one of the latest.

this true that the principle of the modern chiransy was probably understood long before the practice of constructing it became general, but it was so rare an object, even in the sixteenth century, as to have excited the surprise of Leland, who, speaking of Bolton Castle in his "Domestic Architecture." thus expressed binneff; "One chyrge I muche notyd in the hawlo of Bolton, how chimeneys were conveyed. by tunnells made on the syds of the walls betweet the lights in the hawle, and by this means, and by no covers, is the smake of the barthe in the hawle wonder strangely conveyed."

According to Peelet, chimneys appear to have been unknown to writers of the early part of the fourteenth century.\(^1\) But, once inwriters of the carry part of the four-contraction century. But, once introduced, their merits appear to have been rapidly appreciated, since we find it stated that in the reign of Queen Elizabeth, apologics were made to visitors if they could not be accommodated with rooms provided with chimneys, and ladies were frequently sent out to other houses where they could have the enjoyment of this loxury.

Thus the general use of the chimney is quite recent, and it was not until the time of Savot, Franklin, and Cauger, that we have record of any serious attempts to combine the cheerfulness of an open fire-place with the accommy of an enclosed store.

The science of the proper centilation of huildings is still more recent. "Till the discoveries of modern science," says Dr. Reid,

^{1 &}quot;L'époque à inquale il faut placer l'origine des étentiains est assez incertainn; les suiteur du commencement du quatorrième socia remblent de les pas committe. La date le plus annieque, et cu même temps la plus cortaine où il sit ésé quantion dus cheminous, est l'ampée 1847.

"revealed the value and composition of atmospheric air, and the resiprocal action that enemes between it and the blood, the architect was, in respect to this question, like a traveller without a guide, and bad no distinct appreciation of the position in which man is placed in respect to the atmospheric ocean in which he lives." Even where these facts are understood by scientific men, the great mass of the people still remain in ignorance of them, and the rough treatment to which our laws are subjected in the firm of described. people still remain in ignorance of them, and the rough treatment to which our langs are subjected in the form of draughts, poisoning by vittated air, and adden changes of temperature, often inducing fatal diseases of the organs of respiration—diseases which might be prevented if the elements of physics and hygiene were more generally taught,—shows how little the value of pure air is appreciated by the public. This want of knowledge and appreciation of the subject explains in a measure why the progress of improvement is so slow. The time has been too short to make men believe that an atmosphere apparently pure and transparent as well as agreeable to the senses, may be filled with the most subtle poison. A bundred years is insufficient to work a revolution in the liabits and prejudices of men for the sake of a thing which they can neither see, small feel. of men for the sake of a thing which they can neither see, small, feel, bear, nor understand.

NOVEMBER 2, 1878.]

What progress has been made will be seen from the following bistorical sketch.

LARLIEST FORMS OF THE OPEN FIRE-PLACE.

In the earliest ages the chimney consisted of the entire bonse, the fire being built in the middle of the building or but, and the snoke escaping from the roof, as is shown in Fig. 4. Barbarons as this



Fig. 4. Fram Viollet- e-Duc

arrangement may reem, it nevertheless has certain advantages we should not lose sight of in making our improvements. the fire is utilized to a far greater extent than is the case with that burning noder one modern eltimacy. All the radiated heat is obtained and a large part of the heat of contact of air. As a ventilator it is superior to our modern apparatus, since no impure air can remain for a moment in the room, and the cold draughts entering are not drawn to a single spot limited by the height and size of the manual with us and holds therefore has a superior described. tel, as with us, and being, therefore, less concentrated, are less dan-

In its manner of disposing of the smoke it is, of nourse, interior, nonviolstanding the statement of the owner of the lumter's cabin



Backwoodsman's Loy represented in the accompanying sketch, that the smoke never troubled him in the most uniavorable weather.

A central flue constructed of sticks succeed on the inside with mad or clay, and descending from the opening in the roof to within a safe distance of the fire below would improve the draught and prevent the smoke from blackening the roof, though at the expense of some of

The next step made to improve the draught by means of a fine, is described by Viollet-le-Due, in his "Habitations of Man," Fig. 6.



Fig. 6. From Violletsle-Duc

But the description most have been purely imaginary, as no evidence exists of the use of such flows at the early age indicated by the writer. The fire was in this case supposed to be built against the wall of the house. Thus a large part of the radiated heat of the fire was eat off and no corresponding change was made to regain the proportion of heat thereby lost.

heat thereby lost.

Gradually, for the purpose of avoiding lateral currents of air, jambs were built on each side of the fire, to direct the air upon the fuel, and the chimney fine was brought down to within a few feet of the fire. By this step another large portion of the radiant heat was lost, and the whole of the heat of contact of air, without an effort to obtain a corresponding compensation.

THE HAUSTRATIONS.

THE PELGRIM CHAPEL, DROOKLYN, N. Y. MR. J. CLEVELAND CADY, ARCHITECT, NEW YORK.

Turs chapel is built of Philadelphia pressed brick, relieved with terra-cotta finish. It will accommodate twelve or fifteen hundred persons who have an unimpeded view of the speaker.

HOUSE OF MRS. S. S. ADAM, OYSTER DAY, LONG ISLAND, N. Y. MESSRS. POTTER AND ROBERTSON, ARCHITECTS, NEW YORK.

HOUSES FOR JAMES A. PRAZER, ESQ., CINCINNATI, OHH). MR. JAMES W. MCLAUGHIJN, AUGUSTECT.

These houses have recently been built for James A. Frazer, Esty, on Auburn Avenue, at the corner of Evans Struck, Mt. Auburn, a suburb of Cincinnati. The bricks are from Newport, Ky. The roofs are covered with Virginia states, the ridge-crostings being of Akron tiles. The stair-cases are of oak, and the remaining interior finish of selected pine, varnished.

LA PORTE GUILLAUME, AT CHARTRES, FRANCE. DRAWN BY MR. JOHN W. H. WATTH.

Chartres is too well known as a rity full of interest to the architectural student to need particular description. La Porte Guillanne is situated in the lower part of the city, between the branches of the hure, a very insignificant but nevertheless picturesque little stream. The subject of the sketch is but one of the many interesting places along its banks.

CORRESPONDENCE.

SO-CALLED QUEEN ANNE WORK. - MR. BURGES'S HOUSE.

LONDON, October, 1878.

Is Queen Anne dead? asks a lively writer in a recent number of Truth, as he deepairingly bewaits her influence in all the English fur-niture at the Paris Exhibition. However it may be for inmittere, after a sincere search about London I am convinced she is dead as regards architecture. Not only is she dead, but so lew and indistinct regards are the contributed by the good queen left behind her that almost any foot will fit them, and there are plenty of masqueraders at present capering in them. If the prevailing fashion introduced by the mania for bein-a-brue were called the anonymous tryle, it would be comprehensible; but then it would not sound so well, and in England, at least a grant line is in a case. Anothing which is not identified with prehensible; but then it would not sound so well, and in England, at least, everything is in a name. Anything which is not identified with the late Gothic revival is hobbly appropriated for this "pot-pourri" of architecture. Although the spirit of american is runopant here at present, I was not prepared for the following proof of it. Wishing to look up what books there were on this Queen Anne style, I went to Butsford's, the architectural book-seller's, — strangely enough his modest shop in High Holour softices for the whole London profession, - and there was told: "Oh, we have no books on that style. Our Queen Anne architects take their details from Sauvageot's work on the French Chateaux!" Hence, "Queen Anne," on the hurus a non lucenda principle."

Houses however, were built of course, during the reign of this personage; and at Chelsen I found a row of bond file Queen Anne houses looking upon the Thomes, across a strip of trees and verdure. striking characteristic of these dwallings in Cheynu Raw bes, to use a contradiction, in their unobtrusiveness, - certainly not a quality of their recent namesakes. A plain brick front of two or three stories, with flat, sloping roof and simple cornice, is enriched by a wooden porch with a classic order and delicate mouldings. Sollting could be more simple and commonplace; but there is a decided charm in these quiet houses, which is wanting to youder block, fortunately be comparison in the extreme present fashion. Their narrow and lofty fronts are carried still higher into exaggrerated gables, while tall, narrow are carried still higher into exaggerated gables, while tall, narrow windows suggest the view on a back-yard, rather than that across an animated river. The first tendency of this civic was in breaking away from the conventional modes of building, to allow common sense to express itself; but the desire to be original—perlans I should say to be odd—has drifted it far to the locward. In one group of these houses, by Mr. Godwin, an octagonal front is recessed, so that the sale windows, instead of getting a wider oblique view, look upon the wall of the next house. The entablatme rans, however, straight along the front of the two houses, and a brick well-trave, without suggestion of arch-work, is carried across the recessed corners. Of course there must be a hidden band of iron, but it looks nost meconfortable. In the next street the same architect has fast most uncomfortable. In the next street the same architect has just built a house for Mr. Whistler, the painter. As they are both own who are nothing if not original, something extraordinary was to be expected. The first result was so plain and ugly that the Metropolitan Board refused to grant a license for it. It was then annelogated enough to pass that most tolerant of critics. Its small front door opens directly on a landing of the sparcase - an excellent way to break the neeks of barelars and of all who are not forewarmed that their first step from the door will prodpitate them headlong into the large atelier below. Not a had feature in this latter is the segmental arch which divides one end of the room and the incoherent from the main part. This freplace is in the present fashion, and has a small opening for the grate, while a wide portion around it is filled with tiles. As is often the case with recentric designs, practically and the second of the case with recentric designs, practically and the second of the case with recentric designs, practically and the second of the case with recentric designs, practically and the second of the case with recentric designs, practically and the second of the case with recentric designs, practically and the second of the case with recentric designs, practically a second of the case with recentric designs. sical questions have been neglected; and this first story, really a basement below the street level, has not been protected against the damp, and is found noinhabitable; while the china closet has proved fit only for a coal-bin, and the servant's room has been turned into the former. I quote these details to show where the present tendency to be original at all cost is carrying some of the best known men; for Mr. Godwin, besides being known as the editor of the British Architect, has done far better things than these later works. In such a inclanchaly little house I was not surprised to find on Mr. Whistler's easel "a symphony in blue;" the wonder was that under such posttive eironmstances it was as vague as this vagnest of impressioniets always is.

So much for the bad side which the offert after odd effects has introduced into these latest buildings. But good has come from the increased attention given to brick-work, for "Queen Anne" work abounds in that pilasters and delicate mouldings in brick or terra-eotta. The English have bitherto been far behind both the Germans and ourselves in the quality of bricks and the use made of them. There are very few buildings of fine face bricks in London, and their course, porous ones, by absorbing sout, add to the dinginess of the city. Now, however, a finer quality is accessarily used in this new style, of which it is fair to mention the best examples. style, of which it is the to mention the dest examples. Hany of these were built for painters, who are certainly appreciative of "Queen Anne." Away from the everlating smoke and fog of the city, at St. John's Wood, Hampstead, Chelsea, and South Kensington, many painters have built. Close to Holland Park is a particularly interesting group of new houses, all of them original in design. Val Princeps and Leighton are side by side, in houses designed respectively by Webb and Aitcheson. A few rods off the leaders in

the style, R. Norman Shaw and Stevenson, have built for Colie the style, R. Norman Shaw and Stevenson, have built for Colie Honter and Fildes. Next comes Mr. Burgus's house, of which I will speak later, as he would be horrified to be classed with the "Queen Annes," though surrounded by them; for on the other side Watts has a house, by Cockerel. As these men, both architects and painters, if not all academicians, are regarded as the "immortals" of their professions, this group is full of interest, and the houses themselves are picturesque and homelike, and generally entirely of brick. In this same neighborhood both Stevenson and Shaw have built several handsome and characteristic duellings. The design of one, by the latter, published in the Buddler, June 4, 1875, gives the best characteristics of the style. It is of brick, five stories, with lofty gable; the ground-floor is recessed, and has slight wooden baylofty gable: the ground-flort is recessed, and has slight wooden bay-windows with tiny panes, such as one still sees in such old English lowns as Canterbury. A fine business store by the same architect breaks agreeably the classical monotony of the city. From the late Gothic revival we at home are apt to regard London as of that style; whereas it is really the city in Europe where the "orders" are most used and abused. In the city there is hardly any exception to this undless Renaissance reproduction, and the latest are like the first

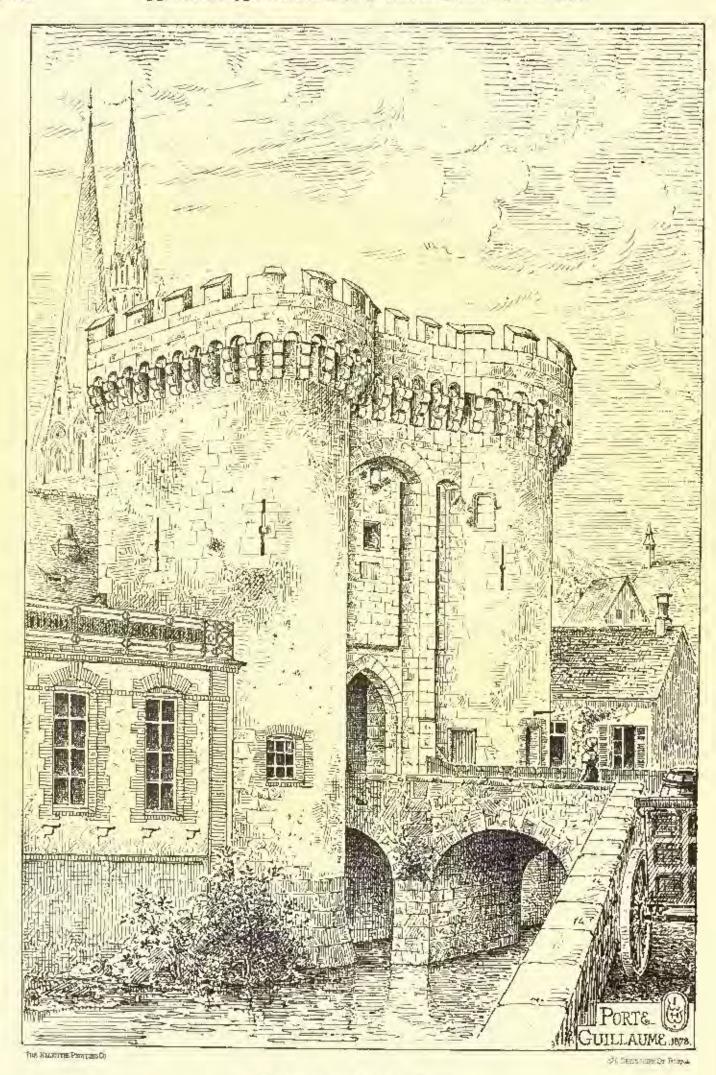
Mr. Barges has spared neither time nor expense to make his house artistic, and only half the rooms are finished, so lavingly does be potter "ever the decoration of them. The house is of trick, with stone fuish, and is picturesquely grouped, a round stair tured flanking the unin gable towards the road. The entrance is at the side through a righly scalptured brunze door. Though he is acknowledged as an authority on decoration I was told to expect the most violent coloring and contrasts, and so was not surprised at the brilliant thats of the hall, which is two stories in height, and is lighted by a large, colored glass window, with full-size flying figures. The stairs start from the hall and disappear into the tower, and then emerge on a balcony above. The library is the only room as yet entirely halshed, and is as original as beautiful. To use the last London "art" slang, it is "a symphony in gold." One third the height of the room is taken up by a frieze of the deepest gold, a scroll pattern piezed out with red. This would be glaring were it not skilfully ted up to by palse tones of gold below. The wooden bookeness are of models and action of the rooms is a scroll with red. pieced out with red, and pieced below. The wooden bookenses are of up to by paler tones of gold below. The wooden bookenses are of greenish gold covered with painted figures, in a mediaval style, greenish gold covered with a red gold pattern. The Where the wall shows it is stamped with a red gold pattern. The gramm of the painted ceiling has a deliciously soft, golden tint, and it is hard to realize that this hare comes from contrast, for it is only

the natural color of the pine!

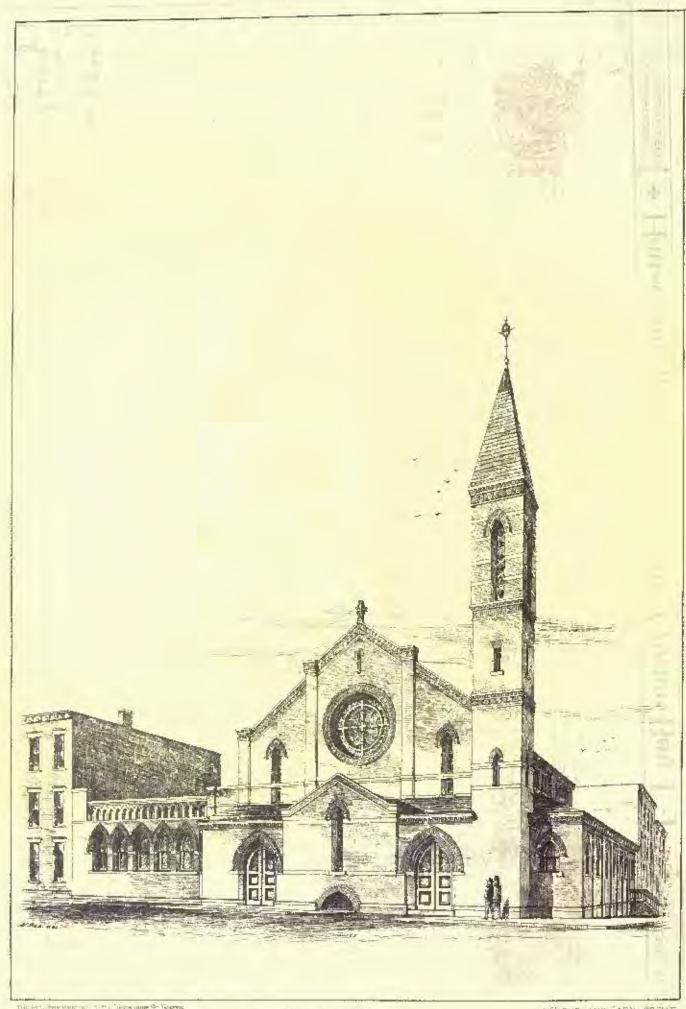
Mr. Burges is full of quaint, mediaval fancies, which peep out un-Air. Burges is full of quant, medizeral fancies, which perposit unexpectedly on the painted furniture and walls. For instance, the library mantel has a deep frieze of a procession of figures in high relief, which turn out to be the parts of speech before the Tower of Babel driven back by a figure of Grunmar. The conecit is ingentiously earried out. Thus two trumpeters, male and female, lead as "the personal pronouns;" behind them is a dog for "it;" after then comes a lady as "the verb," and the pages holding her train are "the articles;" a youth and made represent "preposition and confinction." at the end is a man starting back for this instance. them comes a baly as "the verb," and the pages holding her train are "the articles;" a youth and maiden represent "preposition and conjunction;" at the end is a man starting back for "interjection. These and all the other decorative figures are most graceful and of high artistic merit. The mentel of the next room is admirably sculptured with the "Romance of the Rose." Up-stairs is a mantel with "fack and the Beaustalk." In the architect's bedroom there is such a flood of color that the ground of the furniture is scarlet, without its appearing too crude. Here fancy has been everywhere at work. Instead of sharters delicate gilded lattices of Eastern design class the windows, and the red markle basin is inhaid with rilver close the windows, and the red marble basin is inlaid with rilver fishes. It is this endless play of iancy and his fastifious taste bave, perhaps, kept Mr. Burges from competing more frequently for important buildings. The decoration of St. Faul's was at first constitute bins, but a seem interference of the constitute of the late of the constitute of t fished to him; but on some interference of the committee with his ideas he promptly threw up the whole thing. He has the hopor of being the only man in England who has built "a real live" cathedral, that at Cork, in the sariy Ereneb Cothic. His design for the Law Courts was the one most liked by the profession in general: but in the celebrated division of spals which gave Barry the National Gallery, Waterhouse the Natural History Massenm, and Street the New Law Courts was the respective of their designs, he was left and in the New Law Courts, irrespective of their designs, he was left out in the cold. We can console ourselves that our competitions are hardly more unfair than those elsewhere.

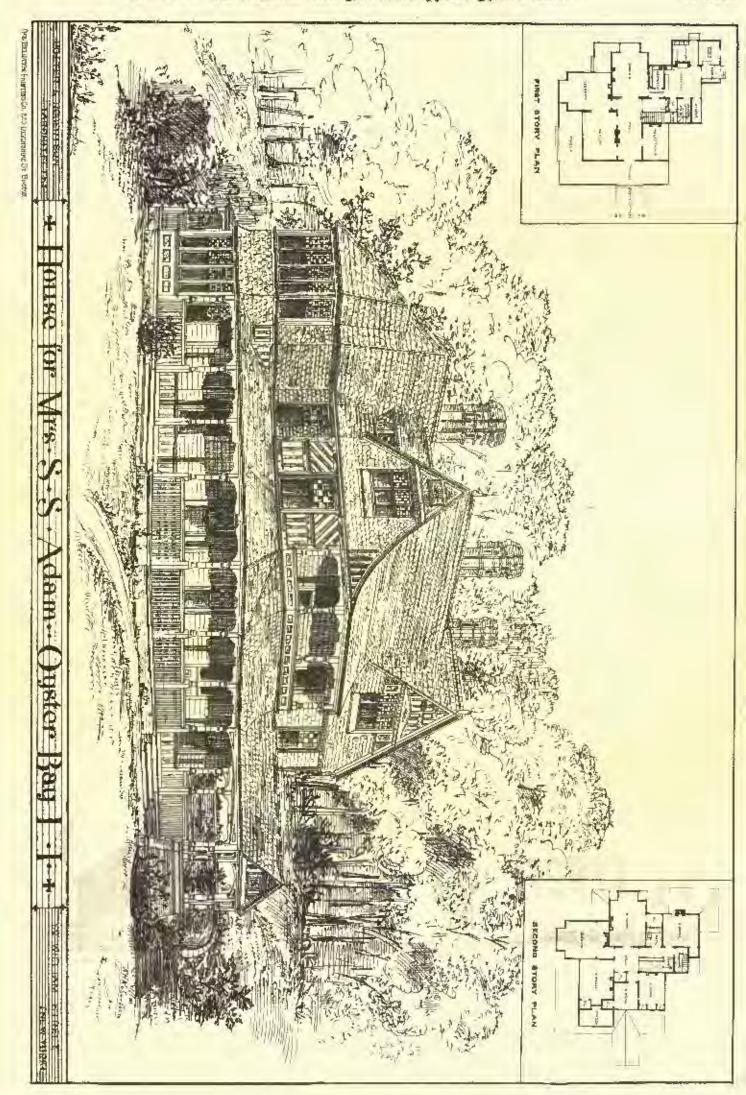
THE MASSACHUSETTS CHAMITABLE MECHANIC ASSOCIATION'S EXHIBITION, II. (Continued.) Bosnos.

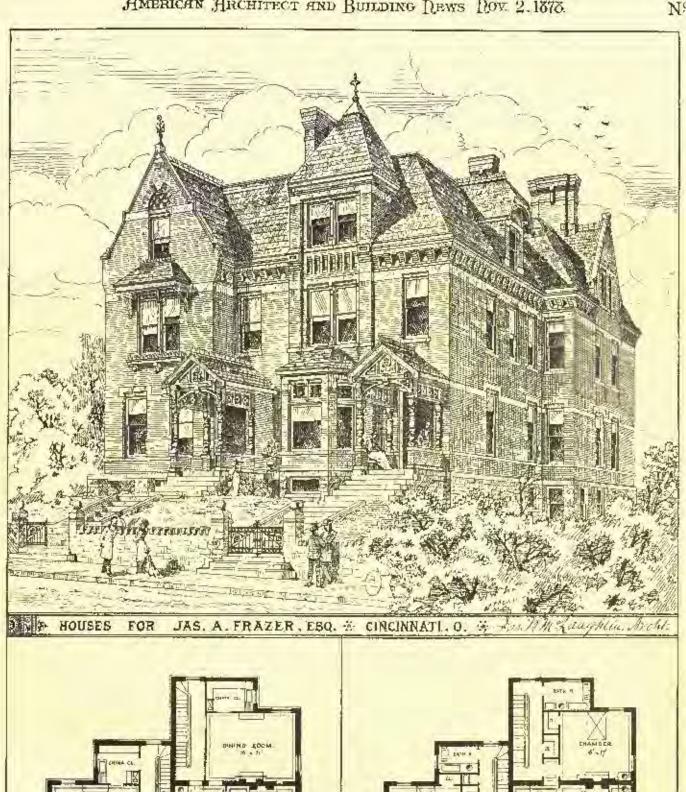
It is good and wholesome for the home artists to see their pictures bung by the side of these masterpleces, and it is no exaggeration to say that the comparison is in many cases exceenely creditable. One of the first pictures which catch the eye on entering the gallery is a noble picture of Boon Island Light, by W. F. De Haas. The French racely paint marine subjects, I believe; at any rate we soldom see them here, — the calm, broad harbors of Ziem can scarcely be called unaffines. — but after the samples along it Ziem's rightness in the galled - but after the sensuous glow of Ziem's picture in the great mardings, gallery, what a healthy tonic is this of De Rass, with its dark sky and angry sea, and the ficree drive of the surf against the white shaft of the lighthouse. M.F. H. De Haas has two pictures here, of which one, No. 238, is the same for which a medal was awarded him at

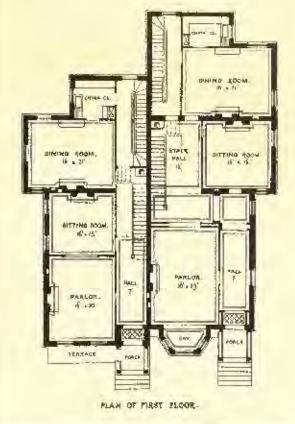


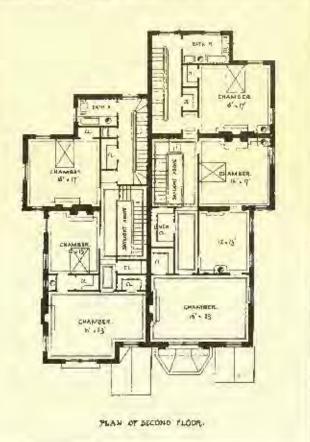
CHARTRES. FRANCE.











THE BELIEFIE FRANCISCO EEO DIMENSIQUE GO. HOWAY.



the Centennial. These pictures at least cumor be charged with twogreat a devotion to French methods. No more can those of George functs, who is liberally represented on these walls. His large pieture of the pine grove of the Barberini Villa is here, and makes an imperative domand on the attention, with its group of sloping heads of stone pines, with its hard green turf and its cold sky, and the atmosphere of a New England March. His earlier style, as seen in 247, the end of a thunder shower, is much truer and more impressive; and his later also, as in the landscape No. 270, such a quiet view as one might see in any New England upland town, with no touch of

grace added by way of idealization.

Mr. Hout has a larger number of pictures at the fair than any other artist, and they represent a surprising variety of work, in which, singularly enough, no portrait is included. No. 254 is a noble and solemn rendering of a most poetic subject, "Harvesting at Sunset;" "the earth is dark, but the beavens are bright," and against the set; "The earth is dark, but the heavens are hight," and against the gloseny sky stand out, almost in silhouette, the slow axen, with their loaded wain, tailing along the steep hillside. The charming picture of the bathers, one boy standing waist-deep in the water, and his fellow upright on his shoulders, preparing to dive, is in one of the small rooms, hung rather low, and, as it seemed to me, with not quite as good a light as it deserves. The two pictures of Niagara do not seem very successful in reordering either the grace or the majesty of the great fall, while the mad rush of the rapids above is scarcely so much as indicated.

Mrs. Darrah's fine picture, No. 212, "Gathering Kelp," bangs in what, for most pictures, would be dangerous proximity to the great group of French canvases on the cast wall of the large gallery, but it is in no way put to shame by its grand neighbors. It is a very strong and masterly treatment of a difficult subject; the attempt to contrast the sombre colors of the landscape has, perhaps, led the artist to make her sky ton uniformly white and cold. Mr. Appleton Brown has four pictures here, of which No. 185, a fine autumn land-scape, with a great brown nak, and a plain covered with a law growth of reddening shrubs, with cold clouds drifting above, is quite in the

hest French manner.

M. Oudinor, a French painter who has come among us to paint and to teach, sends two pertures to this exhibition, of which No. 140 is noticeable, apart from its somewhat singular subject and its resemblance to Corot, by reason of its graceful drawing and its cool, fresh, and sweet color. It is a French country road, shown in sharp perspective, with a thin row of half irees on the right, through which one sees some cultivated fields and a dark group of farm buildings. The spongy soil of the road, with its deep ruts filled with water, and the grass growing between, are rendered with remarkable teath and beauty, and make one desire to see more of M. Oudinot's work.

Mr. Foxeroft Cole is one of the most conscientions and successful disciples of the French school, and his pictures, of which he has some half a dozen on these walls, are faithful, intelligent, and strong, though they seem to me a little monotonous in subject and treatment, and too uniformly low in tune. The prevailing sombreness of the landscapes makes one breathe a sigh of relief when he cauches sight of Mr. Addison Richard's charming little picture of Anne Hatha-

way's cottage, so fresh and bright and spring-like is is.
The genre painters do not gather in great numbers. Mr. J. W. Champacy sends four or five pictures, of which No. 268 is a careful Champacy sends four or five pictures, of which No. 268 is a careful and minutely claborate piece of pointing, called "Lunch in the Field." Another "Lunch," by W. Shirlaw, No. 258, is amoving and claver. The stardy little maid and her small companions are quite of one mind respecting the duty which is next their hand. In Mr. Beard's picture, No. 184, "Kicked Out," the tramp is immortalized; the in-bospituble weather, the pittless closed dom, and the shring of hard philosophy with which the poor dead-heat gathers himself together and menance to tramp, proceeding whither are closer in the extreme. and prepares to tramp, uncertain whither, are elever in the extreme, and worthy of a better subject.

Mr. W. A. Gay is represented by three characteristic pictures, "A Coast Scene at Cohasset," a "Forest Interior," and a lovely "Nile View," wherein the foreground is a village on a high bluff, dark and strong in color, with a rudu dome rising out of it into the blue sky, while below in the middle distance, the river is seen, and beyond, the distant shore, faint and gray with palm-trees. There are few architectural subjects beyond a Byzantine court-yard by Henry Leland, not very characteristic, a church interior in North Haly by

Eugene Benson, with peasants worshipping, and an interior in the Hutel Clany by our townsman, Mr. H. P. Clark.

Mr. William Bradford's "Rainbow among Teclergs" is a picture which makes a severe draft upon the faith of the beholder. One is willing to believe in the strange and exaggerated colors of the are-

the seemery, but not in the solidity of the rainbow.

In one of the lower rooms is a small but interesting collection of In one of the lower cooms is a small but interesting collection of water-colors, mustly English and American, in which there is no extraordinary work, but much that is very good. Some charming trawings of French farm and village seenery by Foxeroft Cole seem to me more interesting than his more claborate oil-paintings. There are two or three of the exquisite drawings of Miss Bridges, in which the minute pencilling of the grasses and small fluwers is carried almost to an excess of poetic delicacy.

These lower rooms form a very attractive feature of the fair. Besides the preparations there is a lot of abstractive feature of Evency rice.

sides the water-colors, there is a lot of photograpures of French pietures, contributed by Messes. Knoodler & Co., of New York, which really need more time than one can often spare in a gallery ; a large

cultertion of heliotypes from the Heliotype Printing Company, and another of Albertypes from the Forbes Lithograph Communy, which enable one to compare intelligently the results of these rival processes of reproducing engravings and drawings; a few good architectural drawings, among which I remember Mr. Clough's fine perspective of drawings, among which I remember Mr. Clough's fine perspective of the new buildings for the Larin and English High Schools, some large and well colored perspectives by Mr. Putnam of sea-shore hotels, and a very elever sketch by Mr. Preston of the interior of the Exhibition Building; and a very ereditable exhibit by the Household Art Company, of tiles, furniture, tapestry, and cases. Among which are some beautiful wall-tiles, by Minton, of a pomegranate pattern, showing the haves, flowers, and fruit, on a ground of trange-many; and an upright border of tiles from Creil, of remarkable beauty, set in the jamb of a decrease. and an upright border of tiles from Creil, of remarkable beauty, set in the jamb of a doorway. And then there are the displays of china by the great dealers, and of glassware by the Boston & Sandwich Class Company. I said, in my last letter, that we can at present only follow the other nations in all matters of art, but we fullow pretty close in glass-making, which, if not a fine art, requires at least some of the artist feeling to bring it to perfection. The glass of the Boston & Sandwich Company is exquisitely beautiful in its forms, thinness, and decoration, and some of the ruby and amber ware is superb in color. In pottery, also, Messrs, Jones, McDuffee & Strattan have included in their exhibit some of the productions of Messrs, Robertson & Co., of the Chelsea pottery (why they have not an ex-Robertson & Co., of the Chelsea pottery (why they have not an exhibit of their own is a natural question), which in form, color, and glaze would not do discredit to Doubton himself. Some of their ware has a decoration of an incised pattern, by Fenety, of remarkable grace and originality.

THE ANNUAL CONVENTION OF THE AMERICAN INSTITUTE OF ARGITTECTS: -QUARTERSY REPORT OF THE BUILDING DE-PARTMENT.

Tue prospects are that the Institute Convention next month will but a good working meeting, pleasant and profitable, but without any very scurational features. Messrs, Cady and Robertson, the committee of management, representing respectively the Institute and the Chapter have corresponded extensively with different members, and some good papers are promised. One, on Brick Architecture, will be in the very nick of time, judging from the endeavor of many of our metropolitian architects to outdo each other in erecting fan-tastic things in hrickwork. The paper will be a sharp criticism of tastic things of breedwark. The paper will be a sharp criticism of many of the faults, while recognizing that there is a wonderful possibility of use and beauty in this material. Another topic to be treated in a paper and thrown open to discussion is "The Faults of Modern Architecture," — broad enough surely to give roun for almost endless discussion. The essay will dwell upon the ambitious cudeavors of modern designers, in every class of work, and the lotuise striving after something new; the worship of novelty for its own sake, and the general growth of an unrest in civil, religious, and domestic architecture. The sessions will be held in the Coal and from Exchange Building,—a building of Mr. Hunt's design, and as a piece of construction, one of the most perfect in the ciry. Of its design members can judge when they arrive. The sessions will last two days, thesian is a library and assured as a session of the circumstance. closing in a dinner, and excursions to various new and prominent hulldings in the city have been arranged.

The quarterly report of the Superintendent of Buildings shows a gratifying increase in the number and estimated cost of buildings erected. The quarter suded on the 30th of September, and is for the dull period of the year, but compared with the corresponding quarters of other years preceding the following table is made up:

	1870.	1870.	1877.	1878.
Plans filed Unid Jings embraned Alterations Uniddings embraned New buildings completed New buildings completed Alterations removement Alterations removement Alterations removed Afterations in progress Afterations in progress Afterations in progress	961 297 239 980 301 376 532 907 746 198	190 815 822 940 405 280 423 268 768 143	108 258 259 250 250 268 268 268 268 307 844	154 844 529 245 428 428 425 275 275 212 836 189

In money value the rate is sustained in favor of the quarter just passed, the figures standing ; -

Third quarter,											New work,	Attere	ictions,	Total.			
1878 1876 1877 1873	2111	4	2160	44.44							\$3,196,879 2,817,478 2,828,173 3,746,725	62	8,195 7,213 8,631 W,125	\$8,817,253 \$,814,600 8,105,850 9,300,850			

Of the 154 plans offered 124 were passed on first examination; 15 were sent back for alteration, and then approved; and 15 were rejected outright. The 344 buildings included are classified as follows: first-class dwollings, 135; second-class dwellings, 43; French flats, 27; tenements, 72; first-class stores, 5; second-class stores, 8; third-class stores, 6; office buildings, 4; shops, 7; chirches, 2;

stables, 15; public buildings, 4; frame dwellings, 14. The churches are small buildings in the upper part of the city. During the quarter 18 buildings have been ordered to demolition, and 252 have been found out of order and made safe. No had breakdowns have marked the quarter, though in one or two instances baste in rushing up buildings has been checked by crushed and falling walls. The great bulk of the dwelling-house work in all the classes is in the upper wards, where the rapid transit lines are pushing at a steady ratu-

TURNER'S ETCHINGS.

Proof. C. E. Nouros, of Harvard University, has recently caused to be reproduced, by the beliefype process, the series of thirty-three stehings from the plates of Turner's "Liber Studiorom," with a view to bringing them within result of students of art, and of selecula throughout the country. The reproductions are made for Professor. Notice by The Heliotype Printing Company of Boston, and are executed with atmost care, all interior impressions being rejected. As reproductions they seem to us most executent; and to constitute one of the most important contributions which have yet been made in aid of useful instruction in drawing. The lines appear wonderfully clear and perfect throughout, and the plates seem scarcely to differ in any respect from the originals, save in regard to that embossed quality of line which the deeply bitten copper gives. But this quality, though it adds great richness and charm to the originals, is not an important one to the student. The exchines themselves are all by Turner's own hand, and consist of the leading lines of the subjects, which were af-terwards realized in complete charoscure, by means of mezzotiat engraving. The true significance and value of these leading lines, engraving. The frile significance and value of these leading lines, as such, can be recognized by those only who have couplied the expacity to appreciate the qualities which make a line expressive and beautiful; and they are, therefore, like all great work, to be studied before they can be fully enjoyed. In his use of the line Turner is instinctively in accord with all the great anasters and schools of past times; and this use of it is by no means confined to these plates of the "Liber Studierum." It is constant, as a skeleton groundwork in all his works.— from slightest sketches to highly finished drawing. the "Liber Studiorum." It is constant, as a skeleton groundwork, in all his works, — from slightest sketches to highly finished drawings, and large oil-paintings. In those last it becomes educed, indeed, in all passages where softness of massy form, and mystery of space require it; but there is searcely a drawing or painting by him in which traces of it do not remain visible, giving from definition to all salient points. The great mass of his nous and sketches from nature are points. The great mass of his notes and stanches from nature are alone in pencil outline, lightly washed with water-color; the firm line and the washed color supplementing each other according to the method which, as we have said, is in perfect accord with that of all the great schools of the past,—and is correspondingly at variance with the loose methods of most modern practice. The methods of the classic schools,— Egyptian, Greek, Tascan, and Venetian,—are, in this respect, essentially identical and invariable. Though whatever available, the maler are, in this respect, essentially identical and invariable. Through whatever modification of national or individual poculiarity, the order of procedure is always t first, firm outline, second, color, third, chiaroscuro. In the wonderful fragments of Egyptian painting, from the walls of the tent's along the Nile, which are preserved in the British Museum, this order of procedure is perfectly distinct. In all known Greek wase-painting it is the same, so far as Greek painting goes. In early Italian act it is so precisely the same that if one of the Egyptian brids from the British Museum were placed beside one by Benozzo Gozzoli in the Kiecardi Paiace at Florence, or the Campo Sauto of Pisa, they would appear very much like work by the same hand. And in all the Italian painting the same methods hold fill the rise of the academic schools, which have reversed ancient principles, given false direction to modern practice, and eripping principles, given false direction to modern practice, and erippied fine artistic expression ever since. The few painters of modern and recent tipies, who have achieved anything of permanent excellence, recent times, who have achieved anything of permanent excellence, have been mostly those who have eschewed the relicols, studied nature for themselves, and drawn independently upon the ancient sources. Torser began to draw upon these aminent sources at a very early period in his career. The hold and careless methods of his first teachers were gradually supplanted by those which were akin to the methods of the old Florentines. In these methods, which hocate the basis of all his firture practice, he went on steadily improving from year to year, until, in the full maturity of his powers, he was able to produce such outlines as these of the "Liber Studierum."

Nothing, nechans, rould better contribute to the acquirement of

was able to produce such outlines as these of the "Liber Scudiurum."

Nothing, perhaps, could better contribute to the acquirement of the capacity of appreciating, not only Turner's genius, but also the fundamental qualities of all finest art, than attentive study of these reproductions. This study involves immediate rolerence to nature. When one has made some progress in discovering leading lines, and has become sensitive to those linear qualities which are expressive of essential characters, as, for lustance, the energetic growth, clastic apring, and movement of fibre in a tree; of geologic structure, cleavage, and mearing away of a mountain, one will be likely to feel that these characters are wonderfully expressed by Turner in the character of his line; that the seemingly accidental movements of hand are graphic in the highest degree; and that in this graphic expression the economy of touch is as wonderful as any other quality. The master always knows precisely when to stop, so that each line and dot may have its utmost force and suggestiveness.

Then, beyond these graphic qualities, in which a different, watch-

Then, beyond these graphic qualities, in which a diligent, watchful, and sensitive student may hope, in due time, to attain no mean skill biusulf, there will be found, in these outlines, expression of

those great instincts of design which mark genius of the highest order. The faculty of dividing a space and distributing quantities heautifully, so that the design as a whole shall be felt to be beautiful, even without regard to what the lines graphically represent. A faculty to be in nowise gained by any communicable code of laws of composition; but one which, when, it exists at all, is always spontaneous and mysterious. In the results of it, laws may be discovered, to which it always works in butthesis a challenge. to which it always works in instinctive obedience, the perception of which may increase our enjoyment, but from which it would never be possible to produce another beautiful thing. Turner is incomparably great as a linear draughtsman; he is great, also, as a landscape painter in all respects; but he is especially great in the quality and range of his designing faculty.

INDUSTRIAL SCIENCE DRAWING.

Mr. WARREN's hook, which is one of a series of text-books apon Descriptive Goometry and Instrumental Drawling, is an enlarged reprint of a book published five years ago, the last balf of it being entirely new. The original work, if we may judge by what is bere reprinted, consisted in an exposition of some of the more elementary conceptions of geometry, expanded over fifty or sixty pages of text, to may per large been without relies to another the more demonstrative to the contract of the to may not have been without value to students approaching this study without an instructor. The first part summerates the different ways in which straight and curved lines can be combined. The second treats of solid forms in the same spirit. The reader is then second treats or some forms in the same spirit. The reduct is then advised to draw things in isometric projection and in perspective, advancing from the geometrical solids to "knives, forks, spoons, castors, tea-sets, thus, pumps, sloves, pitchers, bowls, caps, success, dishes, etc.; . . . and articles of furniture having a geometric form, studies cluster, clocks, work-boxes, book-cases, tables, desks, etc.; and such mechanical objects as are accessible, such as rail-

all the mechanical objects as are accessible, such as ranroad chairs, frogs, and switches; grindstones, hay-enters, bridgejoints; root-framings, as found in bons, aftics, etc."

"By practice," it is added, "the learner will not only learn to
make such sketches readily and nearly, which will often be a survineable accomplishment, but will by degrees colinet an album of valuable examples of construction, the exam knowledge of which may be
assful." Chapter IX., on Lettering, gives the proportions of the useful." Chapter IX., on Lettering, gives the proportions of the letters of the Roman alphabet with great minuteness of detail, it being said of the letter V, for instance, that its width is just eighteen and a half sixteenths of its height, a fact which has, we may presume,

bitherto escaped record.

hitherth escaped record.

The third part, which is entirely new, treats of the Elements of Geometric Beauty, or purports to do so. Here the writer appears to less advantage, being apparently on unfamiliar ground. One chapter is given to the three principles of "Unity, Harmony, and Freedom;" the next to the "Two Radical Geometrical Ideas of Distance and Direction," and to the numbers 2, 3, and 5, and their empounds, as found in the multiplication table. The third explains the arithmetical theory of barmony in music. The remaining forty pages are "based, in general, on the ingenious and presumably correct theory of D. R. Hay." Mr. Hay was a mun of genius whose personal influence as a practical decorator is still felt on both sides of the water; and his "Frinciples of Symmetric Beauty" gives abundant evidence of the vigor and originality of his mind; but our author is probably the only one of his readers who was ever imposed upon for an instant by the brilliant and fantastic speculations with which it is filled. The "egg-forms, derived naturally, and in unlimited variety," which are presented in this work as an improvement upon Mr. Hay's composite ellipse, serve as the reductional descent surdum of his theories.

We have before now expressed our surprise and regret that the house of Wiley and Sons should lend the weight of their name to publications like this, which darken counsel by words without wisdom. Its form is that of a scientific treatien, but it is without substance. It is not fair to the draughtsmen and arrisans, teachers and students, to whom it commends itself, for them to lend a hand

in bringing it into the world.

A WESTERN COMPETITION.

Melwavere, October, 1878.

To the Editor of the American Architect:

Dear Sir, - The following notice appeared in the columns of the Milwauken Daily News, the official paper of this county, on the same day it bears date.

they it bears dube.

Notice is been's dube,

Notice is been's dube,

of the County of Milwaukos, atopled on the 27th day of May, 1878, that plans provided,

of the County of Milwaukos, atopled on the 27th day of May, 1878, that plans provided on the 27th day of May, 1878, that plans are summarized for the county asylon for the County of Milwaukos, for the accommodation of 250 patients,—such plans, drawings, and specifications to rover a compact building, including beating apparatus and other requisite machinery,—will be received by the Schot Councilities of the acid Bayeries of County Asylom, at the allow of the County Clerk, in the Count House, in the City of Milwaukos, until the 17th day of June, 1878, as 10 a clock, a. a. The architect whose plans stall be adopted will be suppleyed to superintend she countraction of the building, and his plan cony to be pash for.

Batel, Milwaukos, May 28, 1878.

Select Compared by 782 Bodder Brand on County Asylom.

i Instabilal bisience Brancing. Elements of Plane and Said Free-Hand Geometrical Brancing, with Lestering, and same Elements of Grandwical Commenced Distant, including the Principles of Harmonic Angalar Narios, etc. Bur decognitemen and artisans, and techniques of industrial and mechanical drawing. By S. Edward Watten, C. E. New York: John Wiley and Sous.

The time for receiving plans was afterward extended three weeks

beyond the date, June 17, as per notice.

The author of each plan uppeared before the select committee to give the necessary explanations and answer such questions as might be called forth during the consultations of the committee. The result was a manimous rejection of four out of the six plans presented, and two reports were musle to the hoard of supervisors, with reference to the two remaining plans, which resulted in the rejection of these 1 80.

A second notice was issued through the official journal, differing not materially from the one given above, with the exception of dates. Near the 20th of September the second batch of plane was presented to the committee, three commetters only appearing. The were most successful in the first competition) were strongly replaced and in the purposes. The committee, with creditable anxiety to have things all right this thus, scheeted two experts to whom the plans were submitted, and who gave them most careful consideration. One plan out of the three was decisively rejected as being wholly enfected for the purposes. The remaining two (being by the rame two architects who were most successful in the first competition) were strongly replaced. mended by the experts, either one being pronounced admirably cal-culated to carry out the best idea of an asylum for the insane. Par-ticular points of excellence were noticed in each one, offsetting points in each that were capable of improvement, one detect simply being discovered in either. The committee were divided as before, on the merits of the two plans, but a vote or the board resulted in obtaining a majority is favor of one of them, the vote standing ten A provision in the law of the State of Wisconsin, umpowto eight. ering counties to build asylums, stipulates that the plans adopted by the heard of supervisors must be submitted to the state board of charities, and also to the governor of the State, for approval. This has been done in the present case, and on October the lifteenth, the plans of H. C. Korla & Co. were finally adopted by the board of supervisors, who have authorized the committee to advertise for proposals for building the aluresaid asytum, and also to make a contract with H. C. Koch & Co. for the plans, specifications, and superintendence of the buildings of the proposed asylum.

This particular mention of the nutter would hardly be called for,

to occupy from in the American Architect (although a very long story is tall as briefly as possible), were it not an additional evidence of the improper methods employed in obtaining plans for public buildings. The prevailing notice is — as shown in the laws which empower States, counties, and cities to levy taxes and creet public buildings—that any body of men are capable of procuring suitable plans and passing judgment upon them, whatever may be the purposes of the building for which they are intended. Until the public is educated out of such a fallacious notion, similar follies will be

again and again repeated.

This board of supervisors of Milwackee affords a fair example of the average bodies of men usually intrusted with such matters. About one half of them, in this instance, representing the townships in the county, are farmers; the remainder, representing the city, conin the county, are farmers; the remainder, representing the city, consists of two commission merchants, one picture-frame maker, one retired farmer, one retired dry-goods dealer, one sailur, and one solltary mechanic, a journeyman stone-entter. These are all worthy men, fitted for their own callings by nature and experience, and manage the county business passably well. What private citizen, however, would intrust them with a commission to provide plans for his own buildings for any purpose? Yet our wise legislators empower these men to provide a hospital for two hundred and fifty unfortunate lunaties. Happily in this instance a combination of peculiarly fortunate circumstances have given this county the heactir of a very excellent plan, but it is questionable if after all the delays and discussions upon the merits of it, there are three men in the board who cussions upon the merits of it, there are three men in the board who have a correct and intelligent comprehension of its essential features of adaptability for the purposes designed.

Competition may seem to be a very excellent method to those who do not compete, but its effects are pernicious in many directions upon those who do, and the results of competition generally partake more of the devilish than the divine.

THE CASTELLANI COLLECTION.

THE Castellant collection, recently exhibited and offered for sale in New York, was formed by an experienced gentleman with intent to dispose of it, if possible, as a whole. His price was £30,000, or £150,000. Failing to sell it as a collection, the owner offered it for sale by anction in Paris, on the 27th and 29th of May last, during the exhibition which attracted thither representatives of art lovers

from all the world.

This collection is so well known here that it is unnecessary to describe its character. It was especially valuable for its fine examples of Gubbio lostred wares, having also a few renowned specimens of other fabrics. Long known to collectors, it was expected that the "famoy specimens" would effeit active competition, and they did so. While the general run of prices was greatly lower than the experi-enced possessor had anticipated, there was, nevertheless, a marked advance over previous sales, and the distinction of two classes which we have before indicated was remarkably demonstrated. The pos-sessor, after deducting expenses, realized from the sale considerably less than half his price for the collection as a whole. Of the amount realized, a very large proportion came from a very small number of pieces. Our notes are based on a priced catalogue sent

us by a friend who attended the sale, and whose accuracy we have no reason to doubt.

As American readers are familiar with the Metropolitan Maseum of Art entalogue, and as a number of pieces were assigned in the French sale catalogue to different factories from those to which Signor Castellani had assigned them in the New York catalogue, we refer to the pieces as described in the latter. The sale included nominally 540 specimens (one or two unimportant pieces, however, seem to have been emitted from the French catalogue, and only 339 were sold); of these 138 were Gubbio Instre, and these brought just about one half the total amount realized. In round numbers the sale realized for the whole collection 406,000 frames, or say \$81,000, of which Gubbio waves brought about \$40,000. The average price of the Gubbio specimens was not far from \$300 each. This high average was due to about seven specimens and of the 138, which brought nearly one third of the total realized for all the examples of this factory. of this factors

In the entire collection there were fifteen pieces which brought 155,000 frames out of the total of 406,000.

Possessors of the estalogue will be interested in noting these highpriced pieces, as follows:

No.		Della Robb							,		4								-	4,000	francs.
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-1	34.	*)	+		16		4		4		-		1						1	9,200	3.1
41	511.	Guldria .														4		4		15,000	61
2.4	作し	10																		15,500	16.3
1.1	G2-	11						4		4.										4,700	26
16	64.	46	1		4		12		4		4		-							11,500	41
44	GG.	14		4		4				-		-				4				5,050	91
24	1311.	44	7		-						4		E.							4,600	¥1
41	T16.	16						-		-						140		41		5,700	21
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11	839,	Plotentine	per	cel	gin					÷				9		14		34		10,000	44

There is, notably, very little gradation between the 5,000 frame pieces and those sold for 10,000 and upwards. Deducting the seven high-priced pieces, the average price of the Gulbin specimens was not much in advance of the average in the Soulages collection.

By way of contrast with the highest, it may be interesting to note

a few of the lowest prices of Gubbie lustreil wares,

No.	50.	Deup	dish							4						5			\$46.00
10	34.	Takka	, Sign	and ?	b. (lipr	Uch	-	. 4		-						2		59.00
11	102-	Cup	ist.	Jeros	neq	sip	Heis	by	Gin	rki	g	-		7		+		+	42,00
14	120.	Phile	Gint	ia				4	+		4		- 0		4		8		22.00
34	1.44	5'mp				4	- 2			4				1		91		4	15.00
44	108,	Scode	lla	1				1				-	-		1		+		12.00

It is useless to discuss or attempt to explain the arbitrary rules which guide collectors in paying high prices for some specimens of Majolica, and we repeat the warning against any attempt to estimate Majolica, and we repeat the variing against my attempt to estimate the value of other specimens from price catalogues. When a particular specimen has obtained a reputation as a great work, or a rare work, and comes into a sale, the mure desire to possess it as a triumph over other collectors rate it far above any just estimate of its value. There were specimens in the Castellani collection which, judged by accepted rules of heavily outside of Majolica collections, ought to have brought the highest prices, which sold for a few follows: and other specimens, which so the same rules were appreciated. lars, and other specimens, which by the same rules were monstrustties, and brought thousands of francs.

There were twenty pieces of Castel Durante wares sold, at an average of about \$125. The highest price (\$160) was paid for No. 190, a cup on a stand, and the lowest (\$35) for a pair of Albarelli,

numbers 201 and 202,

Ewenty-shree pieces of Caffaginolo work averaged \$300. high average was due to two plates, No. 33 and No. 34, which brought respectively \$2,020 and \$1,840; as much as all the other specimens together. Forty-nine pieces of Urbino ware averaged about \$275. This high average was also due to two renowned specimens, No. 269, the portrait of Charles V., said for \$4,000, and No. 293, a historical basin in shape of a tartle shell, seld for \$5,000, the highest price realized for any one piece in the collection. The Roma specimens averaged about \$40. The Castelli waves, ranging from \$5 to \$160, averaged about \$72.

The most striking feature in this sale is the great advance indicated in the prices paid for what we have called "fancy specimens." The highest price paid at the Bernal sale was about \$1,000, while the highest price at this sale was \$5,000. This is due to the sharp rivalry among wealthy collectors, who direct their attention almost exclusively to what may be called extraordinary specimens. — W. C. Prime in the Art Interchange.

A. New Form or Menallic Corper.—The existence of an allocropic modification of copper, distinct by its physical and shemical properties, has just been established by M. Schutzenberger, who has described those properties to the French Academy.— Compiles Rendon. The surest way of obtaining it is by electrolysis of a ten per cent colution of acetaks of copper, previously boiled some minutes to expel acetic acid and render it slightly basic. Two Binsen or three Daniell clements are used, and all rice of temperature in the bath is avoided. The electroles, platinum negative, copper positive and larger, are arranged parallel about three to futr continuers apert. The face of the platinum next the copper is then covered with allotropic copper, while the other face receives a thinner deposit of ardinary copper. The new form has a bronze appearance, with metallic lastic, slightly rugoes surface; it is brittle, and can be bruised to impalpable powder in an again mortar.— Engineer. ble powder in an agaic morter. - Engineer.

NOTES AND CLIPPINGS.

We desire to call attention to an advertisement which will be found on we assert to can acception to an autorescence which will be found on page vi wherein it will be seen that our publishers give to new subscribers for 1879, paying before December 15, 1878, the nine numbers for November and December next.

CIRCUNSATI Seguends of Art. — The places of instruction in drawing and the various forms of art in Cincinnati seem to call for some notice in this journal, and the information may be of interest to our readers.

Drawing is taught in all the public schools, and has been for some years past. Mr. Arthur Forbriger is principal, and has been for some years past. Mr. Arthur Forbriger is principal, and has been for some years past. Mr. Arthur Forbriger is principal, and has been for some years past. Mr. Arthur Forbriger is principal, and has been for some years past. Mr. Arthur Forbriger is principal, and has been for some years past. Mr. Arthur Forbriger is principal. The architectural control of the winding. The Mechanics' Institute has classes for instruction in drawing, and is divided into five different departments, viz.: the architectural, Messrs. E. Anderson and Thembure Richter, instructors; mechanical, Messrs. E. Lictre and Gen. Wadman, instructors; artistic, Messra. M. Giulelin and W. R. McConats, instructors; madelling. Mr. C. L. Fettweis, instructor; life class, the C. T. Webber, instructor; the partment, 54; inschanical, 75; artistic, 46; modelling, 10; life class, 10. Total, 201. This number, no doubt, will be increased, as the school less but just uponed. The schools school is under the charge of Mr. John B. Hairt, as principal. Its sessions are held every Theoday and Fridny evening, from seven to nine o'clock, for four mainths during the winter. An allouission fee of \$3.00 per session is required from the schoolars; not to pay the expenses of the school, since these are many times beyond the receipts, but is charged as giving to the scholars a preayer incentive to activity. Drawing has lately been introduced into the night Public High School, on a very extensive scale, and is in charge of Mr. Hency Millward, Mr. Feks, and Miss Solvion. There are over 15th scholars arrelled for drawing alone. The scholars in this school halong to the working class, and the instructions they receive will no doubt be felt have not as yet the statistics.

The Olders House in America. — The old Horton House, at South-old, Sullotk County, N. Y., is said to be the oldest house in America, inviting been built by Barnabas Harton in 1839. A pertion of it (the east rad) was selected later for the use of the Court of Sessions in the East Rolling of Yorkshire on Long Island. This Yorkshire mat its Riding with the Court of Sessions were established by the Duke's Lows in March, 1665. The judge's bench remained in the house until a few years ago. The old house has recently been sold to Mr. Amus L. Sweet, who intends to take it done had day we one on its site. The residents of Southold and its vicinity, as a fitting ending for a famous building, arranged for an evening entertainment. Antique farmiture, household goods, kinchen usensils, implements of domestic industry, cranes, transmets, spinning-wheels, one entertains and tables, were gathered from every part of the county, and the ladies who actual the tables dressed in the costumes worn two handred years ago.

MAKING PENGIL MARKS INDELIDLE. — Pencil marks are made indeli-ble, says the Papier Zeitung, an paper prepared as follows: Any ordinary drawing paper is slightly warmed, and then rapidly and carefully had on drawing paper is slightly warmed, and then rapidly and extently hid on the surface of a bath consisting of a warmed solution of blooded colorbulum in alcohol, antil the entire surface is moistened. It is then dried in a current of but air. The surface of the paper becomes smooth, but readily takes the impression of a lead peacil. In order to make the lead peacil marks indefilide, the paper is warmed for a short time on a stove. This method may prove valuable for the preservation of working drawings when a lack of time will not permit the draughtsman to faish them in ink.

CLEOPATRA'S NUBBER, — It is east that the total rost of setting up Cleopatra's Needle in Lundon amounted to \$75,000, of which \$50,000 was given by Dietor Wilson, and \$25,000 by Mr. Dietor.

MONUMENT OF WILLIAM III. OF PRESSIA. —The monument of Fred-sciek William III., father of the Germin emperor, just unweiled at Co-logue, in one of the largest colosial equestrian staines ever cost, being twenty-two feet high, with pedostal tigates averaging from nine feet to ten feet, and commemorates the embodiment of Rhinchond, as well as the king who accomplished it. Figures of Blucker and Kleist, Billow, Harden-berg, Arndt, Wilhelm von Humboldt, Alexander von Humboldt, Niebuhr, Gueisenau, and others surround the granite base. The nonconcent is the work of the Berlin sculptors Blaser and Calendrelli, weighs 76,570 pounds, and end \$112.500, which was raised by a Rhenish andscription in 1885. and cost \$112,500, which was raised by a Rhenish subscription in 1865.

Monument to Mercaton.— At Dolsburg, Rhouish Pressia, has Intely been unveiled a memorial of Garbardt Kremar, commonly known as "Moreator," author of "Mercator's Projection." Born of German parents in Planders in 1512, he settled in Duisburg in 1562, and died there in 1594. The first stone of the monument was laid in 1869, but lack of funds delayed its completion.

STATUR AT KIRL - A statue has been erceied at Kiel to Jona Larmsen, a jurist, who was horn in the feland of Sylt in 1793, and died on the banks of the Lake of Geneva in 1838. His pemplete of 1839, advocating complete autonomy for Schloswig-Holstein, exceed him dismissal from office and a year's imprisonment, after which he died a broken-hearted axile. He is now honored as the prote-mattyr of Schleswig-Holstein.

Screey or learnwars. — The Annales des Posts et Chanseses has just published some statistics which show that a person had in France, in time of the diligences, a chance of being killed in making three hundred thousand journeys, and a chance of being hart once in making thirty thousand. On the railways, from 1872 to 1875, the chances were reduced to one death in forty-five million of journeys, and injury in one million.

Fires in Crimners. — At the meeting of the Societé de l'Encouragement, of France, M. Pallard read a paper on Sulphide of Carbon se a Fire Extinguisher for Burning Chimnoys. The products of combination are sulphidrous acid gas and enthonic and gas; there is no necessity to plug the chimney, and the cost of the sulphide is trifling. The firemen at Paris are stated to be expert in its use, and to have used it in January last in 32 out of 51 dres; in February, in 81 out of 103 fires; in March, in 138 out of 165 tree; or in 251 out of a total of 319 fires, the extinction being almost instantaneous.

STREATHERIC EXPLOSION OF MARINE TORPUDORS. — In a general sort of way it is known that dynamite torpedoes of from one hundred to two bundred pounds will ignite one another if sunk in ten feet of water, at in-Innoted pounds will ignite one another if sunk in ten feet of water, at intervals of three handred free, when one of them is explanded. Gun-corton torpedous are considered to be somewhat less sensitive. It is upon this fact of the communicability of lightion from torpedo to turpedo that the method of clearing a channel of torpedoes is leaved. A pinnace taking along a bundle of insulated cheetric wires starts from a vessel to the place where the torpedoes are supposed to be laid. Near the first torpedo a charge of dynamite or gen-cotton, connected so the electric wires, is dropped from the pinnace, and when the pinnace has retreated sufficiently far the charge is explosted, with the effect of discharging the sub-marine explosives in the neighborhood. Nothing very accorate has as yet been ascertained with regard to the influence of depth of water, character of the explosives, one, upon such connectmining. The experiments at Portsmouth, England, on September 8, were rather of the name of a sham leatle than a thorough test of the conditions under which a channel protected by torpodoes can be cleared and safely entered by a fleet. But, doubtless, less showy has more useful methods will, by and by, determine the exact value of torpedoes for defensive purposes. defensive purposes.

Discovery at Ornaria. — A great murble bull has been discovered at Olympia in front of the Exedra of Herodes Auteus. On it is an in-cription that Regilla, the wife of Herodes, presented it for the conduit built by

Depth of Langs, — The Bargring Course publishes an interesting comparative statement of the depth of lakes. Among European lakes the Achenses, in the Tyrol, heads the list. At some points the depth of take lake amounts to 2,500 feet. The grearest depth of the Lake of Constance is about 975 feet, that of the Chiemsee about 458 feet, and that of the Walchen and Konigssee, 611 feet. The measurements made about 1370 at the Res Sea showed that at its deepest part its depth is 1,636 feet; but if we consider that the level of this lake is already 1,394 feet below the level of the Mediterranean, then we find that the total depression in the soil here amounts really to 2,330 feet. The fake of Tiberies is extremely shallow in comparison; on its eastern part the average depth is only 26 feet, while on the wastern side it lies between 19 and 22 feet. In Lake Buikal depths have been found which, for a lake, are utterly astonishing. In the apper part of the take the depth is 10,800 feet, shoult the height of Mount Emal, but downward the borton constantly descends, and near the opposite bank the depth amounts in 13,230 feet. The depth for exceeds that of the Mediterranean Sea, which, at its deepest part, measures only 7,800 feet. iterranean Sea, which, at its deepest part, measures only 7,800 feet.

A Polar Ballaws. — A scheme has just been proposed by M. Émile Pagan, a Belgion, for reaching the North Pole in a bailoun. The aerial machine, which is of a special form, will be used as a sailing vessel as far as the eighty-fourth parallel. There he will fill his balloon, of a capacity of 2,500 cubic metres, with pure hydrogen, which he will make in the arctic regions with 14,000 cable metres of sulphuric acid and 5,000 of iron-fillings. To will be supplied with boxes of preserved meats, biscuits, houries of brandy, alcohol, etc., which when emptied he will throw overboard as he advances toward the pole. The car will serve him, according to circumstances, as a sledge or a boat.

An Instance of English Vanualish. — An English tontistmen has broken into the Louvre and somehed a vase. One James Olsden was in An Instance of English Vandalish.—An English touristing has broken into the Louvre and soushed a wase. One Jimes Olsien was in the second room of the Mussa Campana, looking at the objects in torracotta, and enjoying the solitude of the place, whou a crowd of two handred rourists, led by a man who spoke broken English, rushad in helter-skelter. Suddenly James alorosaid heard a faint shrick, succeeded by a crash, and he, one of the two large vases from Cyprus, between four and first feet high, which he had been admining, had been pushed over from its pedenal, and lay in a hambrel pieces on the fleor. The custodian was quickly on the spot to protest against the destruction of an art treasure. This was one of those "personally conducted parties" which advertisoments have commended to the public of all clines, and the electone was equal to the occasion. "Well, it cannot be helped, but I cannot have my party interrupted in this manner; we are already late. You know me, you know Mr.—; send in your bill, but I won't have any party interrupted any longer." So the crowl swept on. Prosently the chef was on the spot; he andered the tragments to be collected in a basker, and in a few minutes a vacant pedestal was the only thing to show that a treasure which had excapted for centuries the victisatindes in its own concury, and the perils and destruction of revolution and commune in the land of its adoption, that fallen at the hands of English travellers. James followed the moh, and only heard the gaide remind his people that every picture in the Salon Carre was a masterpiece, and that "that one by Burillo" had cost \$25,000. Four stranglers, standing before Teniers "Kermesse," were masted by the antics of the Dutch hoors at the country fair, and the eldest of the group, in order to suphasize the remark, "By Jingo, these two are larving a folie toime of it," actually gave the painting a rap with his walking-stick. — The London Times. London Times.

A LAVA BULWARK, - Professor Palmieri, of Naples, is constructing a bulwark of scorize around the observatory on Mount Vesavius, capable of offering considerable resistance to the flow of Java should it come in that

An Inspection of Pleastro, - The reputable plumbers of the city of Baltimore intend to ask the city council to appoint an inspector of plumbing.

BOSTON, NOVEMBER 9, 1878.

CONTENTS. Summary:— The Convention of the American Institute of Architects, — Express Companies and Drawings. — The Value of Chances in Competitions. — The Value of Drawings. — Waterworks and Sawers in Chacinasti. — Elevators and Inspections. — The Spinola Steam-Heating Schame. Architects and Origanization 154 New Haven Revisited. 155 The Illustrations:— Eastern Staircase of the Hartford Capitol. — Design for a Subarban Villa. — House at Milton, Mass. — The Belgian Facade at the Paris Exhibition 156 Sir Francis Grant 157 Correspondence:— Letter from London. — Letter from Boston 153 The Boston Chapter, A. I. A. 156 Notes and Chiptiges 156

The twelfth annual convention of the American Institute of Architects will be held in New York on the 18th and 14th of this month. There will be two morning sessions and one evening session, the aftermoons being taken up with exeursions, visiting different buildings of special interest in the city. sides the usual addresses, reports, and regular business, there will be a memorial address on the life and services of the late Mr. Richard Upjohn, and a variety of papers on special subjects. The resolutions submitted by the Rhode Island Chapter with regard to the liability of architects are made the subject. of discussion at the first session, with papers on Commissions to investigate causes of fallure in buildings, and Penalties when they are the result of culpuble negligence. The other subjects for discussion are: Plumbing and Sanitary Experiments, Pre-vailing Faults of our Architectural Designs, and the Use and Abose of Brick in Decoration, - fruitful topics all, and each of them sufficient to occupy a whole session, if there were time for it. The excursions will be, on the first day, to the old City Hall, the Brooklyn Suspension Bridge, and the Church of St. Augustine; on the second day to Trinity Church, for examination of the now reredos, the new court house of the Ninth Judicold District, the Church of St. Thomas, and the new Roman Catholic cathodral. On Thursday evening will be the annual dinuer.

In a new law book. Sedgwick's Cases on Damages, we see recorded a case which is interesting to architects and somewhat amusing in its inferences. It is the case of The Adams Express Co. ex. Egbert. A building committee offered a pre-mium of five hundred dollars for a design to be submitted on a fixed day. An architect's plans, which the express company undertook to deliver, were negligently delivered so late as to be thrown out of the competition. The Pennsylvania court before which the case was tried decided that the amount of damages to which the architect was entitled was simply the value of his chance of success in the competition, and that since he could not prove any likelihood of succeeding, the value was nothing; therefore merely nominal damages were awarded. A like case which came before an English court, however, was differently decided, the court rolling that the architect, who claimed damages for the loss of his chance, should be restricted to the cost of producing his plans. Apart from the question of the merit and conflict of the two rulings, which is of some im-portance, it may be interesting for adventurous architects to consider the opinion which a respectable authority holds of the value of the chances for which they expend their invention and labor when they go into competitions. Whether it is good for the morals of expressmen to tell them that when by their negligence they destroy these chances they may be holden to no indomnity, is a question by itself.

From the architect's professional point of view it appears that the American decision is the right one in its main principle, though unreasonable in its application, and that the English one avoids the essence of the question. The loss in such cases is not of the plans, but of the opportunity of competing. Nor is the value of the opportunity any measure of the value of the plans: that an architect does not consider it to be so is shown by the fact that although he may be willing to make

them for its sake, he never thinks of exchanging them for the opportunity; that is, he never surrenders his plans in return for the privilege of competing, but retains the ownership of them unless in case of subsequent sale. The weak point in the Pennsylvania decision, it strikes us, — and the thing is worth noticing because such cases often occur, and may always occur, in competitions, - is its allowing no value to the chance of winning. In this case the chairman of the committee appears to have testified in behalf of the express company that he found the drawings unsuitable, and therefore unlikely to have been adopted; but we cannot see that the company were entitled to shield themselves from responsibility bolded this opinion. The actual probability of any one competitor's winning, and therefore its value, are of contact too recondite to be compated, depending on the composition of the committee, his relations to them, his personal address and influence, and possibly on the merit of his design. But the fact that it is not to be compared does not prove that it does not exist. Men buy and sell things every day whose value they cannot compute, on the strongth of greater or less probability. Though we set aside the value of absolute success as beyond appraisal, there remains the value of the money recompense which is offered. Here the value of all the chances is necessarily equal to the sum of all the premiums. Then if there are a thousand dollars in premiums and two competitors, - all the clauses should be assumed, in default of knowledge, to be equal, — each chance is worth one hundred dollars plus the tenth part of the uncomputed value of success in the ultimate object of the competition. The minimum compensation, then, that should be awarded him for the sacrifice of his appartunity is the hundred dollars. If, however, there are a hundred competitors, the value of each chance is reduced to ten dollars, and the damages may fairly be called nominal. Without entering further into it, we carnestly commend this subject, and especially practice in this sort of computation, to the enterprising men of the profession.

As for the value of architectural drawings, that is a subject which deserves attention, because it is usually misunderstood. The common impression is that their value is simply the cost of making them. Nothing can be more fallacious. It is true only of copies that may be multiplied. The original drawing of a design has a twofold value, as a record of an idea and as a manufacture. The invention embodied in it gives it its principal value; and it is worth the value of this invention added to the cost of making it. Unless the drawing is very elaborata the cost of manufacture is held to be a small part of its value; has in fact no more to do ordinarily with real value than has the engraving on the face of a bank note. This principle is recognized in the ordinary practice which appraises a set of plans for a building, or rather their use, without any regard to the cost of making, but simply by the importance of the work which they describe. It would be impossible to make such appraisal exact, that is, special in each case; but by common consent the system has been accepted which values the record of a design, whom elaborated so far as to be adequately comprehended, at one per cent of the cost of executing it, and a record complete enough for its carrying out at two and a half per cent; the value being due simply to the fact that the record is the only means of giving effect to the idea, and nobody troubling himself, in fixing the price, about the cost of making the record. If this clear, matter-of-fact view of the case could be commonly understood, it would save architects many controversies and many sacrifices.

A PARRE on the sewerage of Cincinnati, read lately before the medical society of that city by its chief engineer, contained some suggestions which cannot be comforting to the people of the Ohio and Mississippi valleys. At present these two rivers are used at eace as a common water supply and a common sower by the people who live on their banks. Twenty years ago it used to be the beast of the people on the Mississippi that its water was the best in the world; that after its sediment had deposited, the water was clearer and kept fresh longer in tanks than any other. The skeptical stranger would naturally receive this boast with a grain of allowance; whether it is still made or not we do not know. During the interval the large cities of the valleys, — Pittsburgh, Cincinnati, Louisville, St. Louis, Memphis, and New Orleans, to say nothing of the

smaller towns, - have been steadily passing their sewage into it, Cincionati now taking all her water from it as it comes from her neighbors, and sending it on with her contribution of defilement to the cities below. If we are to accept the conclusion of the English Rivers Pollution Commission, that "there is no river in the United Kingdom long enough to secure the exidation and destruction of any rewage that is discharged into it even at its source," the people who drink the Ohio and Mississippi water may well be measy. Colonel Anderson, the engineer to whose paper we refer, gives additional comfort to the people of Cincinnati by telling them that one of their sewers empties into an eddy which extends several hundred feet above the water works, so that more than once the discharge of the sewer has absolutely been traced into the reservoir. He cites an instance, which perhaps will not be so wholesomely deterrent as some, The whiskey from a hurning distillery ran into the sewer, and the next morning all the people of the town recognized it at their breakfast-tables. Some of the cities, like Lonisville, eschew the river water and depend upon wells, and doubtless in must ultimately come to a question of giving up the use of the water or of keeping the sewage out of it. Considering that the towns are independent of each other, and that no means but water-carriage has yet been found which satisfactorily disposes of the sewage of a large city, the latter alternative looks un-promising for the present. Meanwhile it would seem desirable to determine, by careful observations from time to time of the water and the deposits in its shoals, whether the condition of things is not growing worse.

The falling of elevators in buildings, with or without fatal effect, continues to be frequent. Two have fallen lately in New York, and within a day or two of our writing one has killed its man in Chicago. Considering how new the elevators are, and how few they have been till very lately, we cannot suppose that the tide of disaster has reached its flood. The prevailing habit of cheapuning everything indicates that we may expect in due time to see them falling on all sides. The safest elevators, those in the form of a hydraulic press, have been abandoned on account of their cumbrousness and cost, and all these that are now put in are suspended to one way or another. As ropes wear or grow weak they will not be replaced in time; clutches and pawls which are not meant to be used till an accident occurs will be found out of order then; faulty running gear will betray itself and the cheap manufacturer by giving way. In New York there is an ordinance to govern the use of elevators, and owners are made responsible for injury from them, but still the necidents occur. The Commercial Advertiser recommends that the manufacturers who sell weak elevators, as well as the men who buy and use them, should be made responsible. This is sufficiently just, but experience shows the difficulty of fixing a responsibility which may be shared by two persons; the public salety is upt to be best provided for by placing it where it can-not be transferred, and enforcing it rigidly. As a measure of prevention, a system of careful inspection is the natural thing. Made strict enough and well enforced, it would unquestionably save many disasters; with ordinary care it would do some good, though when we consider the quality and results of inspection as it is now provided in the case of sceam-hollers, for instance, or of buildings, we are not greatly encouraged.

Mayor Edy, of New York, has vetoed the ordinance in favor of the Spinola steam-heating scheme, saying in his message: "I am of opinion that no such grant or privilege should be given in the absence of experimental proof of the adaptability of the proposed system of heating to our city. If it should be proved that the proposed plan is feasible, then the privilege of carrying the system into effect, which would unquestionably be one of great value, should be disposed of after public competition in such a manner us to produce the greatest amount of revenue to the city." To resist the Spinola scheme on the ground that it is a "job," as it is accused of being, would be an intelligible thing; the actual reasons given are not very convincing. The first reason offered suggests the answer that experimental proof cannot be given till an experiment is tried; the second, that although to repoire a royalty may be a test of the good faith or solvency of projectors, considered as an aconomical scheme the proposition to levy an impost which will be made up again by a tax on the citizens is a financial juggle, and might be expected not to impose on the people of a business city.

ARCHITECTS AND ORGANIZATION.

ONE hears now and then among architects in the United States, scattered as they are and the greater part of them without organization, the question, What good can I get from a professional association? The question would perhaps hardly be asked excepting in a profession in which organization was not old enough and wide enough to have its benefits generally approved by experience. Other professions have found their account in keeping up their associations. The two which in the United States have made in late years most advance in technical knowledge and skill, as well as in public contidence, the engineers and the physicians, have carried on theirs with a spirit and success which ought to be strong proof to architects of their value. In our profession abroad the examples point the same way. In England, for instance, the Royal Institute and the Architectural Association contain, the our some six or seven hundred mentbers, and the other eight hundred or more. In the United States there is no architectural society that we know of but the American Institute, and its hundred and fifty members are unmerically but a small fraction of the profession. That societies should have made so little progress is natural enough in a country where the profession is so new, its standard of attainment and its lines of demarcation hardly fixed; but it is for that reason the more to be regretted, since so many things that concern the practice of the profession remain to be determined, things of which the determination might be at once hastened and made more satisfactory by united effort.

Of the liencit to be get from association with one's professional fellows we have at different times expressed our opinion, and we shall not dwell long on it here. As a matter of business, the direct advantage of any society depends upon what its standing is, that is, upon the quality of its membership. Indirectly, every member and indeed every outsider of the same vocation feels, or at least uses, in his practice the advantage of every successful movement of such a society to establish public contidence in his profession and define its usages. There are no architects in the country whose practice is not made easier by what the American Institute has done to fix in our chief cities the proper relation of architects to the public and to their clients; to make known their proper function, their legal rights, and their due recompense. Its efficacy in this respect has led to its being ac-

cused, unjustly enough, of being a trade's union.

But the business advantage of association is not its best side, The interchange of knowledge or experience, the scimulus of common intercourse, and the fruits of common deliberation are worth a great deal more. The more a profession is advancing, the more new problems it has to solve, the more valuable these things are. In architecture especially, where forms, processes, and materials are constantly changing, where, as with us, the hest of professional attainment is constantly rising, and needs to rise, free intercommunication is most important. There are various means of such intercommunication, but none which are more efficient, none of which the energy can be more effectively pointed to any desirable mark, than organized societies. They are the meeting ground of men of varied special experience, of the old and the young practitioner; they may be the exchanges for a great fund of important technical knowledge, and directors in the investigation of the chief problems of our work. In this they depend, to be sure, altogether on what their members choose to bring to them. Hence a good way to judge of their use is to consider what one has to give. There are not many professional men so modest as to be willing to say that their experionec is of no value to others; we may infer that there are not many whose arrogance or perverseness will ancourage them to decide that the experience of others is not in its turn of value to them.

This lends to a different, and it may be a less sellish view of the matter. Instead of inquiring too curiously what he shall get, one may reasonably ask what he can accomplish, by professional association. The answers will be almost as many as the questions. He must be a man of parrow aims to whom his profession suggests no objects that cannot be attained within his own office or among his own ellentèle. There are certain general interests that every professional man may be expected to wish to advance: the proper standing and respect of his profession with the public, its purification from neworthy practices, a high standard of technical excellence and of apright dealing among its members, the means of bringing its due influence to bear whonever there arises a question which it is concerned to decide, or a doctrine to promulgate, or a public movement to

forward. And almost every active-minded practitioner will have some matter of professional study or of practical hearing, which circumstance or taste has made of special interest to him, and on which his contribution to the general knowledge will be of value to his fellows; some idea or action to enforce, in which his assistance will be of importance to them, or theirs to The tendency of the day to specialism, the fact that in most professions the whole range of acquirement is 100 wide for any single person to compass, still less to increase, make the interchange of ideas and the combination of effort the more important.

These two views suggest the two chief reasons why there has hitherto been so little serious cooperation among architects in the United States. The first is a want of appreciation of the real objects of association and the benefits to be derived from it. This may be trusted to disappear with experience as the profession gains consistency, and as architects come to feel more per-suasively what they all know at bottom, that the interests of the whole body of them are really the same, and that many of these can be greatly advanced by concert. The rapidity with which it will disappear must depend greatly on the wisdom and enterprise with which those who are already associated together make use of their opportunities. The second cause, and, we fear. the more obstinate, is a want of general professional interest and of public spirit among architects. The circumstaneos of their practice tend to maintain a business rivalry among them; and business rivalry is one of the things most hostile to concert. It is increased greatly by the method most in favor of selecting architects for work of importance, the method of competitions, a method which is unknown in other professions, except in a modified form among the clergy. The private and underhand rivalries which distigure architectural practice are more disintegrating still. These disraptive elements make it the more desirable to foster every wholesome means of encouraging professional intercourse and keeping down a kind of antagenism which is the seed of most of the abuses of our calling. It is the praise of a professional life that it gives men something a little nobler than pecuniary success or personal aggrandizement to spend their energies upon. It is the province of an arcist especially to go beyond his own private work and to interest himself heartily in the work of his follows and whatever concerns the progress of his art. A little less of the habit of sellish isolation and a little more of a manly interest in the general wellbeing of their profession would be an excellent leaven for the body of our architects. 'To such an interest professional association is at once a stimulus and an opportunity.

We may therefore fairly recommend to architects who are doubtful whether they can secure any benefit from a professional society, and who consequently larve joined in none, to take up the correlative question, and inquire whether they cannot do some good by uniting with their fellows. We may assome it to require no proof that men whose occupation is the same have the same interests, and that common interests are best forwarded by common effort. There are things enough to be done before the position of architects, and their relation to the public and their clients, will be fully and uniformly established the country over. There are points of practice and professional relations among themselves to be settled. An unlimited amount of work can be spent to advantage in a common study of professional problems which are continually occurring, and always will occur with the progress of architecture and the changing wants of the public, problems of which no one peactitioner can hope to reach the best solutions, or even adequate To encourage a right tone in the profession, to raise the standard of its acquirement and the technical and artistic character of its work, to give it wholesome and efficient influence where its influence ought to be felt; these things are in the special province of professional socioties. Even the architect who has no desire but to secure work and to get through it successfully cannot afford to dispense with the advantage which the general welfare of his profession may afford; but we may take it for granted that to every professional man, after he has given his chief energy to his own business, there shall still he left some residuum of interest and activity for this general welfare.

NEW HAVEN REVISITED.

This is one of those American cities which are constantly growing in architectural interest, and may always be revisited with satisfaction. Upon returning after a prolonged absence one is impressed

with the thought that the great question as to whether New Haven is Yale College or Yale College is New Haven is as far from solution as ever; and as long as this supposed rivaley goes on we may safely look for a higher development of both, and he thankful that it remains an open question. For a time, while the college, or university as they like to call it now, was in a condition of confortable repose, grinding over its old traditions from year to year and scornrepose, grinding over its old traditions from year to year and seming any intrusion of progressive ideas, great manufacturing interests arose about it and New Haven became wealthy, while Yale planted ivies around her Tudor library. Then the wealth of New Haven began to flow into the college treasury, and she awate from her simber. Sheffield, Street, and others became her benefacture; Durice turned in the wealth of Rhode Island looms, and thus capital paid tribute to learning. Yale began to shine with new departments and new architecture. But soon manufactures declined. The crisis of 1873 was showed a declined. But Yale 1873 was almost a death-blow to New Haven industries. But Yale continued to rear her stately edifices. Architecturally considered she leads the contest.

New Haven may fairly claim a share of the interest which attaches to whatever we have of old American architecture, now capidly passing from sight everywhere. Some of the old houses of the eighteenth century are still in good preservation, and it is not unusuid to find good examples of that sort of finely-moulded and carved word-work which was so extensively employed in New York, and which an English writer in London's Magazine for 1888 said must have been due to the fact that a great deal of the inside work of New York houses of the last century was done by ship joiners. These old New Haven houses are models of good workmanship. They are plain brick structures in which but little stone is employed, while the decorative treatment is confined to the wood-work both of the extended to the wood-work both of the riar and interior. Some of them have projecting pediments on the front, supported by artemated columns of solid wood reaching to the roof, and often decorated with the details of the Roman Dorie order, but having nothing in common with its proportions. Two of the well-known churches on the green are of rimilar style and workmanship aiso, reminding one of the style so long practised by Wren. New Haven also partook of the classic revival which left its im-

press everywhere, mostly in boards and stucco, and seldom in stone or marble, during the first part of the present century. Fortunavely New Haven got only the boards and studeo; and as these are rapidly New Haven got only the boards and staces; and as these are rapidly disappearing probably no one after this generation will be afflicted with them. Here lived one of the few known and recognized American architects of the early part of this century, with whom, for want of better ones, we associate the past glories of American architecture. This was littled Town, the contemporary of Latrade, Strickland, Haviland, and the still surviving Davis. He built munerous dwellings here, including that one occupied by Mr. Shellield, and the State Capitol, now abandoned lorever, and falling rapidly into decay and rule. But his work was not confined to his own city. He was associated with Davis in the exection of the New

form city. He was associated with Davis in the erection of the New York University, one of the first attempts to introduce the Tudor Gothic, and other buildings in New York and elsewhere.

The architecture of the old college buildings is on the mudel recommended by Professor Huxley. The "intelligent bricklayer" here had full swing and sway without the interference of imperiment and intermeddling architects. Coming down to comparatively modern times we find that the college had advanced beyond Professor Huxley's architectural ideas, and creeked two buildings in the successful Gothic style.—berging insides and controllers corresponding one to the Gothic style, — having insides and outsides corresponding one to the other. Those must have been put up about thirty years ago. They are the Library and Almani Hall. The former is in the style hald down in the books of the day as "Tudor," and also portrays one of those original features peculiar to Yale College architecture, which might be called the "truncated" style. This is the omission of the stone planacles all around the building. But with a due regard to the feelings of those who might have occasion to look at the building, models of the larger turnet terminations in wood have been set. up, to show what they might be if made of stone. The other building, known as Alumni Hall, but famous as the place for holding the biengial examinations, is in the same style, eastellated. In this case, however, a full-sized model of the proposed machicolations and erenellations of the curtain and four great towers has been set upon the stone walls. The opportunity thus afforded for archmological study is such as is not to be had in other similar institutions. This system of instruction has, however, been discontinued of late. dents of architecture and archieulogy in the new department of Pro-fessor Weir are obliged to get the necessary information on these subjects from plates and small scale models. The illustration of the "truncate!" style is therefore not interfered with, as it has been seen for ten years on the turrels of the Art Building, and is now mura fully exemplified in those of the new chapel.

The college seems to have been in danger of falling into an architectural rat, until the Art Building was erected in 1864. This rut.

was the Tudor style, supposed to have been coordinate with scholarship, learning, and monastic mysrification. With its freedom from precedent, and evident adaptation to a purpose, it seems to have com-menced a new era of college architecture at New Haven. No buildings had been creeted or contemplated for a number of years. The gift of Mr. Street was a surprise and an innovation. It was not only a new building but a new department of study. It was natural, there-

fore, that it should result in a new architecture.

Wich the erection of this building the record of Yale's architect-al progress begins. The building itself looks as fresh and new ural progress begins. as the day on which it was completed, or rather occupied; for its unfinished torress cry aloud for architect and builder to come back and linish them. An unsightly cost of white paint on the great sky-lights makes the roof hideous to behold. This has been resorted to lights makes the roof indepos to bohold. This has been respected because the inside ground glass ceilings were never completed. Stoam and water have been lately introduced under the energetic management of Professor Welr. The Ghiberti gates and other interesting models have been set up within, while the professor has started an art library which appeals to all friends of Yale to came forth and help fill the shelves of the cosy and artistically decorated room which he has fitted up.

The role of the Art Building was completed no additions were made to the college buildings for several years. But the seed has brought forth good fruit, and the last half dozen years have winnessed the erection of two dormitories, Farnham and Durlee, two dormitories and a chapel for the divinity school, a large addition to the Sherifield Scientific School, the Feabody Mosaum of Natural History, and the new college chapel, besides two new buildings for the securet contribute. The new heat-house was a legitimate nursing of the unisociaties. The new heat-house, as a legitimate nurshing of the interestry, might also be counted in the list. The record of Yald's progress is a truly noble one, therefore then the encoungement of architecture pure and simple. It seems strange to heat that up to the progress and Yald Callery led actions all accounts of a collections than the encoungement of architecture pure and simple. ten years ago Yale College had prefested against all systems of same tary drainage, and that the introduction of water in one of its buildings was resented as an innovation. These things must be known in

order to properly estimate the strikes the has taken.

Farniam demittery, the first of the proposed front tier of buildings with rear on College Street and front on the imaginary quadrangle, is a building which shows what can be showed with common brick and blue stone. This would be a good place for Professor Huxley to begin his architectural studies. Here he can see what his "intelligent bricklayer" can do, with some one to stand by and show him how to do it. Monided bricks are here used, the first employed to any great extent since the discatement of brick architecture in America. If any one doubts this decadence let him look at the lease mouldings of two of the oblest dormitories here, at Carpenter's Hall. Philadelphia with morided base and wall laid with Femish bond, every header being a black glazed brick, and at the comices of a hundred buildings in Washington and Saltimore, all of which are executed in mondert, carrell, or enamelled brick. But in spite of much good detail Eurobam is a glomny building, and it was havely But in spite of wise to build its large abough picturespine dormer windows of wood. Public apinion pronounces the other new dormitory, also by Mr. Sturgis of New York, to be the best of the two. There seems hardly to be a footbold for adverse criticism of this building. It will be a long time before the quiet dignity of its roof and chimneys will be surpassed anywhere. The new chapel, which stands at the corner of the quadrangle, joining the two last-mentioned buildings in a group of three, has just been completed, except that its unfinished towers bave joined the chorus of those on the Art Building with sympathetic wail, keeping tune on windy nights with the mean of the condemned clus on College Street standing in line west of Farnham thill. As Mr. Storgle did not design the chapel until after the first two buildings had been completed, he can hadly be blamed for the incongruity of the entire grouping. The Farnham building seems to have been brilt with the intention either of extending it or abutting another been boilt with the intention either of extending it or abutting another building against it, perhaps the chapet itself, for it had a rough brick wall on that end. The Durfee building was built on a higher grade, inflicating some change of the general scheme. The chapet most resembles Durfee in materials and design, yet it does not coucht, while it is put in juxtaposition with Faruham and on the same grade as Durfee. This involved the necessity of raising the water table of Faruham to grade, and shortening its basened windows. There is no resemblance or composition in the grouping of the trick Faruham with the stone chapet. The crowning feature of all these incongruities is that the upec of the chapel is towards College Street, the front is within the apse of the chapel is towards College Street, the front is within ten feet of Duclee, and half the side abuts against Faraworth. Hence, though it has no frontage proper on the streets, only a half of one side can be seen from the quartrangle, and only one of the four doors, the effect being masgre and unpicturesque. The only point of view from which the well-appears and unpicturesque. of view from which the whole can be seen is the opposite street corner, practically in the tear. Thus this building, best in detail of all that the college has erected, and that whose object claims for it the grandest site, is pushed off to the corner and sufficiented before it is grandest site, is pushed off to the corner and suffocuted before it is born. In spite of these misfortunes the detail and part renderings are such only as could have proceeded from the hand of Mr. Babb, Mr. Sturgis's secomplished assistant in the work. The bad location could not prevent Mr. Babb from making one of the most beautiful interiors to be found in the whole range of modern American church architecture. The windows, with one or two exceptions, are out-and-out Cathedral mosaic work, without paint or ensured; the decoration is well balanced in its reference and has the true securious, treatment is well belonced in its coloring and has the true symphonic treatment. The interior workwork is the most noticeable feature, inasmuch as it reflects the prevailing tendency toward a certaal of the eighteenth century style and workmanship; but the whole designing is so tempered as to be free from the affections of the Queen Anne school. The visitor lingers long in this charming interior, and is leath to go; but other things attract our attention. but other things attract our attention.

There is the Peabody Museum, frush with its finishing touches. or at least so much of it as we will see for the next twenty years or so; for the great scheme is to cover the whole block on High Street from Elm to the next corner west. What we see now is one wing with a high hipped roof only broken by gabled windows of brick and stone. What appears to be a wing to this structure is only the connecting portion which is to join it to the great central building which is to be a broade the wing that had been all the still a state of the state is to be. Already the wing just built overtops all the other college buildings. The style, as in all the other new college buildings, is in the advanced Gothic, the materials brick and stone. The architect is to be. has introduced considerable buff brick, and the polychromatic treatment prevails throughout the exterior to a greater degree than in any of the other college buildings which have been mentioned. The architect, Mr. Cady, of New York, has given this building a grand enchitect, Mr. Cady, of New York, has given this looking a grand entrance, which is the most slaborate piece of work done for the culting. The interior is plainly treated throughout, except the entrance hall and grand stairway, which are faced throughout with brick of various rolors arranged as a mainseot following the line of the stairs. The stairway is of east-fron and about as good as it could well be in that material. There is some excellent painted glass, especially about the main entrance, and in the traceried heads of the first story windows.

Three years ago Mr. Cady completed a building for the Sheffeld Scientific School adjoining the main building. This was quite an in-novation in its way, and being faced with buff and red bricks used in

ocnamental patterns, with its high, round-headed windows and machicolated cornice, has a decidedly Lombardic effect. The contrast to the adjoining laddings is startling.

The new divinity school, by R. M. Huat, has received the necession of a new dormitory, similar in style to the old one. The entrances to the stairways are from a cloister which is decidedly origi-

trances to the stairways are from a cluster which is decidedly original in treatment, running the whole length of the building. Mr. Hunt's Moresque building for the Seroll and Key Society is a prominent landmark among buildings of its class.

There are no new college buildings to progress, nor are any new ones now coatemplated. When the turnets, from creatings and finials, and mosaic inlars, originally contemplated for the Art Building, and the real stone spires of the chapel are completed there will be time enough left still to complete the "great quadrangle," so long dreamed of. But even without these we may be content that Yale has done her full share of good work in the revival of architecture, so much in fact as to fully evenerate her from the charge of tardiness at the beginning.

ness at the beginning.

But, as was said at first, Yale Cullege is not all of New Haven. She is only half of it, and there is some good architecture in this goodly city, which is not within her classic precings. However, the influence of the college architecture is not to be questioned. the following of the college architecture is not to be questioned. Until the Art Building was creetal, New Haven could not boast one arcistic scructure. She had a stereotype post-office building, and many others noted for weight rather than beauty. She had a new city hall, which, with a picture-squo outline and a pleasing color officer, was a most extraordinary and incongruous thing in detail. It was the simple but estness effort of the aututored mind to fathou the miss the sipple our earnest errort of the natural and to fathous the mysteries of Gothiu architecture. Since then an extension to it by Mr. Brown, of New Haven, has been built in much better style. New Haven also rejoices in a good, new, and practical police building by Mr. Russell. She would not be complete, being so near Hartford, without a great insurance building. This is supplied by an immense granite structure, on Chapal Street, opposite to the green, built of the regulation granite with the proper proportion of polished between and galvanized iron top of direct height and designed in the solution the regulation grante with the proper proportion at possible solutions and galvanized iron top of dizzy height, and designed in the life locarance style of architecture. Of course it does not pay. The visitor going up Chapel Street sees another new building; this time a bank, in the regulation hank style, with many flat quoins at the angles and galvanized iron finish at top. Besides these he will see two business buildings on either side of the street, wherein color eftwo business buildings on either suic of the street, wherein color effects of varied stone with much incised carving may be seen. These are Gothic, after the manner of Mr. Brown, of New Haven. He will see that Trinity Chorch, now getting venerable, has a new pyramidal spite, with gilded iron crockets running up the hips and Iron cross on top. If he goes inside he can see how finely an old style earpenter's Gothic church can be decorated and relitted, especially it disrected and designed by a gentleman with the caste of Mr. Littell, of New York.

One of the most pleasant things in the world is to take a stroll up One of the most pleasant things in the work is any tell how I en-Hillhouse Avenue, New Haven. Another time I may tell how I en-W.

THE ILLUSTRATIONS.

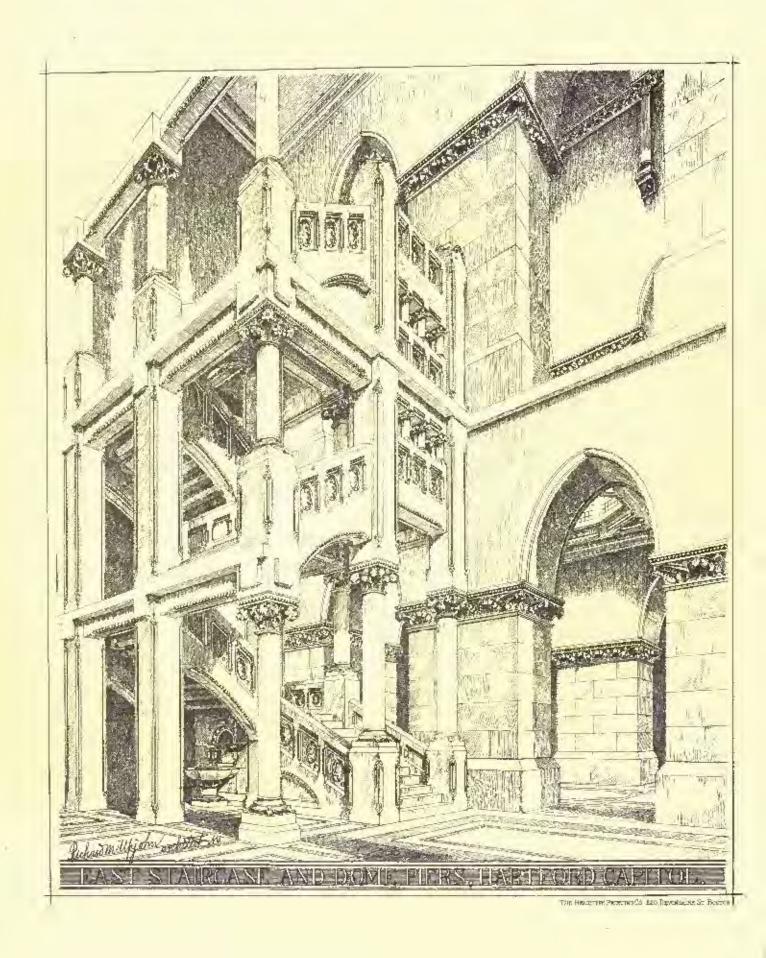
THE EASTERN STAIRCASE AND DOME PIRES OF THE CAPITOL, HARTFORD, CONN. MR. R. M. UPJOHN, ARCHITECT, NEW YORK.

THE staircases of the capitol are made of white marble with granits steps and platforms; the slutte of ble columns are of polished red granite; the piers of the dome are of granite, with caps of mar-

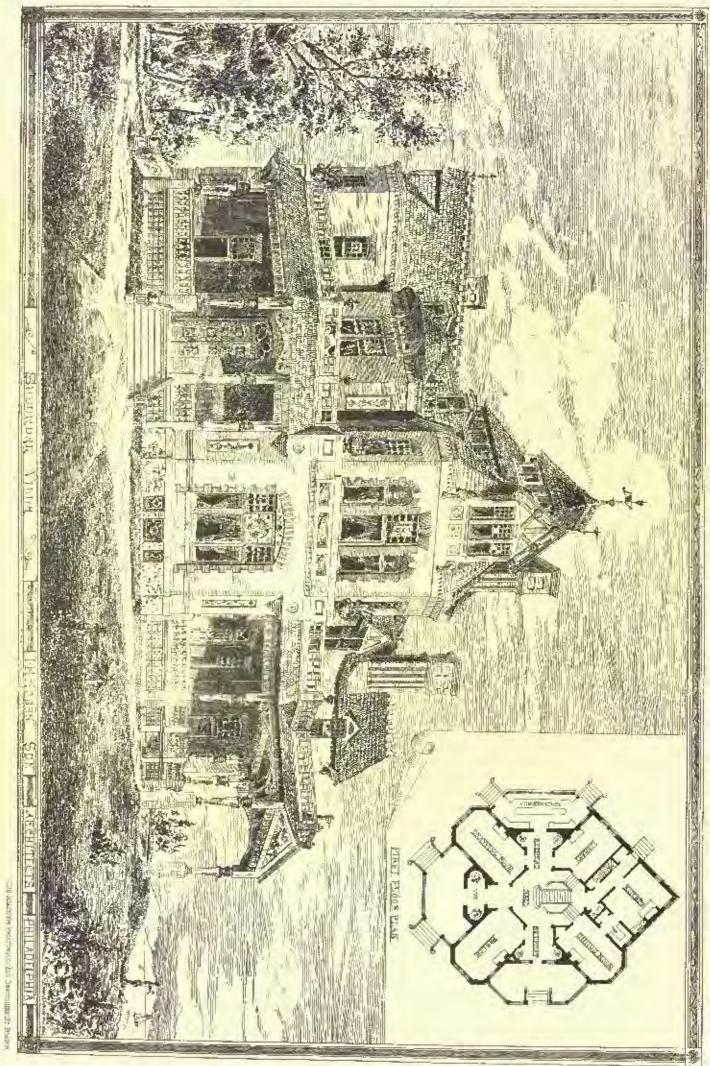
DESIGN FOR A SUBURBAN VILLA. MESSES, I. H. HOBBS AND SON, ARCHITECTS PRILADELPHIA.

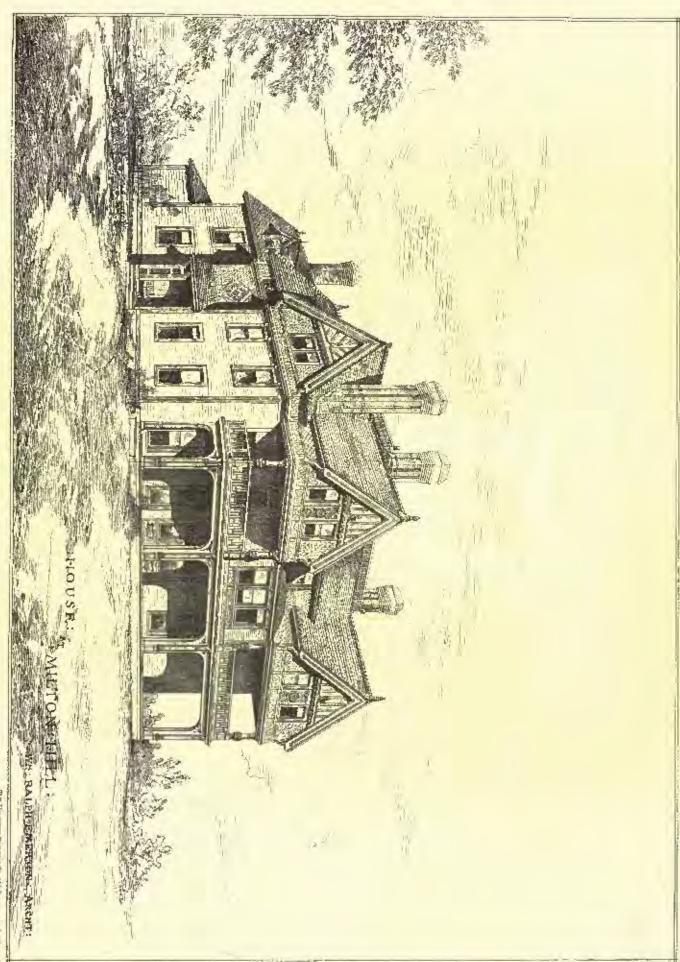
The following extract from the architects' letter will serve as a description: "The plan was organized for Mr. Wooster, of Albany,





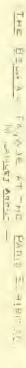


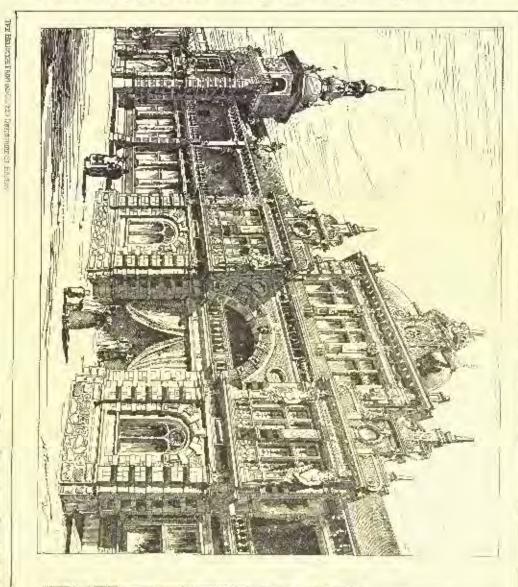




THE HAUSTING PRINTING OF ZEO LENGHOUSE











N. Y. The design was organized for a gentlemen in Boston, and will probably be built, with a few alterations, near that city. It is not necessarily an expensive building, as while it has great variety in outlines it possesses much economy in construction, and the grandeur of interior effect is of the highest order. We have reliable estimates for its construction for \$20,000 by competent builders."

HOUSE AT MILTON, MASS. MR. W. R. RMERSON, ARCHITECT, BOSTON.

This house is being remodelled for Mr. John Bancroft, as is here shown.

THE BELGIAN FAÇADE AT THE PARIS EXPIRITION. M. JANLET, ARCHITECT.

We reproduce to-day from La Semaine des Constructeurs iwn designs which taken together show the façade of the Belgian section on the Street of the Nations. In this structure the materials used are all real, colored granites and marbles being used for the skeleton of the work and for the sculptured features, while brick is used as the main material. The central tenture is the main entrunce, a full centered archway, the voussoirs of whose arch bear the painted construction of the chief Belgian cities. Across the upper part of the archway, at the level of the impost, is carried a wonden baleony which councerts the second stories of the two wings. The engaged columns which divide from one another the windows above are of colored marble with gilded capitals. The Belgian arms crown the whole feature. This central archway is flanked by two pavilions which project slightly before it. On either side of the pavilions are two-story galleries, the upper story being an open loggis. The expitals of the different colored marble columns are all of polished black marble. The façade finishes on the left in a tower which somewhat resembles the old Flemish towers. Corresponding to this, on the other side, is another projecting pavilion, whose distinguishing feature is a projecting wooden balcony. Beyond this, again, the façade is continued in a wing whose architectural character is more unpretending.

SIR FRANCIS GRANT,

The death of the President of the Royal Academy at the gnodly age of seventy-five creates little surprise, though it naturally mores to concern and speculation. Sir Francis Grant has for more than twelve years ruled the world of art. His rise had been rapid; he was elected Associate in 1842. Academician in 1854, President in 1866. Artists, like the rest of mankind, may own high position to native talent or to happy accident; perhaps the elevation of Sir Francis may have been due to toth. Reverting to the past history of the Academy, we find that Sir Joshua Reynolds became first president by the supremacy of his genius; then Sir Benjamin West is said to leave obtained favor by "his extreme courtesy and natural dignity of manner;" again, Sir Thomas Lawrence descrived to be popular, became from "the moment of his decilou he determined to be not all hearts." Sir Martin Shee was deemed so fitted for the post that he had but two dissentients, and one of them, Lealie, —who, with Cullius, had voted for Wilkie, — afterwards diclased that Sir Martin made "an incomparable president." More recently Sir Charles Eastlake its supposed to have secured unanimity by his care and evenly-balanced qualifications. On the death of Sir Charles Eastlake the first shoice of the Academicians fell on Sir Edwin Landseer; but on his declining the honor, a substitute had to be found. Francis Grant, nothing loath to assume the duties with the dignities of the post, was thought to be the right man in the right place by reason of his address, his presence, and his accid position; in short, no one could compete with him as master of the ceremonics. This brief review of the past shows that few public holies have been so fortunate as the Academy in the selection of their onerous labors there seems to have been reckoned a stately lurial in St. Paul's. The first three presidents, Reynolds, West, and Lawrence, were so honored. Shee, as a Roman Catholic, found interment elsewhere. Sir Charles Bastlake was luried at Kensal Grant is buried to-day at Mel

The career of Sir Francis Grant, though hardly affording incident or art material for a distinct biography, has lain a little out of the ordinary routine. The future president, born in 1803, was the vounger son of the hard of Kilgraston in Perthelilee, the elder seion of the house being the late General Sir Hope Grant. Francis was brought up to the box, but, distiking the profession, he took to painting at the comparatively late age of twenty-four years. His early attainments must have been of the slightest, as little is heard of his receiving inition beyond twelve lessons in the human figure. But society rather than study was the ladder by which the yound among his helpful acquainlances was Sir Walter Scott, who sat to him for a portrait while the tyro artist of seven-and-twenty was still on his trial. Scott in his diary tells that Grant was well pleased

with his success in the full length figure scated at a table, with two noble starhounds on the right, and old armor in the background. Scott adds, "The dogs set charmingly; but the picture took up some time." It is evident that in those early days the artist had not acquired his facile sleight of hand. In the diary of the same year (1831) Sir Walter jots down the following particulars about his friend;—

"In youth Francis Grant was passionately fond of fox-hunting and other sports; he had also a strong passion for painting, and made a little collection. As he had sense enough to icel that a younger brother's fortune would not last long under the expenses of a good stud and a rare collection of chefs-d'auere, he used to avow his intention to epend his patrimony, about £10,000, and then again to make his fortune by the law. The first he soon accomplished. But the law is not a profession so easily acquired; nor did Frank's talent tie in that direction. His passion for painting turned out better. I am no judge of painting; had I am conscious that Francis Grant possesses, with much eleverness, a sense of duty derived from the best source, — that is, the observation of really good society. His former acquaintances render his immediate entrance into business completely secure. He has confidence in his own powers, — always requisite for a young gentleman trying things of this sort, whose aristneratic pretensions tanst be carried."

The above extract serves as a key to the painter's career. "The expenses of a good stud" draye "a younger brother" precipitately into portrait-painting. You'd had been spent in vain upon the law, for which neither talent nor baclination was found, and then precious years of manbood, passed in the hunting-field, were devoted to the easting to the winds of a small family fortune. It is not unranteral to ask where could be found the opportunity, under such circumstances, for the study of the history, the principles, and the practice of art? Well oright the "aristocratic president," when addressing the students in the Academy, look with envy on their superior advantages and their timely indesery. We remember the time when the future president, still on his probation, was backed by flatterers who called up for the occasion the axion, "Only a gendeman can paint a genterm." Crities asked, by way of retort, Where is the artist, when the gentleman is found never to have learned to draw or paint? Sir Francis Grant had little fellowship with criticism or literature in any form, and he is known to have warreed the smolenes in the strongest terms against what he conceived to be the injurious

power of the press in matters of art.

A fashiounble portrait-painter has not much mad of studying the internal anatomy of the human body, and Sir Francis Grant did not care to expend time and trouble without adequate return. More to his purpose was costume and draptry; he dressed well himself, and his ritters were always set off to advantage. In the case of huntsmen, when amounted in howeback, style was studied in the set of the breeches at the knees, and in the turn of the feet in the boats and stirrups. In all such matters of taste Sir Francis was a connoisse articles of the man; but we should rather say that the artist in the figure place makes the tailor,—he suggests the soit in which the figure will look best. The most careful of the president's purtraits being seldom more than a bright and pleasing reflection of society, the study of historic costume was foreign to his purpose; the treatment lay generally so much on the surface that there was no need to go further back than the newest fashion. In future times these limings will be valued as showing the manners, the costumes, and the field sports of the upper ten thousand in the nineteenth century. It must be admitted that Sir Francis Grant acquired through long practice a ready knowledge of the human face; the likeness seems to have come to the canvas soon, and, when once eaught, further elaboration was not cared for. The execution appears thin, but felicitous and facile; it had, moreover, the advantage of telling out clearly in light and silvery tones. The countier painter proved himself specially happy in female portraiture. Grant, like Reynolds, seems to have had an intuitive in ight into the graceful traits of womanhood. Among works which served to make his reputation was the likeness of have had an intuitive in ight into the graceful traits of womanhood. Among works which served to make his reputation was the likeness of have had an intuitive in ight into the graceful traits of womanhood. Among works which served to make his reputation was the likeness of have had an intuitive in ight in

An artist cannot reach beyond his own mental limitations, and even a portrait-painter can with difficulty do justice to qualities that the outside his personal sympathies. It cannot be said that the late president met the first intellects of the day on equal terms, and jet before his easel sat Macaulay, Lockhart, Disraeli, Derby, Pahnorston, and Russell. But when we think of Sir Thomas More by Holbein, of Sir Thomas More by Holbein, of Sir Thomas More hy Holbein, of Sir Thomas Gresham by Antonio More, and of Thomas Hobbes by an artist unknown, we begin to feel that portraiture is on the decline, that the changes from the old style to the modern have been momentous, and that Sir Francis Grant was not quite the man to infuse new life and vigor into a mannor which in his hands was daily growing more obsolete. Beyond's commends the old masters who descended upon portraiture from a higher sphere; and it is but reasonable to suppose that an artist capable of rising to the high argument of history can read and portray all the more worthily living contemporaries who are now making our modern history. Of Hay-

don it used to be said that he could not paint so much as a portrait, and therefore was unequal to history. Grant never sourced into history or poetry, and hence his portraits never rise from the individual

tory or poetry, and hence his portraits never rise from the individual into a generic homanity.

Sir Francis Grant did not suffer seriously in the exhibition in 1866 of "National Portraits" at South Kensington; he at least shone among great masters as a star of the second or third magnitude. Looking at "The Meet of H. M. Staghounds," "The Melton Hunt," and that real masterpiets, "Field-Marshal Viscount Hardinge and Staff," we could not hot regret that the painter had bartered away this careful, solid, and well-finished mode for the blandishments of fashion. Admirable, in another way, is the portrait of Lord Chancellor Truro. Sir Francis was so much of the true artist that his canvases speak with an intellect not his own; but he shared the common weakness of preferring sitters whom of his file to seek out genius in poverty and obscarity. He had not, of his life to seek our genios in poverty and observity. He had not, like Reynolds, a kindly feeling for literature even when housed in a garrer; but, as soon as the world had put the guinea's stamp upon the man, then the convectors painter did not withhold his best services. Lord Manually, having dignified the branch position of literature by a little, claimed every attention; and rarely has a head been modled more mussively or with a firmer and freer touch. Lady Stuart Wortley also filled a station to be speak favorable consideration. Sir Francis was represented in the K-essington collection by thirteen protest was represented in proved at least equal to his predeces-sor, Sir Martin Shee, were to more out to him scant justice.

Though the late president maintained the dignity of the Academy, he can scarcely be said in have advanced its intellectual reputation.

He stands as almost the only holder of this distinguished office who has no place in the literature—to say nothing of the science—of his country. While heatures delivered or books written by Royal Academicians—by Reynolds, Fasell, Flaxman, Leslie, Eastlake, and Gilhert Scott—would store a library, scarcely a sentence from Sir Francis Grant will live to after-time. At the Academy benging Sir Charles Faulthin had his horsers repostable into contact of the Sir Francis Grant will live to after-time. At the Academy banquets Sir Charles Eastlake led his because gracefully into paths of literature and of art; but the after-dinner speeches of the last president were chiefly deserving of attention because they gave official announcement of the progress of the masons in the new building, and of the provisions made for the emafort of visitors, including their walking-sticks. But perhaps, after all, Sir Francis Grant's epitaph is best written in the serviceable work he did within the walks of the Sandwer he his turn in the performance of dictions and office in writing Academy by his tact in the performance of difficult and often luvidious duties. On entering office he at once set himself to appease fends; he made conciliatory calls on one or more dissentiants, and succeeded in bringing them within the pulse; he manifested a friendly spirit towards rival institutions, and gonomity looked in at the pri-vate views of well-meaning exhibitions. Above all, it was his good fortune to hold the ceins at a coming-point in affairs when guidance was needful and argent. Hes administration has been signalized by the removal of the Academy from Trafalgar Square to Burlington House; by the breaking down of all harriers; by increasing the power and adding to the number of associates; by enhancing the will ener of the schools; and even by easting a ray of light upon the forlors hope of innumerable "auraiders." The wistom of some of these reforms may be questioned; they lie, however, in the direction

Presidents, like popes, usually give the ourside world premonitor symptoms of the approaching termination of their reign, and so the minds of the members of the Academy are usually turned beforehand to some possible successor. On the present occasion there are rumors, long current, which it is needless to divulge; but it unit be stated generally that four or five Academicians are talked of as eligible. The members from whom the selection must be made are nearly forty in number, and therefore it would seem that one in every ten is deemed worthy of the higher dignity—a larger percentage than might have been anticipated. We are happy to know that several of the possible candidates are endowed with some, if that several of the possible candidates are endowed with some, if nor with all, of the desired qualifications. And yet it is obviously a bard matter to find united in the same man the good artist and the accomplished gentleman, possessed at the same time of tact and business apritude. Artists are supposed by some persons to be the most impracticable of mortals, and yet in the government of their academy they have generally done the right thing. What at the present juncture appears to be needed is a president who in his appointed sphere shall be on an intellectual level with the presidents of the leading scientific and literary societies. — Saturday Review.

CORRESPONDENCE.

ENGLISH AND FRENCH ARCHITECTURE, — ENGLISH WORK AT THE PARIS EXHIBITION, — CLEGFATHA'S NEEDLE, — THE CEATH OF SIR FRANCIS GRANT. — HIS EUCCESSOR. — THE NEW LAW COURTS.

Tue holiday season is drawing to a close; and as the sketch-book The nodally season is drawing to a close; and as the santen-noor gives place once more to the T-square and the drawing-board, another year of architectural work may be said to begin. Most holiday steps have this year been directed Pariswards, where a world of archites been open for inspection. In architecture we have been just able to hold our own; the display of drawings and designs comprises

the chief of those exhibited at the Royal Academy during recent years, and calls for an very special remark. It is to be feared our foreign friends do not quite appreciate some of the work we have been doing. The style of the draughtsmanship in which we represent our designs is so different from that of our confidental neighbors, that they are often mistaderstood, even though there may be a fair knowledge of the architecture of the works themselves. The whole knowledge of the arealisestire of the works themselves. The whole training of the French and English architect is so different that it can hardly be wondered at if the result is most strongly marked in their designs. Broadly speaking, the architecture of the Conjugat may be said to be more academic, and that of England more individual; hence, while in France it is more uniform in general style, here in England we have all manner of varieties, from the rudest fiothic to the richest classic. In spite of this, however, there is the broad distinction of country and climate; and whether the building be in Gothic or glassic there is little chance of the architecture of the one being mistaken for that of the other; the individual character of the motion is too plainly stamped on its face for that. In that medley of trants in 6 the street of all nations," really good architecture is conspicuous by its absence; strange that it should be so, but thus it is; and if the designs of British architects, as shown on upper, were not appreciated; the actual specimens as built in the "street?" are not much better off in this respect. The best and only houses worth mentioning are in the so-called "Queen Anne" style, which doubtless is bacilly quite understand by the classically-trained Frenchen in. The house of the British Commissioners, purporting to be in the Elizabethan style, is almost below criticism; and the other two facodes, in half timber work and out brick respectively, are only very middling after all. It seems a pity that while we were at it the of-held haliding, at any rate, was not the best we could give, instead of — well, the less said about it perhaps the better. But if we have not made any great impression architecturally, it is some consolution to think that in the arts connected with architecture we certainly to think that in the arts connected with architecture we certainly take a very high place, and deserve what we have won. The display of artistic faralure decoration, stained-glass, etc., has quite surprised our foreign competitors, and is on the whole well worth a surprised our foreign competitors, and is on the whole well worth a surprised our foreign competitors, and is on the whole well worth a surprised out facility. The tendency is to over-richness, perhaps, a general fault is all exhibition work; but notwithstanding this there is much thoroughly good artistic work, especially in furniture and is accessories. Messes, Jackson and Graham have carried off the grand prize in this department, probably from the richness of their work, and especially of the "Juno Calinet;" but other from have quite as good work, artistically speaking, such as Messes, Gillow; their buting and in color it is must successful. Messes, Johnston and Jeanes, of New Bond Street, also show very good work, notably a substanced in Old English style, very carefully designed and well studied in detail; also a chimney-piece, though this is a little overdone with carving, etc.; the grate and fonder in it, however, are very supposed in detail; also a thirmey-piere, running this is a firm over-done with carving, etc.; the grate and funder in it, however, are vary fine pieces of metal work. Then again Messrs, Collinson and Lucke have a large display in the earlier styles; and Messrs, Shoulbred have a wonderful drawing-mon in setin would, most woefally over-done, however, in richness of detail and carving; though the latter is very good and very clever, there is far too much of it; it looks as if it had been designed by a carver. There are other firms, such as the Mysses. Howard, which have also sent good work; but the above firms shand out most conspicums for the excellence of their designs and workmanship, and tairly produce work which holds its own against auxibing sent by their rivals at home or abroad, and which has certainly astraished the laster; at all events, not a little; as a whole, therefore, the English decorative artists may be fairly congratulated on the success of their efforts, and the position they have so honorably won in the international race. We hear that several very good commissions have resulted from the Exhibition, and it is hoped they may prove some return for the great labor and expense some of the exhibitors must have lavished on their contributions.

some of the exhibitors must bave lavished on their contributions. Here in London the most recent and noteworthy addition to our architectural monuments has been made by the ersetion of Cleopatra's Needle, on the Thanes embankment; the work of raising it on its new site is now finished, and the scaffolding taken down (or nearly so). Viewed from the river, or from Waterloo or Charing Cross bridges, it is a striking object, and groups very well with its surroundings. It does not look very large, though perhaps larger than was to be expected, considering the impense space of which it forms the central feature. The obelisk is very well placed on its pedestal, the position of which is about midway between the two bridges; on each side of the pedestal are to be placed bronze sphinxes cast from old examples,—rather a modern antique idea, but probably more in keeping with the abelisk beelf than any new once we are likely to design. Then on each side of the pelestal inscriptions are to be cut, giving the history, in a few words, of this wonderful stone, from its birth in the quarry at Syene, and its creation at Heliopolis by Thothmes 111., about 1500 B. C., to its creation on the banks of the Thames in the forty-second year of the reign of Queen Victoria, in 1878, embracing a period of nearly three thousand Queen Victoria, in 1878, embracing a period of nearly three thousand four hundred years, and including such events in its career as its remoral from its original site to Cleonatra's city. Alexandria, in it. C. 28, during the reign of Augustus Cleear; its presentation to the British nation in 1819, by Mohammed Ali, in memory of the victories of Nelson and Abereremby; and its transportation to England, with its loss and recovery in the Bay of Biscay during its memorable voyage

last year. The names also of those engaged in the enterprise, at the bead of which stand those of Dr. Erasmus Wilson and Mr. Dixon, the engineer. We understand also the names of the brave fellows who were lost in the attempt to relieve the crew of the Cleopatra, during the gale in the Bay of Biscay, will not be forgotten. Thus, in a few, simple words, which will carry the thoughts of their readers through the long ages of its history from Cleopatra to Victoria, will the record tell how its destiny has been to weld a contact of the contact of the challest o necting link between two mighty cupiers. A cast of the chelisk is being taken for the South Kensington Maseum, and we believe a model of the ingenious scaffolding designed by Mr. Dixon for its crection will also be made, that the modus operandi may not be for-

Within the last week the Royal Academy of Arts has lost its president, by the death of Sir Francis Grant, at the age of seventy-five. His work was almost exclusively in portraiture, and few artists have filled the chair with more geniality and courtliness of manner. Coming of an old family (of the same stock as your late President, General Grant), and allied to more than one poble house, he was to the manner born, and has been a very popular president. He entered the Academy in 1812, was elected R. A. in 1851, and to the chair in February, 1866, receiving shortly afterwards the hounr of knighthood. He was a D. C. L. of Oxford, and an honorary member of the Royal Scottish Academy, the Pennsylvania Academy of Pine Arts, and the Belgian Society of Artists. Most of the celebrated men and famous beauties of his time have sat to him for their portraits, and he received a gold medal at the Paris Exhibition in 1855.

Mr. Leighton or Mr. Millais is spoken of as the probable successor of Sir Francis. The present state of English art in general, and the relations of the Academy to other artistic circles outside its walls in particular, make the coming election of more than usual importauce, as much will probably he expected from the new president, from an administrative as well as from the art point of view.

Workmen are now busy fixing the great clock on the southeast tower of the new haw Corres. It projects over the street below (the Strand), and is supported by a great carved corbel. The dials will face up and down the street, and it will be fitted with chines and bells. When this is finished and the scaffolding chared away the whole of the eastern block may be said to be completed, and might be ready for occupation now in a few weeks' time if required. It is he ready for occupation from in a few weeks' time if required. It is perhaps too early yet to criticise this general effect of the structure, but the tower looks as if it belonged to a furtress, while the block of offices is full of charming "bits," the detail of which is most excellent, both mouldings and carving being full of vigor and spicit. On the western part of the site the wells of the courts themselves and the great central half are slowly rising from the chaos around, and considerable progress is being made with the test of the Strand front, including the main entrance with its flanking octagonal towers the courts flasture of the general facults. ars, the central feature of the general facule.

THE MASSACHUSETTS CHARITABLE MECHANIC ASSOCIATION'S EXHIBITION. III.

ROSTON.

THE fair has closed, and I have as yet said nothing of the exhibits of the various educational institutes; the Institute of Lechnology, the State Normal Art School, the City of Lowell Free Drawing School, and the School for Modelling and Carving for Women. These collections are all in several rooms of the Tempyson Street These collections are all in several rooms of the Transson Street school-house, which is joined to the gallery of the main exhibition-holding by a bridge, the walls of which are bring with some large drawings of the Charles River embankment as proposed, and some large but not over interesting photographs.

The Institute of Technology has brought together examples of the

work of its students in various departments, which ought to be suffelient to give the public a more general and just appreciation than I fear has yet obtained of the broad field which is occapied by that school, and of its claim to a more generous support from the State and from private bounts. Of course the greater part of its teaching is not of a sort of which any exhibition can be made on these walls; but the work of the departments of architecture, medianical engineering, mining and metallurgy, of practical design in manufactures, and of mechanics' work, is illustrated by very full and interesting collections, which most have been seen by great numbers of people to whom the knowledge of the work of the Institute will sooner lake be of new

or later he of use.

The architectural department, to begin with, as we learn from a printed statement hung on the walls, exhibits seventy-seven drawings selected from the regular work of the school for a year and a half peat, comprising elementary drawings, fac-simile copies of originals made in the Paris School of Fine Arts, and those elaborated from freehand sketches of churches and other buildings in Boston. There is enough variety in the work here illustrated to satisfy any inquirer that although the teaching is confessably modelled on that of the Paris school, there is no blind adherence to its methods. If one were inclined to eavil at too much time spent on what Viollet-le Due calls the "impossible and impracticable problems" of the Ecole des Beaux-Arts, as the restoration of a Pompeian bouse or a Roman villa, he would readily see in the eareful drawings of the humbler buildings of to-day in our own streets that the archate is not taught to the ex-clusion of the modern. The work of these classes improves visibly from year to year, both in design and in rendering.

From the engineering department are shown a series of thesis drawings of bridges and tunnelling, and portfolios of drawings on various subjects, also models and photographs of notable bridges actually built. An Asheroit steam gauge, with a removable dial, allowing an easy inspection of the works, and a Dixwell pyrometer, are also shown. The department of mining and metallurgy exhibits a few specimens of laboratory work, with instruments and specimens; and the Lowell Institute school of practical design, a growd of designs in color of widely varying merit, for woollens, prints, ribbons, cretomes, table-covers, wall-papers, and the like. The nicety of these drawings always makes them interesting even to the general eye, even when a collection of the same designs in the material for which they were made would be far from entertaining. There is, too, a very notable collection of specimens of the work of the students in the technical school at Moseuw, consisting of metal work, as rivetings, brazings of joints, and weldings, wonden models of heavy tools, as drills, reamers, etc., wood-turnings beautifully finished and accurate, and joiners' work of irreproachable nearness. This collection was presented by the government of the Moscow school to the Institute, when the latter was contemplating the establishment of a similar brane's of teaching. This is now in full operation, and shows, in side the Moscow collection, some very creditable specimens of the work of its own pupils in the same line.

The State Normal Art School makes an imposing display of students' work in almost every department of art. There are outline drawings of foliage from nature, some excellent shaded drawings from the round object, some geometrical designs mostly from plant forms, both in outline and in color, and some examples in modelling. of which the subjects are not always of the most interesting, but which surprise one by the case and confidence of the handling, remember specially a very free and graceful testuon of flowers and fullage from nature. There are water-color drawings of flowers and fruit which look very little like the work of beginners, and two or three examples of time sketches, a head in water-polor, from life, done in four hours. In addition to these there are some very workmantike oreconnical drawings of subjects in engineering, and a progressive series in architectural design, comprising plans and alevations of buildings from measurement, in outline and in color; detail drawings; an analysis of the historical styles of ornament, and two designs for a wooden country-house and a brick mansion, respectively, the latter showing a good theat of well directed and profitable study. It will be allowed by anybody who examines this multifa-rious display, that the State Normal Art School has, if the wisdom of state communion is act be admitted, made good its claims to a contin-

ned and liberal support

The City of Lowell Free Drawing-School sends also a large number of drawings, framed and in portiolios, the latter containing, as 1 should judge from a hasty glance, mostly indifferent work, while among the former are some very respectable are bitectural drawings,

among the former are some very respectable architectural drawings, and others in crayon from the round of considerable merit.

The School of Modelling and Carving for Women is just entering on its third term, and here makes a very interesting exhibition of what it has done for a beginning. As might be expected the greater portion of the examples are in plaster, varying from bits of leafage, mostly naturalistic and in low relief in panels or otherwise, up to small breats, and including a levely people head of Mozart, also in very low relief, and a spandrel and fection or two in conventionalized foliage. There is also some delicate and graceful wood-carving, mostly in the way of frames and screens. Vigor and boldness naturally do not, yet appear, but grace and prettiness are everywhere; and that so much facility can be nequired by beginners in the brief time during which the school has been at work must be a continual surprise to the popils themselves, as it is certainly to outsiders. surprise to the pupils themselves, as it is certainly to outsiders.

Indeed the rapid, even sudden development of the caste and talent for design among all classes of our American communities within the last ten or fifteen years is a singular phenomenon. I do not suppose any new faculty has been created in the national mind, but a new field has been opened to cultivation, and the energy and persistency with which it is worked are, to say the least, remarkable. What we see at this fair covers only a portion of the field; we must remember what is doing in all the city and town drawing-schools, at the Museum of Fine Arts, by the new societies for art needlework, and in a thou-sand homes in the way of china-painting and embroidery, to acquire an adequate impression of the spread of the new influence. The phenoneuron is certainly extremely gratifying, and tends to awaken a feeling of complaneary. It is to be hoped the enthusiasm is a whole-What is to be feared is that there is somewhat too much some one. of it, and that it partakes of the nature of abnormal development. We hear now and then a mild complaint to the effect that the city and state are spending money unwisely, if not unjustikably, in maintaining so extensive an apparatus for the teaching of art; that the students of music or of medicine might not unreasonably ask why similar advantages should not be extended to them in their amilies. Into that question I do not outer, but it has struck me sometimes, in considering the immense and rapid growth of art-studies among us, that there is in it something exaggerated and factitions, and that there is really not enough of genuine feeling for art in the national make-up

to account for or to permanently sustain it.

A word of praise should be said of the extremely full and interesting exhibit made by Messrs. Prang in the various branches of lithog-Their long series of prints for crayon and stump drawing, raphy.

and also for sepia and India inks, and, perhaps even more than there, their natural history series, a most varied collection of subjects, icaves, bluesoms, and fruit, heautifully drawn and colored, and " designed as aids to object teaching," - are, I presume, as perfect examples of what can be accomplished by the lithographic process as have ever been exhibited.

It is pleasant to be assured as this fair is brought to a close that it has not only pleased and instructed its thousands of curious visitors, but has resulted in an unexpectedly large profit to the association. Let us hope the next exhibition will be held in a building of its own, more adequate in size and adormnent to the quality and variety of the products, both of art and of industry, which will await its invitation.

AMERICAN INSTITUTE OF ARCHITECTS.

BOSTON CHAPTER.

The Annual Meeting of this society took place on Friday evening, November 1, at the Massachusetts Institute of Technology. In the absence of the President and Vices President, Mr. Ware was elected temporary chairman. The following list of officers was elected for the ensuing year: President, E. C. Cabet; Vice-President, J. H. Sturgis; Secretary, H. Van Brunt; Treasmer, W. G. Preston; Committee on Admissions, Messes. Sears, Tilden, and Fox; Committee on Business, Messes, Longfellow, Van Brunt, and Peabody.

The resignations of Messes. A. C. Martin and R. G. Shaw were reported.

reported.

The following resolutions were passed: -

Revolved, That the Boston Chapter of the American Institute of Architects approves the method of laying the assessments of the Institute proposed by the committee of ways and means and adopted at the Annual Convention of 1877.

Resolved. That this society recommends that the committee of ways and means be a standing committee with power to fill its own

A discussion was raised as to the expediency of officing the services of the society to assist in the architectural education of the draughtsman, junior members, and students of the architectural school, by keepings or lessons sleving the winter. A general willingness was expressed to make some special exertions to this direction,

ness was repressed to make some special exertions to this direction, and the matter was referred to the cummittee on business. A communication was read from the searchay of the American Institute of Architects, stating that a vote had been passed by the Board of Trustees authorizing the president of each chapter, as a member of said Board, to receive and set upon all credentials required of candidates for fellowship, and to report his recommendations that Power and Power and Power are the Commendations and Power and Power are the Power and Power and Power are the Power and Power and Power and Power are the Power and Power and Power and Power are the Power and Power and Power and Power and Power are the Power and Powe

After some further especial business, the meeting adjouened.

PUBLICATIONS RECEIVED.

Titron's Hand Books or Deconative Form. No. I., Greek Ornament. Illustrated with swelve plates printed in the original colors. Edited by W. R. Ware, Professor of Archivecture at the Massachusetts Institute of Technology. Boston: S. W. Tüton & Co. Frankan's Outline Designs. First Series. Buston: S. W.

Tilton & Co.

An Elementary Course of Geometrical Drawing, con-taining Problems on the Right Line and Circle, Conic Sections, and other Curves: the Projection, Section, and Intersection of Solide, the Development of Surfaces, and Isometric Perspective. By George L. Vose, A. M. Professor of Civil Engineering in Bowdoin College; author of "Manual for Railroad Engineers." Hinstrated by thirty-eight plates. Boston: Lee and Shepard. 1878.

NOTES AND CLIPPINGS.

A Consous Accurant, —A Munchan-sat-like accident happened at Pulaski, N. Y., Satueday night, October 20, where the floor of a stable fell and left five sied cows hanging by the task. When found on Sunday morning they were all dead.

morning they were all dead.

Doron and English Painteres. — Some manuscript letters written in 1813-20 by Sir David Wilkie, the English artist, to a friend, have been acquired by the British Museum in London. The following extract is interesting for its bearing on the statements we lately made upon the destructiveness of preservation:—

"An the Hague I met with an artist who was very much surprised that so many pictures of the English school should be found to crack and fade. I told him that their reputation for fading was in some degree a gross equancy, but that for their eracking one and all of us must plead guilty to that. He wondered what we used in our colors, for he said that a cracked picture either ancient or modern is quite unknown in Holland. From what he said of the vehicles they new use (drying oil and mastle varnish) it must be the same with ours, and the difference must be either in the parity of their oil or in a more emetful nearly the warnish. The Dutch and Herolah painters, however, in guarding against the effects of time have not been able to guard against that powerful auxiliary of decay, the gitture cleaner. Thus admirable works that have some back from Paris are now suffering after all the luzards of their journey under this terrible personega. I saw a fine picture of Vandyke at Antwerp undergoing a thorough scouring, some others were lutened for the same process, and at the large tially rubbed into the very beart's core 'and are now out of all lummony and keeping."

PLASTER-OF-PARIS. — M. Landrin has just communicated to the Academy of Sciences the results of long-continued studies relative to the different qualities of this substance. He finds that the more or less rapid senting of the plaster is due to the mode in which it is burned. Its properties are very different when it is prepared in lumps or in powder. The former, when mixed with its own weight of water, sets in five minutes; while the latter, under similar conditions, takes twenty. The reason probably is that plaster in powder is more easily burned than when it is in lumps, and what tends to prove that fact is, that when the latter is exposed longer than usual to the action of fire It sets more slowly. Gypsum, when prepared at a high temperature, loses more and more its affinity for water, retaining, however, its property of absorbing its water of crystallization. Plaster beared to the real, and mixed in the ordinary quantity of liquid, the smallest possible partion is used, say one third of its weight, it will set in ten or twelve hours, and then it is less parons and becomes extremely hard. To prepare plaster for moulding it must be burned slowly for a long time, sufficiently plaster for moulding it must be harmed slowly for a long time, sufficiently bushes of all its water, and for its molecules to lone a part of their affinity for the liquid. M. Landrin stated that a similar result could be obtained by other means. If the platter is exposed to the fire of the kiln for a time short enough to allow it to retain seven or eight per cent of its water, it is useless, as it sets almost unmediately. If, however, the burning is again resumed, the substance seem bases its moisture, and, if then exposed to the air, it very rapidly retakes its water of crystallization, and then absorption continues more slowly. It can then be used; it sets slowly, has acquires great hardness. — Galignani.

PATENTS FOR THE YEAR 1872-78.— The report of the Commissioner of Parents for the fiscal year order June 30, 1878, shows that the receipts of the office amounted to 8734,888, and the total exponditures were \$655,996. Of the amount expended, however, \$50,000 was for the restoration of 18,563 models injured by the line of Lest year, and, omitting this item, the excess of receipts over expenses appears to have been \$118,982.

The Pracock Hall of Pelli.—In Bereston's "Dethi" is to be found the following description: "Peruliarly set apart for the reception of nobility is a questrangle of mederate dimensions. The building is a very heantiful privilen of whice mache supported on massive pillars of the same material, the whole of which, with the connecting arches, is richly ornamented with flowers of inhall mostic work of different colored stones and gibling. It is raised on a terrace four feet, high, the floor of which is composed of flags of white marble. Between each of the four marble parallel work. The cop of the building is ornamented with four marble parallel work. The cop of the building is ornamented with four marble parallely movered with filigree work; "but in 1799 the Mahratus, after a capture of the city, took the silver down and melted it, the value of the same being estimated at nearly a million dellars. "In the cornice at each end of the interior hall is sculptured in letters of gold, in the Persian lunguage, 'If there is a precedure on earth, it is this." In this hall was the finance precede through a called from its having the figures of two peacocks standing behind it, their tails being expanded, and the whole so intaid with supphires, rathies, emeralds, pracis, and other precions stones of appropriate colors, as to represent life. The throne itself is six feet long by four feet broad. It stond on six massive feet, which, with the body, were of solid gold, inlaid with rubies, emeralds, and dimended the bordors of the canopy. Between the two peacocks stone the figure of a parant, of the ordinary size, sold to have been carved our of a single emerald. On either of the canopy. Between the two peacocks stone the figure of a parant, of the ordinary size, sold to have been carved our of a single emerald. On either side of the throne soon a chatta, or unbrella, one of the Cricotal emblanced with canonals. The handles were eight feet long, of solid gold, and studded with thanonds. The handles were eight feet long, of solid gol

NUMBERING HOUSES. - A contrivance for rendering the numbers of it is a state of the prism of the number of the house is the prism of a hollow triangular prism, nine inches long, two of whose sides are furmed of panes of this glass, on which the number of the house is picked out in white; and this prism shaped famp glass rusts against the front of the house, so that the two sides with the numbers on them can be pixinly. seen by the passers by. In the interior of the prism is a gas jet, fed by a pipe from the house.

A New Arrist of the Sixterent Century. — A correspondent of the Lundon Allemann says: "Mr. Ed. Fetis elsims to have discovered a new artist of the sixteenth century — a painter almost of the highest order, who signed his pictures, and whose name is not to be found in any art higgraphy. The facts relating to this worthy, collected by Mr. Fesis, are briefly these: Michael-Angelo Immediate was, on the 22d of October, 1656, received a member of the Antwern Confraternity of Buckelors, in 1668-64 he belonged to the Gulld of St. Luke in that rity, and in 1665 his subscription to a kind of burial clob was paid by his wife. This, with the fact that he painted and signed a picture of very great merit on the well-worn subject of the Continence of Scipio, is absolutely all that is known of this arrist. The picture in question has only recently been discovered in an Antwerp garret, and is so budly preserved that it is donned to early destruction."

An Observatory on Mount Ærna. — The scheme for an observatory on the summit of Mount Ærna is again pushed in the English scientific journals. The asmosphere there is poculiarly clear, and it is thought that some important results might be arrived at by a series of daily observa-

Reputers, - Mr. John Henry Parker is preparing a fifth edition of his "Concise Glossary of Architecture," and a seventh edition of Rickman's "Attempts to Discriminate the Styles of Architecture in England."

BOSTON, NOVEMBER 16, 1878.

CONTENTS. Summary:— The Indiana Capital Commissioners Again.—The Washington Modulent and Government Engineers.—Street Soil of New Orleans.—The Thames Constrainey and the Sewage of London.—School of China-painting in Boston.—Miss Hosner as an Inventor.—A New Motor.—Iter Techniker 161 The Explosion of Stram-Boilers 162 The Light of the Foture 164 The Illietarions:— The New Chiteri St. Lorie, Quebec, Canada.—Stable at Indianapolis, Ind.,—Music Room of the King of Bavaria at Musich 165 Correspondence:— Letter from Peris French Chiteris of English Water-Color Painting 166 Dr. Scriffings 5 English Water-Color Painting 166 Notes and Chippings 168

The troubles of the Illinois State-house commissioners are not limited to their intercourse with architects. A very pretty quarrel has been going on for some time with some of the disappointed bidders for the work. The contracts for the huikling having been given to Messrs. Kanmacher and Denig, the next lowest hidders, Messrs. Farman and Pearce, complained that they had been unfairly discriminated against in the competition; that the letting of the contract was a put up joh; and that the contractors securities were inadequate. They therefore demanded an inspection of the papers, and that being refused, some a letter to the commissioners, botifying them that there was reason to suspect them of want of fairness in letting the contract, and want of prudence in accepting the band, promising to "institute such proceedings as may be lanful and necessary to secure fairness and protection," - in other words threatening them with a law-suit, - and requesting them to furnish for their information (Farman and Pearce's) a copy of the contract and bond. The commissioners, after two days' deliberation, declared the openness and fairness of their competition, and the rigor of their bond; and refused to submit the papers to inspection, on the ground that the bondsmen did not care to have their names known and that the commissioners were responsible for their acts, not to the disappointed bidders, but to the Legislature. We do not hear that the thing has gone may farther as yet, nor do we know anything of the merits of the question; but we should think that if all public officers were to be required to produce for inspection and justification their records and documents before anyhody who chose to call for there, they might find that they had nothing else to do.

THERE is discontent among the faithful at the slow progress of work upon the foundations of the Washington Monament, under Colonel Casey's direction. Some one has taken the pains to compute that at the present rate it will take two hundred and forty-one years' work to finish the monument according to its design, - a computation which to many people will be not un-palarable. The wish, therefore, occurs that the work might be put into the hands of some contractor who should agree to finish it within a given time. The writer of a letter from Washington in the Hartford Times, from which we take these facts and faucies, prophecies that people will by and by find out "that it is a had investment, besides being a fearfully slow one, to put any kind of public work into the hands of army officers." We are afraid that this represents the idea of a good many inconsiderate people. If the friends of the monument should grow so impatient of official deliberation as to tire of importuning the Government for aid, there would, perhaps, be no harm done; nor could we quarrel greatly with those who may wish, if the monment must really be finished, that it could be by contract work of the ordinary perishable kind. The difficulty would be, we suspect, in providing the money to pay the contractor, though it is very likely that contractors might be found, such as they were, under almost any circumstances. But for a real friend of the undertaking to wish to get it out of the hands of government originoers we take to be a serious mistake. The common tendency to undervalue the deliberate thoroughness of their work is one of the had signs of the times. The Washington Monument is a difficult if not a hazardous construction, and there are no men in the country in whose hands one may

feel that such a construction is, on the whole, quite so safe as in theirs. It is well to have them to remind us that in our most important works solidity and good workmanship are yet more important than basic or cheapness.

NEW ORLHANS is taking its turn of uneasiness at the recklessness of dirt contractors and graders. The New Orleans Times nor long ago called attention to the fact that the garbage which had been removed from the city was brought back and used for filling, after the manner of contractors. In consequence of this complaint a committee was appointed by the mayor to examine into the matter. The report of this committee, just tendered, shows a deplorable condition of things. Visiting the dumping ground of the street cleaners, which singularly enough is in the city itself and surrounded by many houses, they found three acres of land covered with four feet of foul deposit, kitchen refuse dead animals, and other disagreeable substances, upon which a hundred or two of stray swine were feeding, rooting up the soil in all directions, and filling the air with horrible odors which sickened the people in all the houses about, and even infected the milk in the dairies. Examination of people in the neighborhood showed that this accumulation had been used by somebody as a heard to draw from during the spring and summer, so that a good deal of it had been carried away somewhere. Further inquiry showed that where street filling was going on it was the custom to use first a layer of street garbage and market refuse without the ceremony of taking it to the dump, and then a con-dressing of street-flirt, which was probably the contribution of the dumping ground. One cannot help wondering how such things can pass unnoticed by the authorities of a city where yellow-fever is a regular visitor, in spite of the statement which we saw not long ago that the dirtiest regions in New Orleans — and the description of them was not savory — were the healthlest. The wonder grows a little when the committee telts that the City Council passed an ordinance allowing street-dirt to be used as a foundation for the mountment to General Lee, him who of all the confederate beroes was perhaps in best odor everywhere. This privilege, says the committee, was "abused," for "the foulest stench imaginable greeted the passers by." At one point however the contractor's fortitude gave way, for being ordered to bury dead animals in some road filling he refused, and hauted them to the dump-

We have called attention before (American Architect, Jan. 12, 1878) to the complaints of the Conservators of the Thames that the costly sewers of London were failing to satisfactorily accomplish their purpose. These complaints, which have brought on a prolonged war between the Conservators and the Metropolitan Board of Works, have been supported by the popular voice, and have been revived in great strength by the experience of the passengers who survived the disaster of the "Princesa Alice," a short time ago. She was sunk by collision a little way above Barking Creek, where is the outfall of the great sewer, and our readers may remember that the fool condition of the water in which the passengers were submerged led some persons to adopt the rather overstrained theory that they were poisoned rather than drowned. This accusing surmise brought the Metropolitan Board to their feet with a resolution of inquiry, as a result of which they have plumply declared that the sewage which goes into the Thames is neither noxicus nor offensive, and by this assertion they stand stantly, notwithstanding the fact which seems to be amply proved that the sunken hulk of the "Princess Alice" was found to have been covered before many hours with a deposit of indescribable foolness. In spite of this, and of the textusony of one of their members, who unfortunately lived near the outfall, the Board stood gallantly to their colors, and voted down a resolution which was proposed, requiring a committee to report whether the sewage could not, at a moderate cost, be so purified before its discharge as to make it innocuous and inoffensive, — because, said they, to do so would be to condomn themselves by admitting that what they discharged was noxious and offensive. To this they add the assertion that the amount of suspended matter in the water is very triffing and that the deep-water channel has increased in the last four years. The engineers of the Conservators reply that the analysis of the Board is of water taken during an unusual flood, that the increase of the channel is the result of dredging, that

it dates from before the establishment of the sewers and has almost stopped since, that ships have grounded where ships did not ground before, and that banks of mud have deposited in various places, whose origin is unmistakably in the sewers. The general opinion of those who have given the matter thought, backed by the testimony of popular observation, seems to be decidedly against the Board, and there is talk of prosecuting them for discharging unpurified sewage into the river, if money can be found to maintain a suit which would doubtless be very vigorously defended.

THE Boston Society of Decorative Art proposes to establish a class in porcelain-painting, which, like the School of Drawing and Painting, and the School of Carving and Modelling, will be given shelter by the Museum of Fine Arts. So popular has this kind of decoration become that it is worth while to provide some means of instruction in it, both to give capable amateurs an opportunity of learning to use their ability to advantage in an art, which, like all other arts, has its technical secrets, and still more, perhaps, to give a standard of comparison and a chance for discrimination between the capable and the incapable, a thing of which our amateur decorators stand a good deal in need. The class will be taught by Mrs. William R. Ware, whose skilful work is well known since the Centennial Exhibition. At first the instruction in painting will be only in the less difficult art of over-glaze painting, which is all that most amateurs are likely to busy themselves with, leaving the greater difficulties of under-glaze work to the future; but it is proposed to set up wheels in one of the rooms at the Museum, that the pupils may get instruction in "throwing," and opportuni-ties for practice at the wheel will be provided at the potteries in Chelsea. If this practice can be carried so far as to produce some skilful workers in the clay it would have a double advantage; for not only might the work of such amateurs be a gain in itself, but their influence on the manufacturers might be a very good stimulus. There is no better training of eye and hand than the shaping of fictile ware, and the training may be made of just the exacting kind that our amateurs specially need. The hasty multiplying of manufacture is not favorable to excellence in fictile work. It is not difficult for amateurs to equip themselves for it, and the mechanical skill which it requires though refined is, so to speak, in small compass, and therefore requiring a less range of experience than in most arts. The competition of a few amateurs of real skill, working deliberately, and producing little, but that of the best they could accomplish, might be of good service in improving the quality of the work of the regular manufacturers.

Our lady sculptor, Miss Hosmer, who has been receiving considerable praise from London newspapers for the model of her latest statue, "The Pompeian Sentinel," by no means limits her activity to sculpture, but seeks distinction also as an inventor. It is some time since the first announcements of her discovery of a process for compacting ordinary limestones into fine marbles, by the simultaneous application of pressure, heat. and moisture. She is said to have actually contracted, under her patents, to furnish floorings, walnesoning, and other decorative work in artificial marble for the British Embassy building which is now going up at Rome. A correspondent of the New York Evening Post, writing from London, besides crediting her with one of the many inventions for turning the leaves of a piece of music, describes a new method of modelling which she has contrived. She makes a rough model in plaster of Paris, and when this is brought into the proper poise and proportion, the surface being left somewhat within the intended dimensions, it is covered with a thick coating of wax, in which the actual modelling is done. This method she claims to be much less troublesome than working in clay, while the model is far more durable than one of clay, requires less care to keep it in condition, and gives much better the effect of the intended marble, besides being pleasanter to look upon.

Miss Hosmen's Capo d' opera in invention, however, is the discovery of a new means of applying motive power; or even a new power, if we may trust our inferences from the account of the Evening Post's correspondent. The power is that of the coming motor, electricity; but there is neither battery nor electro-magnet, nor circuit, nor any means for transmitting an electric current, it is said, the power being furnished by a series

of permanent magnets in a manner which offerly defies all the present theories and expectations of scientific men, and by means of contrivances which she is not yet prepared to make public, The invention has been a study to her for lifteen years, says Miss Hosmer, and a London instrument maker is now building a machine of four-horse power, which will be exhibited in London this winter, when it is finished, and show that a revolution in power-machinery is impending. Miss Hosmer cites the tos-timony of some mechanicians in favor of her success, though she does not seem to have yet provided herself with witnesses among scientific men of known position. Of one gentleman, who reminded her that she was seeking after perpetual motion, we are told that he "could scarrely believe his own eyes," and had to be convinced by repeated demonstrations, at the end of which he had quite lost his faith in the impossibility of anything. It is perhaps useless for anyhody who is not in Miss Hosmer's confidence to conjecture how a permanent inagnet, if such things are to be found, or a series of them, can be made to furnish continuous motion, nor is it quite safe to decide against even the discoveries of amateur science till they are made known; but the ungallant reader may hope to be forgiven if he is a little reminded, by these accounts, of the familiar feat of standing in a basket and lifting one's self by the handles.

Wk have received the first number of a new German technological periodical to be published fortnightly in New York, by Mr. Paul Goepel, Tryon Row, and called Der Techniker. It is a quarto of sixteen pages, approximately on the plan of the Scientific American, but intended especially to meet the wants of German Americans, or, as the editor in his short and straightforward salutatory says, " to further the interests of German inventors as well as the advance of such branches of industry as are in German hands." It is a neat, well printed journal, from Roman type, like most German technical publications, illustrated with clear cuts of various machines; and touches in this first number a considerable range of subjects. It has illustrated articles on some English hydraulic metal-working machines, on Klinkerfues's Hygrometers, a pneumatic beer-pump, Tronve's Polyscope, and a workmen's Respirator, a descriptive list of selected German inventions, and designs for a common chair and and an easy-chair taken from the Workshop. There are, besides, the first of a series of letters from the Paris Exhibition, this one on the display of carriages; an interesting letter about Mr. Edison and his inventions, based on a letter to the New York Tribune; an article, to be continued, on patent laws; a current trade review; a full list of recent German and American patents, which is apparently to be continued from number to number, and a variety of short articles, original and selected, including book notices, articles on the polishing of metals, on trade-marks, the Mississippi jetties, the tobacco trade, the Vesuvian Railway, The original material of the paper seems to be clearly and capably written, entirely from the practical point of view rather than the theoretical.

THE EXPLOSION OF STEAM-BOILERS,1

This little pamphlet is, as its title indicates, mainly controversial; but it raises and discusses questions which are of paramount importance to the whole community. Modern civilization brings us in contact with the steam-hoiler at every turn in our daily life. Leaving out of view its various industrial applications in factories, in steamboats, and in railroads, it is now very generally used for furnishing the supply of heat in stores and offices. It is precisely in this latter application that the lowest grade of intelligence in those who have the care of the machine will be found. We use the word machine advisedly. A steam-heater for a dwelling cannot be placed in the same category as the ordinary furnace. It is a machine, and a very dangerons machine if tampered with or impropedly freated. And yet it is undoubtedly true that many of these machines, especially when used for ordinary heating uses, are under the superintendence of men who have no qualification beyond that of a fire-stoker. We know that Patrick and Bridget wear out and use up our air-furnaces by the most flagrant disregard of ordinary physical laws. We endore this from year to year, put our hands in our pockets, and draw out the means of repairing damages, and recasin content. Should we remain thus content if we really believed that a like ignorance or negligence on the part of attendants might at any moment lead to an explosion and the destruction of human life? And yet, if we accept the statement of the author of the "Attack upon the Judicial Declaion," this is what we should expect. He says, "There is no mystery, no occult, potential energy suddenly and

³ The Cambridge Boiler Explosion. An Exemination of the Attack, in the Columns of The Seaton Daily Astronomy, upon the Judicial Berlion. By J. E. Robinson.

mysterionaly liberated, and not a particle of proof of originally poer iron; " and he then goes on to show that the use of water unfit the purpose, and the abuse of the machine, led to the explosion. We have no intention of entering into the controversy between these two disputants. The points in controversy were fully examined, in the light of the testimony of the best experts, and a judicial decision has been rendered. What we do claim is that a boiler, supposed to be perfect when delivered to its owner, cannot with safety be left to

the charge of ignorant or inexperienced superintendence.

Then arises the question, How do we know, when we purchase a boiler, that it is perfect, and suited to our purposes? The law steps boiler, that it is perfect, and suited to our purposes? in here, and says it must be inspected, and we must show the certificate of inspection. There seems to be no dispute in this case that the boiler was inspected, and was certified to be safe for one hundred the boiler was inspected, and was certified to be safe for one anatred pounds pressure, and yet that it burst at a temperature of 311°, which corresponds to a pressure of 64.33 above the atmosphere, with "everything in a normal condition; no excessive pressure, no lack of water, no apparent disturbance inside or outside of the boiler, no excessive five or blowing off of steam." Does not this show that there was something at fault in the inspection?

We think the author of the pumphlet before us has presented ble whole case in the strongest terms, when he says, " There are many boilers in use that are as unsafe as was the one in question at the time of its explosion; and it does not tend to greater sceurity, and

it is not for the interest of the owners of these boilers, to believe that they may be used with impunity provided they are kept clean."

In justice to the author we must quote his second paragraph:

"There are three hypotheses as to the causes of explosion: (1.) The one upon which our practice has come to be mostly based, that they are all caused by gradual rise of pressure, or gradual reduction of strength. (2.) That they are caused by forces too potent to be withstend by any attainable strength. (3.) That many explosions have their origin in an explosive evaperation of water within the boiler; but this never to an extent that may not be entirely obviously by suitable construction and management, or withstead by the observance of sound principles of construction."

The first hypothesis, the author says, has no scientific basis, and

ignores the most prominent causes of explosions.

the second hypothesis were true the only remedy would be the total exclusion of the steam-boiler from practical use. We might as well harness into a buggy an entamed wild heast.

The third is evidently the only one which appeals to our author.

We wish we had space to follow the author through all his statements, for every sentence is full of matter for serious thought to the public, and every statement so supported by figures (not results, but the detailed computation) that every one conversant with the subject

can follow the writer's reasoning, and agree with him or not.

The first point presented is one which only experts could determine. The stock of which the plates were made does not possess "qualities that are indispensable for steam-boilers," and a boiler of the size used could not be built "for a working pressure one half, even, of that for which the boiler was certified." Plates of that brand sell for half the price of the best roll-welded plates, and for less than one third of the best hummer-welded plates. Just here the outsider may very properly ask, Wintdoes brand mean? Brand ought to mean, if it does not in all cases, not merely who the manufacturer is, or whether it bore such and such tests of compression, extension, is, or whether it bore such and such tests of compression, extension, or torsion, but, by ultimate reference, it should show also of what iron it was made, of what ores, and whether hot or cold rolled. We think Kirkaldy's experiments first called attention publicly to the fact, which is distinctly stated in this pamphler, that "a knowledge of the tensile strength alone of iron is of no value whatever as to its fitness for use in a steam-boiler;" in other words, Kirkaldy showed that one quality of iron bar, for instance, would bear a high load, and then give way without warning, like cast-iron, while another, more ductile, would not yield until its sectional area was reduced, perhaps one hulf, and thus its tenerity per unit of area brought very perhaps one half, and thus its tenucity per unit of area brought very high. That is to say, the bare statement of so much tensile strength conveys a very imperfect knowledge of the quality of iron for a specific purpose. Let those who need any farther information upon this point read the account of the experiments made to determine from what eres the iron must be made, and in what proportions the different irons must be combined, to obtain a suitable metal for cannon. The purchaser of a beiler cannot be presumed to have expert knowledge, but such knowledge may, and indeed must, be required on the part of inspectors. This pamphlet tells us that multitudes of on the part of inspectors. This pamphlet tells as that multitudes at boilers are placed upon the market made of plates totally unfit, when new, to bear the pressure for which they are certified. "Plates very rarely test better than the heand. The variation is almost invariably the other way, . . . the tensile strength brand varying from five to twenty-five per cent in the better grades of plates above the minimum actual strength, and from twenty-five to fifty per cent above in the lower grades." As the weakest link determines the strength of a chain, so in a boiler the weakest plate and the minimum thickness should be used in computing its strength.

There is no dispute as to the correctness of the ordinary formulæ

There is no dispute as to the correctness of the ordinary formulæ for computing the strength of boilers under a steady statical pressure. This formula is pr = tK, in which p is the pressure per square inch, r is the radius, t is the thickness, and K is the tensile strength of the iron. As the plates are weakened by punching, Fairhairn's role is adopted, which allows to a double circuit of the results. adopted, which allows to a double-rivetted seam only 45 of the resist-

ance of the plates of which it is composed. Fairbairn's factor of entety for best materials and workmanship is 6; for good materials and workmanship, 8; for poorer quality of Iron, or for defects in the process of manufacture, this may vise to 0, 10, or mure, up to a total rejection of the boiler as parafe.

There is some difference of opinion as to the degree to which the testing pressure should be carried. If not carried far enough, it is worthless as a test; if earried too far, it may strain the materials beyoud their clastic limit, and thus impair the future assfulness of the boiler. The committee of the Franklin Institute, after a thorough and extended examination into the causes of boiler explosions, proposed that the law should require the test by hydraulie pressure to be carried up to three times the working pressure. Under such a law the Cambridge boiler would have been rested at 300 lbs., whereas

the actual test was only carried to 150 lbs.

We have not space to follow the author through all his discussions. The action of plates under thermo-tension, in which field the Franklin Institute made an extensive series of experiments, is here examined. The effect, upon the strength of boilers, of poor riveiting and of good rivetting, of imperiest welding in the manufacture of the plates, of the use of a poorer quality of icon as the filling of the pile during manufacture, - all these points are examined and commented

upon.

As we stated at the outset, the pamphlet is controversial in its nature, and its main object was to answer the "attack," and to show that this particular boiler was originally weak, and not fitted for the work for which it was certified; that it was exploded, not in consequenec of deterioration by scale on the bottom, not because of neglect or abuse, but because of what the author characterizes, in his third cause of explosions, as "an explosive vaporization of water within the boiler." In other words, a part of the water within the boiler was overheated, a volume of steam was suddenly generated which caused a surging of the water against the back end of the boiler; the from was "short," and could not withstand this suddenly imposed pressure, and consequently "the back end of this boiler was undoubtedly broken off by the surging of the water within the botter against the back head."

back head."

We call attention particularly to the statement, that this holler was broken through the transverse scam. The same theory which gave for longitudinal rupture the formula pr = tK gives for transverse rupture the formula pr = 21K. That is to say, a boiler is twice as strong against transverse rupture as against longitudinal rupture; or, other things being equal, it will require twice the pressure to rupture it. The formula assumes statical pressure and uniform tenacity of the plates in all directions. Yet here was a boiler certified to hear 100 lbs., and which therefore should require 200 lbs. for transverse rupture, which, under a sudden inpulse, eave way transversely, when rupture, which, under a sudden impulse, gave way transversely, when the pressure was, according to all the restimony, far below that which it was certified to bear. The difference between the mere statical pressure of the steam confined in a boiler, and the work which will be done by a sudden release of this stram, and the conversion into steam of water under a high pressure and temperature, is too important to be overlooked. If we raise a pound of water 1° Fabranheit above its temperature at maximum density, we store up in it an euergy equal to 772 foot pounds.—that is, in cooling one degree, it must by the law of thermodynamics do the work of lifting 772 ibs. through one foot. The boiler under consideration was working with steam at a temperature of JIP. A very shaple computation will show the destructive power developed when this steam and the water with which it is associated have their temperature suddenly reduced by an explosion from \$11° to 212°. The author of the pumphlet, while showing that his adversary's estimate is entirely erroneous, proves at the same time what we are most concerned with that in every boiler we have a reservoir of stored energy of vast amount, capable of producing wide-spread descruction, if suddenly released by an explosion. If the boiler, even of good material, is so constructed that a thorough circulation does not take place, this explosion is likely to occur at any moment. Zerah Colburn, in his essay on "Bother Explesions," says, "Destructive explosions often occur at pressure of ten pounds to twelve pounds per square inch in low-pressure boilers; and it is on many accounts improbable that anything like the calculated hursting pressures of boilers is ever reached, even where the most frightful explosions have occurred." Our author closes some re-marks upon construction with, "Showing that there was no suitable provision for the circulation of the water within the builer. And there was no provision for the safe deposit of sediment. A holler with these defects would be unsafe, even if built of the best materials."

While we recommend this psimplified most strongly, as presenting in a very clear and ferrible manner some of the principal points connected with steam boilers, apart from the special controversy which called it into being, we cannot close these remarks without stating that, after all, the thing that most forcibly suggests itself is the after inefficiency of our present system of inspection. The law requires that boilers shall be inspected, but at the same those it holds owners responsible for any damages resulting from their use. Can any one, after a careful study of the pamphlet before us, turn to his inspector's certificate with any sense of security? Here we have the testimony of a well-known expect that the material not merely of While we recommend this pumphlet most strongly, as presenting testimony of a well-known expert that the material not merely of this boiler, but of many is iron totally unfit for the purpose and unsafe at any pressure; that modes of construction are in vogue which would render a boiler made of the best materials unsafe;

that factors of safety are adopted, below those which experience has sanctioned in other countries; that the test by hydraulic pressure, instead of being carried to three times the working pressure, was carried to one and a half times. If this is the way in which certificates are given, and the weak machine is then entrusted to ignorant superintendence, the only wonder is that destructive explosions do not occur more frequently.

THE LIGHT OF THE FUTURE.

Ow the various magneto-electric machines that have been brought forward, that of M. Gramme is the most generally used. As soon as his machine became practicable, an English company purchased the English and American patents, the Societe d'Encouragement awarded a gold medal to the inventor, and a large number of manufacturers ordered the apparatus. The exhibitor has been awarded prizes at the Exhibitions of Lyons, Vienna, Moscow, Liuz, and Philadelphia; and now about 500 machines of his construction, with magnets or electro-magnets, have been delivered, and the demand for them is still increasing. Elactric lighting, which before M. Gramme's invention find not exist, speaking industrially, is at the present day within the domain of things practical. It is not within our scope to give a detailed description of his machine; it is sufficient for our purpose to state that it furnishes continuous electric current having been generated is conducted through an insulated wire to a perpendicular role of retort carbon, the point of which is placed exactly above the point of a similar role, the distance between the points being less than a quarter of an inch. This intervening space is the electric are, and the current passing through Or the various magneto-electric machines that have been brought which is placed exactly above the point of a similar root, the distance between the points being less than a quarter of an inch. This intervening space is the electric arc, and the current passing through that interval from the rod above to that below heats the points to a state of intense incandescence, producing the electric light. The current passing only in one direction,—from the upper or positive pole to the lower or negative pole,—consumes the positive at double the rate of the negative, and consequently the distance between the positive to be continually resultant by electropic and a market. points has to be continually readjusted by clockwork and a magnet,

points has to be continually readjusted by clockwork and a magnet, constituting the regulator or electric lamp.

By the side of the clockie lamp with regulating apparatus for the carbon rods as they become consumed. Jablochkoff's candle has also become the material for electric lighting. M. Jablochkoff's light completely suppresses the regulator. His invention was presented to the Academy of Sciences in October, 1876. The carbons, instead of being opposed, are placed side by side, and are separated by an insulating Justice are placed side by side, and are separated by an insulating Justice were the ends of the carbons. The layer of insulating matter melts, volatilizes, and the double rod of carbon slowly consumes, exactly as the wax of a candle progressively exposes its wick. M. Jablochkoff now laws in his candles, as they are called, powdered ashestos. It seems as if the interesting lahors of M. Jablochkoff will have practical result, and that they will increase the domain of electric lighting, for his lamps are now largely used. In Paris, besides numerous larger electric lamps, at the present time, there are burning many Jablochkoff candles, of which we ent time, there are burning many Jabioshkoff camiles, of which we may mention eight on the Place de l'Opéra, twenty-four in the Avenue de l'Opéra, eight on the Place du Théatre Français, six at

Avenue de l'Opéra, eight on the Place du Théâtre Français, six at the Palais Boarbon along the front facing the Place de la Concorde, seventy in the Grands Magasias du Louvre, eight in the shops of the Belle Jardinière, sixty in the Concert de l'Orangerie des l'uileries, thirty two in the interior of the Hippodrome.

Returning to the Gramme machine, it appears that the first light machine constructed by M. Gramme fed a regulator of 900 Carcel burners; its total weight was over 2,000 pounds. This machine served for a long time for the experiments on the clock-tower of the Honses of Parliament at Westminster. The fault found with this machine was that it became heated, and gave sparks between the Houses of Parliament at Westminster. The fault found with this machine was that it became heated, and gave sparks between the metallic brushes and the bundle of conductors on which the current was collected. This, however, has not given rise to any serious inconventence during five years. M. Gramme's next machine was less powerful, of a power of only 500 burners, and consequently of smaller dimensions. When a current is sent into two regulators, each will give 150 Careel hurners. This apparatus has been introduced on hoard the Suffren and the Richelleu, of the French Navy; on the Livadia and the Peter the Great, of the Russian navy; it is employed by several Goyeroments for service in fortified places. This machine is described as excellent, but its luminous intensity is slightly freeble when the atmosphere is foggy; its price, however, is somewhat high. The inventor has improved upon this machine, and constructed one which, when coupled in tension, gives a luminous intensity of 800 Careel burners at 100 revolutions per minute, and, if coupled in quantity, 2,000 Careel hurners, with 1,350 revolutions per minute. It has been adopted by the French Ministry of War, by the Austrian navy and artillery, by the Norwegian, Turkish, and other Governments. By further simplification, M. Gramme has been able to introduce a machine most suited for industrial purposes, large workshops, and large, covered spaces.

large workshops, and large, covered spaces.

As has already been remarked, the electric light may be advantageously employed in a large variety of works, for it admits of obtaining a great quantity of light at a small expense. By its means, the loading and unfaciling of cargoes, the mounting of machinery, carpentry, wearing, dyeing, and similar trades may be carried on by night just as well as in broad daylight. It is necessary, however, to

employ two machines, in order that the light of the one should counterrest the shades thrown by the other. It has been found by experience that the naked light may be employed, the worksten themselves having asked for the removal of the opal globes which it was thought at first necessary to use. The electric light preserving the tints of colors, this property has been utilized with success by several dyers for standardizing their colors by night.

The electric light is most effective for high rooms; when callings

are of a less beight than 12 feet, its introduction becomes more diffi-cult. As a rule, there may be conveniently lighted with a single ap-paratus about 5,000 square feet of fitters' shops, lathe shops, tool-shops, and modelling-rooms; half that space in spinning-mills, weav-

ing establishments, and printing-rooms; and about 20,000 square feet of yard, courtyard, dockyard, quay, and open-air works.
In a country like the British Isles, where the safety of the marcantile marine and the navy depends so very much upon the amount of security with which ships may enter ports, and the care bestowed upon keeping up an effective system of light-houses to warn the navigator against approaching dangerous coasts, the electric light appen keeping up an effective system of light-houses to warn the natigator against approaching dangerous coasts, the electric light would be sure to prove a welcome auxiliary in effecting those objects; and so in reality it has, being now employed at many of the stations. It renders visible at night, at distances varying from 2,000 in 6,000 yards, objects such as broys, ships, coasts, etc. The electric light was first applied to light-houses in 1863. In that year trial was made with an Alliance roughing at the light-house of La Hève, near Havre, the results being so satisfactory that no doubt all light-houses would have been provided with the new light if the question of expense had not stood in the way. It has been stated that the electric light is seen at least five nules farther than the oil light, and that in hazy or longy weather the range of the light is twice as great with the former as with the latter.

In England, official opinion was at first against the introduction of the electric light in light-houses, on account of the peril of interruption; but this has been overcome. There are now electric light-houses, besides those of England and France, in Russia, Austria, Sweden, and Egypt. Everywhere their action is pronounced satisfactory. Hitherto machines of only 200 Carrel burners have been tried; but it is stated on good authority, that the French Administration of Light-houses are about to experiment with a Gramon machine of 2,000 burners. This machine probable will prestly inhance of 2,000 burners.

tration of Light-houses are about to experiment with a Gramme maebine of 2,000 horners. This machine probably will greatly enhance the advancages, already recognized, of electricity over oil, and will perhaps determine a radical change in the existing illumination of

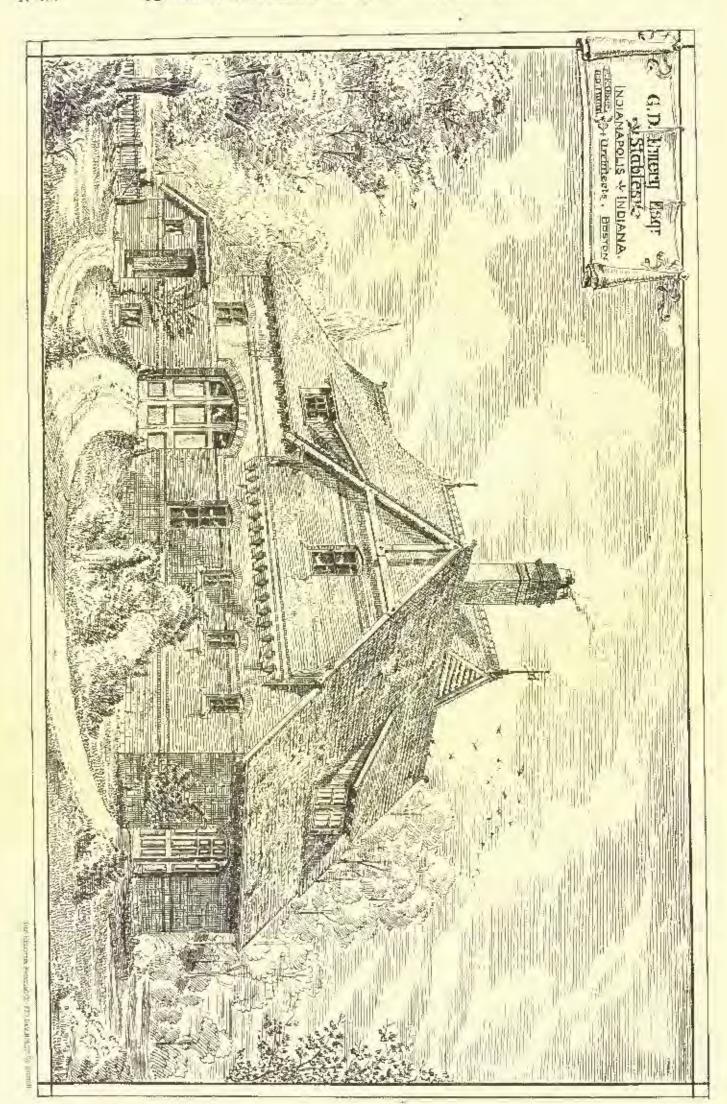
light-houses

The lighting of works by night is highly interesting. The Spanish Northern Railway, after trial, used the light as early as 1862 in the works proceeding in the Guadarama mountains. The expense per hour for material consumed was 2,00 frames per lamp; the saving effected upon the use of torobes was 60 per cent. The light has also effected upon the use of torches was 60 per cent. The light has also rendered important services in the mines of Guadarama. The air became so vitiated in the workings by the explosion of charges and the combustion of the miners' lumps that the ordinary lamp would not born. When a Serrin's regulator was sent down, a complete change took place, respiration "becoming as easy as in the open air," the lamps remaining alight. Amongst open-air works may also be rited, as executed by the aid of the electric light, those of Fort Charagnae at Cherbourg, of the Chemin de Fer tin Midi, the reservoirs of Méailtimutant, the building for the Moniterr Hoiversal, and more recently, those of Havre hachor and docks, the Exhibition of 1878 in the Trocadéro, the Avenue de l'Opéra, the Grands Magasins du Louvre, and other establishments. do Louvre, and other establishments.

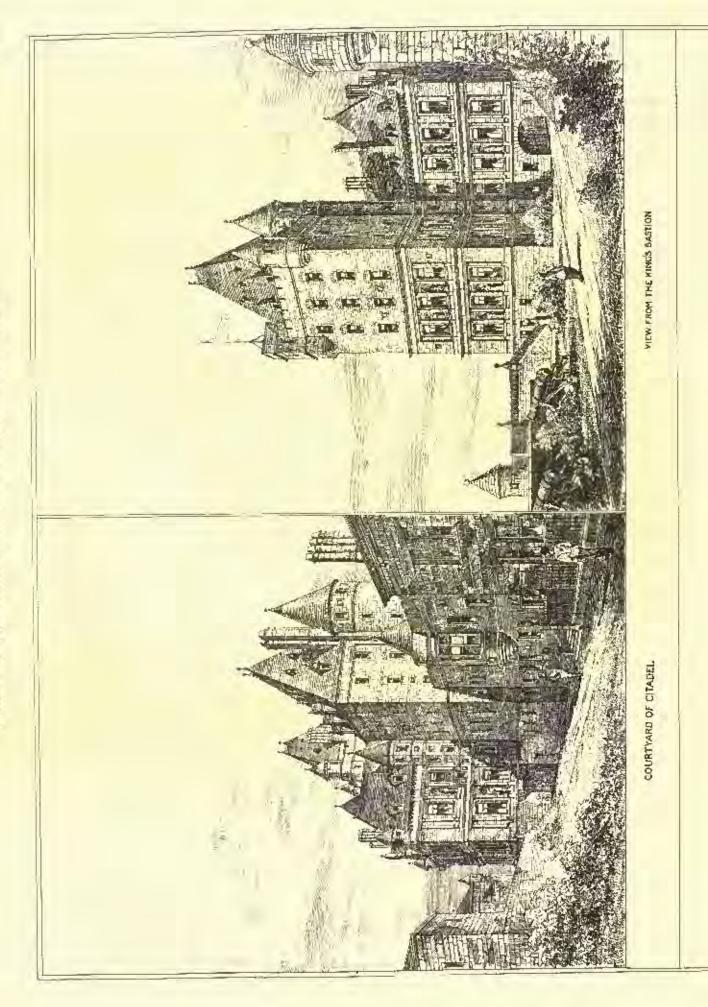
Very little attention has hisherts been bestowed upon the great service electricity will ultimately render in lighting up theatres and similar places of public resort. Besides the comparative cheapness of the electric light, its use will do away with the expensive fitting-up necessitated by gas. The great drawback to thorough enjoyment caused by the flare and heat of hundreds of gas-flames will be entirely removed. No longer broided and heated up to almost fever-point, we shall be able to sit in comfort and, more than that, perfect against that most except of all calculations a fire in a theatre, or safety against that most awful of all calamifies, a fire in a theatre, or even a panic such as quite recently occurred at Liverpool. Panics will be avoided; for people will soon come to know that fire from electric light is impossible. We were forcibly reminded of the great danger to which audiences are now exposed during a recent visit, on a Saturday evening, to the Covent Garden promented concerts. We pictured to ourselves the scene that would easier if, during one of these arounded professionances the mass of these arounded concerts. we pretreed to observes the scene that would chastle it, turning one of those crowded performances, the mass of inflammable material which has been piled up, in addition to what is already stored there,—with the evident endeavor to "decorate" the place,—were to eatch fire; it required but a little fancy to conjure up a picture of an Inferno to which nothing was wanting. With the electric light, on the contrary, we should have, instead of a sweltering, garping trailing the state of the contrary. the contrary, we should have, instead or a swelering, gasping inte-titude, an audience able to enjoy the musical or dramatic fure set be-fore it. As yet, however, little progress has been made in the em-ployment of the electric light has not been a stranger to the stage for some time. It made its debut in 1846, in the "Prophète," at the Opera

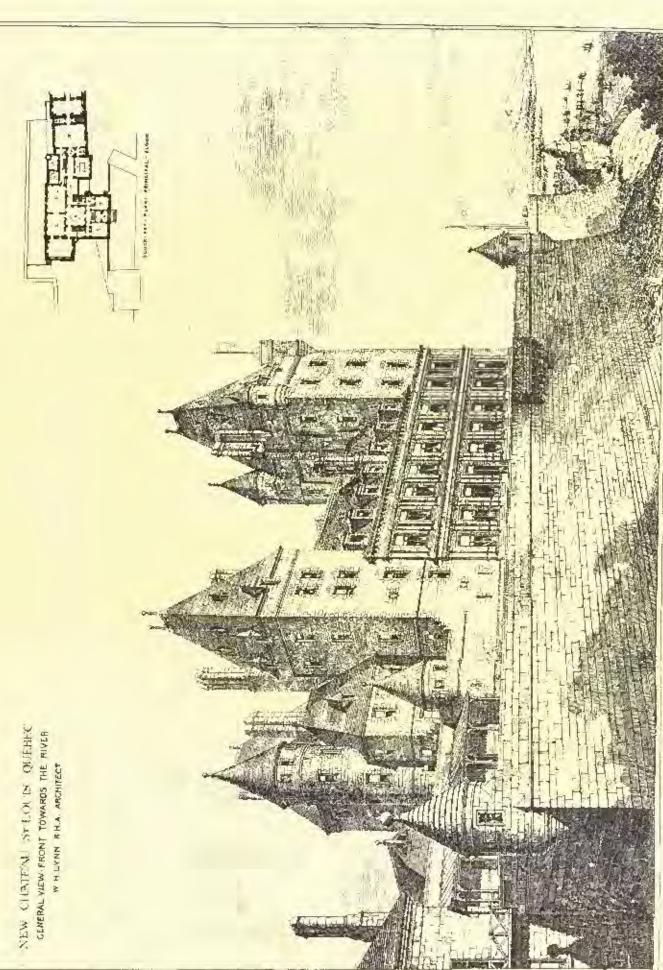
in Faris. At that early time, however, it was only employed to produce the effect of the rising sun. Its success was complete, and since that time it is rarely that a ballet or an opera has been mounted without the Introduction of some effect of the electric light. Since 1855 a host of ingenious combinations have been realized by its aid,



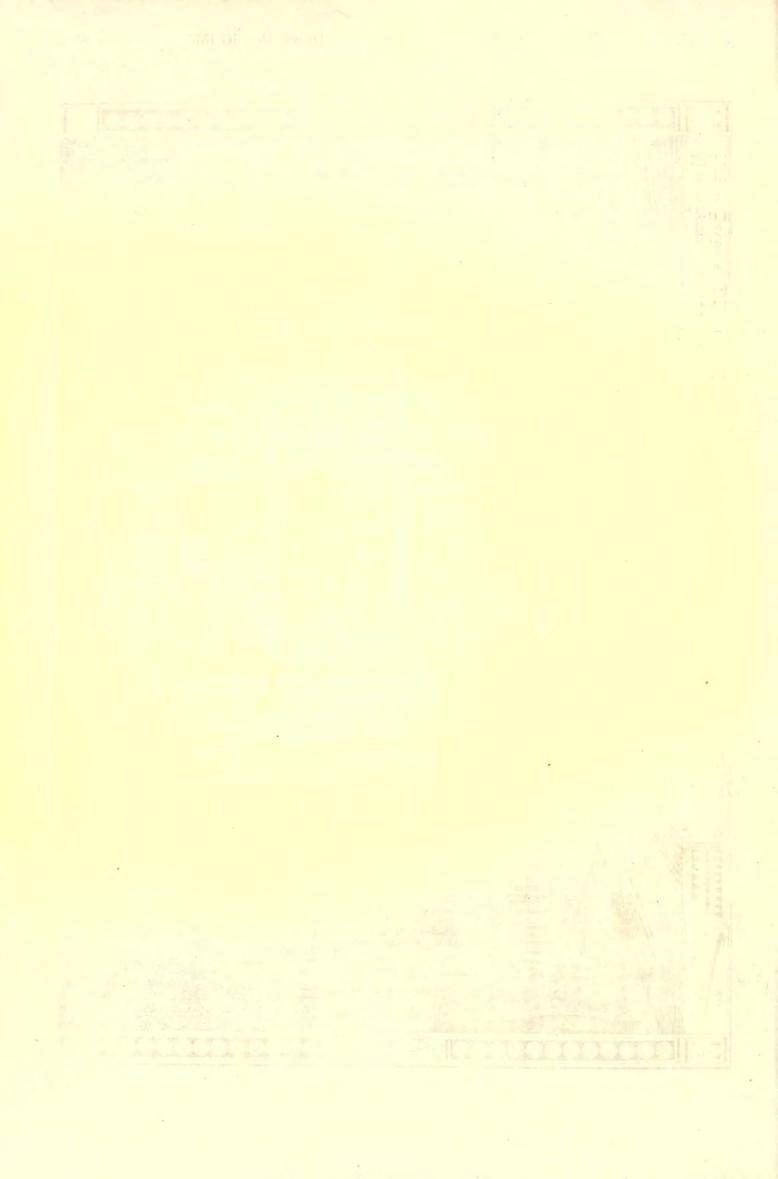


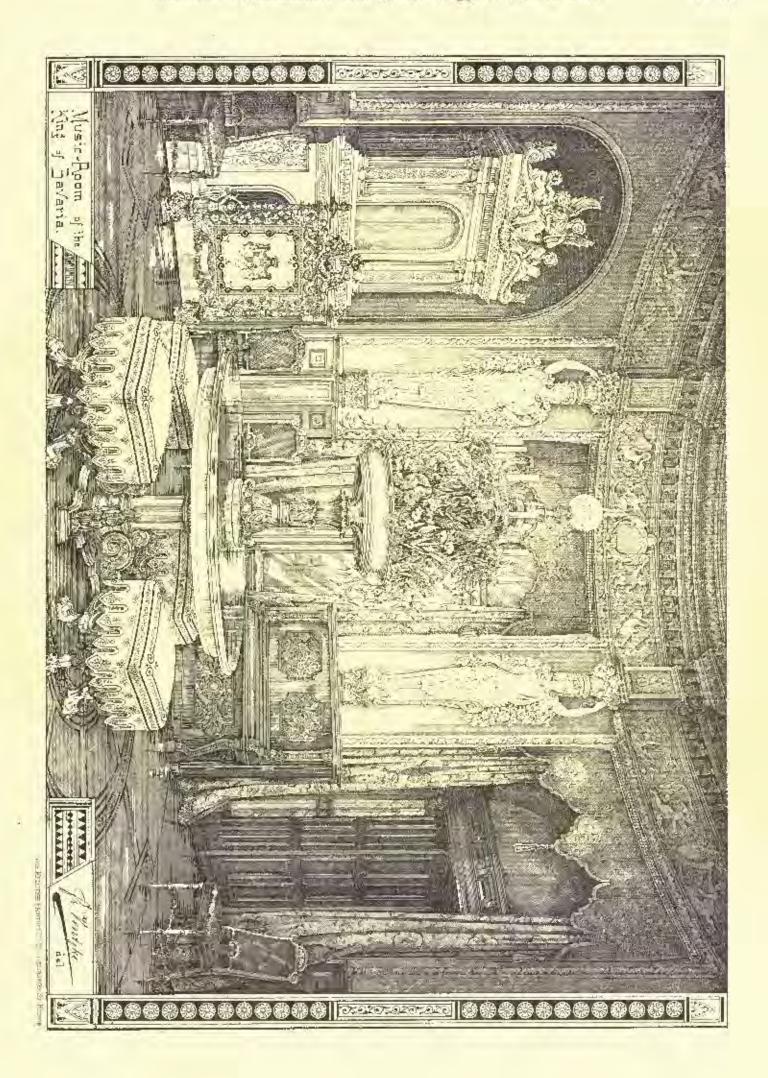






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-rainbows, lightning, reflections of the sun, etc. At the new Opera at Paris, batteries are used, the architect not wishing to betate a steam-motor in any part of the building. At the Opera in Vienna, where steam is employed throughout, use is made of a Gramme ma-

NOVEMBER 16, 1878.]

chine, which gives very good results.

The question of the cost of electric lighting is such a highly important one, and has given rise to so much discussion. But we recur to it, though we have examined it already at some length on a pre-vious occasion, when it was shown that, even under the most unfa-torable conditions, the electric light is certainly below the cost of gas for equal amounts of light. The electric light as used by the London Stereoscopic Company, who employ a Siemens machine, is stated to be three times cheaper than gas, light for light. M. Fontaine calculates the saving with a Gramme machine to be over 22 per cent. Mr. Sprague, who was recently sent to Paris by the Commercial Gas Company to report on the electric light, comes to the conclusion that gas is twice as cheap as the Jahlochkoff light. Other gentlemen have given their opinion for or against electric light with regard to its cost. But any onbiassed man not a shareholder or interested in gas companies, who has taken the trouble to look into the matter, will have arrived at the conclusion that the evidence points in favor of the new light. Moreover, as improvements are introduced In the production of the electric light, its present cost will be still further reduced. In fact, it is one of the conditions of its success that the spirit of inquiry and invention should be turned in the direction of reducing the expenses.

The great problem which remains to be solved is that of dividing the light in such a manner as to split up its intense brilliancy into separate useful atoms, each of which fractions must be powerful anough to serve for illumination under the same conditions and ac least with the same effect as gas. When that is done, but not until then, the electric light will have proved itself a powerful rival to gasthen, the electric light will have proved itself a powerful rival to gas. The stardling announcement has just been made that Mr. Edison, the inventor of the phonograph, if not of the telephone, has succeeded, in conjunction with Mr. William Walkace, an electrical manufacturer of Ansonia, Coun., in perfecting a dynamo electric machine to such a degree as to make it the very thing wanted. As no details have yet been forthcoming, we prefer to suspend our

judgment. - The Bullder.

THE ILLUSTRATIONS.

NEW CHÂTRAU ST. LOUIS, QUEBRC, CAN. MR. W. H. LYNN, R. H. A., ARCHITECT.

Wie reproduce from the Building News several views of parts of the new Chatean St. Louis at Quebec, the original sketches for which we published in our issue for April 14, 1877, together with a full description of the proposed work.

References to the Plan.

1. Drawing room, 25ft × 32ft. 10. Principal stairs.

2. Ante-room, 51ft. × 24ft. 11. Carridors.

2. Ante-room, 51ft. × 24ft. \$. Dining-room, 37ft. × 24ft. 4. Hall, 45ft. × 25ft. 5. Lineary, 22ft. × 18ft.

6. Porels.

Physiness-room, 18ft. X 18ft.

8. Waiting-room, 12ft. X 12ft.

9. Back stairs.

It2. Butler.

18. Billiard-room, 27ft. × 20ft.

14. Ante-room.

15. Armory, 42ft. × 32ft.

16. Yard.

Officers' quarters beyond ar-

mory.

CARRIAGE HOUSE AND STABLE. MESSES, L. F. OBER AND OKUROR D. RAND, ARCHITECTS, BOSTON. This stable has been built for about \$4,000, for Mr. George D.

Emery, in Indianapolis, Ind.

INTERIOR OF THE MUSIC ROOM OF THE KING OF BAVARIA, MU-NICH. DRAWN BY MR. FR. VENTZKE.

The colors used in the decoration of this room are blue and white, the national colors of Bavaria. All scriptured work is in white mar-ble except the frieze, which is moulded in stacco.

CORRESPONDENCE.

ENGLISH AND FRENCH SHA-SIDE ARCHITECTURE.

PARIS In lately writing about the new suburban houses in London, if made some reservations in my praise of them it was chiefly because I criticised them from an English point of view, which may be taken as the highest standard of domestic architecture. Still more evident is this after a trip along the coast of Normandy, where fushion in the last few years has attracted many wealthy people to build. After seeing the houses of the English painters, of which I have spoken, it was peculiarly interesting to visit Etretat, recently brought to notice by the painters Isabey and Lepoittevin, and made celebrated by the works of Alphonse Marr, till now it has become the chief summer resort of the Parisian artistic world, including, besides artists in our acceptation of the word, composure, singers, actors, and little tateurs. Offentiach, Faure, Diaz, Oudiné, and a score of well-known artists, have built there, so that one finds there the last expression of French rural architecture. The place itself is charming: a narrow valley breaks through the tony platean down to a petably breach between fine chalk cliffs, the sloping ground offers picture-que sites, and with its artistic population one might expect original and attractive

buildings. Yet from previous experience, I was really surprised to find but one or two houses which could be called picturesque or inthe tresting. One large villa there is, however, which is surkingly picturesque in the balf-timber style, and full of cosey corners and balconics looking upon the sea. This last consideration is neglected in the greater number of the houses, which are so placed a d designed as to wantouly lose the view. Can it be they are too sristocratic to look out of their windows? as is the case with the Fambourg St. Germain people, some of whose hotels, facing the beamiful Luxenhours Gardon and other fine views, are so purposely walled about, and the servants' quarters so placed that the master's rooms look only upon his own little court. In various other ways this fendal spirit of seclusion shows itself. In fact, in Paris no respectable people will he seen althing by or looking from their windows. The majority of houses at Etretat are built of small, gray cubes of flint relieved with houses at Efretat are built of small, gray cubes of flint relieved with brick, which gives a nest but severe aspect. Roughly laid stucco mixed with something to give a time-stained look is used also with some or brick finish. M. Faure, the celebrated tenor, has introduced into his brick façade large medallions of facence, but with this exception terra-cotts or tiles are hardly used. One in vain looks for a special sea-side character. Here and there an attempt is made to be rustic by trimming a thoroughly city house with wooden caves and jig-saw work, but the effect is much that of a man in a winter surtout wearing a struw bat.

At Trouville and Deauville, where there are many costly villas, the architecture is even more such as might be built in the heart of Paris. Fine, handsome stone and brick structures they are, if you will, but with no plazza or other characteristic of sea-side dwellings open only two or three months in the summer. Again, however, there is one intelligent exception. One of the largest villas at Trenvilla is framed with timber and filled in with diagonal brickwork. The derismen with timber and that it with thaginal breezewist. In design, with its bold gables and finely-carved details, is a clever adaptation of the sixtrenth century style. Indued the motives are easily traced to a fine old François I, house mouldering away in a narrow street of Lisicux, which, distinct only a few minutes by rail fuland, is filled with the best examples of turber-framed houses of various periods and designs. It is a perfect ansento in this respect, yet the most and designs. It is a perfect amsemble in this respect, yet the architects seem in more tempted, either by the desire of novelty or by that of perpetuating the style of the locality, to turn to it than a Parisian lady is to ahandon her fashions for the Normandy cap. It is curious how untialluenced by, in fact how atterly unconscious of the mediaval manial of their neighbors almost in eight across the water, the Frenchmen are. They French architects have ever been in England, and no illustrated journals from it find their way here; for in general, what the architects here cannot get from their own publications, - simple as they are there is never in them a line about England, - they are profoundly indifferent and ignorant about. A

thoroughly French trait.

These two houses I have mentioned show, however, how a French architect can succeed it be seriously attempts picturesque architecture; but it does not come naturally to him, nor can distinctively rural architecture be said to exist in France. Attempts at it generally suggest Parisians on a pionic in the country, and though the provinctal architect may have a more sincere appreciation of rural life than his city brother, his buildings do not show it. The ambition of the worthy bourgeois who builds in the suburbs of a city is to imitate a maison-à-loyer, he wants the same flat loçade with its iron balconies. In imitation of the mairie it must be isolated from all shrubbery by as broad a gravel waik as may be, and there it stands, bare and square, as decary to the Anglo-Saxon as if the architect had rever carefully proportioned the windows and cornice, made the lines of quoins to exactly correspond with them, and carved some graceful little cartouche over the door. It is no interesting question why the French, with their sensitive tasts and quick laney, should be, in rendering the outside of their dwellings attractive, so far behind a less artistic nation, for superior as their public buildings are in breadth of composition and in monumental qualities, the veriest tyro in England will give a casey, habitable character, surely essential to a dwelling, which they almost never obtain. A clew to this is suggested on noticing that the bare, box-like character becomes more apparent southward; for Italian classical influence is responsible for the theory that architecture should concern itself with monuments only. The Italians will lavish art on a fountain or a capture, but a could be all the statements of the statement sino, but a small dwelling is not worth the thought. The training of the Frenchman is against him also; since the very habit of studying for symmetry and aimplicity, by subordination of details, which gives such breadth to their large structures, prevents him from selzing upon the prettiness - pettiness to bim - which is acceptable in dwellings.

dwellings.

On the other hand, the English, applying to their large buildings the same methods as to their dwellings, fail to give to the former the breadth necessary to make them grand or imposing. Details eateh the eye on all sides, and there is no unity or tranquillity. English architecture may in fact be said to be at present confined to details, for there is little study of anything clse. If a man has a town-hall to design he at once thinks of his sketch of the tower at Bruges, and, remembering a fine dormer window at Romen, his chief aim then becomes to work in those two patterns at all costs. It is said for example of Mr. Street, that after his first small sketch be at once gives ple of Mr. Street, that, after his first small sketch, he at once gives his attention to the full-sized details, and the want of subordination of eccondary features to the main effect is unhappily illustrated in

his New Law Courts. The Frenchman, on the contrary, beginning with a free-hand sketch, studies his masses in plan and elevation; and when his plan is entirely fixed, he goes back to his small elevation, approximately fixes he proportions, then doubles its scale, which develops new defects to be corrected, repeats this process until he is satisfied, and then only he comes down to the details, which thus grow out of the requirements of the design; and it may be the building is up and the rough hewn blocks in place before the smaller

details are decided on. I believe the French forego an aid in not making perspectives of Thefleve the French forego an aid in not making perspectives of their houses; for mistending as a perspective may be in case of large structures where the distortions of foreshortenings are great, and which when built present facades seen almost in geometrical clovation, it is different with small buildings well in the plane of the pletture, and which in nature, from their small size, generally show two sides at once. Apart, however, from all this, the French have not so keen an appreciation of the pletturesque as the English. The Inter, as action, have always been travallers and accustomed to sketch. In all lands a skotcher is at once set down as an Englishman. Thus the propole at large, as well as the architects whose chication. This the people at large, as well as the architects whose education aside from office work lies much in sketching, naturally seek and note "bits" which are picturesque. On the other band the French rarely travel or sketch, and their theoretical education leads to the study of elevations and plans in books rather than of the real build-

ings. In comparing those two nations, so atterly different, it is amusing to note the effect of their characteristics at the sea-shore. The one people spend their leisure in walking, the other in talking. Consequently at the English watering places, such as Brighton, there are vast jettles running out into the sea, expressly built for "constitution-ula." Here, day and evening, built sexes tramp up and down. At the end of this walk is generally a wider place where the band plays, but where there is little or no shelter for seats. The French at all seasons like to sit in the open air and clost, and this, combined with their leve for the theatre, accounts for their easines, which at every watering-place are the centre of interest from the wide plazzus where they can sit. These casines vary from the small chalet of a little-frequented place to the magnificent structures of the fashionable ones. In general, however, they front upon a wide terrace over-looking the balling beach, and consist of plazzas, partly enclosed for had weather, of a theorem in the middle into which can be opened dancing and concert halls on either side; and these are flanked by billiard, refreshment, and reading rooms. At many places there is a small theatrical company and orchestra.

We Americans by our traditions are peculiarly open to English influences, and our characteristics as a young, enterprising nation, eager to travel and assimilate from all sides, have this sentiment for the picturesque; the recent results have certainly been encouraging. I truly believe that our finest Newport villas are, for comfort and alegance, within and without, superior to any dwellings of the kind here on the Continent, and surpassed by none in England, while our modern detached city and soborban houses also fairly rival any English ones. An Englishman may find them mero copies of his own designs, but I am confident a Frenchman can perceive in than a certain character of their own distinct from the borrowed motives. We must, however, remember that for a style to be progressive it must be modified according to its own requirements, and not by wholesale becrowing from others; and to this end the French and German methods of patient study at home should not be neglected.

In my recent letter shout the building of the American church at Rome there appeared a typographical error which I desire to correct. It reads, "a Swiss archibishop" regulated the accounts and was clerk of the works; the reading of course should be "a Swiss archibet."

FRENCH CRITICISM OF ENGLISH WATER-COLOR PAINTING.

Where it not that England, whose participation in our great Exhibition has been on so grand a scale, devotes a special gallery to water-color drawing, it would be superhous to make this branch of art the subject of an article. The other nations, including France, are scarcely represented in this specialist. Moreover, the English artists' treatment of water-colors scarcely differs from their method in oil painting; in fact, one passes from the galleries in which their canvases are lung to the one containing their drawings without being made aware of the fact by any nevel impression. We find here the same soft tones of color, the same careful and somewhat hesitating manner, which seems to dread producing two brilliant an effect, and as it were to shrink from uttering a note pitched in a key that and as it were to shrink from uttering a note pitched in a key that hight disturb the general harmony of the composition. English painters, and most aspecially water-color artists, are perfectly indifferent to what we term is moreous; their dominant proceenpation is, that the idea of the nieture should be convoved to the mind as dithat the idea of the picture should be convoyed to the mind as diright me dea of the picture should be convoyed to the inited as directly as possible; they consequently estefully avoid distracting the eyes of the spectator from the subject. Our artists take an opposite view; they paint for the sake of pointing, considering the organ of sight sufficiently precious to merit every possible effort to gratify it.

If our neighbors do not including in the seductions of the palette they have other merits not less estimable. Their composition is admi-

rable; and if they obtain the sensu of harmony by somewhat moffled tones, nevertheless they undenbtedly do produce harmony. It is, therefore, not too much to assert that if they may learn something from us, they can much to assert return us the service; and they have an idiosynerasy quite their own, whereas ours differs in nothing from

that which is common to all the art schools of Europe.

English water-color art has lost much of its individuality since the
Exhibition of 1867. It has become a serious art, which ranks with oil painting. Under these new circumstances one is tempted to inquire whether its origin has not been somewhat forgotten, and even we may whether its origin has not been somewhat forgotten, and even we may go further, and contest its raison d'êre. It undoubtedly matters not, when we see a work of art for the first time, whether it has been thrown on a canvas or on a sheet of paper, and it is a very secondary consideration what the exact quality of the colors employed thereon may be; but it is of importance to preserve a distinctness in the mathods of procedure, for a similarity in these methods would deprive us of variety in set production and serve no useful end. It had been admitted that a certain freedom of extention and a likesty in method admitted that a certain freadom of execution and a liberty in method was granted to the water-color art which would not be tolerated in oil painting. The art was like a young sister, whose giddy pranks would be condoned by her youthful grace and freshness. But the English do not look on things in this light; stiff, ceremonious, and correct in their bearing, their water-colors are after their own image. And verily we have no right to reproach them with their peculiar type; but the critic may be allowed to regret that the special method of water-colors study should be so entirely haid aside that it has lost its characteristic physiognomy, and this in the hirthplace of water-colors, and in the country which has produced a Turner, a Bonington, and a Cattermole. These remarks, however, do not apply indiscriminately to all English artists; there are some among them whose works evidence careful research for the distinctive qualities of the art, and they paint accordingly; but th y who do so are not the most admitted that a certain freedom of exception and a liberty in method art, and they paint accordingly; but th y who do so are not the most popular, for the cleverest men are in the opposite camp. I shall give a rapid sketch of each.

Frederick Walker and Pinwell stand at the head of their school, in my opinion. Both artists terminated their brief career to 1875, and it is really hard to have to commence their enlogy by the announcement of their death. I shall, however, write of them as though

nonnerment of their death. I shall, however, write of thom as though they were here to enjoy the record of their successes.

Walker has everything in his favor. Equally remarkable for the delicacy of his coloring and the accuracy of his draughtsmanship, his composition moreover displays an exquisite sense of nature, and the langlish school does not possess a more careful observer of detail. These qualities are intensified by a gift peculiar to his own mind, and that is a strongly-developed sense of humor. His water-color painting, as well as his drawings, fully justify the high position this priest. mat is a strongly-developed sense of humor. His water-color painings, as well as his drawings, fully justify the high position this artist has held in England, and his works have this peculiarity, that if they are frankly English in form and feeling they are first-rate works of art, no matter in what latitude they may chance to be. Mr. Walker has several styles, —the one siry, bright, and eleverly concentrated (this he applies to the illustration of books); the other more that of a painter, where every detail is finished with the utmost rarefulness. This style precisely serves his purpose in the composition of the home scenes in which his countrymen delight. Of his first style are the smaller water-color drawings, of the freshness of coloring and rapid smaller water-color drawings, of the freshness of coloring and rapid execution for which Johannot was remarkable, of which the most noteworthy example which recurs to me is the drawing for an illustration of one of Miss Thackeray's works. A whole drama is expressed in the size of a sheet of letter-paper; the scene conveys a powerful yet sweet emotion, of which the truthfulness to nature is notable, at the same time the score of vision is gratified by the general and hamoristic manner of the artist. "The Health to Absent Friends" is the title of his water-color drawing; equal in merit is a wood engraving called "A Bouquet." The publisher has had the good sense not to hand over to the senerace the piace of hox on which this delivious hand ever to the engraver the piece of box on which this delicious composition is designed. The scene is one of the every-day life of a laborer in his cottage, but the talent of the artist elevates the thoughts to a far wider sphere. A few touches of his pencil have sufficed to characterize the moral tone of his personages, their social position, and the feedback within their are increased.

position, and the feelings by which they are inspired.

Walker excels in his reproduction of children, as do most of his fellow-countrymen, but he does so with a freedom of drawing and a lumor which no other linglish artist has attained, with the exception themore which no other lengthsh artist has attained, with the exception of Mr. C. Green, especially in his drawings on wood, for as a painter he is less forcible. Children are prominent in almost all Walker's water-colors; the types and attitudes of his tiny personages are as varied as nature itself, and so happily given one never wearies of them. In the very centre of his "Field of Violets" a child is the prominent figure. This work is a masterpiece, and as perfect as are any of the illustrations of which I have already spoken. With infinite gravity she holds the basket in which an aged woman piles the nile gravity she holds the hasket in which an aged woman piles the nile gravity she holds the basket in which an aged woman piles the violets she has gathered in the mendow; her figure stooped, in an attitude which recalls our own Millet. His name is the only French one of which we are involuntarily reminded in the English are section; but it must be admitted that it often recurs to us. This water-color drawing of Walkor constantly reminds us of a master who would infallibly have added bette to our art school had he act, by inconceivable carelessnoss, been all but totally excluded from the exhibition. The gesture of the principal personage in it, and yet more the mothod of the artist in the composition of the work, recall Millet. There are the same incisive touches of tones at first opponent, but

gradually blended with an infinite softness, and which convey rather

more the impression of a crayon than that of a water color drawing.

The great majority of English artists, be it said, make use of color in tubes, or also have color prepared on the palette, which facilitates the retouching of the work without this being apparent. Water-col-ors admit of no such transactions. We have already said that all is Water-colwell that ends well, and we do not mean to reproach the artists who well that ends well, and we do not mean to reproduct the artists who are fless means with the fact, but we are authorized to assert that the tones of color obtained by these processes differ absolutely from the coloring of nature; that however tender may be the harmonies which result therefrom, they are based on a faction and cost less work. Delacroix's ambition soared higher; he determined to conquer by a struggle with difficulty, and can one blame him? The English are afraid of color; they dread its destroying the idea of their picture by attracting attention and diverting it from the subject. They are right to frame their water-colors as well as their paintings; at the edges of the canvas or of the paper the reflected light from gilded frames raises the tone of the ambient atmosphere, which is much work gained, and the general harmony of a picture is not the worse for this. The indiscretions of our broad white margin are thus avoided, which so often proves a touchstone by which the local truth and freshness of the tones of color can be tested.

The death of Pinwell, in 1975, proved as great a loss to the English school of art. The anthor of the "St. James's Park" has at the same time more passion and more fraction of drawing than Walker. In his compositions the preconceived idea is clearly defined, and he never allows the technical part of his work to induce him to swerve from it. It would be waste of time to attempt to assimilate swerve from it. It would be waste of time to attempt to assimilate his diverse methods of painting with the rules of aerial perspective; he only recognizes gradations of light to a certain degree and in an arbitrary manner. When he has clearly expressed his thought he stops short, and leaves the cest to mere indications. If I had to choose between what is distinctly given and what is left to the imagination, I should select, on account of the execution subtly, those parts of the work indirectly hinted at, for in these the genuits of the axist is most traily revealed. Conveying an idea has a reader artist is most truly reveaked. Curveying an idea by a few strokes requires adaptability, lightness of touch, and profound knowledge, qualities which are not common in England, where usually a certain

besitation and heaviness of moment is predominant.

Pinwell is a painter, a philosopher, and a poet at the same time; he continer the two years which are the distinctive feature of English art of the present day. At times he selects an abstraction — as, for instance, a fable — for his subject. He did this when he painted the "Pied Piper of Hamelin." At other times he paints life as it is, and relates its incidents with admirable truthfulness; but he generalizes more than do most of his countrymen, and he delighes in painting a moral. "St. James's Park" afforded him an opportunity for units. more than no most or his countrymen, and he delights in painting a moral. "St. James's Park" afforded him an opportunity for painting modern London society. It is evident that when we study this group of the varied incidents in the every-day life of the great city we roust carry our thoughts beyond what the artist actually juts on the canvas. This is more than a mere reproduction of the habits and customs of the epoch. That there is here a final and allegorical meaning we cannot for a moment discuss, if we will only study the general plan of the composition. The scene takes place on a bench in the park. The personner in the centre has a sinister repect, —that of poverty in a black coat. He is either a broken-down gambler or the discoverer of some invention on which he has vainly spent his uttermost farthing; his features bear the etamp of his defeated life. In most farthing; his fratures bear the stamp of his defeated life. In the fixed expression of his look one can see that he is on the brink of a fatal resolve. What is before him? crime or suicide? He has an honest look about him. One hand is gloved. The Thames may see the end of his history. On the right, a woman in a dark dress and a boy, — street singers both of them. The mother reckons their pennics. There is no doubt as to their story. They are clearly the victims of some heart-breaking mislorature. The boy is old enough to remember the marking his look above the first tills a boy he has a completion. ber; the way in which he looks before bim tells us he has seen better days. On the left is a young norsery-maid who blushes while she listens to the whisperings of a fascinating guardsman sitting by her side, and in front of them, a little girl dressed in velvet. While she pushes a buby along in a perambulator, with a pitiful expression she glances at the two poor musicians. Vaguely she feels they are her equals in rank. We have before us two children personitying the well-known types of rank and decadence. The bench on which this tradicenteral extent is to use an architectural expression in this tragi-comedy is acted is, to use an architectural term, accosed in the background on the right by the figure of a woman whom we have a clear right to consider as typifying modern vice, and on the left by a man very comtortably dressed, who carries in his gloved hand a brues of partridges. The contrast is too striking for us not to perceive that he represents lubor rewarded, au-dessus ses petites affaires, as Gavarni would have said. The ontline of a policeman, seen in the distance, may be said to typify the law

I cannot assert that when Pinwell composed this picture he meant to convey the ideas I have attributed to his personages, but it cannot be denied that his genius had a singular facility of impressing the most ordinary subjects with an elevated order of sentiment. He was, in sounness with the great majority of English artists, a refined analyzer. The superiority of his genius is made manifest by the conclusions his pictures force upon one. They are works of a rare degree of

elevation of tone.

I shall only speak of the third water-color drawing of this remark-able artist — "La Grande Dame," a retrospective study of the habits

and customs of England — for the purpose of extelling the brilliance and powerful harmony of its tone. The blues and reds are graduated and powerful harmony of its tone. The blues and reds are graduated to a vinous tinge, somewhat displeasing to our French vision; but as soon as one has become acclimatized to the English galleries, where this tone predominates, one admits its exquisite beauty. There are certain portions of this work, and these the least finished, as I have before remarked, the execution of which is simply superb.

before remarked, the execution of which is simply superb.

The east is brilliantly represented—perhaps, indeed, too brilliantly—in the water-colors of Lewis, who likewise died in 1875, a year so peculiarly fatal to English artists. By the clearness of his colors, which he used almost erude, Lewis seemed to enter a protest against the pale coloring of his fellow-artists. His water-colors have the appearance of a kalcidoscope; they are, however, admirable specimens of draughtsmanthip and of singular elegance of design.

Let us, however, confess that this style is of a past date. He does not stand alone; the romantic drawings of Sir John Gilbert are likewise somewhat out of date, and their intensity of tone only preven this fact. In Mr. Linton's case this energy of tone is at least equal,

wise somewhat out of date, and their intensity of ione only proves this fact. In Mr. Lioton's case this energy of tone is at least equal, but the form is more modern. His "Cardinal Minister" is a good historic painting, in the style of Delaroche; the execution displays knowledge and is worthy of the subject. Mr. Gregory exhibits two very remarkable works. His style is full of vigor, of freedom of touch; less, however, than he aims at. The title of one is "Sir Galahad," a knight of the days of remance, who is scarcely discernible in the shadows of night; the mystery which enstrands him, however, adds considerably to the improves a malared. "Si Gregory in the shadows of night; the mystery which enstrands him, however, adds considerably to the improves a malared." Si Gregory. ever, adds considerably to the impression produced. "St. George" is simply the life-size bust of a man, broadly treated in water-colors on extremely rough paper, with scratched-in effects cleverly managed. The saint is of a somewhat ordinary type, but the hands are remarkable for hearty, and prove knowledge of form. This drawing appears all the more startling in effect maximuch as the rest of the works of the English school are of a pseudiarly subdued tone. It is

like a trampet call in the middle of a concert of rippling song.

I shall not dwell on the retrespective works of Messys. Burne-Jones and W. Crane; they midder differ in style nor form from the oil paintings by those masters, already criticised by M. Duranty. "Love in Death" is nevertheless a curious work by Burne-Jones; but we ask in vain why this artist has drawn on paper instead of on can-vas a work of such dimensions, for doing so was simply accumulating its difficulty. Its artistic value is incontestable. The artist has a vas a work of such dimensions, for doing so was simply accumulating its difficulty. Its artistic value is incontestable. The artist has a perfect right to close his eyes to the progress which has taken place since the year 1500. I even consider this fact as the indication of a refused and original nature. The artists of medieval ages had among other merits that of nature's but this quality is terrible, inasmuch as it does not admit of imitation. English pre-Raphaelites prove this by the inanity of their efforts. Nevertheless they succeed in interesting us in their works. Who, for instance, could pass by with indifference "The End of the Year," by Mr. W. Crane? I fungine the buried of a year. The hold is home along in a kier; a Christian burint of a year. The body is borne along in a bier; a Christian priest leads the procession; the moorners defile—as in theatres to the very edge of the grave, which yawns beneath a portice à la Giodo. Mr. W. Crane, in a charming little landscape which is the last of his exhibits, entitled " Almond Trees on Monto Pincio," jo his adoration for malvete has not kept to the primitive Italian school, but gone off to Japan, and the combination of these two styles has suited him to perfection. I leave to others the task of proving that in acting thus the artist has sacrificed nothing of asthetic unity, and that if he has drawn from two different streams it is because both spring from the same fountain.

It is time to take leave of the English section. I shall not do so, however, without repeating once more, that the originality, the narf charm, the humor, and the honest tune of the works it contains fully justify fluir success. Perhaps they lack purely plastic qualities, but we cannot have everything. Our art section is sufficiently rich in merit to admit of our unlessitating admiration of perfections in others of which we must confess ourselves somewhat lacking .- The Archi-

DR. SCHLIEMANN'S EXCAVATIONS AT ITHACA.

DR. SCILLEMANN'S late excessations at Ithaca, though they have not given him any such prizes as he has found elsewhere, have nevertheless afforded him much archaelogical comfort, as appears in his communications to the London Times. Of Mount Actos, where was the citadel of Ulysses, he says:

"There can hardly he any doubt that, in the same manner as the Acropolis of Abbens was widened by Cimon, who included a large portion of its northeastern slope, and filled up the lower space with stones and debris, the level summit of Mount Actos was extended to the nurth and southwest he a large Cyclopean wall, still existing, the space between the top and wall being filled up with stones and debris. Thus the summit forms a quadrangular, even platform, 168 feet 8 inches long by 127 feet 4 inches broad, so that there was on the summit ample room for a large mansion and constrard: To the north and south of the circuit wall are towers of Cyclopean masonry, from each of which a large wall of immense boulders runs down. But at a certain distance these two walls begin to form a curve, and altimately join together. Two more Cyclopean walter an down from the up—the one in an easierly, the other in a southeasterly direction—and join the curve formed by the two first-named walls. Instly, I have to mention a large circuit wall about fifty feet below the upper circuit wall. This wall has fallen on the west side, but is in a marvellous state of preservation on the other sides. To increase the strength of the place the foot of the rock has been out away so as in form a perpendicular rock wall twenty "There can hardly be any doubt that, in the same manner as the Acropfeet high. In the walls are recognized three gates. Between all these Cyclopean walls once stood a city, which may have contained two thousand houses, either cut out of the rock or ladit of Cyclopean masours. Of one hundred and ninety of these houses I have been able to find the rules more or less preserved. I measured twelve of them and found them between twenty-one feet and sixty-three feet long, and lifteen feet to twenty feet hread. The usual size of the radely cut stone is five feet in length, four feet eight inches in breadth, and two feet in thickness. The size of these stones by far exceeds that of the stones in the Cyclopean houses I discovered at Mycenæ and Tiryns. Some of the houses consisted of only one room; others had four or even six chambers."

He identifies the stables of Lumena as follows:—

He identifies the stables of Lumwus as follows:-

He identifies the stables of Lumanus as follows:—

"Near the southeast extremity of the idend, about four and a half miles from Vathy, are a number of stable-like roams, averaging twenty-fire feer in length and ten foot in breadth partly nock cut, partly formed by Cyclopean walls of very large stane, in which Homer must have some the twelve swing stables built by the divine swhiched Eumanus. To the dast of these stables, and just he from of them, thousands of very common has most auction potaheids indicate the existence of an ancient resule liabilities, which Homer appears to have described to us as the bouse and station of Lumanus. This is the more probable, as at a very short distance to the east of this site, and mear the sea, is a white cliff with a perpendicular descent of one handled feet, which until now is called Korax, that is, the Rayen Rock, to which Homer refers when he represents illysees as obsleinging Eumanus in precipitate him from the great rock if he finds that he is telling lies (Od. xiv. 303). Below the Korax, in a recess, is anarral and always plentified and pure water, which he tradition identifies with Homer's formatain of Arethusa, from which Eumanus' swine were watered. I excessivated as well in the scables as in from or them, en the site of the house I struck the rock in a depth of one foot, and found there frequents of very interesting, most ancient, impainted potery, also of pattery with red bands, and masses of bruken riles. I found in my executions at the foot of Manut Actos two medals of Ithuea, having on one side a oock with the exergine 194KTN, and on the other side a Utyssos head with a content cap or plifeting plus two cones of Aguihocles of Syracuse. These latter oins are here frequently tenned and abundantly offered for sale. Also Coriothian and Roman coins are very bequent here."

The crotte of the numbers, where Llysses hid his treasures, he "Near the southeast extremity of the island, about four and a half miles

Corinthian and Roman coins are very frequent here."

The grotto of the nymphs, where Ulysses hid his treasures, he claims to have discovered, and thus describes:—

The Odyssey mentions a grutto of the nymple, in which Ulysses, assisted by Minerro, hid his treasures. Dr. Schliemann thinks he has discovered this place in a statactite greate near the little port of Dexic. He

envered this place in a stalactite grotte near the little port of Dexia. He found no treasure, but says:

"The granto is very spacious, and it exactly unswers the description of Hemer, who says that it has two entrances; one in the parth side for men, and one on its south side for the immortal gods, for no man can enter by the divine floor. All this is true; but by the entrance for the poils he means the artificially cut hole in the vante of the gratte, which must have served as a channey to lead off the sands of the storificial lives. From this chimney to the leatment of the gratte is fifty-six feet, and of course no man can enter by this way. But for ages the proprietors of the field seem to have utilized this chimney to get rid of same of the stones which channel here, for the grotte is filled five feet and six feet deep with small stones. From the vanit of the grotte leang immunerable stalactics, which have given to Honor the idea of the stone urns and suppliers, and the stone frames and looms on which the nymphs weave purple-colored mantles and vails."

NOTES AND CLIPPINGS.

PERNSYLVANEA'S THEROES. — In response to the invitation of the commission entrusted with the selection of the sculpture of the statues of Robert Fulton and General Peter Muhlenberg, which are to represent Pennsylvania in the Hall of Heroes, several sculpture submitted models of the two vania in the Hall of Heroes, several scalpiors submitted models of the two statues, which have lataly been placed at the Academy of the Fine Arts in Philadelphia. Among the competing scalptors were Mesers, Builey, Storek, Murker, Manger, Ellicott, Kern, and Roberts, all of Philadelphia; Miss Nevin, of Lancaster, Penn, and Mr. Gould, of Boston. Apparently after the modela had been submitted the commissioners decided that the work shenid be entrusted to native Pennsylvanium outy, which at once rolled Mr. Gould and any other nilens out of competition. The sward was finally sinde to Mr. Howard Roberts, of Philadelphia, who will thus have a chance to add the statue of Robert Pulton to his other works, among which are the figures of Hoster Pryane, Hypatia, and La Première Rose. To Miss Nevin was intrusted the possibly easier task of representing in markle the "fighting parson" of the Revolutionary War.

Statue of Kamehameha. — The centennial of the discovery of the Saudwich Islands by Captain Cook in 1778 is to be communicated by a broad statue, hernic size, of Kamehameha, the conquorer and organizer of the islands. Kamehameha was an ancester of King Kalakama, who risited the United States in 1875. The legislative assembly of the Saudwich Islands at Honolula voted manimously in August has the sum of ten shousand dollars for a work of art to communicate their country's here and their contennial era. The chairman of the committee, Hon. Waltor M. Gibson, member of the Hawaiian Parliament, who has charge of this commemorative inchument, has placed the work in the hands of a Boston artist, T. R. Gould.

Electnos verso on China. —An ingenious process has been recently introduced in France for electrotyping on a non-conducting material, such as china, etc. Sulphur is dissolved in the oil of lavendula spica to a syrapy consistence; then chloride of gold or chloride of platinum is dissolved in sulphuric other, and the two solutions are in this state mixed noder a gentle heat. The compound is next evaporated until of the thickness of ordinary paint, in which condition it is applied with a brush to such portions of the china, glass, or other labric as it is desired to cover, according to the design or pattern, with the electro-metallic doposit. The objects are baked in the usual way before they are immersed in the bath.

Antoenapine Telegoraphy. — Among the ingenious electrical inventions at the Paris Exhibition is D'Arllogron's sutographic telegraph. It is designed for use on the lattle-field, but there is no reason why it could not be made serviceable in time of peace. It can tensmit a map, plan, or message exactly as it may be drawn or written, and if it can do that, it can also send far and wide the portrait of a runaway bank director or any other person who may be "wanted." A general idea of it may be gathered from a verbal description, but a diagram would be required to explain its details. At the transmitting and at the receiving end there are cylinders, each of the same size and driven by clock-work, so as to revelve and to more laterally at the same rate. Each cylinder has an earth connection. The despatch or plan is made with greasy ink on a piece of fell paper, which fits accurately the circumference of the transmitting cylinder. The play parts of the surface are neu-conducting, while the metallic part is conducting. On the receiving cylinder is a sheet of chemically prepared paper. A platinum wice or "finger" is attached to each end of the wire; and these fingers are adjusted so as to move easily over the cylinders. The sending cylinder is connected with the battery, which is also in short fremit. Whenever the finger of the sanding cylinder touches the non-conducting surface the current rates go over the long wire notallic fell it passes over the short circuit, and an electric action is tell at the receiving end. Every time the current goes over the long wire the platinum finger of the receiving cylinder makes a blue mark on the chemically prepared paper. The result is that an exact counterpart of the plan or despatch is received when the work is done. Every military officer will appreciate the value of this invention. A modification of the same apparatus has been used for eigenving, but the erupleyment of it is not profitable unless a great many copies of the same design are required. — N. I. Times.

Cherous Circums Uses — In opening a burial mound at Cade's Pond, two miles northeastward of Santa Fe Lake, Florida, Mr. Henry Gillman found two instances of a peculiar kind of cremation. The skull of the subject in each case had been employed as the urn to contain the askes of the rest of the body. Neither of the skulls showed any signs of having been subjected to the action of fire.

JAPANERE AND CRIMER ART.—One or two distinctive features in Japanese art, noted by Sir Ratherford Alcock, foraish evidence of its identity with that of China. The curious fancy for the discovery of human features and forms in rocks and trees and lails, observable in Japanese drawings, owes its origin to the imagination of Chinese artists. In some of the engravings which accompany the text of the "Imperial Compandent of Literature," this conceit is very conspicuous; and in most illustrated Chinese books of travel—such, for example, as the "Fan that no"—it forms a noteworthy feature in the landscape. But the point which most nearly allies Japanese to Chinese art, and dissociates it from that of oil other, and especially Earnpean countries, is the total neglect of the correct study of the human form. In China this most from a remaideration of decency, and it was noticed that when the Chinese amines adort visited the British Museum he walked straight through the galteries of Greek and Roman antiquities without turning his eyes to the right hand or to the left, though its all other departments be examined most ravefully the objects to view. In Japan, on the contrary, the notions of decency are of quits another kind. As Sir Rutherfoul Alcock consider, "Censual apportunities for studying the made exist, or did exist until quite tacty, in the bath houses, where both sexes lashed in common for hours together; and in the stroets and on the roads in summer, it was the exception to see a working man with any clothing beyond a loin-cloth,—much too scany to interfere with any artistic requirements." And yet has says, "Canstaring how well and vigotously they [the Japanese artists] can draw the human figure in action, one is disposed to wonder that they have never learned to draw both hands and feet with something like correctness." Here we have, then, two conatries differing from all others in their neglect of the study of the human form. In the one, the oldest of the two, this neglect is a matter of principle families direct an anoth principle is known, and every opportunity is familihed by the habits of the people for the development of this branch of art. What greater proof can we have than this, coupled with the connection which we have shown to exist between the school of art in the two empires, of the obsequiousness with which Japanese arrives have followed in the wake of their Chinese masters? — Exchange.

Acoustic Galleau at Bex. — Prof. Ch. Dufour, during the last session of the Swedish Society of Natural Sciences at Rex, observed a remarkable color in the church. The Interior is of a rectangular form, with one end rounded. The pulpit is nearly in the middle of one of the large sides of the rectangle. Persons in front of the pulpit, at its foot and a little to the right, hear a speaker with great difficulty; but an unditor standing at two or three metres from the middle of the rounding part hears, with remarkable distinctness, the slightest words which are spoken at the foot of the pulpit. Dufour considers this effect more remarkable than the one in the dama of St. Panl's, at London, and than that in the halls of the Conservatoire des Arts et Metiers, at Paris.

INCODATION EROM THE NILE.—The damage by logardation on the Damietta branch of the Nile is estimated at \$2,500,000. Two hundred and fifty lives have been lost. The Government is accused of neglecting all precantions against such a calamity.

Excavaring the Tenene of Delput. — It is said that the Athens Archeological Society is in treaty for busing up the houses on the site of the Templa of Delphi, and transferring the village to a short distance off. Excavations will then be undertaken.

LACUSTRING RELICS. — On the site of the lumstrine village near Esta vayer, hald have by the lowering of the waters of the Lake of Neachatel, have been found number ornaments belonging to the age of stone, and a bountiful golden backle of the age of bronze. Four cances are visible, but they have not as yet been raised to the surface.

BOSTON, NOVEMBER 23, 1878,

CONTENTS.
SUMMARY !-
The Architects' Convention at New York Papers and He
bases Resolutions concerning Competitions The Su-
pervising Architect's Report - Rotation of Architects -
The Paris Exhibition - Mr. Leighton and the Royal Acad-
The Larm receipton - are resigned and the Royal Acad-
The Twelfer Convention of the Institute 170
THE IWELFTH LONGESTION OF THE INSTITUTE
ALL WALTER & ANNUAL AUDRESS
ARK ILLUSTRATIONS;—
Country House at Concord, Mass Municipal Offices, St.
John, N. B House in Boston The Extension of Har-
vard University Library, Cambridge
HINTS ON RULDING COLLINERS
COMMECTION DESCE.
Letter from Hartford
FAILURE OF CONCRETE FLOORS AT CAMBRIDGE, ENGLAND 174
COMMUNICATION: -
Elevated Railways
How the Errach Covernment hers Pictures
Monery Liustrated Books
Nivers our Organization
NOTES AND Chippings

THE twelfth convention of the Justitute, of which we have given a fuller account elsewhere, was duly hold in New York on Wednosday and Thursday of last week, in the Corn and Jron Exchange, whose juxtaposition with one of the stations of the Sixth Avenue elevated railroad gave the members from abroad a fair experience of both the virtues and the vices of the new mode of transit. It was not a full convention, the attendance from other cities being small; nor a long one, being limited to two days and three sessions. The reports of the officers made only a fair showing for the past year: the membership having re-mained pretty nearly stationary; the expanditures leaving a small balance on the right side, owing to the omission of the usual publication of the Proceedings; and the active work accomplished during the year baving been less than usual. The Board of Trustees reported that efforts on their part to infinence Congress in favor of government tests of building mansrials had proved ineffectual, and they had laid the matter on the table. The presidents of the chapters had been appointed a committee on the credentials of new members. The resolution of the Committee of Ways and Means revising the method of collecting the revenue, passed by the last convention, had been rejected by the chapters. The New York Chapter reported from their committee on the logal status of architects a decision of the courts which involved the denial of the protection of the lieu law to architects, the case decided being actually that of an engineer, but showing by implication that no such protection was given to professional men, since the law was intended to aid laborers only. The Boston Chapter presented a resolve ratifying the resolution proposed by the Committee of Ways and Means, and asking that the committee be made permanent. They also reported the expedition undertaken with the encouragement of the chapter by Mr. Joseph T. Clarke, one of their junior members, for a complete comparative study of all the accessible remains of Greek Doric architecture in Europe and Asia Minor. The Baltimore and Rhode Island Chapters reported indifferent success in their efforts to secure the passage of proper building laws, that of Bultimore being defeated, and that of Providence having been passed after a long struggle (of which we have here and there given an account), but shorn of many important restrictions, and with no satisfactory provision for its enforcement.

The Rhode Island Chapter presented the draught of a law imposing a fine of a thousand dollars and a term of imprisonment ment any architect, engineer, or superintendent whose ladding should fall down or fail to perform its use during five years after it was built, provided that be had full control of its construction; and a like penalty upon any contractor or builder who should provide any building material whose failure should cause loss of life, unless he could prove that he carried out his instructions exactly. This was followed by an able paper on the legal liabilities of architects here and abroad, by Mr. T. M. Clark, and led to an animated debate, some members arguing in favor of the most rigid accountability, and decrying building laws; while others demanded a qualification which should exclude incompetent architects from practice; and others called for

a careful discrimination between the responsibility of the architect and that of the builder. The subject was dropped without action or expression of opinion from the convention. The president, Mr. Walter, rend, besides his annual address, a very interesting memorial of his predecessor, the late Mr. Richard Upjohn, which it was voted should be entered upon the minutes of the Institute, a copy being sent to Mr. Unjohn's family. A paper by Mr. Littel on the use of brick in decoration provoked considerable discussion on the relative value of brick and terracotta as building materials; and others were read, on the metric system, on the faults of American prehitecture, and on plumbing. A report was received from the Committee of Ways and Means, suggesting the value of a technical examination as a qualification either for membership or for professional practice, and proposing means to secure the interest of the younger members of the profession by prizes or other appeals, and to increase the importance of the conventions. The other things which occupied the convention were chiefly matters of domestic business or discipline. The old officers and committees were reflected with a few exceptions, of which the chief was the election of Mr. Charles D. Gambrill as secretary, in place of Mr. McKim, who declined to serve another year.

Another subject which led to considerable discussion was the conduct of architects in competitions. The following resolutions

were passed:—

"That any momber of this body who, is case of competition, should propose or agree to undertake the work for which he is competing for a less commission or competantion than his follows in the competition violates the sole condition of numbership in this society, viz., "the honorable practice of his prefracion;" and that upon proof of the fact to an investigating committee, which shall consist of three Fallows, who shall he appointed by the Board of Trustees upon the demand of two Fellows of the Institute, he shall be declared to be expelled by the Honor of Trustees, without further action of the Institute as a body, and that such expulsion shall expal him also from the chapter."

"That if in case of paid connections are more to the thirty the state of the chapter."

"That if in case of paid competition may member of this Institute shall offer his services free of charge, he shall be hable to consure, if charges are made by two Fellows and a committee appointed as provided in a former resolution, for consure for violation of the conditions of membership in the Institute."

THE papers give short abstracts of the report which the Supervising Architect has just made to the Secretary of the Treasury. The notices that we have seen are very meagre, but we make out from them that the usual obstacle of insufficient appropriations has made it impossible to carry on much of the work to advantage, so that several of the buildings — the custom houses at Hartford and Fall River are quoted — must as usual be stopped, almost as soon as work on them is fairly resumed, for want of fauds. The office is being gradually relieved of the last of the fifteen per cent contracts, those for cutting the granite of the Hartford Custom House and the Boston Post Office extension having been modified during the year, so that the work will honceforth be paid for according to measurement. The Boston building is reported as advancing satisfactorily. expected that before the season closes the stone-work of the first story on all the fronts will be set; and a contract has been made for the iron columns of the basement and the beams of the first floor. The amount of the balance in hand, three hundred and forty thousand dollars, allows one to hope that it may be possible to keep the work going till the next appropriation is available.

THERE is so much persistent talking about the removal of Mr. Hill that there must be a strong effort making to displace him. We cannot presend to any familiarity with the matter, but the movement seems to have grown out of the Chicago Custom House quarrel and to be a purely local one, while the unofficially appointed successor is a Chicago man. It is safe to say, without assuming to be well acquainted with a question of which we do not know the ins and outs, that we have not seen indications of any but local dissatisfaction with Mr. Hill's administration of his office, nor have we heard of any well-sustained accusations of unfituess, by reason either of incompotency or of unfaithfulness. Indictments have just been brought against him and others for fraudulent dealing about the Chicago Custom House, but they look as if they were aimed somewhat at random, since they includo no less than eight persons, among whom is Mr. Hill's prodoccasor, now for the first time attacked. Moreover, it does not tend to give confidence in the fairness or disinterestedness of

those who are working for the temoval of a prominent official, that they should have a candidate in hand ready to push into his place as soon as it is vacant. The professional officers of the government are those who more than all others should hold their positions without dependence on polities or cliques. Supervising Architect, especially, is an official who should be as permanent as possible, in order that the traditions of his office and the continuity of his work should be as little interrupted as possible. There is perhaps no work undertaken by the government which is so likely to be marred in passing from hand to hand as its architecture, because it is never finished, and one man cannot without pecutiar difficulties take up the artistic work which another lets fall. Mr. Hill had the exceptional advantage of coming to his position thoroughly familiar with the traditions of it, and even with the details of the work actually in hand, baying had a long training in the office itself. To supplant such a man by a novice is prudent only when he has shown himself incompetent or dishonest; that any private person or cotoric should assume to urgo a successor of their own selection into his place could at most be justified only by conspicuous and commanding ability of the candidate.

The French Exhibition has been closed a fortnight after the time first appointed. There has been more or less complaint against the inmagement of it, particularly in respect to the awards, —a thing which, for that matter, is always to be expected. People have found fault because the awards were so long in coming and because when they came they were cheaponed by being lavishly and indiscriminately distributed. In spite of the warning of Vicana and the good example of Philadelphia, the inn-keepers and exactance of Paris, and the shop-keepers according to their opportunities, combined to make the way of line visitor hard. The want of suitable restaurants at the Exhibition itself was another thing that gave serious annoyance. But with all these drawbacks the Exhibition has undoubtedly been, as it was meant to be, the most attractive that has yot been hold, on account of the splendor of the display and the magnificence of its buildings, as well as the brilliancy of the city which gave it. It has probably proved somewhat more costly and less directly remunerative than was anticipated; but the French expected to pay liberally for it, and wore not in the humor to criticise the cost too sharply. The expenses were estimated in advance at something over thirty-live millions of frames; what they have amounted to is not yet told. It was assumed that the receipts from visitors would be fourteen millions of frames; they are reported at somewhat less than thirteen nullions. The receipts at Philadelphia were greater by half; but the admission fee at Philadelphia was a balf a dollar, while at Paris it was a franc. ceeds of the concessions (for restaurants, catalogues, and the like) were counted at a million and a quarter, and with an allowance of four millions for the sale of the buildings, it was concluded that the immediate deficit would be about twelve millions; which. however, was to be more than made up, it was thought, by the increased revenue from postage, telegraphic despatches, various imposts, and the reduction in subsolies to railroads. The receipts from the sale of the buildings will probably not help the deficit much, for that on the Trocadéro was built to be permanent, and now it is decided that the great building shall remain also. Champ de Mars, where it stands, has always been considered the inalienable parade ground of the Ministry of War, which has vigorously pressed its claim to recover possession, it is said. The Ministry of Commerce, however, has fought hard to defined its building, and has secured a compromise, in virtue of which, we are told, the building is to be preserved. Already we hear of a movement to prepare another American exhibition, this time in New York. We might hope that the next American exhibition would be under government authority, if we could he sure of honest management. To undertake it under private or local ambority is quite at variance with the idea of an interor local authority is quite as the la disadvantage to it, however national exhibition, and must be a disadvantage to it, however national exhibition and the management may be. This was honost and public-spirited the management may be. the rock on which the Philadelphia Exhibition almost split.

The Royal Academy has this time chosen for its president a painter whose reputation does honor to the selection. The new president is Mr. Francis Leighton, who would probably be accounted, by more people than any other, the first English painter of our day. Americans who studied the paintings at the Contennial will be likely to remember him by two strongly contrasted yet in some way analogous pictures shown there, the

"Egyptian Slinger" and the "Summer Moon." He is one of the few English painters who have tried in this day to keep to the walks of what is called "high art," eschewing pretty much all subjects from the actual life of his day and generation, and confining himself to the works of a poetical and somewhat severe imagination. A certain early tendency toward purism was in keeping with his choice of Steinle, of Vienna, the follower of Overbeck, for his master, and Ary Scheffer for the companion of his later studies. His father, it is said, gave him up rather reluctantly in his youth to the study of painting, influenced by the advice of Powers, the semptor, to whom he had referred his case. This decided, his training, which was long and thorough, was mostly German. He studied first in Berlin and thon in Frankfort, spanding afterwards some years in Rome. The first picture which brought him reputation was, characteristically, a picture of Cimabue carrying his painting of the Madonna in procession through the streets of Florence. The subjects of his other works show the imaginative bent of his mind. Among them we find "Dante in Exile," "The Triumph of Music," "The Fisherman and the Siren," "Paolo and Francesco," Tho Star of Bethlehem," "Ahab and Jezebel," "Helen of Troy," "The Syracusan Bride at the Temple of Diana," etc. He was commissioned a short time ago with Mr. Poynter to solve the overrecurring problem of painting the interior of St. Paul's. He was made an Academician in 1869, and is now farty-eight years old. He is said to be as distinguished for his social qualities as for his artistic achievement, - a distinction which is held to be a sine quanou for the just for which he has been chosen-

THE TWELFTH CONVENTION OF THE INSTI-

THE twelfth annual convention of the American Institute of Architects, held in New York last week, though it called out some unimated debates, does not seem to leave behind a great deal to record. This is portage partly because the attendonce was smaller than usual, and among the absentees were a number of members who have usually lent efficient help to the proceedings; partly because the various officers and committees of the Institute had provided less material than usual to be acted upon; and also because cutting down the exercises to two days, instead of three, which is the time-honoral length, left seant room for the lamiling of the subjects that were and might have been presented. There were in fact but three sessions, instead of five or six, as has been the usual custom, so that several of the more interesting matters were dismissed, either without a satisfactory discussion or without decisive action; while others which might have been discussed with profit were passed with a mere mention, and one paper on an important subject, which was presented late in the proceedings, was necessarily put on record without even being read, for want of time. A well-considered and well-arranged programme and the starting of several questions of professional importance made the sessions interesting, nevertheless.

Of literary matter in the shape of essays and special reports there was as large a proportion as usual, we should say, and probably as interesting; while the manner in which it was introduced, distributed, as it was, pretty uniformly among all the sessions, was perhaps as effective in securing attention and promoting discussion as any, though it does not tell so much in the retrospect as if it had been massed together in distinct sessions. Besides the president's annual address, which we print obewhere, his sympathetic memorial address, which we print obewhere, his sympathetic memorial address on the late president, Mr. Upjohn, and Mr. Clark's excellent essay on the legal responsibilities of architects were the two papers which showed careful and deliberate preparation, though there were short papers of interest from several of the members present and absent on the subjects proposed in the programme.

The reports of the officers and committees showed little change in the conditions of finances and membership. There had been but few elections and two or three withdrawals during the year, leaving the number of Fellows at sixty-five, and Associates seventy-two. The result of cutting down the annual assessments in the last two years was shown in the fact that, notwithstanding the failure to publish the Proceedings of the Eleventh Convention during the year, the revenues had barely sufficed to cover the expenditures, the balance in hand at the end of the year being less than that at the beginning, and it being thought necessary, therefore, to lovy a special assessment to provide for the publication of the proceedings of that convention and the present one. The scheme of finance provisionally adopted a

year ago by the convention was reported as rejected by the chapters. This leaves the Institute — after the general assembly has cut down the assessments, without regard to the requirements of its usual expenses and what is considered its necessary outlay, and has rejected the means provided by which it could exercise control of these expenditures—to a choice between two or three rather unsatisfactory alternatives. These are, to go on with a rovenue which obliges it to torego something of its proper efficiency; or to provide for annual deficits by a special assessment, as has been done this year; or to again increase its regular fees.

The most important question of practical hearing discussed was that of the responsibility of architects for the failure of buildings put up under their direction. This was introduced by a draught of a general law proposed by the Rhode Island Chapter, which provided that the architect or superintendent of a building should be held responsible under severe penalties for loss or injury due to the failure of his work, unless it proved that it was not carried out according to his intention, in which case the respousibility should pass to the builder. Mr. Clark's paper on the Liability of Architects also turned discussion in the same direction, citing the practice of the French courts, which holds the architect and builder to a joint liability, - apportioned according to the evidence of fault in each case, - as distinguished from the English and American habit, which allows the client or injured person to attack whichever he chooses, a privilege that is apt to lead to the discomfort of the architect and the escape of the builder. The discussion showed considerable varicty of opinion, there being, however, a pretty general agreement as to the importance of holding architects to a strict accountability for the quality of their own work, with symptoms even of a generous readiness to accept liability for the faults of other persons as well as their own. One speaker argued against the restraints of specific building laws, which, being made to sait a particular class of cases, as he had found by his practice in New York, were an actual hindrance to satisfactory construction in others; so that a building might, he thought, be built in exact accordance with the law, which would infallibly fall down. He therefore favored the enforcement of individual responsibility rather than of restrictive laws. It was time, another urged, that the law stepped in to teach persons who dared to add "archiuset" to their name the weight of the responsibility they assumed; and he thought the penalties to which architects were liable could not be too great, so that incapable pretenders might if possible be prevented from assuming their daties. A third held that the public was ready to take care of itself, and that there was no reason why architects should interpose to provide protection for it by arging legislation. If it were desired to eliminate incapable men from the profession, it was better to begin at the other end by establishing some standard of qualification, and not allowing unqualified persons to practise as architects.

The general course of the debate showed that while the liability of architects was sufficiently well recognized by them and by the public, and unbesitatingly enforced on occasion, the profession itself had no very definite idea of the limits of highlity or the hest way of enforcing it. The discussion, in fact, drifted away from what was the chief point brought forward in the Providence resolution, and suggested by Mr. Clark's paper, the point which we think most needs the attention of architects,—the discrimination beween their liability and that of the builders who work under them. At present the American practice seems to hold both of these persons liable, and as against the public the owner also, and to visit the wrong, where an injury occurs, upon whoever happens to be nearest or most visible or most solvent. Among these three the builder, being usually the least conspicuous, is most apt to get off free. When the architect is to be held as first hostage, as some of the speakers When the at the convention seemed to wish him to be, the kind of superiotendence which this position requires from him ought, it seems to us, to be clearly distinguished from that which is tacitly understood, given, and accepted in the conduct of ordinary work, and the fee for it ought to be considerably greater than is allowed in the regular schedule of charges. As for the building laws, it must be remembered that though skilful constructors would be more comfortable without them, and may even be impeded by them in their development of actual improvements, it is not they who are aimed at by them; and it is more for the general good, since, as one speaker remarked, the laws cannot be made clastic, that a capable architect should now and then he hampered

by them than that cheap Jack, who has no fear of responsibility, and who does five times as much building, should be allowed to do it at his will. After a pretty animated dehate, the convention let the subject full without action.

The most important resolutions adopted by the convention were those which we have quoted in another column, touching the commet of members in competitions. If there are in the Institute such offenders as these resolutions would touch, it would be well to make an example of them. How great readiness there would be among their fellows to pursue them to conviction remains to be seen; but to do it would undoubtedly strengthen the Institute as well as do something to abate a sexu-Another question of practice, which was referred to the Board of Trustees, was suggested by the letter of a member of the Boston Chapter, who complained of the provision in the published schedule of charges, that the whole fee or commission ou "stores" shall be three per cent. This certainly is a bard-ship to the architect, unless "stores" is defined to mean plain warehouses or something like them; for, as the writer urged, the greater part of buildings which are nowadays put up in our cities under that name require from the architect as much care and design, in proportion to their cost, as dwelling-bouses, churches, or public buildings.

The paper which led to most discussion on more technical subjects was that by Mr. Littel on the Use and Abuse of Brick in Decoration, in which the writer discountenanced this use of brick, and favored the employment of stone for the ornamental parts of buildings, on account of its superior breadth and solidity. The debate turned chiefly on the advantages of terracotts and monthed brick as building materials, and of carving in brick-work. One member objected to moulded bricks on the ground that their lines were always course and unsatisfactory, and that being moulded on the ends they gave only members of four inches wide, and so rended to monotony of scale. - all of which may he true as concerns the inferiority of brick to stone for the finer uses of building, and yet leave a wide range of work in which it can be employed to good purpose. In favor of carred brick the point was made that it had an advantage over terra-cotta incominch as it could be carred in its place; a process which its advocate said he always employed in stone carving, that he might see the effect of his work as it went on. To this the advocates of kerra-cotta replied that the clay could be carved or modelled in its place and burnt afterwards, and added, fairly enough, that it was a more reasonable proceeding to carve the clay before burning, when it was soft and tractable, than after-wards, when it had become hard and intractable. The arguments were furnished by a small number of those who were present, and there was nothing to show what the prevailing opinions were: but we fancy there will not be much dissent among architects from the general doctrine that natural stones are the first of materials for sculpture; that term-cotta is an economical substitute, which deserves respect for its serviceableness and durability, and lends itself well to artistic effect; and that brick, even when made of special quality for the purpose of carving, must be regarded as a rather ungratuful pis-uller.

The conventions are the mainspring of the Institute, so far as it acts distinctly from the chapters, and every one who is interested in the welfare of the institute should do his best to strengthen them. The most efficient means to this end is careful and early preparation. If the programmes for them could be laid out some months beforeland, instead of two or three weeks, and members could be induced to inform themselves upon and consider the topics which were to come up in them, a good deal of hosty writing, uncertain action, and rather unconsidered discussion might be exchanged for what would be of more permanent value and influence. As it is, the conventions are apt to wear an air of impromptu disputation, which takes something from the weight of their conclusions, and makes it difficult to direct their force effectively. Not that the impromptu element should be banished; it is valuable as giving life and flexibility to the deliberations of any assembly. But it would be well if it could be more solidly weighted with the influences of scrious proparation. This would certainly give more effect as well as greater steadiness to the action of the conventions. It would allow a chance to correct the folse perspective of hasty debating, and to turn their chief energies to their most impor-tant concerns. We know how difficult it is for basy men to give their attention to any occasional work before it is absolutely required; nevertheless we commend this view to those who are

to have the next convention in charge.

TWELFTH ANNUAL CONVENTION OF AMERICAN INSTITUTE OF ARCHITECTS. THE THE

PRESIDENT WALTER'S ADDRESS.

FELLOWS AND ASSOCIATES OF THE AMERICAN INSTITUTE OF ARCHITECTS.— These convocations mark the progress of our art, and tend to its development and advancement; their recurrence is, therefore, to be regarded as occasion for congratulation and fraternal greeting, in the interchange of which I take pleasure in occasing you to-day. We have assembled to hold our Twelfth Annual Convention, which, to us as professional architects, is an occurrence that we should highly prize, and embravor to make the most of. The business that will some before us relates to the heat interests of the profession, and it is expected that each one of us will have something to impact that will add to our general stack of knowledge; it therefore becomes us, in this connection, to "be ready for every good word and work."

We have been guarded and guided by Divine Providence since we last not in convention, and this we acknowledge with gratitude; at the same time we are called to how with samulation to a very great affliction.—our late beloved President, the venerable Richard Upjohn, has gone to his reward. He departed this life on the 17th of last Angust, at his picturesque home at Garrison's anothe-Hadson. I shall not now admic further to this irreparable loss, but at the request of the Board of Trustees of the Institute, I shall read a separate memorial paper on the sabject to morrow, dering the morning session. We shall therefore turn for the present from the dead to

the living.

The progress of architecture during the past year has been quite in sympathy with the times. A period of financial depression, such as our country has passed through since our last annual convention, is by no means calculated to promote the development of architectural sciones. Some works of importance have been commenced, but not many; and others that were begun in better times have contin-

ued in progress of execution, with satisfactory results.

Much has been done during the year in our large cities, in the construction of residences and buildings for business purposes, the most of which hear the impress of independent thought in architect-

oral composition, and it is not to be doubted that the development of the gentus of design is becoming every year more apparent.

While it is true that we, as architects, recognize with satisfaction the progress of our art, it should be borne in mind that we do not expect everylody to admire what everybody else does; our tastes, fortunately, differ in regard to the sestletic hamiling of most of the works that come under our natice; but that difference is the life of our art. If, in the processes of architectural design, we all thought alike, our works would be devoid of individual inspiration, and a wearisome monotony would persade all manner of buildings. It is therefore well for our art that differences of opinion in matters of taste exist among its professors, provided the individuality that characterizes our respective works is the outgrowth of genius and cultivatioa.

We have, unfortunately, some specimens of building in our principal cities, which, so far from exhibiting progress in the artistic manipulation of material forms, remind us of the primitive efforts of a barbarous age, carrying us back to Ellora, Elephanta, or Danial; it is, however, a satisfaction to know that such eccentricities are

comparatively few.

As the masses of the people become more induced with intelligent as the masses of the people become more habited with intelligent conceptions of art, whatever fails to develop the good, the true, and the heavigful will cease to be folerated. After all, it is to the estatation of the public wind in what constitutes the genius of architecture, that we are to took for the suppression of crude and inartistic building, and the promotion of a faste that will do homer to the age in which we live.

But But has been done by the Institute during the past year in promoting advancement in the professional practice of our art. The general stagnation of all kinds of business has had the effect of causing a falling off of the members in their attendance as the meetings of the respective chapters, and a general loss of interest in sciencific

If we fail to bring our minds and energies to hear upon whatever If we fall to bring our initials and energies to hear upon whatever relates to the advantament of our profession, and to keep the machinery of our argenization in active operation, we shall undoubtedly use ground with the public and come short of the elevating and enabling influences to which our art is addressed.

We shall not, however, desputed. Business men say that stagnation in trade has "trucked bottom," and that better times are before us; let us than partake of the influences of the revival in business, in commercial virglus, and apple pursulas.

in commercial circles, and apply curselves, now and coward, to the promotion of all that relates to a healthy architectural progress.

In the works of the recent past a decided improvement to the structural character of buildings is noticeable. More attention than hereuntere is being paid to the permanency of foundations and to the scientific elements of construction, thus affording conclusive evidence of the value of the improved architectural training which sembles now enjoy, and of the improved architectural training which sembles now enjoy, and of the improved architectural training which sembles is now enjoy, and of the improved architectural training which sembles is the sembles of the improved architectural training which sembles is the sembles of the improved architectural training which sembles in the sembles of the improved architectural training which sembles in the sembles of the improved architectural training which sembles in the sembles of the improved architectural training which sembles in the sembles of the improved architectural training which sembles in the sembles of the improved architectural training which sembles in the sembles of the improved architectural training which sembles in the sembles of the improved architectural training which sembles in the sembles of the improved architectural training which sembles in the sembles of the sembl denis now enjoy, and of the increased attention of architects in general to the sciences which underlie the art of building. The pursuit of knowledge in this direction, both in and out of the profession, is, no doubt, mainly to be attributed to the Institute and its chapters.

It is, however, to be regretted that we are not yet without neca-

sional examples of imperfect building, some of which have resulted in serious disaster; but it should be remarked that in most, if not in every instance, the faults have been traced to unskliful superintend-ents and mareliable contractors, rather than to the architects from whose plans they were constructed, and who in most instances had no control over their execution.

Architects are frequently called upon to furnish designs for buildings, with detail drawings and specifications, with the understanding inglied or expressed, that in order to save a portion of the full conc-mission of five per cent on the cost of the work, their services in the direction and execution of the design will be dispensed with; such economy is "penny wise and pound foolish," as it soldom fails to result in defects in carrying out the plans, as well as in a greater ex-penditure than would have been incurred bad their author's design been properly executed; and what is still more, the false economy referred to has, in some cases, resulted in serious disaster.

It must nevertheless be borne in wind that an architect is always considered by the public as responsible for his designs, whether he is employed to see them executed or not. Should they be committed to unskilful hands and be mutilated ad libitum, and so imperfeetly executed as to result in a want of stability, he need not expect that public opinion will exemerate him from a certain degree of blame, however perfect his design of construction may have been. Not only is the permanency of a structure affected disadvantageously by in-trusting its execution to irresponsible mechanics, without professional guidance, but its architectural proportions and appointments are sure

to be hardly dealt with.

It would be well for the profession and well for the public if architects would decline to farmish designs, unless it were understood that

they are to supervise and direct their execution.

It may not, however, he politic for an architect to insist in all cases on such an understanding; but it is obvious that the fewer drawings be commits to the manipulation of maskilled hands the safer will be his reputation as an architect and the more satisfactory will be his practice

As the objects which suggest themselves for the emsideration of the Institute cover everything that relates to architecture, it is contently proper that some attention should be given to the subject of the laws which govern the erection of buildings, wherever such laws

The Institute is obligated, by its relations to the building public, to inquire as to the puwer vested in building inspecture, particularly in our large cities; to ascertain their qualifications for the proper discharge of the duties pertaining to the office, and to inquire into the efficiency of the laws by which they are constituted and governed, and, in case the public safety requires it, to recommend to the cunstituted authorities, especially of our large cities, such changes in existing laws and the processus of their execution as will insure greater safety to the public, and a higher degree of architectural propriety in the appearance of buildings throughout the country.

Permit me to say in conclusion, that although our professional co-

gagements during the past year may not have been on as extensive and magnificent a scale as we could have desired, we have all, no doubt, added more or less to the architecture of the age in which we live; and it becomes a question for us to consider, whether in our works we have in any degree cultament the dignity of our profession and the well-being of society; whether we are progressing in a purer, higher style of art; and whether the developments of our genius, as we have embodied them in material forms, have an educating effect for good on the public mind. If such is the result of our doings, we have consciousness of progress to nerve us for the future, and the satisfaction of knowing that the world is the better for our having fived.

THE JLLUSTRATIONS.

HOUSE FOR E. S. BARRETT, ESQ., CONCORD, MASS. MRSSRS. PEABODY AND STEARNS, ARCHITECTS, BOSTON.

THESE are three preliminary sketches successively made for this country-house. It is now being built in the main live the large sketch, and somewhat like the small one that shows the opposite Fides.

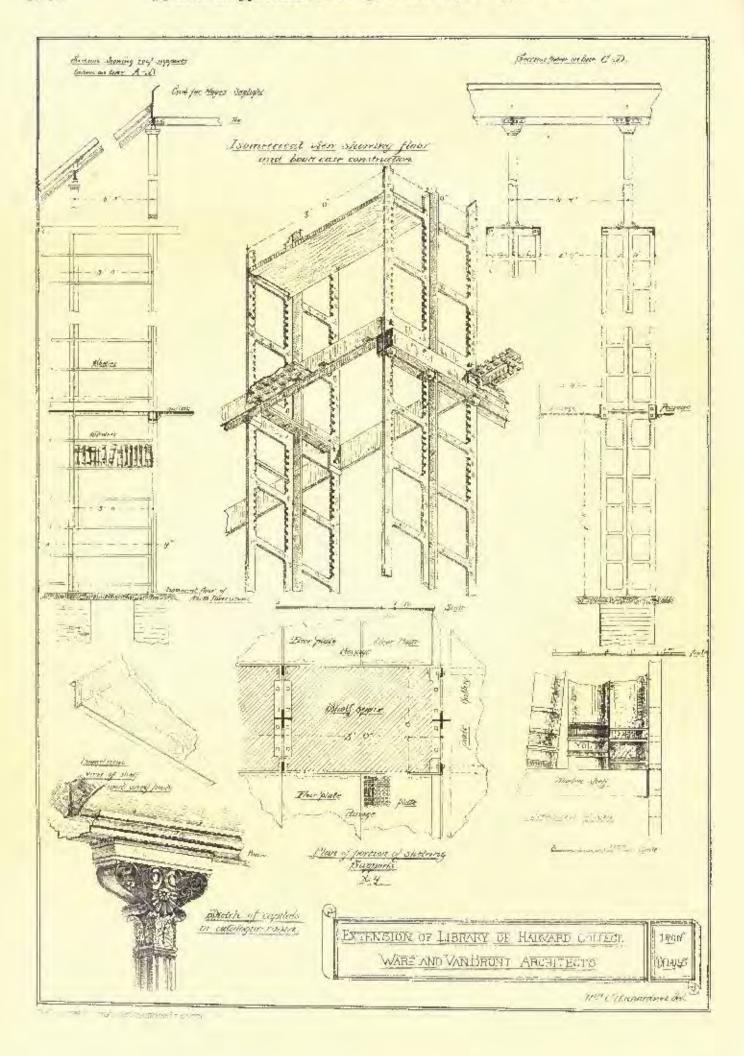
MUNICIPAL OFFICER, ST. JOHN, N. H. MESSES, MCKEAK AND FAIRWEATHER, ARCHITECTS, ST. JOHN.

HOUSE ON COMMONWEALTH AVENUE, ROSTON, MASS. MESSRS. KIRBY AND LEWIS, ABCHITECTS, MOSTON,

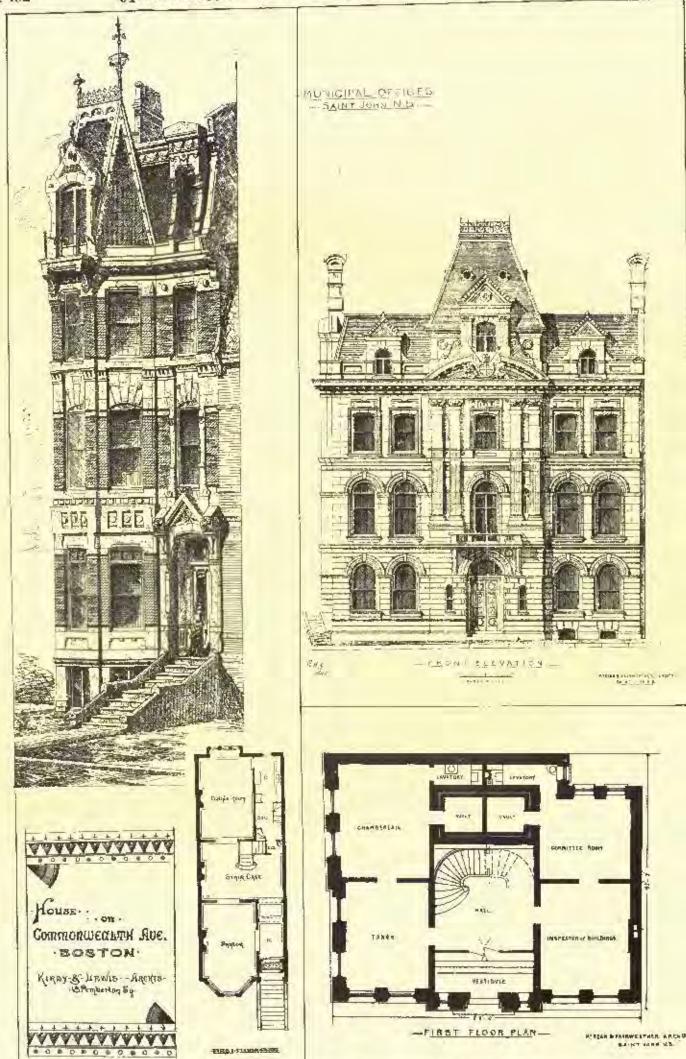
DETAILS OF THE NEW EAST WING OF THE LIBRARY OF HAR-VARD UNIVERSITY, CAMBRIDGE, MASS. MESSES. WARE AND VAN BRUNT, ARCHITECTS, BOSTON.

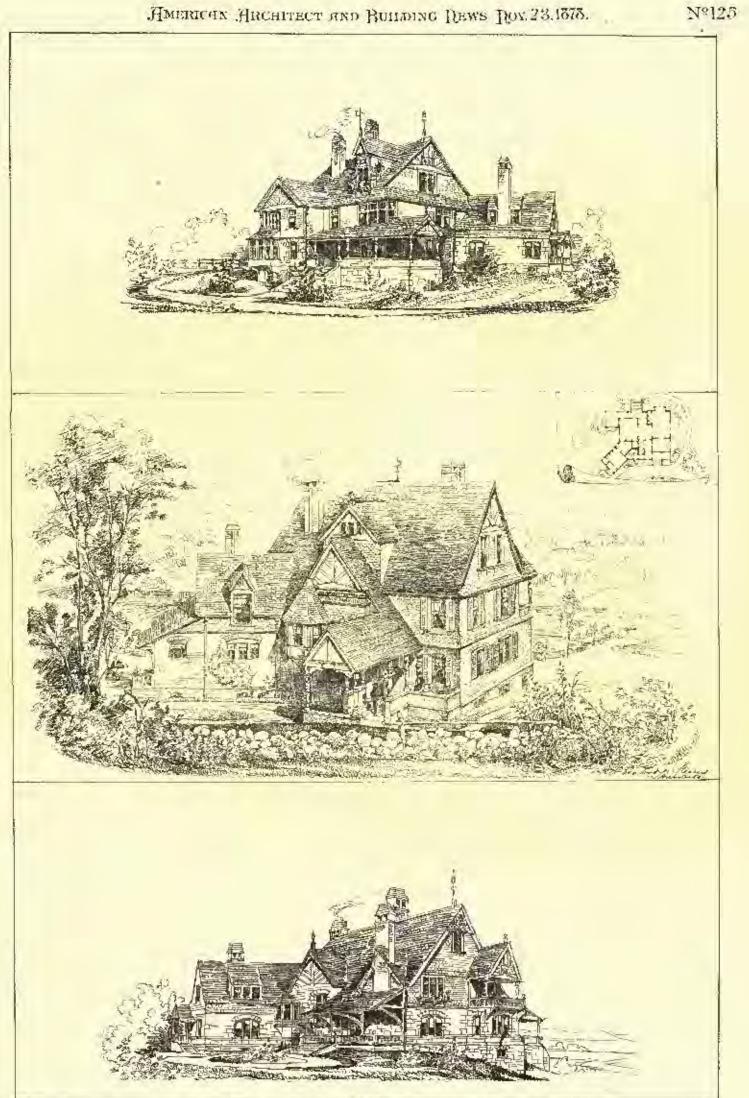
This design is intended to most the complicated service of a great library, according to the new conditions of the catalogoing, distribution, storage, and delivery of books. The book-room is divided into server stories, each seven feet high, by floorings of upon iron gratings, resting upon a series of transverse bookcases, also of Iron, two feet and dight inches apart, arranged to incilitate the more concomical and compact storage of books, and their scientific distribution upon the shelps, so as to be upon toward expressible to the official upon the shelves, so as to be most rendily accessible to the officials of the library. The structure is wholly fire-proof, and is divided from the old library by fire-walls. It is intended to arrange the old library for a reading-room for the students of the university. The new book-room will accommodate from two headred and fifty thou-

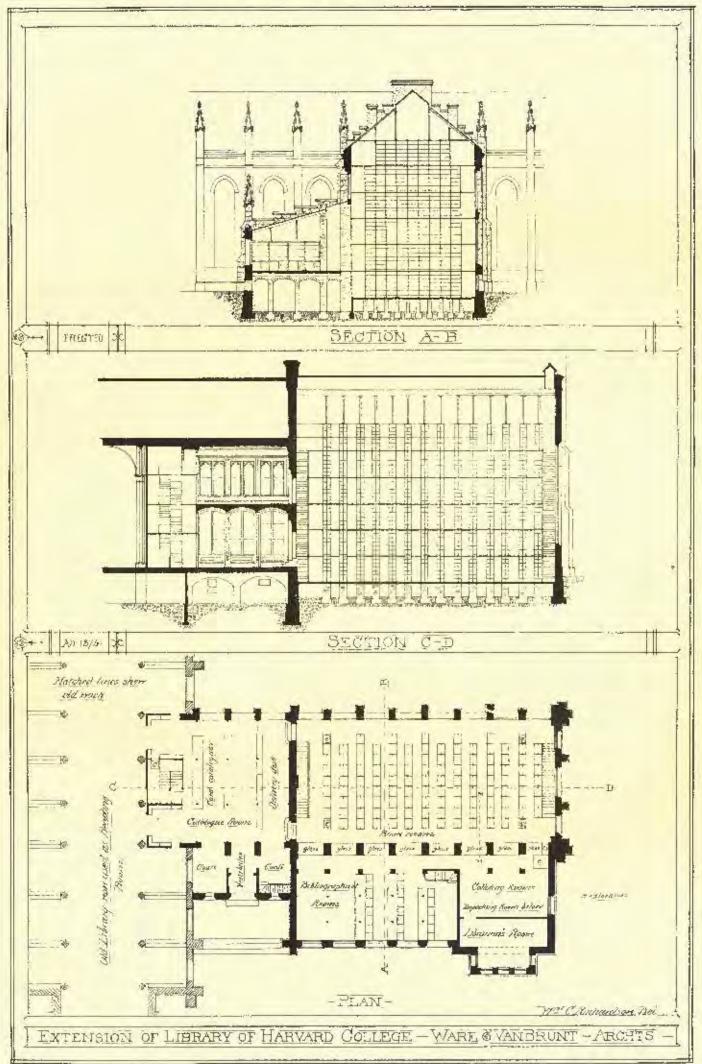


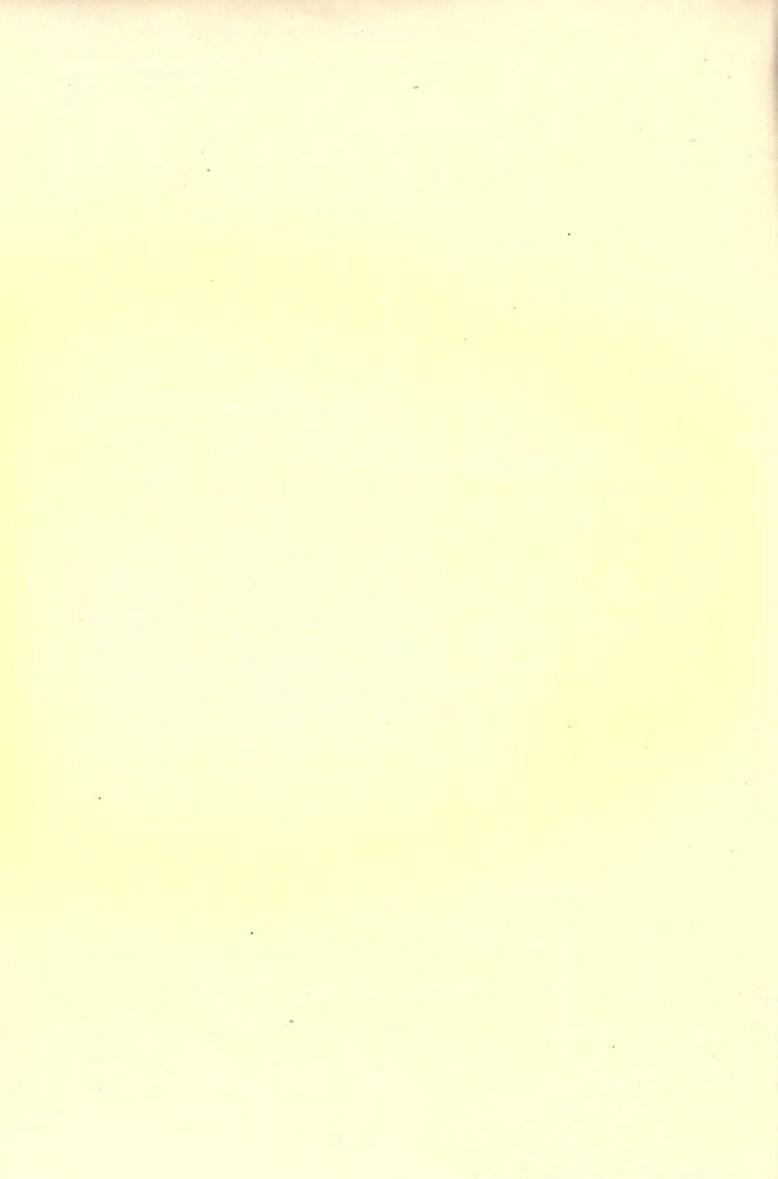












sand to three humbred thousand volumes. Accommodation is provided in the south aisle or lean-to for the hiblingraphical department, at present carried on with from fifteen to twenty assistants.

ART STUDIES.

PROFESSOR COLVIN recently told the students of the Brighton School of Art that :

They must remember that to learn to draw, paint, and model up to a certain point was very far indeed from learning to be an actist. The profession of an actist, as he understood it, was to follow one of the greater and higher branches of the fine arts, to produce pictures or statues that should be things teally worthy for cultivated beings to look at, and capable of giving them the bigher kind of pleasure which it was in the nature of sculpture and painting to give. He said, and with all seriousness, without meaning disrespect to any one, that of those who practised these arts as a profession at the present time in England, or in any other country of Europe, the larger part had much better not have practised them at all. He did not say that they had better not have learned to draw. Far from that. But he meant that a picture was not worth painting, and a statue was not worth modelling, and that neither was worth looking at, unless they attained a certain degree of excellence. The curse of modern art exhibitions, and of the quality of modern art generally, was this; that it was fairly dexterous, and showed a certain amount of skill, but was not good enough to have easy sufficient reason for existing. He was very glad to have that some agreed with what sounded rather a hard saying. He did not wish to quarrel with the pre-ent century, which was one of most interesting that ever existed, and had describe of its own. But be did want to fuce and realize those conditions which necessarily altered altogether the character of our art in comparison with that of the ages which we were justly accustomed to

think of as the gent ages of art.
In the Greek age or the medieval age there was no subject which man could think of which he did not view in a fashion that suggested Images of art and images full of awe and worship, conceptions of the kind which most raised and hispired the faculties of the artist to high contemplations, and to the production of whatever likeness of Divinity he could imagine. The ancient Greek with his religion, which invested all the forces of the world with human forms, could positively not carry on any of the ordinary occupations of his life, could not think of anything or do anything at all, which did not suggest to him a statue. This was one instance of the manner in which goes to him a statue. This was one instance of the manner of the Greek's way of looking at the world burned all the accidents of his life to forms of any. If a rich Greek had been sick, and had his life to forms of any. his life to forms of art. If a rich Greek had been sick, and had come —as the cich Englishman comes to Brighton — to a place in Thesaly famous for its time air, and had gut well, he would seknowledge his recovery by ordering a has-relief, in which would be figured the god Æsculapius and his daughter Hygica, the goddess of health. If he had been out at sea and had had a nerrow escape from a storm, be would similarly definate a work of art to Neptune, the god of the sea. All that we recognize as realism, or years painting, and most of our portraiture, hardly existed at all in the great day of Green. Jumping the interval to the medicaval ages, there was to be found a similar sort of conditions. The painter of the Middle Ages was not set to choose from the life of every day his own subject, to illustrate something out of a novel, or to catch at something which had pleased him in the street; he was not set to invent a new subject every time he wrought; but he was set to paint at one or another of that eyele of subjects on which all the higher and more solemn thoughts of men were fixed, — the eyele of the Christian religion, with its Divine and the attendant figures. The concentrated efforts of many generations of painters were spent in giving to these prescribed and uniform subjects all the sublimity, all the majesty, all the tenderness, which long, devout, and ardent thinking could give them. It was not until the modern achoes of painting dawned in the seventeenth continued. with the Datchmen, that the range of art was, so to speak, thrown open. The artistic mind of Europe thencolorile ceased to move along these narrow lines of definite and prescribed religious concep-

along these narrow lines of definite and prescribed religious conceptions, and spread itself along a thousand tracks,—the tracks of daily existence, of landscape, of genre, of anecdete, and the rest.

All that art of ordinary life and ordinary nature, which was to be seen in the exhibitions of the present day, and which formed the staple of art as we knew it, had been invented latterly.—within the last two hundred years. A whole enormous cycle of things, which people used to think of as locarnated in divice persons, or personified in human images, had passed out into the pale and bloodless region of abstract ideas. And with this change there was naturally a corresponding change in art. Art, descending and spreading itself to responding change in art. Art, descending and spreading itself to right and left, became comparatively trivial; as the strict's thoughts were no longer connectrated on some one dominant cycle of bless, which aroused all his emotions and naturally suggested forms of beauty, so his work lost its high protic character. If the artist were of a prosale temperament, he saw what was preside in the world, and painted it. We now found fault with an artist if he painted an old subject. We looked always for novelty of invention. And so it came about that the besetting sin of modern art was a prevailing triviality of conception, and at the same time a prevailing commonness of execution. It was no part of his intention to quartel with the changed conditions of the time. They must accept the fact of art having come down and spread itself over an innumerable new

range of subjects. Only let them insist that the work should be really excellent of its kind, that the artist should be a man, been by the power and intensity of his nature, to add something permanently pressions to the aspects of every-day life, and enery his skill of hand to a suriously excellent and exceptional pitch. He believed that, when all of us were taught from childhood to draw, and when our eyes were somewhat trained to learn what was really excellent, and to refuse what was only telerable, we should cease to accept a large portion of the current art of to-day. A greater number of artists of really high power might be thrown up from among the population, but the standard of what would be thought worth having would be very greatly raised. This sounded as an antagonistic and a discouraging result to expect from the spread of the kind of teaching which his hearers were receiving and succeeding in at their school, but he did not think that it was really to be considered as discouraging. He did not at all know how many among the prize winners of the evening might have set their thoughts upon the career of an artist. No doubt some had. Then let them well consider whether they felt willin them the true calling and the power for that high career. Many others, no doubt, - some they knew from the nature of the prizes and certificates won, — might not have that intention, but had the intention, at any rate, of following the career of teachers of art, in the sense of teachers of those manual exercises of drawing, painting, and modelling which were the foundation of art. That was a must honorable cateer, and one certain to come more and more into demand if education in these exercises became almost universal. The Architect.

HINTS ON BUILDING CHIMNEYS.

A proap, deep, and substantial foundation is necessary, — one that will not settle or be disturbed by trost. If the chimney is built in or rests upon the wall of the basement or cultar, the wall at that

and reses upon the wall of the basement or callar, the wall at that point should be sufficiently broad.

2. The chimney should be perpendicular, straight and smooth, without angles, econers, jogs, or contraction, and at majoint in contact with wood; with a space of an inch or more where it passes joists, ratters, or timbers, or through floors, ceilings, or roofs, and at least four inches between the back of the chimney and the end or side of the childing. Julists should not be masoned in or rest upon or against the chimney wall, but a header well removed from the chimney each for their amount. An additional crosses when the chimney each for their amount. or against the enumery war, but a header were removed from the chimney used for their support. An additional reason why chimneys should be built very strong and entirely free from contact with any wood in the frame buildings of our western country is that they are so often what is known as "balloon frames," so lightly put up that they are always liable to be shaken by our heavy winds so as to

cause cracks in claimacys otherwise constructed.

3. The walls of the chimner, when built of brick, should be six, eight, or more inches thick. A chimner with six-inch walls, the inside course set on the edge and bound with brick that transversely every four or five courses, is nearly as safe as an eight-inch. Where an eight-inch wall is laid it is perhaps better to leave a space of about an inch between the two courses of brick, occasionally binding by laying a brick transversely. A wall of this kind will not heat so as to endanger wood even in pretty rlose presimity. The chimney should be put up at a time when free arcess can be had by the musons to every part of its putable, before juists and other the misons to every part of its untside, before joists and other timbers have been placed in the way and before the roof has been put on. Funr-inch wells are unsafe at the best, and particularly so if there is any truth in the theory that brick exposed to hot air or steam will in time show a larger amount of heat than is at any time to the heated air or steam passing by or in contact with it, that is, if brick will accumulate heat as we know some metals and minerals do. We know of some facts that seem to support this theory. If it is true, many queer fires from furnaces and chimneys will per-haps he more sui-factorily accounted for.

4. There should be openings at the bottom of the chimney and of each separate flue for the removal of sort. These openings should be closed with a heavy iron box or scoop-staped stopper. If left open the draft will be affected, and hesides, there will be danger of fire falling upon the floor. These sort boxes, or scoops, unless made of heavy iron, are liable to rust out, owing to the damp soot and

pyroligneous acid.

5. The chimney should be smoothly plastered with a mortar com-posed of one part fresh new dung and three parts ordinary nortar. The mixture should be made from time to time, as needed, and ap-plied before it has time to set and become hard. A chimney so plaspiled before it has time to set and become hard. A chimney so plastered will soon present a hard surface nearly as smooth as glass. Soot will not accompliate on the sides of the due, and the draft will be quite parfect, other things being observed. The draft will be still further improved if the area of the flue is increased one inch every ten feet from the bottom to the top.

6. The due for an ordinary dwelling fire-place or stove-pipe should have an area of at least 128 square inches for a wood or soft and fire and not less than 26 square inches for a wood or soft and fire and not less than 26 square inches for a wood or soft and the soft and so the soft and the soft and

the end fire, and not less than 96 square inches for a grate or stove turning bard roal. Where large wood or soft roal fires are required, the area should be 192 square inches. Each fire-plane or stove-pipe should hive a separate flue, otherwise you cannot rely upon the draft. If for any cause more than one stove-pipe is to enter the same

⁴ From a juper read at the Indosertions' Convention, at Chicago, by Mr. Daidel Morse, of the House Insurance Colonius of New York.

fine, the size of the fluc should be increased one fourth for each ad-

ditional pipe.
7. The hearth should rest upon a brick or stone arch. and board foundations are always concealed incendiories; iron, be-

and board foundations are always concealed incendiaries; tron, because of its power to conduct least, is also unsafe.

8. The throat of the fire-place should be well contracted and pitched forward, so as to be directly over the fire. This will insure a draft, owing to the fact that the past of the atmosphere not passing through the fire, but entering the flue, will come in more direct contact with the heat, and thereby he more highly rarefied. The construction of the ritinary being right, the draft is produced by the air being ransfied in passing through and over the fire. This heated and lighter air accords the flue, while the denser air in the room rushes ferward to senally the partial vacuum. TA common but inexact way of pulto supply the partial vacuum. [A common but inexact way of put-ting the case. Fos. Am. Arcurt.] Sometimes the draft is imperfect, because a sufficient supply of air is not admitted to the room; and in

because a sufficient supply of air is not admitted to the room; and in other cases owing to an open pipe or soot-box hole. All openings should be closed with lorick and mortar or closely fitted actal stoppers. The modern practice of pasting a piece of paper over an opening should not be permitted.

9. The walls of the chimney, particularly on the back side, where it is concealed from inspection, and at points where the chimney passes near wood, should be most carefully brid, pointed and plastered on the outside. Fires from defective fines where there is no crack usually reveal the fact, if the chimney is left standing, that the wall on the lack side, at points passing near timbers through floors on the roof, lits not been well pointed and plastered on the outside. Good work has been done only at points or places exposed

floors on the root, has not been well pointed and plastered on the outside. Good work has been done only at points or places exposed to the eye, and where there was no danger from fire.

10. The practice, in many cases, of building a water-shed by projecting the brick just above the roof, should not obtain, nor should the chiamey at this point be enlarged for any purpose. The projecting bricks in a majority of cases rest non the rafters or roof boards; and if at any time the chiamey below should settle, there will be a crack and by and by a fire. Chiameys thus anlarged above the roof, presenting a massive and substantial appearance for the roof, presenting a massive and substantial appearance for below. A word in regard to chimney sweeps and stated periods for cleaning flues. In places where ordinances have been passed and enforced on this subject, and sweeps licensed, fires caused by the burning out of chimneys or from defective flues have been of rare occurrence. Ferhaps if in our respective fields we were to add in having ordinances touching this matter passed we would prove ourselves public benefactors and at the same time promote the interests of insurance companies. companies.

CORRESPONDENCE.

THE BARTFORD ORDUAN ASYLUM. - THE STATE CAPITOL.

The keen edge of distrust of Gothic architecture by the public The keen eage of instructs of Godine atchievement by the practice bereshouts, except in its relation to coelesia-tical structures, has been somewhat dulled of late, not only by the building of the new State Capitol, but also by the completion of the Hartford Orphan Asylum, recently occupied, which offers a good example of Gothie work as applied to a secular building. It has been building for the past two years from designs and plans prepared by Mr. F. Kimball, of this city. The first impression produced is that of pictoresquences. This is attained by an artistic distribution of the masses attention to constructive details as well as by the treatn close attention to constructive details, as well as by the treat-ment of the more important features of the composition. The en-tire plan as originally consemplated has not been carried out, suffi-cient accommodation for the present wants of the institution having

cient accommodation for the present wants of the institution having been provided in those structures already finished.

The chief points of the design may be summarized briefly as follows: a main building thirty feet wide by one hundred and thirty-five in length and three stories high, its length broken and its sameness relieved by the projection of a central portion finished with twin gables above the main cornice line, a long wing on the right extending beyond the frent and rear lines of the main building, an L running out from the rear of the main building to a distance of over fifty feet, and a square tower carried up at the intersection of the main building and the wing. This is finished above the lines of the surrounding roofs; the skydine is further broken by a well-proportioned ventilation turner rising from the main roof above the central portion. The wing of the asylum displays no inconsiderable variety in the treatment, and is the first to attract the eye. The front is marked by an ornate gable, the lines of which are broken by variety in the treatment, and is the first to attract the eye. The front is marked by an ornate gable, the lines of which are broken by a large chimney, and at the ground floor level a small bay window is thrown out. On the eastern façade of the wing is a square projection carried up the full height of the building, and the composition is further emphasized by a large, octagonal, wooden bay, having a bold projection from the main line of the wing and carried up through the several stories and finished with pointed roof, supronunted by a finial of metal-work. The asylum has a frontage towards the south; and upon the north advantage was taken of the natural slope of the ground to seems in the L a serviceable basement. The building depends for its color effects upon the contrasts of the secural materials used in construction; the hody of the work is of brick hild in red mortar, with a finish of brown stone and Ohin-stone, the latter being plentifully used about the principal entrances for door

jambs, etc., as well as for copings and finials elsewhere throughout the building; white brick are seen in pattern-work upon the tower and also in some half-timber work about the triple gablets which form a conspicaous feature on the rear of the main building. The moulded brick, so popular with architects here, were first introduced to any great extent upon the asylum, and, together with brick for diaper work, enter largely into the design, serving important ends in beaded window-jumbs, label moulds, cornice work, and string courses. With few exceptions the windows are pointed and evince study in With few exceptions the windows are pointed and evince study in their grouping and distribution, the large ones baving multions and transous, while the tympana are filled with brick in various patterns. The dormer windows are of wood and vary in design; and English ridge tile of peculiar design crown the main roofs as well as those of the dormers throughout, the roofs being covered with dark slate bonded at the ridge with red. The windows in the L have square heads, the jumbs being of Obio stone; the L is divided into five bays by buttresses, and the north gable is broken by a large chimney, a well executed piece of ornamental brickwork, a large shield panel giving additional effect to the work.

In the building, wide halls and corridors of generous widths give

In the building wide halls and corridors of generous widths give an air of hespitality, and the finish throughout, though plain, is sub-stantial and effective. The main corridor on the ground floor, reached through the entrunce hall in the main building, has rooms opening from it on one side only, the south, the upposite side being largery occupied by bays with slight projection, completely filled with windows which flood the corridor with light. Separate entrances for boys and girls lead from the front of the building to the main corridor; eventually, separate staircases will be provided. The large wing on the east of the main building is in part occupied by the residence of the superintendent, connected on each floor with the asylum, and contains also the two nurseries, one for day the other for night, the former apartment having a fine sen exposure afforded by the laumense wooden bay alluded to. The scaircase in the towar gives access to the first floor. Upon the first floor are found a schoolroom, dornitories, assistant-nation's room, convenient bath-room, clothes-rooms, etc. The second floor contains additional dornitories, linen and other rooms, and in a remote part of the wing a hospital; a lift in connection with the hospital caus from the basement in the second floor. The ground floor of the L contains the dininghall, a characteristic feature of the interior of the asylum. hall is \$2 × 50 feet, with open truss roof; the trusses are of solid oak and are supported by massive corbels of Olio-stone built into the walls, the lines of the trusses marking the bays, which are each pierced by triple windows filled with leaded sash. Large windows out stone multions and transoms pierce the north wall, and between with stane inclines and transons piece the north wall, and between them, projecting bobbly, is a massive, hooded chimney-piece of Ohiostone. It will be enriched by carefully executed carving and will bear upon its face a brues tablet with the names of the founders of the dining-ball. The dining-room when completed will have a high wainscot of oak upon its several sides. The kitchen, laundry, sentlery, etc., are beneath the dining-ball. Several large basement tooms serve the purposes of play rooms, and have tennented doors, convenient lavatories, and proper means of ingress and egress. The building is beated throughout by steam, the apparatus for which is beneath the kitchen. Care also has been bestowed upon the all-important subject of ventilation. Some attention has been paid to the laying out of the grounds about the building, and altogether the naylum stands out prominently among the newer buildings in Hartford.

Work upon the State Capitol has grown apace of late; the marble-Work upon the State Capter has grown apace of tate; the marne-work above the course of the dome has been completed, as well as the lofty pedestal for the reception of the crowning figure in bronze. The figure will have been put in place by the time this letter appears in print. The staging upon the dome will remain in its present posi-tion until next season, when it will be required for placing the sev-eral statues about the dome. These are twelve in number, and when the State has so generously given of her wealth to build this costly structure, what can be said in favor of the piece of Yankeeism which authorizes the creation of six fine statues interspersed with six authorizes the crection of six fine statues interspersed with six duplicates? Currwood.

THE FAILURE OF CONCRETE FLOORS AT CAMBRIDGE, ENGLAND.

The failure of concrete doors in the New Comparative Anatom-ical Schools at Cambridge, which occurred in Fubruary last, forms the subject of a special report by the Muscums and Lecture-Rooms Symbols to the Senate of Cambridge University, in which all the circumstances and subsequent correspondence are set forth in all the Although the building itself was a comparatively small one, the cor-Annough the intering usets was a comparatively strain and, the decrees the region dence is instructive as showing the incapacity of concrete to resist tensile strains, although it behaves admirably under compression. It is explained that the school buildings were designed by Mr. W. M. Fawcett, and were created under his superintendence in two contracts by Messrs. Bell. When nearly completed on February 18th last, a slab of concrete forming the northernmost comparate of the real superintendence in the flower with of the roof gave way and fell to the ground, carrying the floors with it and three men at work on it. The syndicate on the following day instructed Mesers. Arthur W. Blomfield, M. A. and Thomas M. Rickman to examine and test the soundness and stability of the concrete floors throughout the building. In their report they state that

the structure was three stories in height, and about forty feet from the ground to parapet, and having a basement under part of building. The external walls, which varied from two and one half bricks to two bricks in thickness, were of ample strength. The floors and to two bricks in thickness, were of ample strength. The floors and roof throughout were constructed of concrete of an even thickness of six inches, and excepting the roof perfectly level. The passages, landings, and roof were finished with tensent paving, making a total thickness of seven inches. The floors were carried on rolled iron joists of the following weights and sizes: 18 ft., bearing 9\frac{1}{2} in. deep, 25 lb. per foot run; 20 ft., bearing 10 in. deep, 23 lb. per foot run; 24 ft., bearing 12 in. deep, 45 lb. per foot run. The concease floor was carried down from the top of the gircher to the butter of the first of the firs a filling-in finished with a slope, and at the top of each girder was a joint between the several slabs of concrete. This concrete was filled in over boarding, which formed a level centre for it, and which was originally set with a camber of three fourths of an inch, which was brought down to a level line by the weight of concrete before it set. The concrete was made with six parts of clean-washed shingle passed through a one-lineh gauge, and one part of clean washed said, and

through a one-linch gauge, and one part of clean washed sand, and one part of the best Portland cement, with sufficient water thoroughly in set in one bard mass, and was fully up to this standard.

The accident second to have been caused by jarring in lifting a coping-stone, and involved the fall of a whole compartment of concrete, 18 feet by 11 feet, and the destruction of each of the thors on which the masses fell. The report adds that the concrete in the floors was very hard, although it did not contain so much sand as hight have been used. The roofing material was, however, decidedly inferior, and no floors could be expected to withstand the call of four or fire tons of material. A partion of one of the virders. eidedly inferior, and no floors could be expected to withstand the fall of four or five tons of material. A portion of one of the girders, 7½ feet long, was subsequently, tested by Mr. Kirkaldy, of Soothwark, and found to be more brittle than could be wisited for. It bore a load of 10½ tons without deflection, but broke under 35 tons, and proved to be crystalline instead of fibrons in texture. Messrs. Blourfield and Rickman therefore considered that the joists were not of sufficient strength for the purpose, and that the floors were so designed that any use to which they might be put to neshed in many instances seriously on the working margin left in the calculations. Mr. Faweett demorred to some of the canclusions in their last report, and to the proposed strengthening of the girders, and was permitted to test, with Mr. Mollett, two of the existing floors. They bore, the one a strain equivalent to 2 cwt. per superficial foot, with \(\frac{1}{2} \) inch temporary deflection, and the other nearly 3 cwt. with \(\frac{1}{2} \) inch deflection. Mr. Baldwin Latham, C. E., was consulted by \(\frac{1}{2} \) fresh the floors to be due to inherent defects in the material when applied in a large building liable to sattlement from compression of concrete floors to be thus to inherent defects in the material when applied in a large building liable to suttlement from compression of the foundation, or from settlement in the walls. Concrete, he remarks, is often liable to fall from a simple jar, owing to the drying of the outer faces before the interior has set from crystallization. As the material will resist a very great compressive strain, but cannot withstand a tensile strain, it ought not to be used in large slabs. The girders in this particular building were insufficient, and should be strengthened throughout the building. Plans were then prepared by Mr. Fawcett, in consultation with Mr. Fatham, providing for the reconstruction of the faulty compartments of roofs and floors, and for the strengthening of the rest by additional girders and columns, and were approved by Messes. Blomfield and Rickman. The syndicate, however, were not altogether satisfied with the new plans, and it was eventually decided, on the advice of Mr. Latham, to remove the whole of the concrete roof and replace it by one of wood, slated; to reconstruct certain boys of the thoors,—these, as well as those which whose of the concrete root and replace it by one of wood, stated; to reconstruct certain buys of the thors, — these, as well as those which have failen, to be of wood in place of concrete; and to strengthen the other floors with additional iron-work. These works were undertaken at onec; but, owing to the sagging and pracking of some of the old floors during the work, Mr. Latham was again consulted, and it was determined to remove the whole of the concrete floors except that un the ground level, and replace them by would. The question of the respective lightlines of Mr. Fawest and the University for the goal of these works of connective has been referred to the order. the cost of these works of reconstruction has been referred to the arbitration of Mr. Charles Barry, President of the R. I. B. A., who has taken evidence and inspected the building, but has not yet made his award. - Building News.

ELEVATED RAILWAYS.

PHILADELPHIA, PAL

TO THE EDITOR OF THE AMERICAN ARCHITECT:

Sir, — In a recent number of the American Architect you very justly pointed out that the experience of New York warned other civies that the excetion of an elevated steam railway was equivalent to the destruction of the street on which it was placed.

A plan is now being determinedly brought forward to build a steam freight elevated railroad on Market Street, of this city, from the Delaware to Thirty-lifth Street. You will realize the extraordinary nature of this proposition when you consider that the city is now engaged in building, at the intersection of Market Street and Broad Street, an enormous pile of very ornate buildings for municipal purposes, to cost about \$12,000,000, of which the marble work, chiefly for ornamental purposes, is actually under contract for five millions. for organizated purposes, is actually under contract for five millions. The building is nearly square, with four full fronts, all very costly.

The elevated railroad is to pass in such a way as to entirely destroy the architectural effect of all the fronts but one.

That is, the line of road passes up Market Street with a double truck twenty-six feet wide, passes along one half the cast front, passes the whole of the north front and one half the west front. It posing in each direction, and great expense has been already gone to for that purpose. Of all this, three fourths will be destroyed by the road, if built. has been intended to make the approach to the bulldings very im-

But this is not all. Many of the rooms in the new building have been intended for court rooms. It has been doubted whether the street noises would not greatly interfere with the transaction of the street noises would not greatly interfere with the transaction of court business, and whether it might not be necessary to keep the windows clusted, even in hot weather. Now New York experience shows that ordinary street noises are as nothing compared with the noises of an elevated railroad. On Sixth Avenue it is said to be almost impossible to carry on conversation in the front rooms, and even very difficult in the back rooms.

The absurdity of this Market Street scheme is so great that it would seem impossible of sciences if it were not being orged on by the Pennsylvania Railroad,—a corporation accustomed to my or foreits way. The engineering of the scheme is being done for the railroad by a person to whom, more than any other, Philadelphia owes

road by a person to whom, more than any other, Philadelphia owes her defective drainage.

HOW THE FRENCH GOVERNMENT BUYS PICTURES.

A CORRESPONDENT writing from Paris says: A friend writes me, asking if there is not some mistake in the price given in the newspapers for Vibers's picture of the "Apothsose de Thiers," bought by the government. They are only asquainted with the prices given by the United States Government when it orders a work of art, and are surprised to learn that the French nation only pays eight thousand frances for the enormous canvas which already has a world-wide reputation through the reproductions in photography and engraving, and that has been painted by one of France's favorities, engraving, and that has been painted by one of Trancer's lavories, whose smallest canvases, that one could put in a pocket, are sure of bringing as much. No, my friend, there is no mistake in the printed figures. Eight thousand france is all that was pain for that master-piece, and the frame which encircled it probably cost more than half that sum; but "it was bought by the Government," and we all understand here that that is to say, "We do not pay more for a painting than the cost of the material and the time of a common workman; but we have the printed by the facilities of the Laurelle of the facilities of the faci we hang the picture bought by us in the gallery of the Luxembourg — the gallery of modern paintings — amongst the great men of to-day, and you know that ten years after your death if your work is considered worthy, something more than the fashion of assason, your painting will be transferred to the Louvre, and placed beside the old and famous masters, and you become one of that definer body." And you know the promise of fame is more to an arrise than price, And you know the promes of fame is more to an arrise than price;

— srists, I mean, not simply painters, — and if the Luxenbourg

Palace would promise to bang all free gifts, every artist who could

afford to work for fame only, and many who could not, would order

a large remeas and commence a picture, and gossip in the studios

would eternally be about So-and-so's picture for the Luxenbourg.

But it is not so easy, for every year there is a committee appointed

"for the relaction of works of art for the Guyernment." This committee is formed of artists and deputies; the artists supposed to have mittee is formed of arrists and deputies; the artists supposed to have the interest of their profession at heart, and the deputies to control the artists who are supposed to have favorites amongst the new coners. Before the pictures are selected, a sun of money is voted for purchasing, and, as a general rule, the paintings are chosen from amongst those which have received recompenses at the annual exhibition, for the annual purchase of paintings is made during the Salon. If a painter receives a medal, he makes a written request as the acquainter are them in numbers his ricture, and it is remarked. to the committee, asking them to purchase his picture, and it is generally understood his request will be granted; for by his written erally understood his request will be granted; for by his written demand it is understood he accepts the governmental price for his work. Thus are ist juint large pictures for the Satou, in the hope of receiving a prize. If they are fortunate, they receive a medal, and then are also able to dispose of the huge canvas to the government. They can wish no more. If they miss the medal, then they are fortunate if they can sell to the stare to be long in some provincial gallery, for every large town has a public picture gallery, otherwise many of the huge efforts would have to be returned to the studios. — Philadelphia Bulletin.

MODERN ILLUSTRATED BOOKS.

A very few years ago pictures for books were engraved only on wood or on steel. Wood-ents, with rare exceptions, were very had. Steel engravings, technically good, failed in the artistic quality, and were, moreover, very expensive. "Books of beauty" and annuals were illustrated at enermous cost; and the price of a book no bigger were innerrated at enormous cost; and the price of a book no bigger than one of our shilling magazines was a gainea, and eren then only paid its publisher when there was a large sale. An attempt to introduce better designs was made almost almultaneously by Seymour, Cruikshank, and Hablot Browne, the last better known as "Phiz." These artists orthed their own works, and dispensed with the services of the engraver, who in other cases so often marred the best design by clumsy or conventional execution. At the present day book illustration is in a transitional state. First, we have photography, with some hundreds of processes by which the artistic drawing may be transferred to the pages of a printed book with as little interference as possible from the engraver. Next, we have pure excluing, which behors under the disadvantage of requiring separate pages and a different quality of paper from the letterpress. Woodcutting has been brought to a point of perfection it has never attained before. Some of the American engravers are far about of the Athatic, and only want artists worthy of them to make a revival of the art of Bewick possible. We have not at the present time in England a single wood-engraver of the first rank, except for faulscapes; but one or two of the French enters are able to initate steel-engraving on blocks with a success worthy of a better art. Lithography by itself is not common now, though Mr. Pooley in one of the hooks before us has used it with considerable advantage. Chromatic printing must be considered, on the whole, the coming art. Yet color is sparingly used in illustrated blooks, for the obvious reason that it can only be made to pay its expenses where the sale is very large, while it is impossible to print a great number of impressions of a volored picture without serious deterioration. Chromo-lithography led the way, some twenty years ago or more, with initations of water-color drawings, so good as to give rise to the best hopes of art of this kind. Almost immediately, however, for the reasons we have given, they fell off, and few things more deplorably bad are to be seen than the faded, crude, ragged prints from Rowbotham or Harding which hang in every lod ging-house. The demand for Christmas cards and valentines of a gorgeous kind from the recognized by several of the publishing houses that to be cheap, pool, and suitable for extensive circulation, delicate shading and half tints must be synded, and designs amployed which resemble rather a

NOTES AND CLIPPINGS.

We wish to draw attention to the publishers' advertisement on page vi. of the advertising pages, where it is stated that the numbers of this journal for Novamber and December, 1878, will be given, grads, to new subscribers who pay their subscription for the cosming year before December 15, 1878.

The Cenemary Charten, A. I. A. — At a recent meeting of the Charlenger Chapter, A. I. A., the named election of officers for the consuling rear resulted in the following rhoice; President, James W. McLaughlin; Vice-President, E. Anderson; Secretary Charles Crupsey; Treasurer, George W. Rapp.

The American Society of Civil Escribers. — At the recent annual meeting of the American Society of Civil Engineers the following persons were elected officers of the American Society of Civil Engineers for the year beginning November 5, 1873. President, W. Milnot Roberts; Vine-Presidents, Albert Fink, James B. Francis; Scoretary, John Rogart; Treasurer, J. J. R. Cross; Directors, George S. Green, William II. Paine, C. Vandervoort Smith, Thomas C. Clarke, Theodere G. Ellis.

Acquare Tenseration.—An exceedingly difficult piece of undergreened engineering, and one which foreighes an admirable illustration of the necestray of calculation based on scientific principles, has just been completed in Princylvania at the Humpton usine of the Delawere, Lackawama, and Western Railroad Company. The Stranton Republican says: "The name has been falle for improvements for some time, and the work under notice is the construction of a tunnal in the rock voin, making one slope serve the purpose for which two slopes and a "dip" were formerly employed, effecting a considerable saving in men, males, and machinery, and shortening the distance from the scene of the mining eperations to the fact of the shaft by at least 2,0.0 feet. The survey was begun six months ago by Mr. Joseph P. Phillips, Mine Surveyer, under directions of Mr. Sayder, the company's Chief Mining Engineer, and from the outset was attended with the greatest difficulty. Over seven eighths of a mile, principally through old tumble-down workings, had to be surveyed, and 85 sights, at as many different angles, taken before reaching the point opposite the shaft from which operations for the tunnel should be enumented. The next difficult feature was to strike the caset starting point, so that the tunnel, when completed, would be from a mathematically correct on grade and point. A variation of a lew feet up, down, right, so that the tunnel, when completed, which the work regarded it with some anxiety until the workmen mee in the middle of the tunnel, and proved the problem to be correct. At least a quarter of a mile of the survey was made through aid workings where the reof last fallen in, and in some places the space was no more than two feet high, so that Mr. Phillips and his assistants were compelled to crawl through it. The survey was made through all workings where the reof last fallen in, and in some places the space was no more than two feet high, so that Mr. Phillips and his assistants were compelled to crawl through it. The survey was

The Other Specialism of Iron.—The sickles found by Relvoid under the potential of the Splain, at Karma, acar Thebes, the blades which Wyse found embedded in the wall of the Great Pyramid, and the piece of a saw which Layard due up at Nimreud are the oldest known pieces of wrought iron extent. They are kept in the British Museum.

Convict Labor. — A convention of stone-cutters of the United States and Canada was held in New York on Saturday, November 2d, at which resolutions were adopted denouncing the present system of contrise convict labor as tending to bring henest labor down to the level of convict labor besides being rainces to the interests of workingmen, and requesting all workingmen to take and defeat my person who favors convict labor and demand from all persons who may request their votes, that they will oppose convict labor.

The Decay of Ivalian Arr. — The inferiority of Italian paintings and scalpiners, more particularly the inferiority of the latter, which was more of at the Centennial Exhibition, was so apparent in the Italian contribution to the French Exhibition which has just closed that it has been thought necessary, in the interests of the future development of art in Italy, to make an inquiry into the manner of conducting the various schools of not and the methods there practiced. Accordingly, the Minister of Public Instruction has directed the Commendatore Salazaro, the director of the Pinakuciacoa at Nuples, to make a teur of inspection among the schools, "with a view of discovering to what causes must be attributed the present decay of art in Italy, rendered more obvious than ever by the Italian exhibition of works of art at Proje."

Prements of the great weight of set wash-rays of state, especially when full of water and wet clothes, and provide very inadequate supports for them; that the sweating of a water-pipe can be prevented by covering it with a neu-absorbent material, such as newspaper; that a good way to present pipes leaking at the joints is to grease the gasket and surface of the pipes with tallow before serewing them besset; that a crack in an iron pump may that a water back which iron filings and sat-manumize, so as to form a rust joint; that a water back which is the larger for the boiler attached, and consequently provides how water in expose of the demand, will generate steam which will drive the cold water before it, so that when a facert is opened steam will escape at that point to the slature of the massay.

Roman Astrophyses at Strasmuno. — The process of fevelling the ground for a central railway terminos at Strasburg has led to the discovery of very many some coffins, evidently fating from the Roman period, — a fiscovery which confirms the belief long entertained that this place was the site of a Roman burnel-ground. Chuon Straub, the president of the local historical society, who takes a great interest in all such matters, has obtained from the military enthorities the assistance of several placety, and is making much deoper excavations at the new Central Station, in the hope of laying here the whole plan of the Roman cemetery, and of discovering some objects of special interest to antiquaries.

Freeness Miners, — The men live in chorons, — that is to say, villages constructed by the company, the houses being let to the men at a nominal price. Thus a miner has a compital house for \$1 a menth. There is a good deal of difficulty in gaining information in the charms in consequence of the patrice roughes. It appears that the miners are worked on a system of marchandage, which signifies that several miners make a tender for a vein, engaging with the company to extract the voil at so much the aquare yard, according to the difficulties of the task. The names have to bring the coal to the uponing of the pit, and it is drawn up by the rompany. To convey the east to the spot in question the miners employ becheves, who are either old miners are boys: When the galleries were first uponed the miners had an easy and intentive business; they worked away with their picks, the hercheurs had no distance to carry the coal, and at the coal of the day the returns were considerable. However, as the gulleries long thencel, and as the depth of the mines increased, the work became the sunglibrated of time in patring in and out of it, and the kercheurs not only took a long time conveying the coal to the opening of the pit, but they often last so much coal by the way that their cart loads were refused. Seven mouths ago Menday was suppressed, and no work was to be done on paying, which occurs twice a mouth. The consequence is that the miner has not only a much harder task than before, but he can work for only eighteen days in the month. — Full Mall Gazatte.

The Dangers of Picture Clearing.—A Frenchman, while travelling on a railway with an Italian pointer, confided to him the fact that he was the possessor of a veritable Pintarrivehlo, which had been handed down to him as an heirloom. The works of this old muster, who was born in 1451 and died in 1513, are extremely rare. The Louvre pessesses only one copy, a Virgin and child, and conneissours are even doubtful of his heing genation. The picture of the French gentleman showed great signs of agr, and was a want of hong carefully restored. The Italian, having examined it, undercook the task. At the end of a manch the picture was returned to be owner perfectly restored, and the Frenchman, who considered himself a great connoissour, paid the Italian handsomely for his skill. A short time alterward a friend, who ceally was a good judge of art, happened to pay a visit, and struck with the picture, which was hang up in a handsome tramp in the post of honor, exclaimed: "Why, you have had your Pintarricchia conied!" The picture was taken down, and the panel leing turned around showed the menistakable signs of age in its werm-eaten condition and the grain of the wood. The friend, ustamished, but unconvinced, examined it more closely. "You have not remarked," said he, "that the panel is diminished in thickness." "Why, no." "It is your ewn panel," continued he, "Int it is not your picture. The wood, being thick, has been ent fa two with a hair saw, and thus two panels have been made, on one of which was the original. This has been stolen. On the other actever copy has been made, which is the one you at pressure pesses." The Indian was obliged to confess the Irani, and also that the original had been sehl at an exorbition, — Exchasige.

BOSTON, NOVEMBER 30, 1878.

It was a happy inspiration of the same growing desire to make the best of our artistic resources which put the decoration of Trinity Church, Boston, and St. Thomas's, New York, into the hands of Mr. LaFarge, that has called Mr. W. M. Hout to paint the walls of the assembly-chamber in the New York State Capitol. The chamber is a large room with stone walls, and covered by two broad pointed vaults intersecting at right angles, also in stone. It is, we believe, the only important room in the country which is entirely walled suid vanked in stone. Above the windows in the north and south walls, in the sympana under the raults. Mr. Hont has placed two great compositions, covering spaces forty feet wide. He has taken advantage, in choosing his two principal subjects, of the coincidence of the revival of letters and the discovery of America. On the north wall he is pointing the "Flight of Night" before the advance of modern civilization; the pendant on the south wall is "The Discoverer," Columbus sailing forth to discover a new world. These two leading compositions are already well advanced, and under somewhat nevel conditions, the painting being done directly on the stone walls with no preparation of plaster.

The pictures are at once assimilated and contrasted by a fortunate treatment. In the first, we have a single female figare seated, semi-made, on rolling clouds which hear her forward through the open sky, white three decing horses dash violantly away before her, unrestrained by the hand of a groom who seizes one of them by the head. This is a conception which Mr. Hunt has long had in mind, and visitors to his studio, if - they were not formulate enough to see the original cartoon, destroyed in the Boston fire, will remember at least a photograph of it, and will recall the superb rush of these horses, which seem ready to run down the speciator. The second picture shows Columbus, as a single male figure standing in his vessel on the open sea, and attended by allogorical figures, which represent Hope, Faith, Science, and Fortune. A very ingenious device was used for adjusting the designs to their positions. The cartoons, once drawn, were photographed on glass slides and then thrown on the walls from a content. By changing the position of the camera the image on the wall could be enlarged or dimin-ished, and moved about till the figures were duly adjusted both in scale and position; and then the outlines were traced at once directly upon the wall. Perhaps we shall find that Mr. La Farge's work and Mr. Hunt's will open a new chapter in our treatment of important buildings. The one which we have before tried to decorate with mural paintings — the Capitol at Washington — had always been facilly accepted as the only one of its class; and its painting, it must be confessed, like its other artistic treasures, had not been widely enough or warmly enough admired to command imitation. Yet it is very desirable that such treatment should provait. Perhaps nothing has in times past so much encouraged the development of a general feeling for art, as the habit of seeing and studying the work of the best painters and sculptors in commanding positions and on a generons scale; certainly nothing is a greater stimulus to artists themselves. A few years ago not many Americans would have dared ask an artist of reputation to paint a wall. To-day, we fancy, few artists would refuse.

We received the text of the Supervising Architect's Report, to which we made some allusion last week, too late for notice at that time. It contains, as usual, an account of the condition and progress of the buildings now in band; a statement of the appropriations made and amounts expended for each up to the date of the report (September 30, 1878), and of the nnexpended balances; a schedule of existing contracts; and the customary list of all the buildings, finished and unlinished, which are under the care of the Treasury Department, with their cost to the present time. Twenty-night buildings are actually in progress, for which, and for buildings not yes began, the unexpended appropriations amount to about three million four hundred thousand dollars. The custom houses at Charleston and Port Huron, and post offices at Jersey City (remodelled), Parkersburg, and Trenton, are reported finished, as well as the alterations in the custom house at Pensacola. The post offices at Dever (Del.) and Covington, and Assay Office at Helena (Mont.), were to be finished before the winter, and, finally, the New York Post Office, which has been in hand since 1878, is reported entirely com-plead, the last appropriation of \$10,000 having been so nicely apportioned that the balance sheet is clean, without a cent of surplus or delicit. The principal belonces in hand are, in round numiers, for the post office at Austin (just begun), \$116,000; for the Boston Post Office Extension, \$332,000; the Cincinnati Custom House and Post Office, \$300,000; the Chicago Custom House, \$440,000; the Kansas City Post Office (not begun). \$100,000; Memphis Custom House, \$90,000; New York Barge Office (not bogun), \$210,000; Philadelphia Post Office, \$200,-000; the San Francisco Appraisers' Stores, \$108,000; the St. Louis Custom House, \$286,000; and the lineau of Engraving and Printing at Washington (just begun), \$290,000.

Constituenting the tendency of public buildings to outrun their estimates, to which we have been used, especially during the years of bigh prices, it is gratifying to find that several buildings have been finished at a cost well inside their approprintions and to be tald that others are to be timished immedistriby with the same agreeable result, and that the executing of contracts at prices below the estimates has made it possible to use a fire-proof construction in several others where wood was intended. On the other hand, the old difficulty recurs of appropriations insufficient to carry on the buildings in progress without interruption. We are reminded that the backward condition of the Boston and Cincinnati post offices is due to stoppage last year for want of appropriations, and are told that the Cincinnati building must presently be stopped again for the same reason; that the custom houses at Fall River and Hardord have been dealt with in the same way; and that the Nashville custom house must go without a roof because the appropriation was not large enough to farnish it. To refuse money for new undertakings is an intelligible kind of economy, but to provide it in such driblets that work to which the Government is fully committed cannot be carried on without constant stoppingos, is an economy which it is not easy to understand. Another kind of legislative economy was shown, after contracts had been made for the stone work of the Memphis custom house, when Congress interfered to order that Tennessee marble should be used, making it necessary to interrupt the work and increase its ostimates. A curious incident of the work in Sau Francisco is told. The cost of water furnished the Government was so enormous "exhorbitant," the report not unuaturally calls it, - heing eighteen hundred dollars per year for the supply of one building, and four thousand for water used during the construction of another, that the Government thought it wise to sink an artesian well. This it did at a cost of \$775, and got water enough for all its needs. Recent experience, apparently, has hel Mr. Hill to call the attention of the Secretary to the difficulty of maintaining an efficient superintendence over buildings at a distance from the central office, although he does not recommend any remedy.

Turn thirty-fifth report of the New York Association for Improving the Condition of the Poor contains an earnest protest against the evils of tenement houses in cities and an appeal for their reform. The physical deterioration and contagion, the moral degradation, that are bred and spread among the people who swarm in these foul lives, are vaguely known, but not realized, by those who do not see them. The character of the cyils

may be succinctly stated in a few sentences from a quoted portion of a report by Dr. Stephen Smith: "The poor themselves," he says, "have a very expressive term for the slow process of decay which they suffer, namely, 'tenant house rot.' The great majority are indeed undergoing a slow decomposition, a true eremacausis, as the chemists term it. Vice, crime, drunk-ounces, lust, disease, and death here hold sway, in spite of the most powerful moral and religious influences Their intellects are so blunted, and their perceptions so perverted, by the noxious atmosphere which they breathe, and the all-pervading fifth in which they live and move and have their being, that they are not succeptible to moral and religious influences." prevalence of these evils in New York may be guessed from some of the statistics given in the report, which we may assume to be fairly correct. The crowding of population in some parts of the city is said to exceed anything recorded in any civilized country. It is computed that in a large discrict on the east side, including the fourth and sixth wards and parts of the eleventh and seventeenth, the population is not loss than 192,000 to the square mile and in the fourth ward alone it reaches 290,000, while in the densest parts of London it is not more than 175,000 to the mile. Half a million persons are said to live in tenement houses, - say half the population, an astounding estimate which could hardly be paralleled in another city; one house is quoted which has contained no less than fifteen hundred inhabitants. In all of them a great part of the tenants live in rooms from which they never see sun or sky, and sleep in inner chambers that are absolutely shat away from the outer air. That most of the disease, crime, and violence of the city is nursed in them is known; in fact, hardly anything but discuse and vice can live and grow there. Three quarters of the disease of the city is found in them, and the death-rate is double that of the richer quarters. Ninety per cent of the children born in them are said to die in childhood.

THE trouble is hard to reach, not for want of legislation but for want of control. The laws which regulate tenement and lodging houses are strict enough and definite enough to restrain the worst of their evils, if they could be adequately enforced, but the number of these houses is so enormous as to defy efficient inspection. Their owners shield themselves behind irresponsible agents, or are out of sight onfirely, or plend poverty, and in various ways evade the law. Many are men of wealth, and of political influence of a kind against which it is difficult to contend in New York. The Superintendent of Buildings, too, so the report complains, has been backward in cooperation with the health officers, and the Building Department has granted permits for buildings which violated the law. One necessary restriction, -that no building shall be built in the rear of another without leaving an open space between of from ten to twenty-five feet, according to the height of the buildings, - has been evaded with carious ingenuity, by building the rear building first, and then putting up the other in front of it. The case becomes more difficult because the pressure of hard times has driven people more and more into tenement bouses, and these have been put up when all other building has been at a stand still, eight hundred of them having been built, all up and down the city, within the last eighteen months.

PROPLICARE apt to take it for granted that the evils of tenement houses are incurable, and that the utmost that can be done is to provide some of a better class into which those may go who will. But the case is not so hopeless. Foreign cities have taken it in hand with success. Glasgow, Edinburgh, and Liverpool have opened streets, domolished and rebuilt, at great cost, to be sure; yet there is clear evidence of improved health, and great reduction of crime in consequence. The tendency to revert to the old ills remains, but it can be resisted. But there are less heroic means by which much can be done. Tonement houses do not last forever, and it is quite practicable by good building laws to exclude from the new ones that are built the worst faults of the old. Experience abroad has shown for a good while that well-built and wholesomely arranged tenement houses can be made profitable; the example of Mr. Alfred T. White, of Brooklyn, whose Home Buildings we have before noticed (Am. Archt., Jan. 19, 1878), shows what may be done with profit in this country. His experiment has succeeded so well, says our report, that he is now putting up a third building, which is to be an improvement on the others in its provision for the comfort and health of the occupants. And while the old

tenement houses remain, which it will take a good many years to replace, much may still be done to modify their evils whenever the energy of those whose duty it is, or the pressure of public opinion, are sufficient to enforce a thorough system of inspec-tion. Among the other remedies suggested is the Philadelphia system of separate small houses, but this demands either a different allotment of city lands from that which is used in Now York, and imitated more or less closely in our other cities, or the banishment of the poor to the suburbs. Separate houses are unquestionably to be preferred for the consfort and well-being of the poor, more even than of the rich, but they are so much less economical than tenoments, when land is very dear, that they cannot be expected to supplant them. As for living in the suburbs, it is wholesome, but the experience of Paris shows that to live at a great distance from his work is a real hardship to the poor man, and is felt to be so. Moreover, unless they are compolled to, the poor will not go away from the centres. cling as persistently to the crowded regions of a town as does its business, and will rather live in wretched squalor in a compact quarter than in comparative comfort in a roomy suburh. is very little hope of doing without tenement houses, and it remains a public duty to attend zealously to their improvement.

THE most encouraging movement that we have seen noted for some time among mechanics' societies is the proposition of the plumbers and gas-fitters of Baltimore, that their city shall appoint an inspector of phombing. Phombers may be said, even more than architects, to be on probation boundays, and a readiness to take the initiative in providing proper oversight and restrictions on their work is a far healthier symptom than we find in most of the efforts of mechanics' associations or trades-Whether a city, which like Haltimore, contumacionsly refuses to provide itself with a building-law, will rise to the occasion when plumbing is concerned, we cannot guess. Perhaps the proposal to make the inspectorship solf-supporting, by making its payment depend on fees, may prepossess a municipality in its favor in these economic days; but an inspector is an officer who, more than others, needs to be resolute, independent, and impartial, and officers are not often made so by having to subsist on fees.

MODERN PLUMBING. X.

PLANNING THE ARRANGEMENT OF PRUMBING. - DOTLERS AND WATER-FRONTS.

No part of house-planning is more important than the intelligent arrangement of the planting work with regard to the course of the various pipes, both for supply and waste, upon the proper regulation of which depends in great part the efficiency of all the apparatus. One of the most important points is to avoid long stretches of nearly horizontal pipe of any kind. Waste-pipes so placed are continually liable to siphon out the traps connecting with them, and they accumulate deposit rapidly; while supply-pipes sag and become air-bound, are difficult to deain when the water is shut off from the house, and when need for but water lose heat rapidly on account of the slowness of the circulation in them.

It is also desirable to manage the pipes so that if any part of their course must be between the floor and the ceiling below, which is generally inevitable with waste-pipes, that course shall be parallel with and between the beams, not across either them, or any header, or trimmer-beam, or girder. It is evident that for a pipe ranning parallel with the beams their entire depth is available for securing the necessary pitch; where it crosses them, or the contrary, the pitch must be obtained by cutting more and more deeply into them, or horing through them; but as this last makes a little more trouble, planature generally prefer the saw, which they use in the most ruthless manner, cutting a tier of beams half through if it suits their purpose. The greatest watchfulness will not always prevent this, and even coreful boring seriously weakens the beams, so that the part of prudence is to avoid crossing them altogether.

In general, the more compact the arrangement the better. A cluster of vertical pipes with the various appliances closely grouped around it in the different stories, gives the most economical and efficient disposition, and the more nearly this can be realized the better; but where deviations are necessary, as will generally be the case, they can be much more satisfactorily arranged if the course of all the pipes is kept clearly in mind. It will often happen that a washbowl or sink is better placed at some distance from the central stack of pipes than close by, if a girder or a trimmer-beam should intervene, and a door between two fancets on the same line of supply, forcing the pipe either to dip under it or to jump over it and descend on the other side, will affect the flow more injuriously than a long circuit at a uniform level.

To provide for all eases the architect should know not only where his waste-pipes will be most advantageously placed, considering all

the circumstances, but the number and position of the hot and cold supply, circulation and expansion pipes in every part of their course, the vent-pipes from the trups, the outlets from the sales, the tell-bale from the tank, and the ventilation pipes, if any, from closets or bath-rooms. With this knowledge it is a simple problem, but one too often neglected, to manage the disposition of closets and pantries. adding a cupbrard in a convenient corner, building a permanent wardrobe in one room, or finishing another with a wainsect with some of the panels removable, so that in the completed house all the work is found to be accessible, yet inconspicuous; the shut-off cocks within easy reach, instead of being buried in coal-hins or hidden within floors; the supply-pipes secure against frost; and the colored ceilings safe from the danger which always attends the passage of water-pipes over them. The architect should have confidence enough in pipes over them. The architect should have confidence enough in his knowledge to describe with precision in his specification the course of each pipe, indicating the levels in the different portions, so that the steady ascent and descent shall be everywhere maintained, describing minutely the deviations from the direct line which may be necessary in order to carry up the pipes in some convenient corner, and fixing the position of cocks and traps. Without such evidence of understanding of the subject as shall command the respect of the plumber, he is likely to find his plain intentions disregarded on one pretext or another: the pipes carried across the beams by the shortest cut, or ascending in the studding of the parlor walls, so that he is compelled to spoil the wall with a board casing; or perhaps the soil-pipe bulging out of the plastering in awkward places. Not even the best plumbers have much consideration for the woodwork and fresco which are to come after them, so long as their work is properly done from their point of view; so that without a clear and exact specification some such annoyances are to be expected. But with one who is incompetent as well as careless worse evils may follow: boilers collapsed for want of expansion pipes; traps omitted; tank overflows led into soil-pipes; closens supplied from the same cistern as the drinking water, or by a valve on the direct supply; and other anneying and dangerous faults, for which it is impossible to bring the plumber to account, because he can successfully plead that these ignorant and shiftless modes of work are those commonly followed, and that his specification was so unpractical or so indefinite that he had not clearly understood from it that anything out of the common course was expected of him.

Taking the simplest case of supply by a service pipe brought into the cellar from the street main, we have the choice of two modes of distributing the water over the house; either the pipe can be earried up through the house, throwing off branches on the way to all the cold-water cocks, and terminating at the highest fancet; or from the street supply a single pipe may ascend to the highest part of the house and empty into a tank, with a ball-cock to sbut off the supply when full, and from this tank will descend the pipes, one or more in number, which, ramifying downward, supply the different fancets.

Where the water is obtained from a water-ram, or a force-pump drawing from a well or eistern, or by rain-water received directly from the roof, the second method, employing the tank in the attie with downward supply, is necessarily adopted. When it can be used, however, the first method is the cheapest, as it saves one pipe the height of the house, and the cost of the tank, busides certain pipes hereafter described; but it has cortain disadvantages. Besides the obvious risk of having the house left without water in case the supply is shut off while repairs are making, the street pressure is often very heavy, reaching in some localities one hundred or even one hundred and fifty pounds pet square inch, and the consequent strain upon pipes and fittings is very severe. Moreover, the head in the mains is sometimes variable, and this irregularity interferes with the working of valves and faucets.

With the tank system the pressure in all but the rising main is constant, and can never exceed the head due to the height of the tank above any given faucet, not over twenty-five pounds in the highest house; all the apparatus is therefore under the most favorable conditions for periect working and long service. It should not be forzotten that in a pipe under heavy pressure the shock caused by sæddenly shutting a faucet is equal to the blow of a hammer of weight equivalent to the pressure, say one hundred pounds, etriking with a velocity equal to that of the stream of water at the moment when it is arrested; and this blow is applied just as much on every square inch of surface in the pipe as at the faucet. The weakest part of the pipe, usually at a bend or near some joint, soon yields a little, and the effect of the blows increasing as the resistance diminishes an opening is linally made. Even brass pipe, whose clasticity enables it to recover from repeated strains, often gives way at last.

But the worst deficiencies of the direct pressure system are to be found in the hot-water service. To understand this clearly requires a little consideration of the construction and working of the bath boiler and water-front.

The water-front is a closed box of east-iron, which accupies one side or corner of the range, next to the fire. In the outer side are two brass couplings, one near the top and the other near the bottom, extending through to the outside of the range. Sometimes the place of the water-front is supplied by a copper tube, which starts from one coupling, and after traversing the fire two or three times ends at the other coupling; but these tubes are apt to boil the water in them with violence, and if the water is shat out of them they get red-hot and burn out, so that the iron front is to be prefetred.

The builer, which usually stands beside the range, is simply a cylinder of stout sheet copper, timed inside, with a flat or slightly convex bottom, and in all but the poorest specimens a done-shaped top. One or more galvanized iron bands are often fixed in the interior to strengthen it, and two, three, or four couplings are attached to the head, one in the side about eighteen inches from the bottom, and one either in the bottom or very low down in the side. The two lower couplings are connected by brass takes with those of the water-front, and either on the lower tube or with a separate connection is a "sediment cock," for emptying the hoiler and water-front. From one of the couplings in the head of the hoiler a copper tube extends down to within six inches or so of the bottom, with open mouth, and near the top of this tube a small hole is bored. To this coupling is attached the pipe for cold-water supply. The cold water from the pipe descends through the tube, and seconnulating naturally in the lower part of the boiler, passes through the lower coupling and the connecting brass pipe into the water-front of the range. Here it is heated, and becoming lighter as its temperature rises it ascends and passes through the upper coupling of the water-front, up the second pipe, which to facilitate the movement, is had with a gentle ascent toward the boiler, and entering through the side coupling takes its place in the upper portion of the boiler. This circulation constantly goes on between the water-front and boiler, and the water passing repeatedly through the range becomes warmed in proportion to the ratio which the licating surface of the water-front bears to the coding capacity of the boiler. The difference in temperature between the upper and lower connecting pipes to the water-front may be plainly felt with the hand.

The other couplings in the head of the boiler simply communicate with the lastide, and to them are attached the pipes which supply hot water to the louse. Several couplings are used where the number of sinks and wash-bowls to be supplied is considerable, to obtain a freer flow than could be obtained from a single pipe compelled to supply several fancets; but one tipe is sufficient for a small boose.

supply several functis; but one pipe is sufficient for a small bouse.

When a cock anywhere on this pipe is opened, the warm water issues under the same pressure as that of the cold water; for the whole system of pipes and boiler being constantly full of water, the pressure is the same throughout at the same level, the boiler being practically nothing but an entargement of the supply-pipe, while the water-front with its tubes represents a loop through which purious of water are continually drawn from the boiler to the fire, heated and returned.

The drawing of hot water in any part of the house subtracts from that in the top of the boiler, causing an equivalent amount of fresh water to enter through the cold pipe, from which it is ted without mixing with the warm upper stratum through the couper tube to the lower or cool part of the hoiler, there to begin its journeys through the water-front, by which it is qualified in its turn to take its place in the warm, upper region. This is the principle of the modern hot-

water supply in its simplest application.

Under this system it is evident that the only circulation is between the water-front and the boiler, and that in the hot supply-pipe, each branch of which terminates at some fancet, the water remains stagnant except when a cock is opened, and loses its heat by radiation, so that on drawing from any fancet this stagmant, lukewarm portion must first run off before obtaining the hot water from the boiler itself. To remedy this it is customary not to terminate the warmwater pipes anywhere, but to make them constantly ascend through perhaps devicus courses from one fancet to another, until they reach the highest fancet, from which a pipe descends again and returns into the boiler, sometimes by entering the cold supply just above the coupling, sometimes through the lower tube to the water-front, or by a coupling of its own near the bottom of the boiler. In this way a secondary though extensive circulation is set up through the pipes themselves, hot water ascending on one side and descending on the other by virtue of the linewater may be drawn of the same temperature as that in the upper part of the boiler, minus the comparatively small loss which it suffers in its rapid course from the boiler to the point at which it is drawn. To obtain this regular circulation in the test pipes is essential to their satisfactory working; but it cannot always be managed unless the architect has kept well in mind the course of the pipes in arranging his wash-bowls and sinks.

So far the system is the same, whether the boiler is supplied under the street pressure by a pipe connected with the main, or from a tank. But rectain circumstances may interfere with the working of the apparatus. It often happens that the water-front is too large for the work it has to do, or the copper tubes which serve as a substitute are too much heated by a brisk fire, and the circulation not being rapid enough to keep down the temperature the water begins to boil, and bubbles of steam run through the upper tribe toward the holler. The mass of water in the boiler being still below abullition point, the steam is condensed on reaching it, and the sudden reduction of a pipeful of steam to a drop of water leaves a vacuum which is instantaneously filled with water. The next hubble of steam meets with the same fate, and the successive shocks caused by the sudden rush of water into the vacuum cause a snapping and rumbling in the pipes and beiler which often alarm housekeepers.

If the heat should he so great as to bring the water in the boiler

itself by degrees to 212°, the same thenomenon is in danger of being repeated on a larger scale. If all the invests or other outlets are closed, the steam accumulates in the pipes and the top of the boiler, and acquiring a tausion soperior to the pressure of the cold water forces it back into the main. The water in the main serves as an elastic saidy-valve, so that the steam pressure will never much exceed that of the water, so long as the connection between the builter and the cold supply is unobstructed, and it the boiler is strong enough to revist the water pressure, there is little or my danger of its being hurst outward by the steam; but there is a very sections risk that when the boiler is very hot and partly fell of steam some one, by opening a hot water faucut anywhere in the house, may allow a listle steam to escape, and the tension being thereby reduced for an instant cold water presses in from the supply. The admixture of the smallest quantity of fresh water lowers the temperature of the contents of the holler and condenses the steam with increasing rapidity as more cold water rushes in to fill the void so made. This process goes on with extreme rapidity, so that in a fraction of a second after the cock is opened the steam has vanished, and the condensation being much more rapid than the entrance of the fresh water, a vacuum ing much more rapid than the entrance of the tresh water, a vagious is caused in the upper part of the beller, and the atmospheric promise since thus enddenly brought upon it crushes the cylinder like a teaf. This "collapse," as the plumbers call it, is a very common occurrence, and with a boiler supplied from the street pressure there is no sure way of preventing it. One or more vacuum valves are often inserted in the head of the boiler, to open by the pressure of air from without; but these get so firmly pushed into their seats by the ordinary water pressure in the boiler that they are very apt to stack when must meshed, and are then useless. Sometimes a storyways is when most meeted, and are then useless. Sometimes a stop-valve is put on the supply, intended to prevent the steam from pushing back the watter; but this simply gives a closed boiler, store to blow up if the steam pressure should exceed a certain limit. The only pathative, where the supply is direct from the main, is to be careful where it is a lot for in the range to come the water-water cocks can there is a hot fice in the range to open the warm-water cocks cantinusly, and if steam should come out to shut off instantly all but a small opening, which may relieve the pressure so gradually as to pre-cent harm. Compression norks, which open by a screw, are for this reason satest in use; but it is essential also that the heating surface should be properly proportioned, and the pipes between boiler and range, as well as the circulation pipes, should be large and smoothly graded, and the flow therefore casy and rapid, to obtain even a moderate degree of security.

Where the boiler is supplied from a tank the danger of collapse is almost entirely romoved by the simple expedient of carrying up from the highest part of the holowater system a one-half or three fourths inch pipe above the water-level of the tank, leaving the curl open, so that any steam which may be generated escapes quietly, without ever accumulating tension enough to force water out of the boiler. Unless this pipe should be so long and torthous as to get choked it is a sure protrection. The end of the expansion pipe is turned over the tank, or, better, over the month of the standing waste, so that the foatning mixing of water and steam which sometimes comes appared in protecting mixing the protecting with it possible under the processes well as

may run all without doing mischief. Of course, so such protecting pipe is possible under the pressure system.

The hot-water supply is sometimes arranged without a boiler, by nuploying two tanks, one for end and the other for but water, both placed at the same level in the artis. The supply-pipe descends from the odd tank to the water-front, and from the upper coupling of this a pipe ascends to the hot tank, from which a descending main branches to the different laucets. Both disterns are open to the air, so vacuum or bursting pressure are there impossible; but an expansion pipe must be carried up from near the water-front to observe and the water-front to observe the coupler boiler, and the steam from the lot tank is disagnatured. employs the copper boiler, and the steam from the hot tank is disagreeable and injurious in the rooms, so that it is rapidly becoming obsolute.

Boilers supplied from the street pressure sometimes give way under the strain of the water alone, especially if they have been previously weakened by an incipient collapse, and where the head is considerable they must be of galvanized iron, riveted like a steam

boiler

Assidents also sometimes becar from attempting to empty the boiler by the sediment cock without opening a fracer above to admit air, or in occasional instances, where the supply from the street has been connected at the bottom of the boiler, by the retreat of the water in the mains, which, drawing with it the contents of the holler, leaves a vacuum behind by which the cylinder is collapsed as effect-ually as by the sudden condensation of steam. The tank supply with the expansion pipe provides against this danger as well as the other.

THE SANITARY "SCARE,"

Rewore going to Europe in June, I wrote a paper for The Plumber and Sanitary Engineer (published in the Suptember number) referring to the "scare" outery. I stated it as my purpose to "scare the plumber himself, and cause him to realize the fact that he is playing with fire whenever he undertakes the drainage of a

Further observation and reflection have not affected my opinion save to strengthen it, and I am satisfied that the most efficient ser-

vice that any writer could render the plumbers would be to devote his energies unremittingly to emphasizing the evidence leading to this opinion, until they become convinced that the future prospects of their trade are really to be good or bad, according as they accept the present condition of public sentiment and accommodate themselves The public is not a fool; and about some things it makes up its mind in a very resolute way, and is not to be driven from its position, especially when the organizate advanced for the purpose may The public is fast making up its mind that there is no safety in American house-plumbing; and American house-plumbing must become radically different from what it has been thus far, or the publie will act upon its conviction, and get on with as little plumbing as possible.

It will not do to talk about good workmanship or had workman-ship as lying at the hottom of the difficulty, for the bottom is much broader and deeper than any question of workmanship. Of course, we want good workmanship so far as we have any at all. The question which is uppermost now in the minds of the more intelligent classes is whether we really need any plumbing work at all, beyond the narrest necessaries of domestic economy. Numbers of persons are cutting off the pipes from their wash-basins, bath-tubs, etc., and are going back to the ohl wash-bowl and pitcher and the sponge-bath. Their reasons will be accepted as good, and their example will be followed by others; so that unless some strenuous and rational effort is made to restore their confidence in house-plumbing, the amount of work to be done during the next generation will be

less than that which the present generation has demanded.

I have used the expression "the American system of plumbing! for the reason that plumbing, as we know it, is essentially and almost exclusively an American institution. In our desire to save labor so far as possible, to procure in our houses the having of abundant water without the task of carrying it in and out by hand, and to provide, even for those classes of society which are little given to luxeries, the antold convenience of a free tap of water at every point, we have carried the possibilities of the industry to its unnest timit; we have done this, too, in a country whose climate compels us to adopt precautions against frost which are unknown elsewhere; and we have done it obsolutely without the knowledge necessary to ensure our doing it properly. The utmost profusion of plumbing has become so much a matter of course in the organization of our houses that until recently any man who seriously criticised the system was et down as an alarmist. Now that the alarmists are found to have right on their side, we are confronted by a dilemma, one of whose hards we must accept in spite of ourselves; we must either be content to see our people, under the influence of the instinct of self-preservation, throw their plumber's work out of doors and make up their minds to do more manual labor for the rake of better health and longer life, or we must frankly accept the fact that their fears have a valid foundation. We must not only accommodate our work to their demands, but we must show them that we have come to a realization of, and have learned how to avert, dangers which ten rears ago neither they nor we knew or thought of.

The only other country which can be said to have any plumbing

The only other country which can be said to have any plumbing work at all is England, and the plumbing work of England is a very different affair from ours. It is rare to see in an English gentleman's house, in London or in the country, stationary wash-basins or stationary bath-tubs, fixed butler's sinks, or laundry trays, or taps for drawing water, except in the coultry or area, or some other place quite remeved from the centre of habitation. Every bedroom is provided with a movable wash-stand with a movable apparatus; generally also with a tin sphage-bath, to which the water is brought by lead. Water-closely are in almost universal use but is brought by hand. Water-closets are in almost universal use, but they are generally in outside extensions, or at least against the outer wall; as a rule their communication with the outer air is much more free than their communication with the interior of the house. The whole somewhat rade system of plumbing is of a character and in a situation which, with our winter temperature, would be impossible. Or course, there are countless exceptions to this rule, and the people have suffered scriously from the fact that their workmanchip is so often interior to ours. Considering the amount of plumbing in a verago houses in England and here, they suffer from diseases original-

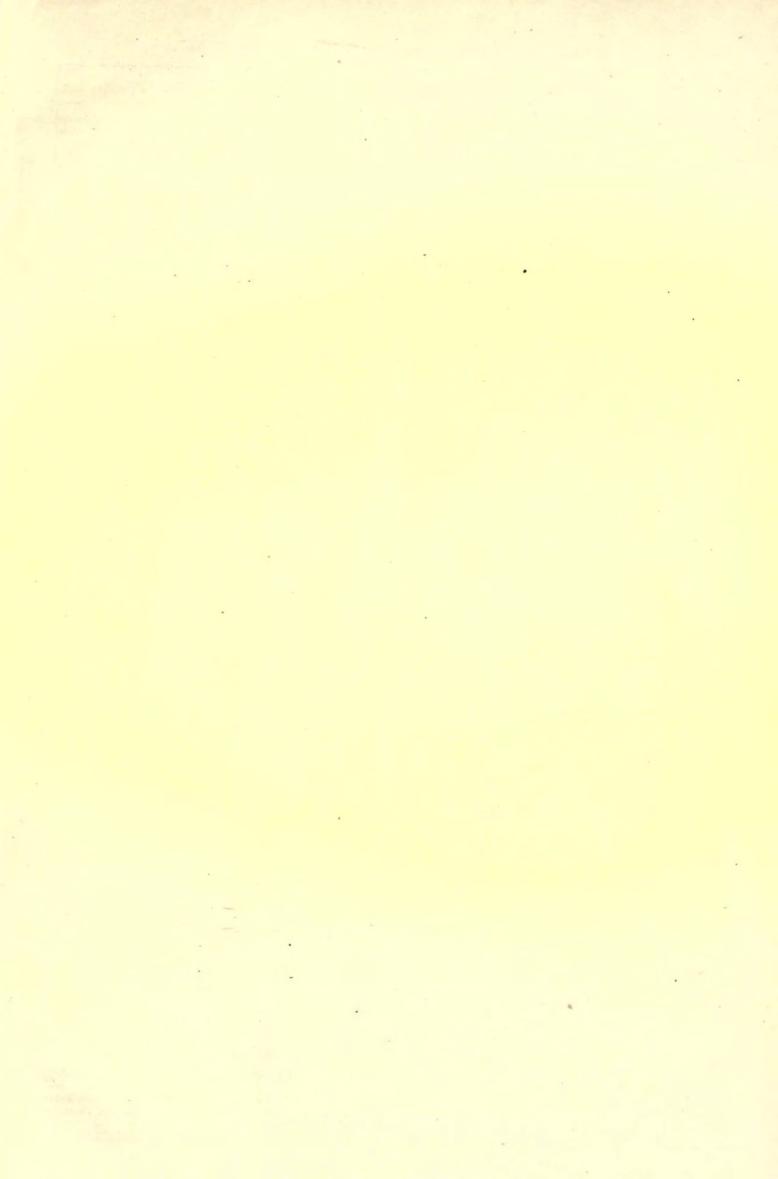
age houses in Angulan and here, they shale from lossesses originating in the drainage of the house far more than we do.

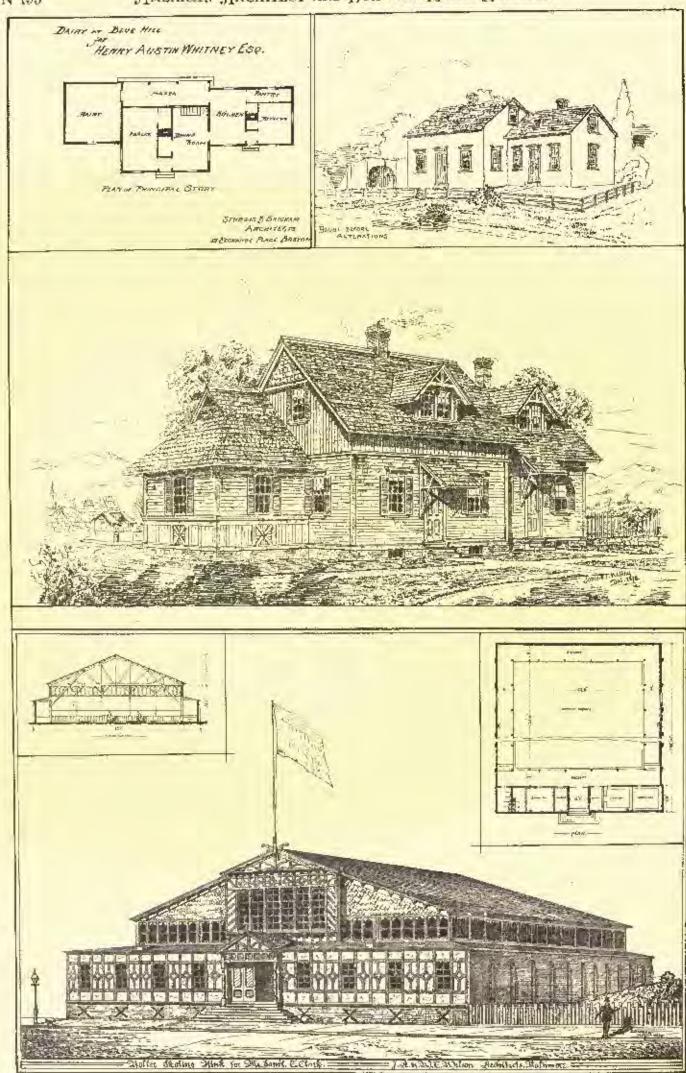
The question as to whether the American people will continue to be the liberal and extensive patrons of plumbers that they have been hitherto, or will go back to the systems of their ancestors, is one which is to be decided entirely by our ability to personde them that we realize as well as they do the dangers which they fear, and that we have succeeded, as we certainly have, in devising efficient and reliable means for securing ourselves against them. GEORGE E. WARING, JR.

THE ILLUSTRATIONS. CHURCH OF ST. HILAIRE AT BOOKN, PRANCE. M. SAUVAGEOT, ARCHITECT.

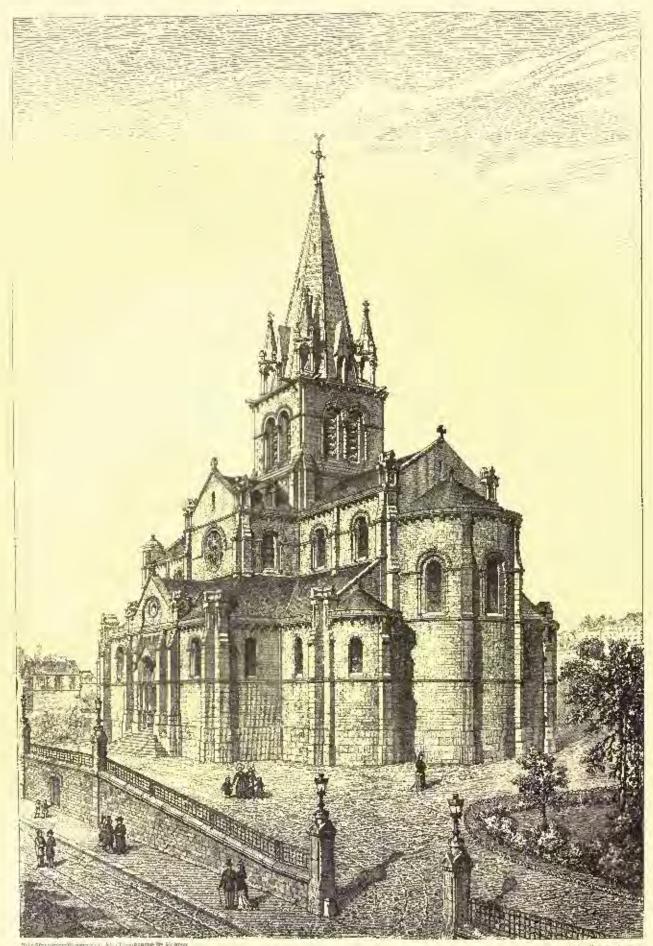
We reproduce this week from L'Encyclopédie d'Architecture a perspective view of the Church of St. Hilaire, the plan and elevations of which we published in our issue for October 26.

FURNITURE DESIGNED BY MR. EDWARD DEWSON, BOSTON.



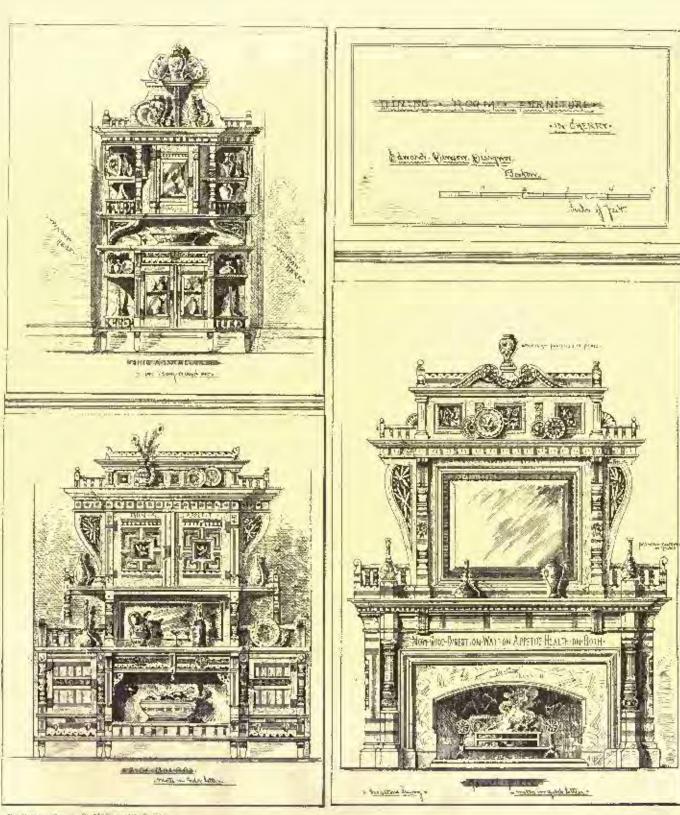




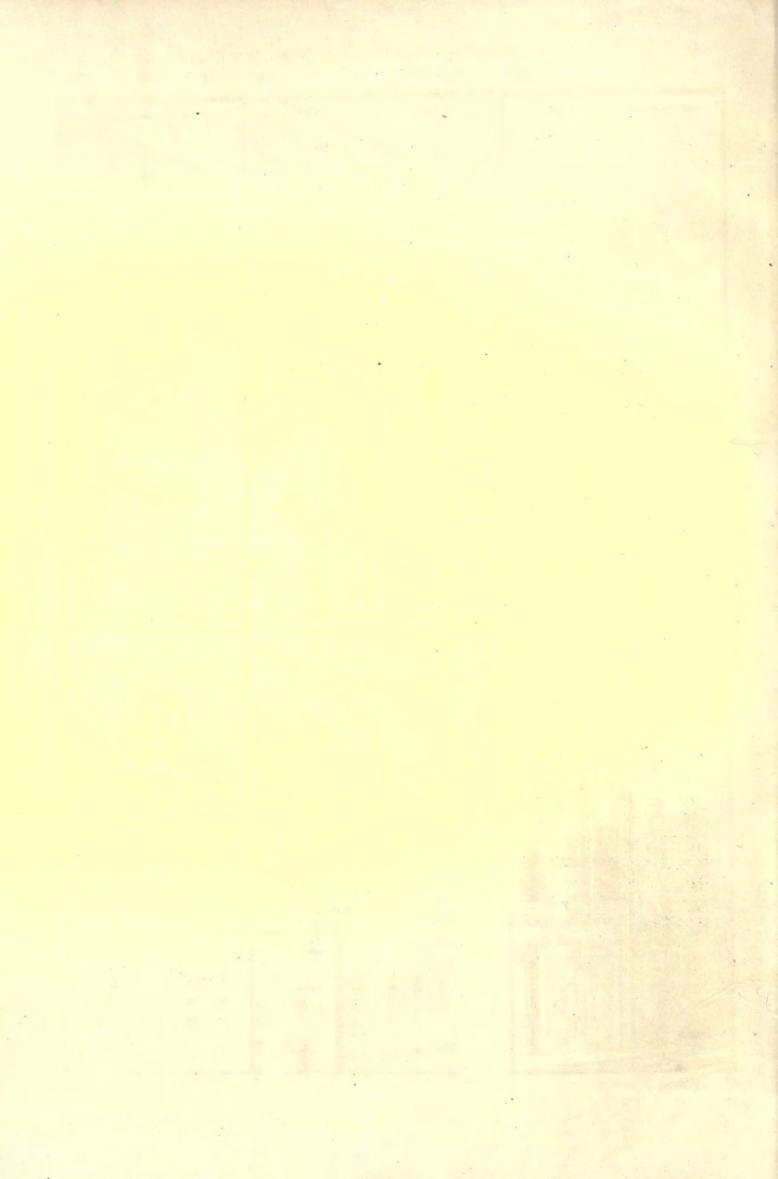


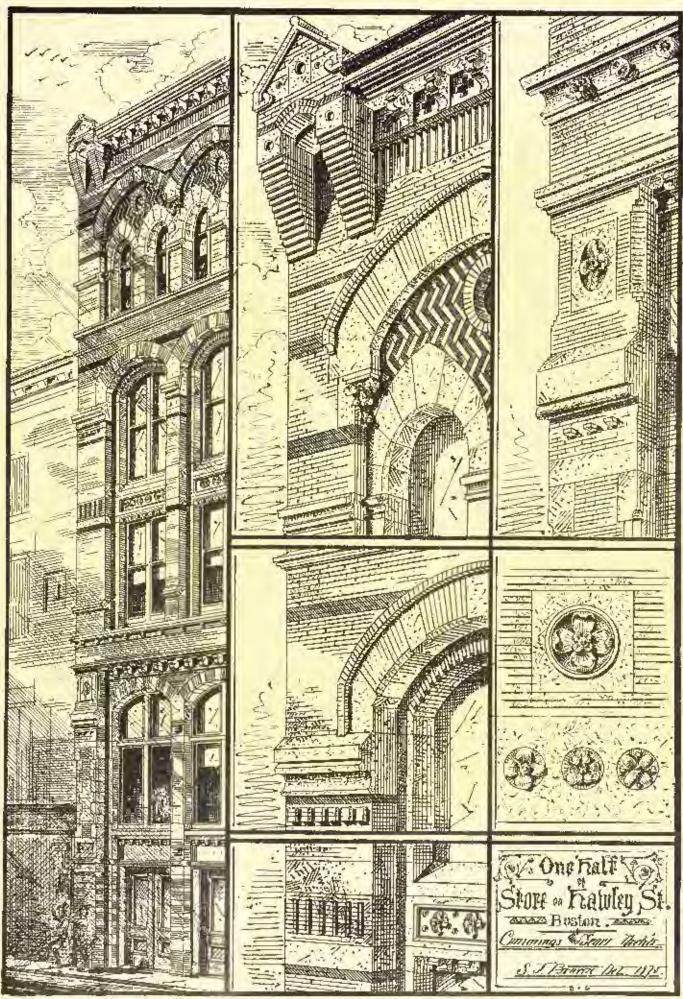
- CHURCH OF ST HILAIRE AT ROUEN -

- M. SAUVAGEOT ARCHT -



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ALTERATIONS MADE ON THE DARRY OF MR. HENRY A. WHITNEY, MILTON, MASS., MESSRS. STURGES AND DRIGHAM, ARCHITECTS.

SKATING RINK, RALTIMORE, MD. MESSES, J. A. AND W. T. WILSON, ARCHITECTS, BALTIMORE.

This rink, to be used for roller-skuting, is building for Mr. S. T. Clark.

STORE ON HAWLEY STREET, BOSTON, MASS. MESSES CUMMINGS AND SEARS, AUCHITEUTS, BOSTON.

This drawing is one of the series made by the Portfolio Club.

SECOND LOAN EXHIBITION IN AID OF THE NEW YORK SOCIETY OF DECORATIVE ART.

THE "Loan Exhibition" noticed in these columns somewhat less than a year ago, proved in many ways a most successful venture. A repetition was accordingly planned and the exhibition now open at the Academy of Design is a more than worthy successor of the first. One marvels anew at the righness of the sources drawn upon. for all the rooms are full, and all articles previously shown have been rigorously excluded. The pictures are less showy and more excellent than last year, the pottery collections for fully and more calculate. The Oriental impostrices fewer and less magnificent. but amateur work is not introduced among them. Brie-4-brae is less plenty, and the same may be said of silver, jewelry, furniture, and has, while here seems quite unrepresented. Upon the pietness and plenty, and the same may be sate of the Upon the pictures and fans, while lare seems quite correpresented. Upon the pictures and the pottery depends the interest of this year's show, and its value the pottery depends the interest of this year's show, and its value depends upon the excellent arrangement of the whole. The pre-turesque disarray and be wildering profusion of last year are replaced by systematic disposition and more careful cataloguing. What is lost in the brillancy of the general coup-d'zii is many times re-funded in the advantages of system and sequence.

The large South Room is filled with paintings, the East Room with European portery and portelain, the North with Oriental art products, and the West with brie above from the December Art South-

west Cabinet is devened to specimons from the Decurative Art So-

The greater number of the pictures are from foreign hands. Such American convesses as there are, show in one or two cases a simitherety of subject with their trans-atlantic neighbors that allords op-portunity for interesting comparisons. Swain Gillord's Lawy Day in Egypt, and The Merchan's of hi Layonet crossing the Algerian Descri, hang near enough together to eateh the eye at almost the Descri, hang near enough tagether to eater the eye at almost the same moment. Preferring the latter, one is still distatisfied with either, still convinced that the facts of African sun and shade and that and almosphere are not given. The question as to how they might be given, which always seems doubtful unless visible interpretation is forthcoming is set at rost if one turns to another wall where hangs Gérome's Egyption Conscripts crossing the Descri. The flatness and coldness of the other pictures is here replaced by a blinding luminousness which seems almost mixty by excess of girt, but always date checkurs has a measurable golden with the characteristic and its the by sharp, dark shadows, by a pervasiing vollow sint, and by the general feeling—peculiarly characteristic of North African land-scape—that the atmosphere is more palpable and important than solid earth itself-

Three great canvasses of Bouguereau exhibit the inripidity, the want of life and force, the cold-cream complexion and seatmentality which should long ago have become distasteful to the American public. The Spring-time of his pupil Cot, - the picture which suddealy gave him a circle of admirers almost as wide as his master's is also exhibited. It is as correct in drawing as Bounnereau's, with more of life, but equally trivial, and the flesh painting equally far from heing true to nature or masterly in touch. A large landscape of Andreas Achenbach, who vibrates through a larger are of varying excellence than is possible to many painters, shows him almost at his worst. The cloud-painting is what his countrymen would call unerbort. It is a pity, for there are many good paintings of his in

Leloir's The Slave is a clever picture of a repulsive subject, so repulsive that it seems out of place in such a collection, would seem out of place in any lady's apartment. For there is not caungle artistic beauty to overshadow the moral and physical ampleasantness, and the artist's eleverness does not rise to tragic power. Hector Leroux's Vestal Duccia is exquisitely imagined and drawn, but the coloring is almost conventional in its reserve, and there is no at-

tempt at texture, whether of water, sky, flesh, or garments.
Several pictures by different bands show the fashionable metallic style, glaring tints without shade, repose, or harmony, a travesty of natural color with no memory whatever of chiaroseuro. The best of them is decidedly the Morning with the Presamaker of Alvarez. The worst unquestionably is G. Kiehter's Veil Dance, in which it is hard to discover a redocuming trait. It lacks even the clear outlines and eareful touch one expects in this style of work. Commonplace in consequence, but to the clear of the commonplace. in correption, faulty in drawing, and poor in technique, it is Eastern only in costume, for the types are without exception European and atterly vulgar. Such a picture would not be worth condemning were it not to notice the indulgence so often carelessly given to pic-

tures whose counterparts in literature, for instance, would not be publicly approved. Madrazo, who has sometimes painted well, shows At Hesalefast, which looks like a badly painted portrait of a very un-

Al Breakfast, which looks like a bady painted potential balylike person.

Willook Ziem, De Menville, Vibert, Meyer von Bromen, Kruus, and Salentin, show average work. More admirable are two fine entile-pieces of Van Mari-ke and a landscape by Jules Dapré—nut, perhaps, of his best. Alam Tadema, whose work is not very often seen in this country, is but poorly represented by a small seene from the fill century. It is doubtless archaeo, ogically correct, but the composition, figures, and color are far inferior to his average—anteh more his eleverest—work. Jules Bretan's Britaing Pentled antch more his eleverest — work. Jules Broton's Reitting Pendenlis also below his average. In Boughton's New Year's Day in New Amsterdam, we see intensified the Iaults which have grown into mannerisms. It is well compared and grouped, doubtless, but the tions are pair, flat, and minarized, laid on with no attempt at blend-ing. There is no sign of modelling or relief. Crowded nations the corridor, and "skied" as well, are two clover

Crowded out into the corrupter and "stated" as well, are two cover studies by Mr. Wim. Chase and a capital portrait by Defregger, worthy a most honorable place. It ought to be carefully studied, and it cannot be soon. On the line, but still in the had light of the corridor, where, furthermore, it is impossible to get as far way as his touch demands, are two Makarts — peor for Makarts, truly, but very clover pictures and valuable as one sees here so little of his way. The Ancient Egyptian Girl is well posed and expressive, but hereby in other than is good with Mokart, and alticularly blueged in harder in content toggether the same poses and expressive, our harder in operation is usual with Makaet, and absolutely blurred in parts from pure haste or feedlessness. The Tuckey-solier of Cuiro is hetter pointed, thought the subject is less satisfactory, the face better pointed but the eyes. The color is beautifully harmonious, the post full of life and grace. Both pictures are but "post-backers" as sometimed with Makaet's constant with Interior the post-backers " as compared with Makart's careful work, but even the pot hollers of genius are interesting and, to a certain extent, valuable

Among American pictures I shall also notice a good study of a Bay's Head by Mr. Hant, and a poor one, of the same subject, by Mr. Chase, Eastman Johnson is at his best in the careful and charges teristic Cool Players. Mr. B. C. Porter at his worst in the Poerroit of a girl reading. Mr. LaFarge's Study of a woman in a green gawn shows, as usual, greater mastery of dispery than can be claimed for any of his countrymen, but the thish is poor. Mr. Whittredge's Gid Handing Grounds may fairly be taken as copresentative of the average American landscape, hard, careful, martistic, unindividual, unideal, and yet not natural. Mr. Pawell's Feating Buys is impossible, and Mr. F. E. Church's Mr. Desart almost as unsuns-

factory in another line.
If I have left to the last the fixest picture in the room, it is hecause I fear to touch upon it, - cloubt whether in doing it justice ! eause I tear to tomen upon it, — name whether in duting it pastice I shall not, to those who have not seen it, appear to exaggerate its merils. It is a life-size portrait by Foctony, said, I know the how correctly, to be the only one be ever painted, and comes from the famous collection of Mr. Steahlins in Paris. It requires faith to take it for Fortuny's work, for the genius usually showed in a very different material. ent way. There is a tiny picture of his also, in the exhibition, which gives a fair idea of the contrast. His figures, everyone knows, were usually small, his canvasses glowing with a brilliancy of varied and contrasted that that his imitators can but travesty. His touch was rapid, dashing, uneven, and in his most carefully completed works one rarely sees a polished and haished surface. In this portrait — of a Spanish lady — the beauty of the result gets nothing from the accessories, for it was painted in 1865 when " The fa-homs" were not artistic. Black satin, crinoline, rural, and frizzed black hair do out sound and do not look picturesque; but one does not care for the things that usually go to make up it satisfactory undern portrait in view of the supero homonity, the perfect art of this picture. The pose, the drawing of head and hands, the expressiveness, as of nature seen face to face, above all, the flesh painting, are beyond praise, Most unlike Portuny's usual bresh is the ivory finish, the smoothness as of an actual, pure skin itself, and in noteworthy contrast the elever, rough impasts of the lace. In the over-reserve of color, in somewhat of Spanish stiffness, and in the general tone and chara-ter of the work it is unlike a Titian or any sunny balian canvass, much like Velasquez, to whom it has been, not too presumptuously, compared. Is it too much to be believed of a contemporary painting that it might be frong in a gallery next either of these and not seem out of place?

In the " Antique Collection " in the West Room one notes many miniatures, the best, perhaps, one of an old lady, by Malhone (931), and one by Arland (942). Most beautiful and interesting, whether a genuine bit of Quentin Matsys's handliwork or not, is the little iron has-relief No. 965. In furniture one marks little but a 14th century cabinet (1900), one in marqueteric (1294), and an arm-chair of the Louis Quaturze epoch (unnumbered). The silver is not remarkable. In the jewel-case the honors are borne off by some unrivalled contributions of Mr. Prime—a superb set (1128) of old Persian tor-quoises, cagraved and gilded, which be dates from the 15th to the 17th century, and a necklass (1128) of stateen ancient Egyptian scarabasi. Some intuglios of varying beauty form a mucklace numbered 1113, and a mixed collection of antique stones are classed under No. 1116. No. 1085 covers a collection of "Houish and Swedish Silver Ornaments," some of which, wherever obtained, are more probably Russian in their origin. One pendant shows in culest workwanship, the survival of an unmistakable Byzantine pattern.

No. 1133 is a chatelaine with a motley profusion of pondants, one of No. 1133 is a chatchine with a motter protusion of pendants, one of which is worthy of notice. It is a small flat lighter which, if not a genuine old Irish or other Celtic bit, is a clever imitation. One notices also a fewel which gives a definite Pompelian pedigree, and a necklace from India, marvellously presty in its combination of tigers' claws with native goldsmiths' work. Among the watches, No. 1160 has good record work, and No. 1144 is a most beautiful bit of red enamel done by Boilly mader Louis Scize. The various ivories deserve an examination, as do stray bits of bronze and brass. The bell (1114) confidently attributed to Benvonuto Cellini and purporting to come from Strawberry Hill is little like the work of his time; and its claim is somewhat audacious when there are scarce three nuits chim is somewhat audacious when there are scarce three undoubted works of his in Europe.— perhaps only one that is quite unchallenged. Strawberry Hill hardly guaranteed the gennineness of its labels, and it is equally hard to believe the bell Benvennto's or to admire it on its own merits. Some the French tapestries claim more notice than can here be given, especially as there is little space left for the two rooms full of pottery.

The majority of objects in the Oriental Room come from the wall known Burdingover Marcon, Andrews, Pennsym and Williams

well-known Burlingame, Harper, Andrews, Pomeray, and Williams collections. Their tasteful and orderly arrangement is due to Mr. Colman. Japanese art in its various branches is well represented, and one has the opportunity of comparing it with the work of Chinese artists, who have of late been neglected in favor of their island rivals. It is hard to distinguish among many works of so near and so high an average, but one must remark No. 614 as a splendid speso high an average, but one must remark No. 614 as a splendid specimen of Japanese raised embrothery on a gold ground, some large Japanese pictures in water-rolor on silk and paper (631-636), exquisitely free and delicate, and a sopech lacquer and painted screen (662). In ceramics are to be remarked a fine case of Rosedon specimens, an old Satsuna incease burner (154), and a curious Satsuna vase (154), and some magnificent Kishin pieces, whose torqueise and purple cannot be excelled for splendid contrast. Profiler Chinese ensurelled percelain tex-jar, most carious (771), a pair of a Chinese enamelled vases (700), a vase with souffle decoration (800), and a Satsuma vase with figures in relief (741). All of which are noticed not so main as being superior to their neighbors, but as samples and specimens. Mr. Hoe's collection of works in hard stone are most heantiful, represally the jades. Also noteworthy is a collection (789) of various small Japanese works in ivery, metal, etc.

The European pottery is most carefully arranged, and this year a tyro can gain a knowlege of sorts and styles. That any one sort is represented by especially good specimens it would be too much to say. In Sevres we see a set in yellow and gold, the best one could have from the inartistic spech of Churles X. A fine case of plane 127 417 and exhibits the assectable to the contraction. (437-447) well exhibits the varied styles of the factory. The Dresden pieces are numerous, but none of great value if we except some brown Battelier ware shown by Mr. Prime, a saucer (272), and perbrown liabilitar ware shown by Air. Franc, a soncer (272), and perhaps Nos. 181, 133, and 138. Some of the modern work is of the worst that is made. It is stratege that the classification of Dresden percelain in this country should be so arbitrary and should exclude all mention of Kändler, the finest artist without exception who ever modelled at Meissen. His work is lost to us in the general name of "King's period," assumed to extend from the "Angustus Rex period " to 1774. His name, so familiar on his own ground, seems to be unknown to our collectors, who mark no difference between his exomistic rocces shares, low relief, and defected ground, seems to be unknown to our concerns, who mark no directions between his exquisite recase shapes, low relief, and delicate thats, and the very different styles which came before and after. Marcolini is the fashion. His painting is superb, truly, but his shapes far inferior, more commouplace, loss characteristic, than handler's. The latter does not even get the credit with us of having a statement of the controller's the controller of the controller's the controller of the controller

ing originated his troops of tiny figurines.

A few good Vienna pieces call for mention, Nos. 270, 295, 296, etc., also a seventreach century Emen plate (550) and a Franken-

vase (292).

There is much English ware, valuable to those who like fushionable curiosities independent of beauty. The best English work, such as the Worcester Tru-Set (393, 394), the Worcester Some Ware (382, 383), and the Derby Vases (513, 513), Salad Borel (522), and Kiver (263) are interior to continental work, and the bulk of Spodle, Bow, Chelses, Lowestott, and the rest is valuable for no artistic rea-tion whatever. The smaller factories, whose short and unmarked ex-istence was evidently due to the badness of their wares, have obrained celebrity to-day because they were short-lived and obscure. Every execrable bit of doubtful origin, which no one could wish to see duplicated, is more greedily soized upon than a pretty piece of Oriental work or of delicate Meissen modelling and color. The much Oriental work or of delicate Meissen modeling and color. The much discussed Lowestoft excites, by the specimens it shows, no feeling save the wish is had never existed; and it is hard to see what pleasure the most rabid collector can take in course figures like No. 330 or 320, or in printed agliness like No. 328, or in No. 391, from Spode, or No 395 from Worcester, or such a monster as the Leeds cow, No. 415, and there is much in most English and American collections that is even mores than these. even worse than these.

It is pleasanter to look in the corridor at various fair specimens of Gres-de-Flundre, or at the nahinst from Tiffany's filled with exam-Gres-de-Fundre, or at the cannet from Anially good are the pieces from Collact and Doulton, a graceful specimen from Naney, and the sample Falunce of Longwy.

M. G. v. R. WE once had the pleasure of hearing an eminent landscape painter discourse apon a new method, which he had invented and perfected, of painting scenery "without reference to nature." This ingenious purson could, according to his own account, enable any one, no matter how small his capacity so long as he had strength enough to wield a hog-tool, to produce, after a few weeks' instruction, irrepresentable a nog-tond, to promote, after a tra-landscapes, each with its proper proportion of blue aerial perspective, its middle distance sunk in orthodox obscurity, and harmoniously distributed patches of Roman other and Vandyke brown to the foreground, which only meded a slight exercise of the imagination to suggest stones, sand, dry grass, or some other species of vegetation, so that the cauvas at a proper distance presented a marketable imitation of nature.

Perhaps it may be possible for others to rediscover this invaluable secret. Indeed, some artists soem to have made considerable prog-ress toward the acquisition of intallible art-recipes of their own. Why otherwise should each successive work of the celebrated X appear with a triangular expanse of Naples yellow in a particular corner, taking the form now of a wheat-field, now of a sandy slope, then of a dry patch in a grassy lawn, while a shady brook, eart-path, ditch, or what-not winds away, always in the same direction and about in the same colors, in the opposite angle? Or why should the provideral accounts in the newsparses of the life and carriers of the periodical accounts in the newspapers of the life and services of the distinguished Y invariably portend the giving to the world of a large canvas covered with green paint, modified toward the top by a certain admixture of white or gray, and divided into irregular patches by streaks of brown, while in the middle blazes a spot of pinkish white feed into irregular patches. by streaks of brown, while in the middle blazes a spot of pinkish white, fushioned into a rule suggestion of a building of some kind?

le it that nature presents herself to these artists always under the same aspect? Or can it be that having once succeeded in representing her under a certain form to the admiration of the growd, they devote themselves thenceforth to the mechanical repetition of the ef-

feets by which they have won applause?

Whatever may be the reason, the tendency of landscape painters to choose a succession of similar subjects, which they feel to be within easy reach of their powers, is very strong, and an ambition like Mr. La Farge's, which disclains to repeat itself and loves to grapple with new difficulties, is an ease as it is noble.

This collection of pictures, gathered for sale out of the studies and sketches of twenty years, represents almost the whole range of the art, from the slight sketch of sky effect to the severe and conventional forms of decorative design,

To us, the most interesting part of the collection consists in the budscapes painted and finished on the spot, and we will devote a

few words to them.

No one who has not tried to paint out of doors from hature can auderstand the immense difficulty of the work. We do not mean water-color sketching, in which a few happily chosen washes laid on with skill may convey with striking fidelity the superficial character of the some; nor the scientific landscapes composed beforehand with a framework of cobalt blue and gray for the uppur part, a pronounced shadow across the middle, and a due allowance of "golden dirt" for the foreground, into which the intended view is forced, by dint of luppings and stretchings, to fit, leaving enough of the prominent features still visible to enable the cariesture to be identified. Such art is not difficult of autoimment. It is comparatively easy also to make studies of color out of doors, and afterwards, in the tempered light of the studio, work them up into a finished picture, which shall be better in tone than any of the skewhes, and contain a certain amount of truth; but to block out, carry forward, and finish a picture under the perplexing out-door light, and in the face of nature the herself, demands not only great technical knowledge and skill, but a degree of many locality in the face of the same and skill in the same of the same o of mental power for the intense and comprehensive grasp of the scene under a chosen aspect, and the persistent retention of this idea in the memory through the long processes of painting, in spite of the non-though changing of the landscape itself, which those who have tried such a task can best appreciate.

It is a communicate of the tast book to the landscape itself.

It is a commonplace of the text-books to say that our whitest pig-ments are black in comparison with the sky, and that the colors of nature can be represented on canvas only in tones transposed to an octave very different from those for which they stand; but such mans-position is not beyond ordinary skill; it is the mental process of an-alyzing and retaining the evanescent impression of a given scene, so as to bold that impression coefficients. as to bold that impression steadily through the minute and distracting details which crowd upon the eye in out-door work, which should command our admiration, and of this those paintings give abundant

examples.

Our respect for the power of mind so displayed is, moreover, heightened by the variety of landscape offuets with which we find it to sympathize; so that to say of Laffarge's pictures that one cannot tell which he enjoye most, smooth sea or rocky coset, summer or winter, sweet inland orchards or dark woods, is as true as it is his highest praise.

Nothing could be more free from artifice, from the vulgar concern, than these paintings. Nowhere is the "brown tree" visible; the metancholy individual in black who should meditate in front of the principal high light is absent; no dog trots across the middle dis-

MR. LAFARGE'S PICTURES.1

¹ des Metropolisus Museum Mandbook and labelling in present exhibitions

The plotures which our contributor describes are those which were exhibited and sold in Beston less week. — Ros. August Augustus.

tance, carrying the shadow through the picture. Everywhere we feel the unaffected simplicity, the sincerity, and, if we may so call is, the

humbleness of nature.

It would hardly be possible to single out among the thirty small landscapes any of special superiority. If we have our favorites, we willingly actribute our choice to our own greater ignorance of certain kinds of scenery, or to some bias of association which we could not

expect the artist to share.

It would, however, be wrong to pass over in silence the magnificent painting called the "Last Valley," in which is fully displayed that wonderful drawing of retreating perspective which, under a

treatment even more subtle, formed perhaps the greatest glory of the great picture of "Paradise Meadows," now in Paris.

Of the flower studies no one who has ever heard of LaFarge will

need a criticism. Let us pass on to the important figure subjects, which derive a special interest from their connection with the recent essays of the artist in descrative painting.

We must confess, after what we had heard of the picture, to a certain disappointment in the "St. Paul," which, however, after redescription we concluded to be due to the circumstances under which the painting was shown. The tail figure, standing vertically in the centre of the canvas, and cut almost in two by the sharp, white edge of the awning, whose rectangular shape necupied the upper half of the field, leaving the lower balf dark, like an escutcheon divided in the middle, presented a still, archaic air in comparison with the easy arranging archiveness of some of the surrounding small pictures, which could attractiveness of some of the surrounding small pictures, which could hardly be otherwise than disagreeable in an easel painting. It was only by imagining it in its destined place, high above the eye, in the axis of a chapet, surrounded by the vertical and horizontal lines of the architecture, that it became manifest that the composition could hardly have been different. A posturing athlete would be revolting in such a frame, which could codure nothing short of almost perfect symmetry.

And, the picture once in place, this symmetry would, it was plain, add greatly to the unjesty and impressiveness of the figure, while the violent contrasts of light and shade and line, which annayed the eye in the small room, would be necessary to make it visible in the

place for which it was intended.

Such was the well-understood principle of the noblest decorative painting, before the time of Raphael and Michael Angelo, and Mr. LaFarge deserves credit for having been faithful to the knowledge gained by profiund study of his art, instead of catering to the preconceived notions of the multitude.

The same explanation applies to the "St. Mary," whose elongated

The same explanation applies to the "St. Jary," whose stangard proportions excite the surprise of spectators ignorant of the forestherening effect which its intended position would have had upon it; and to the "St. John," the spiritual beauty of whose face, however, disarras the criticism of the most captions.

Let us finish our study, by way of bonne bouchs, with the enjoyment of the decicious little picture of the "Contaur," painted for Mr. Richardson, and now the property of Mrs. Gurney. Here is no Mr. Rechardson, and now the property of Mrs. Garney. Here is no question of truth to inture, or of decorative proprieties; we are in presence of the soul of the artist, amusing itself with fancies of sweet color, delicate expression, and the beauty of harmonious line. The green grass flier from under the swift feel; we feel the cool breeze and smell the morning fragrance; we smile with the innocent child, and join is the affection which fills the movement of the ancient brates. It is poetry in color, the work of pure imagination, using, but transforming, the materials which it receives from the outward world. world.

A CURIOUS COMPETITION.

The Special Committee of the City Council of Covington, Ky., invite plans from architects for building, in the city of Covington, a juil to cost not over \$30,000.

No plan will be received after twenty days from date.
The successful plan will be paid for.
Plans to be sent to Geb. H. Davinson, City Clerk, Covington, Ky. October, 18, 1878.

The above advertisement has appeared in all the Cincinnati papers, and speaks, in a measure, for itself. The advertisement has, however, such a vague, indefinite, and incomprehensible new upon it, that I such a vague, indefinite, and incomprehensible most upon it, that I instituted a sort of inquisition and discovered—nothing. No one seems to be able or willing to give any farther information than the little that the notice contains. Cincinnati architects are not very busy now, and perhaps not a few will be found who rate their services so low as to be caught on any hook thrown out to them in the turbulent sea of competition, no matter how said book may be baited.

THE NEW YORK STATE REFORMATORY AT ELMIRA. DECROIT, MICH., November 16, 1878.

TO THE EDITOR OF THE AMERICAN ARCHITECT :

Sin, — In your issue of the 9th inst., among the list of prisons now in course of erection, the one at Elmira, N. Y., is spoken of as being in the "Romanesque style," Allow me, as one somewhat acquainted with the anticedents and progress of this building and its design, ar correct such mistaken opinion of its features as such a general term as "Romanesque" might give, and to more accurately describe it as being in the pure Galvanized Iron Style, to all that

the term implies. By all mesos, please, make this correction through the columns of the American Architect, that those interested may know in what Style \$1,300,000 has been spent.

Respondfully yours, CHAS. H. MARSH.

BOOK NOTICES.

ORREG ORNAMENTS.

While amateurs are unusing themselves with decorating pottery it is well that they should know where to look for models; since they are apt to take whatever they find ready to their hand, it is worth sumebody's while to see that really good models are put into their way. This we take to be the purpose of the little hand-book of Greek Decorative Forms, I published by Tilton & Co., and edited by Professor Ware. It contains a dozen plates, chiefly of Greek vase-ormanents, selected from the works of Racinet and Owen Jones, and so selected as to give in a small compass a great variety of motives. There are also given a plate of vases copied from Meser's admirable engravings of the Engickeld Collection, and a sample vase, decorated engravings of the Englefield Collection, and a sample vase, decorated and having a design by Faxman. Finally three plates of Greek polychronic architecture are given on the authority of Hittorff, Bootticher, and others. The plates are nearly printed in colors, and with as much precision as is to be expected of black-printing. The least successful are the architectural plates, in which the colors of the take used do not seem very happily toned, while the detail and even the modelling, being given in black ink, contrasts rather harshly with the colors, as is commonly the case in black-printing.

The eleverest thing in this little book is the ingenious complishing of the text, which, excepting the descriptions of the plates, is entirely composed of extracts from writers upon Greek art. The extracts are full of suggestion and are arranged in a fairly consistent

tinely composed of extracts from writers upon Greek art. The extracts are full of suggestion and are arranged in a fairly consistent cases of twenty two pages. It would nobtless astonish Messrs, Russkin, Taine, Scieper, Owen Jones, Gladstone, Viter, and Henry Van Brant, if they should see the book, to find themselves sitting quietly together in this little "symposium," and most of all, perhaps, to see how well they can be made to agree in it.

FIANMAN'S OUTLINES.

A collection of twenty of Flaxman's outlines 2 by the same publisher are intended to serve the same end. They are taken from the illustrations to the Iliad and the Odyssey and are fairly reproduced, apparently from some kind of photographic relief plates. Flaxman's apparency from some what ont of fashion of late, not because any-thing so good has taken their place, but as one of the results of the relumnd from classicism to naturalism. Studied, as they were, princi-pally from Greek vases, they are, what Weilgewood found them, the best modern designs attainable for the denoration of portery, and since so many people are at work trying to make designs without designing, and to draw pattery pictures without drawing, it will be do-ing good service if these outlines can be made to teach some of them to know the value of a line, and to feel that a handful of flowers dropped on a plate do not make a romposition.

PUBLICATIONS RECEIVED.

The Amateur's Handbook of Practical Justimation for the Workshop and the Laboratory, containing clear and full directions for Bronzing, Lacquering, Polishing Metal, Staining and Polishing Wood, Soldering, Brazing, Working Steel. Tempering Tools, Caselardening, Cutting and Working Glass, Varnishing, Silvering, Gilding, Freparing Skins, Waterproofing, Making Alloys, Fusible Metals, Coments, Glues, &c. Price ten cents. New York: The Industrial Publication Co. 1878.

The Thiery-Firth Annual Report of the New York Association for Improving the Condition of the Poor, for the year 1878, with the List of Members and Contributors; organized, 1843; incorporated, 1848. New York: 1878.

Laws areketing Tenrment and Longing Houses in the City of New York, and Bronklyn. Compiled for the use of Visitors of the Association for Improving the Condition of the Poor.

The Tenroo Navalus and the Means of Preserving Wood from its Rayages, by Dr. E. H. Baumhaner, Commissioner to the Centernial Exhibition from Holland. Reprinted from the Popular Science Monthly. THE AMAYEUR'S HANDBOOK of Practical Information for the

Monthly.

Annual Report of the Supervising Architect to the Secretary of the Treasury for the year 1878. Government Printing Office, Washington, 1878.

The Bulliography of Ruskin : a Biographical List, arranged in Chronological Order, of the Published Writings in Prose and Verse of John Ruskin, M. A., from 1834 to the Present Time (October, 1873). Compiled by Mr. R. H. Shepherd, and printed for white the involution. private circulation.

ROYAL INSTITUTE OF BRITISH ARCHITECTS, List of Members, and Appendix; Additions to the Library, and Abstract of Proceedings during the Session 1877-78. Published at Koyal Institute of

British Architects. London. 1878.

¹ Thton's Rand-Books of Decerative Forms, -- No. 1, Greek Ornamests, illustrated with twelve plates printed in the original column. Edited by William R. Ware, Professor of Architecture in the Massichweritz Institute of Technology. Bestud: S. W. Tillan &

r Plaxman's Outliner. First Series. Boxton : S. W. Tilton & do.

NOTES AND CLIPPINGS

We wish to draw attention to the publishers' advertisament on page vi. of the advertising pages, where it is exated that the numbers of this journal for Nevember and December, 1678, will be given, grans, to new subscribers who pay their subscription for the cosming year before December 15, 1875.

A Continuations Owner.—J. B. Taliman, the owner of a proposed building as 37 W. Pity-third Street, N. Y., has been exceed and taken before a police megistrate on a charge of violating the building law, in earlying up thin walls beyond the specified height. Civil preciselings and injunctions were of no avail, so the department was compelled to resort to the more severe criminal proceedings. To change a twelve foot wall to a sixteen foot one, Taliman carried up a four inch facing, but owing to some clorical flaw in the complaint Taliman was discharged and is to be accessed on a renewed complaint.

Accounts. — On Saurday last the corporar repair-shep of the Cleveland, Columbus, and Indianapolis Radroad at Cleveland was weeked by the falling of the roof, eausing serious injuries to four of the twenty men in the building. The tetals of the acekirat are not dearly given, but it appears that the shop was a trick building two hundred and fifty feet long, but in data as to the width of the building or thickness of the walls are given. The walls were eventy focchigh, and carried the roof frame, from which were suspended two floors, which at the time of the accident were evidently overwaighted with stacks of hard-wood lumbor which were stored there.

Butther over the First of Forth. — Mr. John Waddell, contractor for the foundations of the North British Kailway bridge across the Forth, seemily began operations with a large stoff of workness. Starting from sintaneous on the high ground overlooking the fare-shores on either side of the Firth, the bridge is to be carried in the form of a light lattice gird r structure upon cytindrical brick refames to the edge of the deep water. As far as this pare of the work is concretied, it is not believed to present any feature of difficults. But in the two great spans, each 1,500 feet long, which are to form the central portion of the structure, there has to be inted one of the most difficult engineering feats imaginable. Regarding this portion of the work, the Sostana says that at the point on each side of the estuary where the bottom begins to shelve rapidly downward, there is be be placed an immense composite side, someisting of four groups of ion columns — six can columns in all—firmly bedded on basements of massary and securely beared together throughout their entire height. Over the kaps of these piers will be carried immense chains, whose shoreward ends will be anchored to ponderous masses of massary, and these, being continued over two similar piers, placed on the island of triclegaryie in multiclumied will allow, on the supersonal principle, such assistance as is estimated to be required in an epositing the spans, which, of course, will also rest at either end upon the fermework of the piers. The height of the great 1,600 feet spans will require, as in the case of the Tay bride, to bare a cerusial gradient, and when it is added that the piers will reach the height of from 500 to 600 feet, some idea may be formed of the imposing appearance which the completed structure will present.

Pavics. — It is envious to into how these panies in public haldings seem to come in latches, like railway needents and the like. Within a few days several samilar panies have taken place in houses of worship. No less than two occurred in Jowish samagegoes on the Day of Atonemen — one at Posth and the other at Strelne in the province of Posen. In the former ease it seems that there was a great crush, and seem one being hart cried out, "Fire!" This caused so much alarm, and such as increase of the pressure than the railing of the staircase leading to the gallery was broken down, and many of the women who were upon the scairs were forced over, latting one upon another. From forcy to fifty were through down in the ground. It was a long time before the punic was allowed. Many women were corried in an unconscious state into neighboring houses. Six women received severa injuries, and a child had its jury broken. At Strebo the punic was caused by a parting of the ceiling fa long in. About thirty persons, chiefly women, were more or less seriously injured. One has since died, and it is leared several others will surgainly to their injuries. — Letter to the N. Y. Heroid.

Texts or Strickern. — Before the recent royal marriage at Potsdam, in order to see whether the fluors of the Hall of Shells would stand dancing, the authorities marched in as many soldiers as there were to be guests, and gave the order, "Dance!" The floors stood the less. A similarly inequious experiment was tried some yours ago by the people of a Swiss canton. A splendful suspension bridge had been thrown neroes a deep ravine, and to see if it was firm the authorities declared a builday and collected everybody on the bridge. It sweed, luckly,

EXCAVETIONS AT ROME. — The Remain excavations are processing rapidly. Since the beginning of those in the Valley of the Forum 80,000 cubic lest of earth have been carted away between the Temple of Anananas and the Arch of Titus. The excavations of the Stadium of the Palatina, already almost that shed, have led to the discovery of extensive works in martible.

Various less or Paren.—The Western Paper Tondo says that among the orlines manufactured of paper displayed at the recent Berlin Exhibition were window blinds, asphalt roofing, material for garden walks, window curtains, and a house made of pine, with not only roof, ceiling, cornice and interior walks if paper, but all the furniture, thinds, curtains, chandeliers, correcting, contamented doors, numerous mantel and table ornaments, and finally a stove of aslestos paper, with a fire forming away characteristy and not consuming the stove, as it swidently ought to do.

The Sewens at Bulgaton, — Brighton, in England, is a lamons watering-place, and as such is very sensitive as to her reputation for good sewage disposal. The town is situated on a bluff on the coast, and is producted from the encreachment of the sen by a heavy wait sixty feet high. Formerly the sewage was mainly discharged through pipes into water from twenty-three to thirty-one feet deep at mean high cide, at distances from the shore of fifteen lumdred to two thousand feet, and into a current of from two to three miles an hour. These ontfalls were very efficient, and for ten years gave no trouble in nonintenance; but though the sewage was delivered by the pipes, moment by moment, into a current, and almost always disposed of before it could reach the shore, the sensitive residents were discatisfied because the sewage, from its less specific gravity than that of sea-water, rose to the surface and appeared in discoloted parches, which were plainly visible from the shore, a third of a mile away, darming the visitors when they knew what it was, and the effluria near by was unpleasant. At times a southwest wind drove it to the shore, but so diffused as to be practically harmless. The opposition to this stude of things grow to such propertions that the authorities finally built a sewer seven and one fourth miles long, lurgely through rock tunnelling, to discharge the sewage at Fortshello, out of the neighborhood of the summer visitors. This outfall cost the town half a million dollars, and it cost the contractors much more. — Providence Diarnal.

This Porta Signa ar Theres.—Among the four important scring-times at Treves which are credited to the Romans; to wit, the Basilica of Constantine, the Baths, the Amphilicatre, and the Porta Nigra, the last is perhaps the most interesting although a more undern structure than the others. It siffers from the others in that it is built of incueuse blocks of this stone dowolled together by iron bolts, while the others are built of Roman feleks. The date of its building is a matter of archivelogical controversy, but it is probable that it was fully during the latter years of Roman supremany. From 1047 until the early part of this century, when Napoleon I, began to restore it the gate was appropriated to the uses of religion, for its archively was malled up, and its upper stories were used as you distinct churches. At present, thanks to the care of Napoleon and the later efforts of the Prussian Government, it is nearly in its pristing condition.

There's or the Genes Eccalivers.—So much has been said of late regarding the uses and probable extended application of the products of the Eccalysti, that a few notes on the products countried in the Industrial Maseum at Mchouroe will exemplify the value of this great genus. Of all the species the blue gam (E. plandels) is certainly the best known, on account of its reputation, whether justly so or not is all improved, of puritying undarious districts. Few trees, perhaps, have over attracted agreed about the view of the time of the product of the product of the time great strength and the product of the product of the time great strength and durability of the timer, which in the colony is largely used for beams, joists, etc., in fulfillings, and for railway sleepers, piers, and bridges. Beatles the nase of the wood, the rasin excites they also been prepared from the foliage. The most colossal species is, perhaps. Evologitus anagodalian, which is known locally under various names as stringy bark, messanate, preparating, at. It is said to be not announcedly found up to a height of 420 feet, and conditines to attain a still greater height. The wood is bard and close-grained, well adapted for house building, harbing of ashps, shingles, mile, and other extracts have abiditing harbing of ashps, shingles, mile, and other purposes. This species contains more oil in its foliage fann any of its congeniers; 1,000 pounds of freeheapthered leaves, will their conall branchlets, yield by satellation 500 oncess of oil. It is rubblacient, disinfectant, and employed in the colony chiefy for joists, beams, rainers, and heavy framing work as well as by experienced. For illuminating purposes this oil in dominating approach for most supplementary agentic serving and produces a cilimensions. The wood is hard, straight, and even-grainet, and is seen large work as well as by experse for share, after the bard, straight, and even-grainet, and is received some of the supplements and share here not timed. For illuminating purposes this oil

STRAM AS A REFLECTOR AND RADIATOR OF LIGHT.—It is said that Herr I. Brandan, of Berlin, has been granted a putent for an invention which is to utilize the absorptive and emissive properties which gram is said to possess in a high degree, of one of which properties we have ample evidence in the flash of lightness which accompanies the sudden discharge of a cloud of stemm on a dark and cloudy day. The apparatus which Herr Brandan proposes to use, and which he hopes will be excluded in delling the brilliance of the electric light without absorbing too much of its light, is, essentially, a glass chamber with proper inter and outlet takes into which the steam is admitted and which receives rays either directly from the illuminating source or indirectly from reflecting mirrors.

BOSTON, DECEMBER 7, 1878.

CONTENTS.	
SCHMARY:—. The Chicago Custom House Indictments. — The Fifteen per Cent Contracts. — Their Responsibility and their Alusses. — Major di Cesnole in Cyprus. — The Turks and Archeology. — Mr. Watsh's Superintendence. — Professor Norton and	
the Cothedrel of Florence Mr. Whistler and Mr. Raskin . Amenicators' Resks	186
The Oren Fine-Place, IV	187
The Lightentiers: Cathedral at Cape Harrien, Hayri, — House at Newport, R. I. — House at Sucoden's Landing, N. Y.— The Bureau of Engraving and Printing at Washington; — Gymnusium at Congraving N. M.	100
LEGAL RESPONSIBILITIES OF ARCHITECTS, I.	100
Correspondence: —	
Letter from New York	130
THE LATE MR. COCNERGLY	
The Ownership of Drawings	191
Notes and Crippings	103

WE should be glad to be excused from entering into the onestion of the Chicago quarrel, which seems to us neither stimulating nor edifying. It has every aspect of a political fend, and is only the latest phase of the overbauling undertaken last spring by Collector Smith. We gave at that time a pretty full summary of the charges made by the collector against the contracter for the stone-work and the Supervising Architect's office, as well as of the report of Assistant Secretary French of the Treasury Department, exonerating the Supervising Architect and his immediate subordinates. Having failed to make the desired impression in the Department, Mr. Smith has, it appears, brought his accusations before the course. The result has been the indictment by the grand jury, as our readers have heard, of eight persons, Messrs. Mueller (the contractor for the stone-work of the Chicago Custom House), Mills (his clerk), Hill and Potter (the present Supervising Architect and his producessor); Burling and Prussing (the late superintendents), Reed and Wheaton (foreman and inspector of stone work). The indictment, of which the text is given in the Chicago papers, charges these persons with having conspired at Chicago on the first of September, 1876, to defraud the Government of eight handrol and fifty thousand dollars, money paid to Mueller on account of his contract for slone, and of having, in pursuance of this conspiracy, committed many acts of specific fraud which are enumerated. The whole thing reads a good deal like a burlesque, especially when one comes to the final presentment of the jury, in which Messrs Mullett (the former Supervising Architect, under whom Mueller's contracts were awarded), Robinson (the Treasury Solicitor who then examined the contracts). Rankin and Montrose (the first superintendent and inspector of the building) are declared to be also guilty, whom, therefore, the jury would like to indict also, were they not bound by the statute of limitations, the discovery of their iniquities being made too late. It is not so strange after all this that some of the papers have got so much "mixed" over the matter, or have so far lent themselves to the pleasantry of it, as to declare soberly that the grand jury aspired to include ex-secretaries Bristow and Morrill in the same indictment, had not the statute of limitations again come in their way.

The contracts did work badly, and gave an opportunity for the contractor, or his workmen, with or without a common understanding, to make the work extravagantly expensive. checks provided — the appointment of government time-keepers — proved insufficient, in the case of the Chicago building at least, to control the work. The interest of all the workmen being enlisted (a rare conjuncture) in increasing the contrac-tor's profits by delaying their work, he had nothing to do but to let things go their own way and take advantage of them, while he kept within his legal rights. If he was shrewd enough to so use his advantages as to got the letter of the Government, he was, as Secretary French said in his report, entitled (legally) to this, and there was no help for it; as for the purity of his motives and the honor of his dealing, they are not within the juris-diction of courts of law. The censor of the Department would seem to have been excited by the disastrous result of these contracts to make a headlong attack on whoever was concerned with them. It is quite likely that there was collusion, as Secretary French imagines, between the workmen and those who were I

immediately over them; but it is dangerous to infer that the higher officers were participants in abuses which it is pretty evident that they were unable to prevent. Mr. Potter on his accession found the fifteen per cent contracts in force, and protested against them. He objected to the stone used, and opposed the continuation of the building in it. Mr. Hill in his turn protested against the contracts and succeeded in modifying all but two. One of these two was the Chicago contract, which was not abrogated, said Mr. Hill in one of his reports, because the work under it was nearly finished, and because so many alterations had been made under it by order of the Secretaries and in pursuance of the recommendations of commissions, that to have changed the system at that point would in his judgment have opened more leaks than it would have stopped.

The rather farcical effect of the proceeding is heightened by the fact that at the time specified in the indicament Mr. Potter had been some weeks out of office, and by the statement which comes from Washington that, whereas the eight offenders are charged with conspiring to fraudulently pay Mueller \$850,000, the whole amount paid him since the date named has been less than \$500,000. These slips do not necessarily invalidate the essential part of the charges, but they seem to indicate haste and want of consideration in the preparation of the indictment, which, therefore, is certainly discredited by them, and which really looks much as if it were thrown out to see whom it could bring down, as a boy throws a stick into a tree full of apples. Without assuming to decide in advance of the courts, we say we can see no great likelihood that important evidence has been discovered which was not to be had last spring, or that upon what was then known an impartial court will reverse the decision of the Treasury Department. The whole trouble took its rise in the lifteen per cent contracts -- contracts which were expected to be heneficial to the Government, but proved in the end to be in a different way disustrous to it. They were arranged by the then Supervising Architect. Mr. Mullett, an officer who thought more of the quality of his work than of its economy, but were executed by the Secretaries of the Treasury themselves, after due consideration, and after examination by the Solicitors of the Department. If, therefore, they were fraudu-lent as the indictment declares, the Secretaries must be considered as accomplices to the fraud, and the prescutment should logically include them, as certain ambitious newspapers have made it.

GENERAL DI CESNOLA'S brother and the successor of his investigating fervor, Major di Cesnola, has not found the way of the excavator so easy under the English protectorate of Cyprus as did his predecessor under Turkish rule. The newspapers have been publishing various accounts of his arrest by the English Commissioner, Colonel White, for excavating without authority. The arrest was under a Turkish law, which was promulgated in 1874, while General di Cesnolu's rescarches were going on, though the General contrived not to be troubled by it, and which forbade anybody from excavating for antiquities without per-mission both of the authorities and of the proprietor of the excavated land, under penalty of fine or imprisonment, and the confiscation of his findings. A discharged or disaffected servant complained of the Major's digging, which had not the permission of the authorities, now English; and under a recent order of Sir Garnet Wolseley reaffirming the Turkish law, his house was entered and his museum put under scal. He was arrested, sent to the fail, and fined, and his collection declared confiscated. He submitted under protest and was immediately released, and the fine remitted. Major di Cesnola entered a variety of pleas, it appears, some to the point and some not, — that he was an American subject, and not answerable to a tribunal which was neither Turkish nor English; that there was no proof that his digging was not for agricultural purposes, or that his collection was acquired by digging; that the collection was acquired before the issue of Sir Garnet Wolseley's order; and that the proceedings were an outrage; — but the decree of confiscation was upheld, and he has appealed to the protection of the U.S. Consul at Beirut.

Whereier the law has been enforced against Major di Cesnola in an offensive manner, will doubtless he made known through his appeal to our consul, which will furnish material

for a pretty consular quarrel. That the English in their protectorate should enforce the Turkish laws is, we believe, one of its conditions; and they will probably enforce them better than the Turks themselves. If in this process they are led into offence and trouble "through the overzeal of a subordinate agent," as Mr. Hepworth Dixon writes, this is no more than often happens. It is likely that they will wish to reserve the privilege of digging up treasures for themselves; and not at all likely that the amusing but rather high-handed system of browbeating, which General di Cespola applied to the Turks with such success, will be found effective with them. The pity is, as this quarrel reminds us, that almost all the territory in the world which is rich in classic remains is in the hands of the Tucks, whose policy is that of the dog in the manger. They have a religious contempt for archæology and despise the remains of antiquity, except as metal for the include-pot, or stone for the limo-kilu or for building. But they see that Christians value these things, and the more instinct of cupidity prompts them to be tenacious of the things that other people want. Their tenacity and gradually awakening cupidity are of a kind to bring the archaeologists to despair; for while they in no wise interfere with their continual destruction of the things that are precious to him, they are an obstinate bar to his gotting at them, either for possession or for study.

Mr. Walsh, to whose superintendence of the St. Louis Custom House we have more than once alluded, has written to us to complain that in our paper of November 2, wherein we recited the justification of his career which was published in the Cincinnati Gazetts, and noticed the strong letter of the Missouri judiciary exonerating him from the charges of collusion with contractors which had been brought against him, we nevertheless failed to credit bim with having vindicated the quality of his superintendence, as he claimed to have done, and left him under an unjust suspicion of neglect or incompetence. We said at that time as much as we felt justified in saying by the evidence then at our disposal, which seemed to indicate that the work was visibly inferior to what it was intended to be, for which, of course, responsibility lay upon the superintendent. Since Mr. Walsh's letter was received, however, we have taken pains to get information from the Government, and our inquiries have shown that the evidence we had received was misleading. It does not appear that the piers concerning which the accusations were made were required by the specifications to be of solid out stone, nor that any solid bonding of them was shown by the drawings; but it seems that the superintendent was empowered to have them constructed according to his judgment, and that they were adjudged to be sufficient and satisfactory by the Supervising Architect, after examination by himself and by the inspectors specially appointed for that purpose. So far as we can learn, then, Mr. Walsh has been altogether exonerated from the charges that were brought against his superintendence, and we are sorry to have been misled into implying that he had not

We had intended in an earlier number to call the attention of those of our readers who might overlook them, to two articles by Professor Norton in the Atlantic Monthly for November and December, ontitled "Florence and St. Mary of the Flower." They give, in very interesting form, the chief events of the history of Florence in the fourteenth century, grouped about the story of the building of the cathedral. Their picture of the condition of Florence at that time is very lively, and their account of the building of the cathedral doubtless the best that is to be found. Since they are in great part the fruit of personal research, they contain material that has, we think, never before been brought together. Certainly they give information that is not accessible to Americans in any other form, and that well deserves the reading of whoover is interested in the history of achitecture. So far as we know, they are the most important as well as the most interesting contribution to architectural history that has been made on this side of the ocean.

Mr. Whistler's libel suit against Mr. Ruskin for his savage and contemptuous criticism of his pictures has been decided by an award of one farthing damages without costs. This is variously interpreted by commontators, according to their sympathics, as implying that the criticism was not much more than

the pictures were entitled to, or that Mr. Ruskin's criticism is innocuous. Whichever may have been the view of a British jury, it is clear that they did not consider Mr. Whistler injured, and that be can have got but small comfort out of his lawsuit. The Philadelphia Telegraph ingeniously suggests that the effective retaliation of Mr. Whistler would have been to manage to set Mr. Charles Reade upon Mr. Ruskin, by which he would not only have shown the world an edifying combat between two masters of personal abuse, but would probably have made Mr. Ruskin as uncomfortable as Mr. Ruskin had made him.

ARCHITECTS' RISKS.

The subject of the responsibility of architects for the quality of the work done under their direction is one which could hardly be fully discussed in an hour or two of one session of an architectural convention. Nevertheless some of the points which were brought out in the discussions of the Institute were of much interest, and they raise a broad question which, while it is of much importance in determining an architect's relation to his client and to the public, is liable to come up at any moment in practice, and does come up not infrequently in isolated cases, but has never been formally decided as a point of general usage, probably because it has not as a general question been clearly enough and often enough presented. The question is, How far does an architect's responsibility extend?—that is, not to what point of pecuniary or personal liability, but to what assurance of the perfection of the work done under his direction.

It is not the practice of the courts in this country nor the liabit of ordinary clients to push this responsibility to an extreme; yet there are many clients who assume that an architect's superintendence implies a warrant for complete excellence in every particular of the work, and there are architects who are ready, in theory at least, to accept a plenary accountability for every detail of work which they supervise, as much as if they had executed it themselves. That a client, who wishes to be sure that his work is well done, and who does not very well understand the conditions noder which an architect works, should hold this view until he is otherwise instructed is not unmatural; but in an architect, as business is actually done, it seems to us a little Quixotic, and to require, before it can be safely carried out, a considerable modification of the conditions

of ordinary practice.

Where an architect superintends work two theories of his function are possible; one is that he is not only the director, hut the absolute and responsible controller of the work to its minutest detaks; the other, that he is its director and supervisor, but is responsible only for planning it rightly, for giving right and sufficient directions for carrying it out, and for using due care in seeing that the execution of it is satisfactory, without undertaking to warrant it in all particulars. Now either of these views is practicable and intelligible; but they require that the whole of an architect's business management shall be adjusted in harmony with whichever prevails. There doubtless is a certain convenience in having, in any important charge, one person made accountable by law or by agreement for every fault, whether his own or another's, and this person may, for convenience sake, be arbitrarily chosen. Of course an architect may assume such a liability, and the course of the discussion to which we have alluded seemed to indicate that some were disposed to assume it or to think that it ought to be imposed. It is worth while to conshler what are the necessary conditions of this liability. Obviously if an architect is to be held liable for every fault of contractor or workman be must be perfectly autocratic and independent in his management of them. He must have the unimpeded selection of his builders, whose work must then be done with no communication from the elient except through him. He aught not to be expected to give a contract to a man in whom he has not full confidence, but who is the lowest hidder in a competition; and he should have as minute centrel through his contractor as the contractor has through his foreman. His supervision must therefore be minute and incessant; one visit a day to a building will by no means do, nor will two. All this is necessary for his own protection if he is to assume such extreme liability, and as a consequence his pay for the amount of work which it demands from him ought to be proportionally increased. The one and a half per cent which ordinary practice allows for superintendence out of the established fee of five per cent is not nearly enough for this sort of supervision; and if it were the actual habit to exact such liability, the architect would have to insist on an increase

of fees, or else simply to run for luck. As a fact, the actual habit is to work on the other theory. The architect assures habit is to work on the other theory. The architect assures himself by due diligence that the general character of the work and the execution of the important parts, and of such subordinate parts as he is able by reasonable watchfulness to scrutinize, are satisfactory. He infers that what he has not been able to see is done with like faithfulness, and that he has been able to see enough to make him fairly sure of the rest. This is what he really means when he gives his certificate, and this is as much as the ordinary client is willing to pay for or finds neces-

The question may be asked, and was asked in the discussion, Who, then, is to guarantee to the owner perfect work? The natural answer is, The man who does the work, — when an absolute guaranty is required. The man who has the power to absolutely control the quality of the work in every particular, and who also has the temptation, if any one has, and the opportunity, to slight or deteriorate it for his own profit, is the man who may in reason be enforced to provide a guaranty for its excellence; the client is foolish, and the architect negligent or dishonorable, who is willing to intrust it to any builder from whom such a guarantee is not to be expected. The architect may be called upon to guaranty his own work; to warrant, that is, the sufficiency and excellence of his design, drawings, and directions, and due diligence in superintendence; what is due diligence, that is, in legal phrase, "ordinary diligence," being a question to be determined by the standard accepted in the ordinary practice of good architects. Though it is often tacitly assumed that ordinary diligence, or due diligence, for which the ordinary for is paid, will insure work perfect in every detail, this is too much to expect of it. It will seence a good average standard of exeention; but to insure that there shall be no fault in any part requires extraordinary diligence, for which an extraordinary fee should be paid; and even that will not always do it, nuder pressure of the contract system, under which most of our work is done. Builders know this, if their clients do not and the careful contractor who becomes responsible for the work of his sub-contractors reserves to himself, not a premium of one and a half per cent, the architect's fee for superintendence, but five or ten per cent, to repay him for his necessary trouble and risk.

The truth is that such a guaranty, from any one but the person who actually does the work, is of the nature, not of a professional service or of the duty of an agent, which the architect is, but of an insurance. The architect who offers it simply assumes to justice his client against loss, - takes the risk of the contractor's cluding him at some point, which he may very possibly succeed in doing, in spite of even more than ordinary watchfulness; that is, he takes an insurance risk in addition to assuming the care which he is professionally bound to take of the work, and the liability for his own share of it. It is open to the architect to take this risk if he chooses, but as it is solely a business risk it should be paid for by an insurance premium. If the owner wants such an insurance he may as we'll get it from a company, or from an individual whose bus-iness it is to take risks, as from the architect, who, after he has done his professional work with due care, since he is commonly not a capitalist, had better refrain from such speculative ventures. The view, in fact, which includes such an insurance is a purely commercial view, and not a professional view; and it is best for architectural practice in the long run, as well as for other professional work, to climinate the commercial element from it as much as is practicable. For an architect to guarantee the work of a contractor because he directs it is scarcely more reasonable than for a physician to guarantee a cure or a lawyer a successful suit, since in each case there is an element in the result that is not under absolute control of the practitioner. The architect, it is true, has an advantage over the lawyer or physician, and excepting under unfavorable conditions can assure that the general standard of his client's work shall be satisfac-tory and its essential character good. If he does not accom-plish this he may be charged with negligence or incompetonce, and punished for malpractice; but this is a very different thing from giving a guaranty, which is no guaranty at all unless it is absolute and covers everything.

As for the builder, the effect upon him of knowing that his liability is assumed by some one else can hardly be other than demoralizing. It is one of the worst evils of the contract system to which we are committed that it diverts his efforts from doing his work as well as he can to merely doing in the casiest way what is absolutely exacted of him. If it became the rule

of practice that the architect should be liable for the builder's work, we may be sure that the responsibility would slide from his, the builder's, shoulders altogether, and the architect, unless in exceptional cases, be obliged either to give himself up wholly to watching his contractors, to the sacrifice of his professional attitude and the injury of his proper work, or else do a speculative business in building-risks.

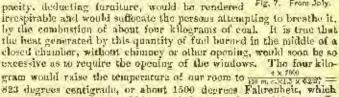
If attention had not been specially called to this view of the question, we might have felt that to argue at length against it was something like beating the air, since the actual practice is unquestionably in favor of leaving the ultimate responsibility where it naturally holongs, holding each man as the first security for his own work; but there is certainly a tendency among many clients to press the doctrine of the plenary liability of architects; and there are architects who, apparently without considering duly where it leads, are tempted to receive it with an encouragement which is more chivalrous than judicious.

THE OPEN FIRE-PLACE, IV.

MUAZIERS AND PORTABLE FIRES.

In milder climates we find the portable brazier without any provision whatever for the outlet of the smoke. This system of heating was generally outployed by the Greeks and Romans. It is still used in Spain, Italy, Algeria and other warm countries. The braziers of the Greeks and Romans formed elegant pieces of furniture, often heautifully sculptured, as in Figs. 7 and 8. The Spanish portable brazier, Fig. 9, in which charcoal is burned, is rolled from room to room, warming out in succession. By this system the entire heat of the fuel is realized, but, on the other hand, the products of combustion, always disagreeable to the occupants, and highly injurious to the paintto the occupance, and highly injurious to the paintlugs and furniture, are extremely dangerous for the health.

The combustion of one kilogram of coal, for instance, converts into carbonic acid all the oxygen contained in nine cubic meters (or yards) of gen contained in this clime meters (or yaris) or air. This, according to Peelet, readers twenty-seven cubic kilograms of air unit to breathe, so that the air of our room 20 × 20 × 10 feet, or of about one hundred and ten subje meters ea-



would be nearly hot enough to melt bruss. (In the equation, 7000 represents the heating power of coal in units; 1.8 the weight of 1 m. c. of air at 0° C.; and 0.2877 the specific heat of Ric.)

The real dauger results from the production of carbook oxide, which gives much less heat. It is calculated that a bundreth part of this gas in the air is sufficient to kill warm blonded animals. Hence the danger of using charcoal for fuel as in the Spanish brazier, the products of embustion being largely carbonic oxide. A remarkable instance of death by charcoal fumes is given by the suicide of the son of the celebrated ebemist Bertholles. He left us a vivid

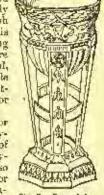
Fig. 9.

secount of his own destruction by asphyxia in an air-tight chamber. Locking the door of the room and closing up all the cracks which might

admit fresh air, he prepared a char-coal fire on a brazier, seated himself at a table with writing materials and a seconds marking-watch, marked the precise hour and then lighted the charcoal on the brazier before him. With all the method and precision of a scientific experiment, he recorded the various sensations he experienced, dorail-ing the approach and rapid progress of

defirium, and as suffocation began the language became more and more confused, the writing larger and more iflegible, until the writer fell dead upon the floor.

In colder climates, where greater heating power is necessary, the brazier is of course insufficient. In the frigid zones, however, where wood and coal cannot be obtained, the brazier reappears to the form of the smoky lamp of the Laplander and Esquiman. Here economy approaches its maximum, the heating, lighting, and ventilation being





effected by one and the same inexpensive agent, namely, patrid oil, hurned under a hole in the roof of the har. "The Greenlander," says Tomlinson, "builds a larger but and contrives it better, but it is often occupied by built a dozen families, each buying a lamp for warmth and cooking, and the effect of this strangement, according to the remark of a traveller, 'is to create such a smell that it strikes one not secustomed to it to the very heart.'" The effect of this great conomy, however, is shown in the bleared eyes and the simpled growth of the onlives.

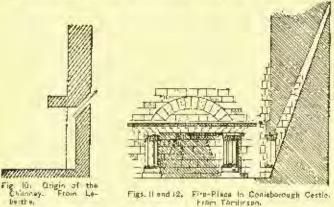
Finally, the last degree of economy in warning, if we can call that economy which saves fuel at the expense of health, is reselved by the lace makers of Normandy, who work warmed by the natural tree burning in the bodies of their domestic animals. They reat the close shads of the farmers who have cows in winter quarters. "The cows are tethered in a row on one side of the shed, and the lace makers sit cross-legged on the ground on the other side with their feet buried in straw. The cattle being out in the fields by day, the poor women work all night for the sake of the steaming warmth arising from the animals."

We workloss at the burder ardress of the civilized truck and the

avising from the animals. *
We wonder at the backwardness of the civilized Greek and Roman in the use of their tripods, smile at the Spaniard with his terbarous rolling brazier, pity the Esquiman with his feeble and smoky lamp, and sympathize with the wratched lace makers of Normandy in their close and sickly atmosphere, yet all the time forget that we ourselves allow the sir of our rooms to be impoverished in the very same manner, and often to no even greater extent, by the noxions vopors pouring from our unventilated gas burners.

ORIGIN OF THE CHIMNEY.

The idea of building the fire-place against the side wall probably originated in England in the eleventh century, at the time of the



Fire-Place in Conieborough Cestle. Figs. II and 12,

Norman Conquest. Previously the chimney consisted merely of a hole in the roof, with a small wooden lower above to carry up the smake. At the time of the Conquest, fortresses were constructed

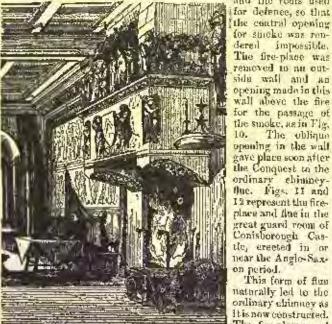


Fig. 13. Fire-piece of the Faurteenth Century. From Violini-ie-Duc.

ordinary chimney as It is now constructed. The fire-places and flues were at first very large. France a royal edict.

tle, erected in or near the Angle-Sax-

on period.
This form of flus

naturally led to the

and the roufs used

for shicke was rendered impossible. The fire-place was removed to an outside wall and an opening made in this wall above the fire for the passage of the smoke, as in Fig.

The oblique opening in the wall gave place soon after the Conquest in the ordinary chimneythe. Figs. 11 and 12 represent the fireplace and the in the great guard room of Conisborough Cas-

10.

as late as 1712 and 1723 fixed the size of the flue at three feet wide and deep enough to admit the chimney-sweep. In this country we have seen old-fa-hiened fire-places eight feet long and three feet deep.

3 Tomlinson, Warming and Ventilation.

These caused such a draught that screens were necessary in the ruom to protect the immates from powerful currents of cold air, but, although the waste of heat was enormous, on account of the cooling effect of these strong draughts of outside air, it was nevertheless much less in proportion to the fuel burned than is the case with the smaller



Fig. 14. Fire-place of the Fifteenth Century.

modern fire-place. Provided usually with a large bood projecting holdly into the room, and placed at a considerable height, sometimes six or eight feet, above the hearth, Figs. 13 and 14, they radiated the heat generously into the room, and, although they did not pretend,

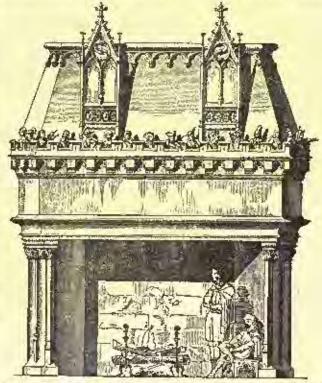
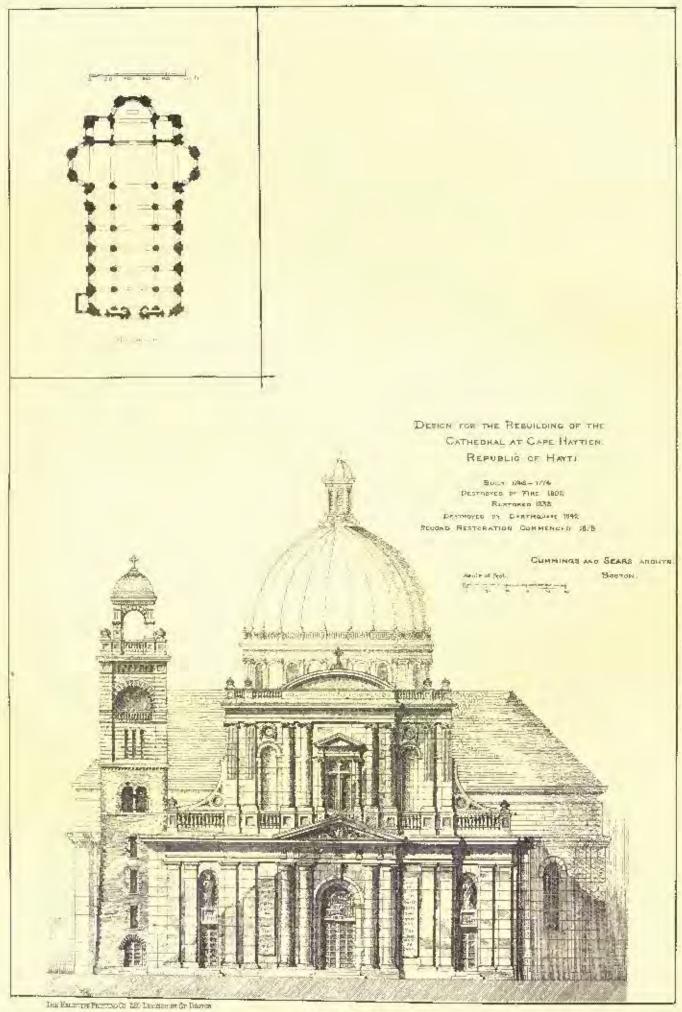


Fig. 15. Fire-place in the House of Jaques Coaux, Bourges. From Gellhebaud.

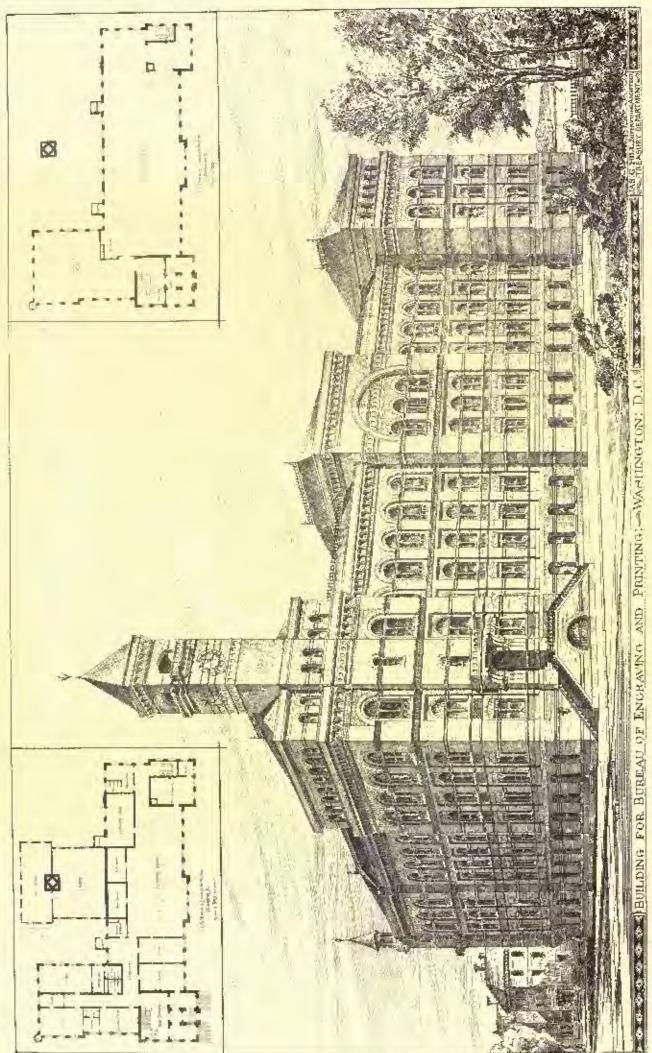
any more than do our modern fire-places, to heat the air of the apartment, they at least sufficed to warm amply the persons grouped around them or seated on the hospitable benches built upon the

As for smoke, it is underiable that where but a small fire is required, as is usual in our smaller modern rooms, and the fire-place and flues are large, the hot air current is greatly cooled by the cold air entering above the free, and the rapidity of the draught is proportionally diminished. It is of course thereby rendered less capable of resisting any impediments to its passage which may be offered in the form of detective construction of the flue or imperfect ventilation of the apactment. But where the fine was perfect, and where sufficient air was brought into the room to supply the place of that drawn up the chimney, and where the hood projected well over the fire, a smoky chimney was found to be a rare occurrence, even with the largest fire-places and with the smallest fires.

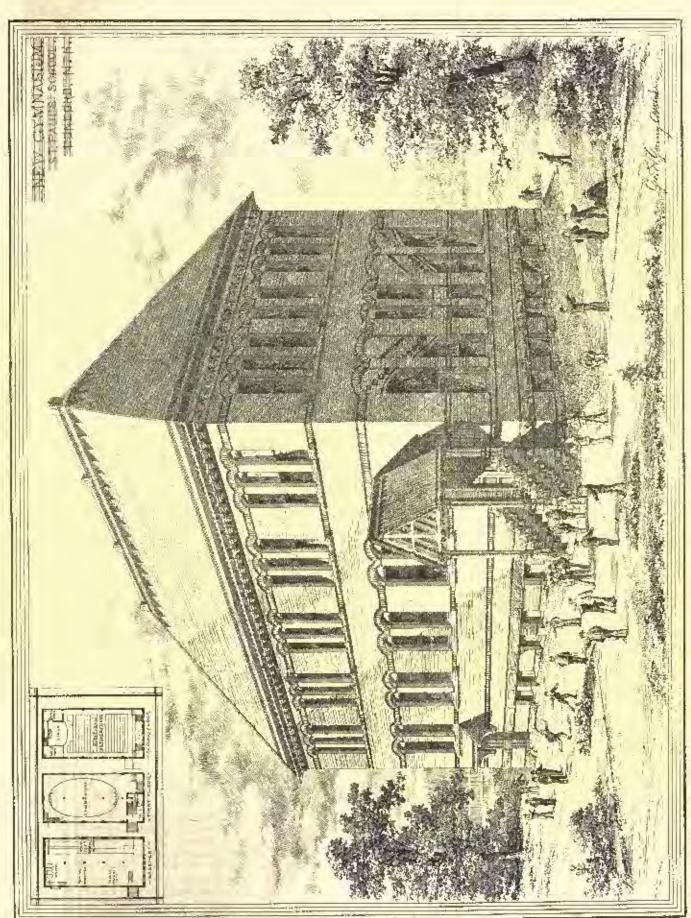




FRONT ELEVATION .

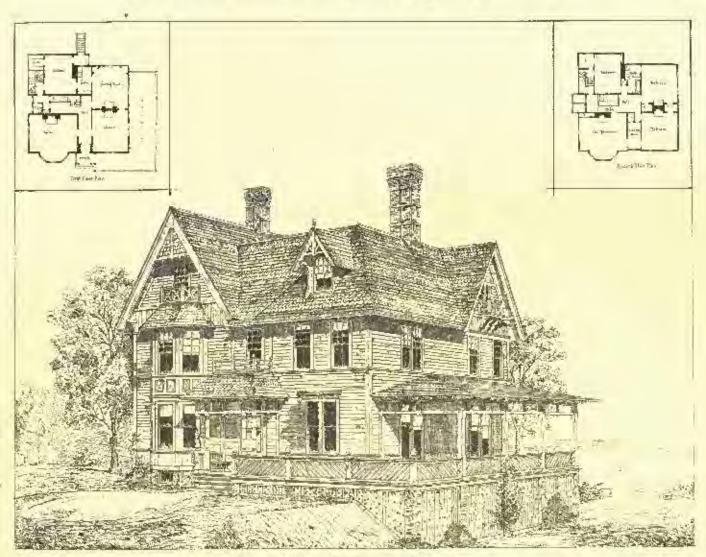


NAME OF PERSONS ASSESSED OF PERSONS OF TAXABLE PARTY.

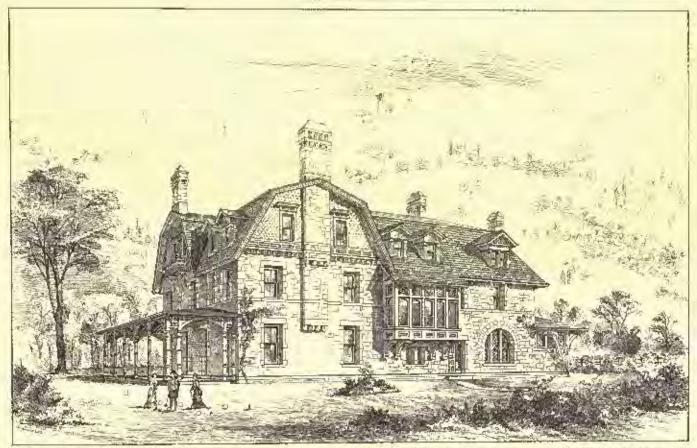


in departmental on, 230 Develorers for Sound





HOUSE OF DR MOLT UIT GENTA TOWN-



THE HELDTINE PROTEING SO. MAD DESCRIBE ST. BOWLOW.

HOUSE AT ENERDENS-LANDING, ON-THE-NUDSON, NEW-YORK

J. Cleveland Cary, Arch!



It is the custom when one of these ample fire-places, built after the old-fashioned style, is found to smoke, to lay the blame to the size of the opening and fice, although nine times out of ten the real fault will be found to be in an insufficient ventilation of the apartment, or min be round to be in an insufficient ventuation of the apartment, or in a careless or irregular construction of the flue. Hebrard, in his "Caminologie," wrote in 1756 as follows: "It is surprising that we should allow these old chimneys to be changed in order to follow the fashion of the day, without taking the pains to examine whether the utility is as great as the novelty. It appears that it is not. It has been observed, on the contrary, that of the few old chimneys which have escaped remodelling, there is scarcely one which suckes. Old men testify to the same effect in regard to those which existed in their time, while we have no hesitation in saving of the majority of

their time, while we have no besitation in saying of the majority of our new chimneys that they do smoke."

The cause of this change was the suppression of the hood which had been built and recommended as of the utmost importance by Alberti, Philibert Deforme, and others. The hood was dropped partly because it was thought to interfere with the decoration of the aparlment and partly on account of the desire for novelty. Figs. 15 and Unfortunately this modification involved a second which had a

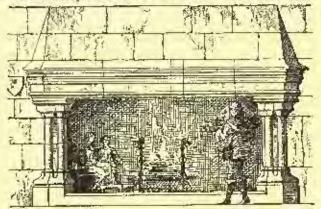


Fig. 16. From " Antient Demostick Architecture.

still more injurious effect upon the heating power of the fire. The snoke being no longer properly conducted to the flue, would under adverse circumstances enter the room, and the device of lowering the montel was adopted to obviste the difficulty. This was done at first by adding a simple band of leather or of some other material below the mantel shelf, then by morable registers or blowers of metal, and finally by lowering the mantel and shelf itself, which modification, in the course of the eighteenth century brought the fire-place down to the form commonly met with in our day; a form which, objects Laburille. "militars neither the radiant nor the transwhich, objects Labarthe, "utilizes neither the radiant nor the transmitted beat." Still another reason was given for the lowering of the mantel. It was urged by Serlio and Savot that this new disposition bad only been introduced to protect the eyes from the heat of the five. It was, however, argued with all apparent reason, by Hebrard, that the object sought could not in the hoast degree be obtained by this means, since it would be necessary for the purpose to give up chairs and warm one's self standing up.

I shall endeavor to show in the next chapter in what way these large, old-fashioned chimneys may be constructed, either with or without the hood, so as to render the draught, in all cases, both

THE ILLUSTRATIONS.

ample and unfailing.

THE CATHEDRAL AT CAPE HAYTIEN, ST. DOMINGO, AS RE-STORED BY MESERS, COMMUNGS AND BEARS, ARCHITECTS, BOSTON.

The Cathedral of Cape Haytien, in the Island of St. Domingo, has had a checkered history. The first church, built some time prior to 1680, a rude structure of palmetto logs with a thatched roof, was burned by the Spaniards some ten years later; but so rapid is the decay of green timber in that moist climate that it was said to be already half reined. In the space of thirty years three more churches of similar materials were built and destroyed. At length, in 1715, the corner stone of a more substantial structure was laid, the walls being of masonry. It was consecuted three years later, but after twenty of masonry. It was consecrated three years later, but after twenty years it was threatening to fall, and was ahandoned for a temporary shed built in the public square. From time to time irregular and languid operations were carried on towards its restoration; but it was found impracticable, and in 1748 a new church was commenced, still on the old site. This also had its viciesitudes, being unable to stand up till it could be finished. It was, however, finally consecrated in 1774, with great pump. Its front was, Judging from descriptions and drawings still in existence, substantially that of which scriptions and drawings still in existence, substantially that of which a drawing is here given; but there was no done, and the reiling was apparently finished with an open roof. This church stood until 1802, when, on the landing of the French expeditionary army, sent out by Napoleon to crush the formidable insurrection, the church, with most of the city of Cape Haytien, was burned by order of Toussaint Converture. It was restored once more in 1838, only to be

shaken into rain by the great earthquake of May 7, 1842, which de-stroyed the entire city. Work has been carried on at intervals by stroyed the entire city. Work has been carried on at intervals by various successive governments with a view to its restoration, but no systematic attempt has been made to put it in a condition to occupy, until the administration of President Canal came into power in 1876, when a commission was appointed " for the recidification and completion of the Cathedral of the Cape." Messrs. Cummings and Sears, of Boston, were instructed to present plans and estimates for the completion of the church; and after sending on an experienced mason, who made a thorough survey of the condition of the walls and piers, with measurements of every part, tenders were invited for That of Mr. H. D. Clement was accepted; but the first the work. contract included only that portion of the church in front of the dome, a temporary but strong wooden framing being crarted across the rear and of the nave and side aisles. Mr. Clement went out himself with a strong force of carpenters, Mr. Famuhar with a gang of slaters, Messes. Mishael and Santer as stone museus, and Mr. J. Oldham as general superintendent or clerk-of-the-works. Oldham arrived in Cape Haytien on the 23d of December, and left on the 23d of May. Between those dates two of the great plora of the nave, six feet square and twenty-five feet high, were taken down and rebuilt, the wall above being shored; a low elerestory wall above the nave cornice was split and carried up four feet in height, the nave roof, one hundred and fifty feet long and lifty wide, put on the nave roof, one handred and any real long and may and stated, the aisles roofed with hard pine rafters filled in with plas-and slated, the aisles roofed with hard pine rafters filled in with plas-and slated, the aisles roofed with hard pine rafters filled in with plaster blocks and covered with Purtland coment for a promensale. pavement of nave and al-les was laid in freestone blocks, the nave roof finished with a barrel vault deeply panelled, the alste roofs with dat panelled cellings, all in white pine. The old front of the church still existed as high as the cornice of the first order. Mr. Clement's contract not providing for the completion of this frontispiece, a wall of brick-work, two feet thick, was carried up to fill the opening of the gable, and to serve as a backing for the stone work when that shall be added. The doors and windows have been sent out since the return of the workmen. Besides all this a great amount of masonry work was done in cleaning and repairing the stone-work of the front and side walls, much of which was broken by the earthquake. These walls, by the way, were faced with a beautifully white and fine sandstone brought from France when the church was first built, and much resembling the Caen stone with which we are familiar.

The work here mentioned exhausted the means at the disposal of The work here mentioned exhausted the means at the disposal of the commission. It is hoped, however, that additional appropriations will be made by the legislature this winter by which the work may be completed. The bell-tower shows in the elevation here given formed no part of the original design, but was one of two flanking towers built at different times and carried to different heights. The architects recommended the removal of both, as detracting from the dignity and consistency of the front. It was, however, determined to retain one of them, and to complete it by the addition of a belify stage as here shown. The done is intended to be built of iron, the over-present danger of earthquakes making it impredeal to carry any work of masonry so high above ground.

work of masonry so high above ground,

The city of Cape Haytien, of which this church is now the only important haliding, has bad a history not less eventful than that of its cathodral. Founded by French colonists in 1670, a hundred years later it was a beautiful capital with a population of some twenty thousand people, with its arsenal, its public boths, its fountains, its theatre, its palence of justice, its hospital, —with a chamber of agriculture, a "Social Royale des Sciences et Aris," and a flourishing trade with France, lengthand, and the American colonies. It was called familiarly "the fittle Paris." But domestic revolt and forcaused minimarity the fittle Parts. But domestic revolt and for-cina invasion supped the sources of its prosperity; and what these could not do, the convulsions of nature accomplished with extraordi-nary completeness. Thering the insurrection of the slaves in 1793, it was given up to the plunder of the troops, and on the landing of the was given up to the plunder of the troops, and on the landing of the French expeditionary army in 1802, was burned by the native general. Still, as late as 1827, Mr. Charles MacKenzie, the English Consul General, says, "the city is large, the streets spacious and well paved, and the houses chiefly of stone, with bandsome squares, large markets, and a copious supply of water from fountains. Upon the whole the city is remarkably beautiful." But in 1842 the Island was visited by an earthquake which destroyed the town, and no traces of its former beauty are now to be seen. The extraordinary vigor and lexuriance of vegetation have covered the ruins with verdure; the wild forters, will a trunk twelve to sixteen inches in diameter. the wild fig-tree, with a trunk twelve to sixteen inches in diameter, is frequently seen growing from the top of a high wall, its strong roots baving struck down on either side into the carth. The streets are still encombered with the ruins of stone buildings, like the streets of Boston after the great fire. The workmen, in clearing away the masses of débris from under the walls of the cathedral, uncarthed portions of skeletons, doubtless those of persons who had taken refuge in and around the church during the earthquake and were buried by the falling walls.

BOURE, AT SNEEDEN'S LANDING, N. Y. DR. J. G. CADY, ARCHI-TECT, NEW YORK.

This house is signated near the termination of the Palisades, which are indicated in the background, near a spot which abounds in his-toric association, Tappan of Revolutionary fame. The house is built of the cream-colored stone which forms a part of the singul, r formation of the lower part of the Palisades. BUREAU OF ENGRAVING AND PRINTING, WASHINGTON, D. C., NR. J. G. HILL, SUPERVISING AUCRITICE OF THE TREASURY DE-PARTMENT.

This building is to be at the corner of Fourteenth and B Streets This building is to be at the corner of Fourteenth and it streets and will have a frontage of 139 feet on the first and 234 feet on the second of these streets. It is to be built of common brick, will be of two colurs, real and brown. The floors and roof will be fire-proof. The arrangement of the rooms is indicated on the plans. The estimated are build. mated cost is \$200,000. At present the basement walls are building.

GYMNASIUM, FOR ST. PACL'S SCHOOL, CONCORD, N. H. MR. G. H. YOUNG, ARCHITECT, EGSTON.

THE LEGAL RESPONSIBILITIES OF ARCHITECTS. I. [A paper read at the sweltth Convention of the American Institute of Architects, by Mr. T. M. Clark, Vellow.]

THERE is a great deal of confusion in the public mind as to the limitations of the responsibility of those who are employed to direct construction, and it is not impossible that are litteets themselves do something to increase the confusion, not so much from ignorance of what the law requires of them as from the readiness with which some, in their eagerness for employment, bind themselves to terms of excessive harshness, and perhaps also the ambition of some to claim an authority over clients and contractors more absolute than is always

authority over clients and contractors more absolute than is always necessary or desirable.

There is a popular idea that the architect is somehow responsible, not only in his own work, but for that of all the contractors for a building. He is supposed to be in some way capable of watching at once all the workmen employed in the structure through the whole of their working hours, so that the medianic who has been asture enough to conceal his bad mortar and rotten timber during the periodical visits of superintendence, passes for having only yielded to the impulses of human nature, while the architect, who failed to find him out, is denounced as incompetent.

Executly is the final certificate supposed to confer a sort of

Especially is the final certificate supposed to confer a sort of plenary absolution on the contractor who has managed to obtain it, and who thinks himself entitled to keep the profits, whether honest or dishonest, which he may have been able to secure by means of it, on the pretence that the architect's approval supersules for him the

faithful excention of his contract,

But if builders find it convenient to claim such preposterous antherity for the acts of the architect, which are profitable to them, the public, on the other hand, seem to find difficulty in holding their agents, in matters of construction, to even modernic accountability, and their attempts to do so result in some cases in gross hijustice to their professional advisor, and in others in such extraordinary contracts with architects as that which the Indiana State House commissioners have succeeded in getting one of them to accept.

It would be much to the advantage of the profession and the publie if their mutual duties and responsibilities were better understood, and a reference to cases in which the law on such subjects has been

and a reference to cases in which the law on such subjects has been established may be interesting, even if very incomplete.

The general rule of law in all cases of employment of professional advice is that the expert shall be bound to use in discharging his trust an ordinary amount of care and diligence, together with an average degree of skill and knowledge of his business. The highest degree of skill is not expected of hint; but neither can be satisfy just the law of the law rice, as has been claimed, with such an amount of intelligence as may have been shown by great musters under unfavorable circum-stances; what is required of him is a continued exercise of the best skill which, with ordinary talents and opportunities, he could be expected to attain.

Perhaps in practice want of care and diligence is more frequently Prehaps in practice want of care and dingence is more frequently imputed to architects than want of skill, and courts are stricted interpreting the law in that respect. In an Loghish case an archimet, succl for negligence, replied that he found his instructions were disregarded by the builder with the approval of the owner, and thinking it useless to waste his time in frequent visits, he had only been to see the work about once a month afterwards. That seems

not annatural, at least; but the court did not find it justifiable, and judgment was given against him.

In general, it may be remarked that juries' notion of faithful supervision differs materially from what architects are apt to under-scand by "superintendence," and he who has a difficult or dangerous piece of construction or alteration to carry out, will consult his ewn interest, in view of the risk of accident, by boing on the ground in person as much as possible, so that want of diligence at least may not be imputed to him.

As to want of due care and skill, there seems to be some variation

As to want or due eare and skul, there seems to be some variation in the practice of different countries.

The French Code says, section 1792: "If the edifice built at an agreed price perish in whole or in part by faults in its construction, even by defect in its foundation, the architect and the builder are jointly responsible therefor for ten years?"

This is the law of France, and, in substance, of England and the United States. The French jurists make some further distinctions.

It has been decided that the architect is solely responsible for damage or failure in a building which has been strictly carried out in ac-

cordance with his plans and under his directions, if the workman-ship and materials were not defective, and this decision seems to overrule a claim which has been made, that the builder should be supposed to know as much of his own business as the architect, and nnless he protosted against a faulty design he should share in the responsibility for it.

Another decision extends the responsibility of the architect to all cases of damage which may result from a violation or ignorance on his part of the rules of the art which he professes, or of the laws which it is incumbent on him to know, such as those relating to partywalls, or ancient lights, or the police or municipal regulations of the locality in which he builds; and it has been repeatedly held that the architect could not free himself from this responsibility, even by al-

leging the consent or the positive orders of the owner.

As to the accountability of the architect for the owner.

As to the accountability of the architect for the bad quality of the work done under his supervision, there is no obscurity whatever. The law says: "If the architect is charged with the surveillance of the work of the connector, he can be held for all the consequences of any negligened in his performance of this duty; so, whether it may be that the plan has not been faithfully followed, and the building is consequently defective, or the contractor has furnished but accordingly defective, or the contractor has furnished but accordingly defective, or the contractor has furnished but accordingly defective, or the contractor has furnished. materials or workmanship, those who suffer inconvenience from any of these deficiencies have a cause of action against the architect, subject to the limitation of the Code, which says (act 2270) that hafter ten years architects and contractors are discharged from the "after few years architects and contractors are discharged from the guarantee of work furnished or directed by them in accordance with an agreement as to price," and, of course, provided they can show that the damage or inconvenience could have been prevented by the exercise of due skill and care on the architect's part.

This seems a hard doctrine, considering that the architect has no interest in permitting the use of had materials, and can wholly prevent it only by extreme watchfulness, if at all, while the builder controls are admitted and representation and if there for

trals every detail of material and workmanship, and if those fur-nished are defective, it must be with his knowledge and collusion, and with intent to defraud the owner; and if he succeeds in his fraud the whole profit is his; but there is no doubt that it is the law in France and Great Britain, as well as this country, and a man who suffers from defective work in his house or other building, which might have been detected or prevented by what the court may consider reasonable care on the part of the architect, can recover damages from him. In the English and American practice it would seem that the architect is compelled to make good the whole loss if seem that the architect is compelled to make good the whole loss if the owner chooses to require it, while the French courts seem to ex-creise a discretion in apportioning the indentity between those to whose fault the loss is due. Thus, in a case where a bridge was washed away by a flood, the municipality sned the engineer to com-pel him to repair the loss; but the court decided that as, although the flood was an annual occurrence, answering in part to what our books term as "act of God," still, it was within the reasonable skill that the law expedied of the unciperent to travelle are took assets.

books term an "act of God," still, it was within the reasonable skill that the law expected of the engineer, to provide against such occurrences, and his stare of the responsibility was estimated at one fourth, and he was condemned to pay one fourth the damage.

In another case, a town built a hall, and six years after its completion the stone began to thake off. The municipality such the architect and builder jointly. It was in evidence that some of the stones were placed off their natural bed; and although it appeared that it was difficult to distinguish the beds in that particular stone, the court held that the architect couch to have been able to do so, and that it held that the architect ought to have been able to do so, and that it was one of the rules of his art not to allow such misplacing, and he was obliged to pay one half the damages claimed.

One of the French commentators asserts the existence of an impor-

One of the French commentators asserts the existence of an important rule, that if the superintending architect has given the proper direction for the excention of the work, and has, before the work is actually in place, pointed out defects in the materials on hand, he escapes liability. If he has not he is liable, but not as a principal. The principal is the direct cause of the damage, that is, the contractor or workman who by fraud or negligence has badly exceuted the work which was confided to him. The is the immediate cause of the damage, and should fornish the reparation. The negligence of the architect is only secondary and accessory, and he should only be the architect is only secondary and accessory, and he should only be held as a subsidiary, as a bouldman in ease of insolvency of his principal.

There seems to be some comfort in this; but without referring to the decisions on which the opinion was founded, it is impossible to sell how much authority it lies. Certainly there appears to be no trace of such a principle in the English or American decisions, so that it is wisest for us to continue to think that a general supervision only is not enough to satisfy the law, and that in case of accident the courts will hold us, as the French say, saidaires with the builder in respect of damages, if any lack of due diligence or skill can be proved against us.

CORRESPONDENCE.

A CONTOMACIOUS BUILDER AND THE BUILDING DEPARTMENT.

NEW YORK.

Tux Superintendent of Buildings is just now engaged in a lively fight with one of the class known as "speculative builders." They are a numerous and most active company of business men, who know the law in its minutest detail, and who are commonly supposed to be

ready at all times to take advantage of every opportunity by which a dellar may be saved. The stock phrase "in a workmanlike mana dollar may be saved. The stock phrast "In a workmanlike manner" means in their practice that manner which will give the best return at the final sale of the building. Their cidices, be they stores, tenements, flats, or dwellings of the better class, are rushed up and hurriedly sold, while the gloss and varnish are pet firesh, and before the settling walls and general want of stability in the structure are shown in the cracked plaster and sprung wood-work.

Lust spring plans were succeed for a double apartment house at 33 West Fifty-third Struct, on the north side of the struct. It is a fine location, and the original account was for a four-story structure.

37 and 39 West Fifty-third Struct, on the north side of the struct. It is a fine location, and the original permit was for a four-story structure; subsequently leave was granted to build a five-story building; but now when the case comes into court it is found that the papers have been altered and a figure "6" inserted, while the filed plans and sections show but five stories. Where or how this crasure was committed is not known. But as the plans on fix are readily accessible to any inquirer, this alteration is not inexplicable. The law says in § 6, "In all dwelling-houses that may hereafter be erected not more than fifty-five feet in height the walls shall not be less than twelve inches thick, and if above fifty-five feet in height and not more than eighty feet in height the outside walls shall not be less than sixteen inches thick to the top of second-story floor belows, provided the same is twenty feet above the ourb-level, and if not, then to under side of the third-story beams; and also provided that portion of the wall that is twelve inches thick shall not exceed forty portion of the wall that is twelve inches thick shall not exceed forty feet above the said sixteen-inch wall; and in every dwelling-house hereafter creeted more than eighty feet in height, four inches shall be added to the thickness of the wall for every fifteen feet or part thereof that is added to the height of the building. All party walls in dwellings over fifty-five feet in height shall not he less than six-teen inches in thickness."

The first violation complained of was the use of the party-wall on the east. It was but a twelve-inch wall above the offset at the level of the first-floor joists, and to make some appearance of complying with the law, and possibly because of some appearance or complying with the law, and possibly because of some notion that even the strength of a twelve-inch wall is a finite quantity, an eight-inch lining was carried up, though urbonded, and built without any particular regard to the old wall. It contributed no strength to it beyond a slight lateral brating. Above the second-story floor beams this was discontinued, and beyond that point not the least pretence was made of cheying the law, and the twelve-inch party-wall was carried up and parteel for heams, despite the protests of the adjacent tenant, and owner who havened in this case to be Mr. Win. A tenant and owner, who happened in this case to be Mr. Wm. A. Reach, the eminent lawyer, whose residence is a five-story one; who carried his objections so far as to seek a temporary injunction. Judge Lawrence after a hurried hearing with the affidavits of the builder and his men that the wall was properly builded and the delay was a grievous one, removed the injunction. Of course it is evident that the party-wall remains for all structural purposes merely a twelve-inch wall from the offset above mentioned to whatever height the builder may choose to carry it. Its bearing strength is not added to one whit by the wall of eight inches set by the new builders; and what the law never contemplated in any case, and particularly with party-walls, i. e., the erection of a twelve-inch wall over

fifty-five feet in height, is carried out.

The opposite or westerly wall exhibits in even stronger light the policy of the builder. The law plainly says that the sixtuen-inch portion of the bearing well shall cease either at the second or third story line of beams, and that from that point, wherever it may be, there shall not be more than forty feet of twelve-inch wall. To fall within this last provision the wall which had ceased to be a sixtuenluch wall at the level of the third-floor joists was continued for a space of a few feet. It was unbouled to the main wall, and was a most farcical pretext for claiming freedom from the punulties of the law. When the injunction was applied for the builder swore that this was a well-honded and thorough wall; but once the order of dissolution was granted against the injunction, the builder became aware of the possibility that the wall might be examined, and the matter tested, therefore the whole length of four-inch lining wall was thrown down, completely removing, of course, any change of a contradiction of the testimony. Another injunction was applied for, this time by the Department, but pending its argument the builder went on with his building, and it became evident that something more summary would have to be applied to such an impracticable; and for the first time in the present administration of the Department. and for the first time in the present administration of the Department, or at any time so fur as its records show, the section of the law which permits a criminal proscention was enforced, and the builder with one or two of his associates was taken into custody. The summons server could not identify the papers served by him on the prisoners, and through this oversight a discharge followed. New complaints were at once made out and new papers served, and now the officers stand ready to arrest the first workman who shall attempt to lay a brick. The case is watched with no small interest by builders and property owners, and the Department for once is determined to show that there is such a thing as a building law.

W.

ROMAN REMAINS AT HEIDELBERG. - Since the discoveries of Roman remains reported last year, further evidence has been produced that Heidelberg was an important station for the legious of Rome in the third century of our era.

THE LATE FREDERICK PEPYS COCKERELL.

Our readers will receive with regret and surprise the announcement of the death of Mr. Frederick Papys Cockerell, the Honorary Secretary of the Royal Institute of British Architects. We are no less grieved to have to announce this event, which deprives the profession of architecture of one of its best known and most valued members in the very flower of his age, and at a time when there seemed every prospect of a long and honored career before him. The intelligence has reached London so near the time of our going to press that it is impossible to give more than a brief account of a career and a character which would have well merited a longer and

more complete notice.

Mr. Cockerell was one of the sons of the late Professor Cockerell, B. A., and a great deal of his professional training was under his father's eye. He also studied in Paris for some time. He became a pupil of Mr. P. C. Hardwick, and was the life and soul of a small group of young men who were being educated for the profession in that office at the same time, several of whom have since made their mark. In the winter of 1855 Mr. Cockerell left Mr. Hardwick and went to the Continent for a prolonged tour of study; he brought home a large number of excellent sketches and finished drawings, for he was a most accomplished draughtsman, and while in Italy be ex-tended and enlarged his knowledge of the works of the great Italian masters of painting and sculpture. It would not have taken much at

masters of painting and sculpture. It would not have taken inden at this time to induce the young enthusiast to by down the tee-square and take up the brush, but happily his original idea was adhered to—Soon after his return to hagland, Mr. Cockerell commenced practice, and he continued it with increasing success up to the date of his nationally death. His best known work was the Freemasons' Tayern, which he rebuilt, and Freemasons' Hall, which he recast, This work he obtained in competition, an early snecess, and one which led to his appointment to high Masonic office. The building, in Queen Street, Lincoln's Inn, will probably long remain to bear testimony to the refinement of taste and the skill of its architect. From the Catalogue of the British Section of the Paris Exhibition rrom the Catalogue of the British Section of the Paris Exhibition (Fine Art) we may extract a list of the works, photographs of which are there exhibited by him; it includes his best, but by no means all his important commissions: Crawley Court, Manchester; Down Hall, Essex; Borrowstea, Surrey; Freemasons' Hall, London; Lythe Hall, Surrey; Dynleaven; the Water Color Society's Gailery, Pall Mall East; Tombs at Algiers, Kensal Green, and Slough; Memorial Colorons at Slough and York; Monument in St. Paul's; Chimney Piece at Chieften.

Mr. Cockerell had a learned and a provided broadcles of Mall.

Mr. Coekerell had a learned and a practical knowledge of all the fine arts, a cultivated taste, keen perception, and a great fund of energy and good sense. His social qualities were so brilliant and yet so kindly that those who knew him will regret the true friend, the acute critic, the brilliant talker (for, in a silent, newspaper-reading age, Mr. Cockerell was our of the very few men to be met in society whose natural and acquired talents of conversation were remarkable) the bright and cheerful man of business, the genuine artist, more, far more, than the accomplished rising architect. The precept,—one of the many wise and telling maxims which dropped from the lips of the old professor, his father, - "Be an artist among gentlemen, and a gentleman among artists," was the rule of his life, and no more gallant, chivalrous, generous gentleman, no truer, more conscientious artist, within the limits to which his predilections confined him, ever

adorned the profession of architecture.

Mr. Cockerell's position and personal qualities years ago pointed him out as the fittest man available to fill the office of Fareign Sechim out as the fittest man available to fill the office of Foreign Sceretary to the Royal Institute of British Architects, and when the duties of the secretaryship were rearranged, he became Honorary Secretary, his colleague, the Acting Secretary, being his old friend and former fellow-pupit, Mr. Eastlake. Mr. Cockerell acquitted himself well in this position. He discharged the duties, which at times were not always simple, with a fine tact and an easy manner that have helped to steer the Institute through rough water when that has had to be encountered; and his loss will be saverely felt by the President and Council and by his present colleague.

Mr. Cockerell died in Paris on the 4th instant, suddenly, at the early age of forty-five. He leaves a widow and a young family.—

The Architect.

THE OWNERSHIP OF DRAWINGS.

OAKLAND, CAL., November 12, 1878.

TO THE EDITOR OF THE AMERICAN ARCHITECTS

Sir,—Much has been written to show that the ownership of architectural drawings is vested in the architect unless a specific agreement has been made to the contrary. As to the justice of this condition, all in the profession know that it is based on the fact that drawings are simply a part of the architect's instruments, provided by himself to aid him in the accomplishment of certain ends, to wit; the estimate of cost and the construction of the proposed improvements. As to the number of distinct drawings he is to make, he is always his own judge, and he is paid, as the lawyer, not for the amount of paper and link used in working up his case, but for his experience and knowledge of his work, the difference being that for the lawyer there is no established rate of charges, whilst the architecture of the lawyer there is no established rate of charges, whilst the architecture is no established rate of charges, whilst the architecture is no established rate of charges. teet is governed (or should be) by the scale of commissions recorded

by the Institutes on both sides of the Atlantic. In general practice to require the bailder to return the derwings and specifications to the architect's office, previous to the final payment, is part of the contract; and disputes seldom, if ever, occur as to their ownership at this juncture, the client being in haste to occupy or acquire possession of his improvements, and consequently indifferent as to the disposal of the drawings. The difficulty which many architects have to contend with arises when the client gets to the point where he decides to postpone the construction of his building. All the necessary labor on the architect's part has been expended to make a complete set of drawings, which appear to the owner of the proposed improvement the tangible exponent of that labor, and therefore the only legitinate "money's worth," so far as he is concerned, which be van lay hands on. It is at this time, generally, that he is conformed with rules of the Institute. He very naturally claims ignorance as to the proceedings of any such (to him) close corporation, and scorns to be governed by what he considers one-sided laws. Furthermore, "what is usual in such cases is nothing to him, and since he is not going to build immediately, he will pay for his (?) plans, and take them home." Hatil the Institute, or the profession aside from the Institute, has clocated the building public to a greater knowledge of its rules and usages, there will be the liability to discuss this vexual question. Many architects, prone to leave this matter for extilement when it shall present itself, shou thrusting the necessary information into the client's face at the legiming of their business intercourse, fearing to jur his too sensitive nature and drive him to the office of a less semiphious practitioner, who will secure him, regardless of rules and by-laws. The greater proportion of our elients are building their first house, and are very reasonably in the dark as to anything in the premises except that they are to employ an architect as

BOARD OF CONSULTING ARCHITECTS AND ENGIN-EERS FOR PUBLIC WORKS IN INDIANA.

INDIANAPOLIS, IND.

TO THE EDITOR OF THE AMERICAN ARCHITECT:

Deer Sir: A bill is being prepared by some of the architects of Indianapolls, to be presented at the next session of the Indiana legislature, which will provide for a commission of architects and engineers, whose duties will be to examine all drawings and specifications submitted for public works, and to prepare an exhaustive description of each set of drawings; setting forth the merits and demerits of each, so as to enable those having charge of public works to form intelligent conclusions. It is the intention that the gentlemen composing the commission shall be those who stand eminent in their profession, whose integrity and ability will not be questioned. It is hoped by this commission to prevent some of the critical competitions and virtually exclude pretentions practitioners. Each design having to pass a rigid examination will prevent such from entering the contest, and will give men of ability who enter competition some assurance that merit will be recognized and rewarded.

J. H. Stem.

NOTES AND CLIPPINGS,

We wish to draw attention to the publishers' advertisement on page vi. of the advertising pages, where it is stated that the numbers of this journal for November and December, 1878, will be given, gratis, to new subscribers who pay their subscription for the ensuing year before December 15, 1878.

Accinews.—On Tuesday, November 26, while two bricklayers were at work on the second floor of the dome of the Capitol at Harlford, a hod-carrier as he mushculdered his load dropped the hardle of his had on the key row of one of the small brick ranks, and as the marter was still green the brickwork gave way, and the three men were thrown to the floor, all budly hark.

The Weather-Cock on Notes Dame.— It is said that Notes Dame de Paris has lost an ornament which was, perhaps, her most conspications one. Three or four weeks up high winds swept over Paris, and one of the strongest gusts blew away from the spire of the church the gilded weather-cock which surmounted it. The debroned bird is nowhere to be found. Whether he planged headlong into the river, or was picked up from the passeness by some ampatriotic and sacrilegious pedestrian, man knoweth not. Within the outer frame of that bird was concealed a heap of minted metal. The collection included every French piece of money current in France, whether of copper, silver, or gold, from a centime to a hondred-franc piece. There were in addition come of one denomination or another bearing the faces of all the sovereigns of Europe.

Poisonous Paints and Walt-Parens.—11r. H. C. Bartlett, in a paper read at the Cheltenham (Eng.) Congress of the Social Science Association, said: Until the actum of last year, I was mable to form any agravate idea of the frequency of cases of severe illness occasioned by poisonous paints and wall-papers. I had, it is true, within my own professional experience, known of several fearful authreaks of lead-poisoning among the work-people employed in white-lead works, and among painters and others working in an atmosphere heavily laden with the saturnine vapors given off in the process of applying such paint or during its drying. I had also been consulted in a great many instances respecting wall-papers which were suspected of heing colored with arsenic, in consequence of illness of the type recognized as arising from these sources. But, when I was requested by Mr. Jahez Hogg, the well-known surgeon and microscopia, to furnish some particulars of the more striking cases I had investigated, to be laid before Government, I was assonished to find that thering the last eleven years I have traced back no less than one hundred and twenty-three cases of illness attributable either to the diffusion of carbonate of lead (common white paint) or to arsenical or antimonial coloring matters in paint or on well-papers. Others have been working in the same field of observation, and of these who have here working in the same field of observation, and of these who have winessed the danger of permitting the use of poisenous pigments and wall-papers, I could mention the testimous of aminont medical men, analytical chemists, and others who have recently professed against the omployment of such deleterious aubstances.

RAVENNESS MORAICS AT BERLIN.—A valuable discovery has just been made in the rellars of the Berlin Maseum. Packed in rations chests were found some old mosaics which lead been bought in Italy during the reign of Frederick William IV. They due from the sixth century, are in the Byzannine style, and originally decorated the eastern apse of the new ruined church of San Michele, in Ravenna, a church contemporary with San Vitale. One of the mosaics represents a concert of angels, all playing on different instruments; another shows a frieze ornament see with garlands of barrel, on which doves sway to and fro. These mosaics arrived in Berlin just at the first outbreak of the March Revolution, and were stowed away in the collars and forgotton. They are now being restored by Sigmor Radion, one of the assistants of the well-known mesaicist, Dr. Salviati, and are descined ultimately to decorate the crypt of the Imperial Mansalemn.

Making a First-class Lighthouse from an Inferior Light,— There is a lighthouse near the Isle of Skys which stands in a peculiar stausains. Just before it is the width of a narrow channel; to the left the channel stretches away for a short distance; on the right, it extends indefinitely. A landern sufficient for the short distances would avail nothing at the longer ones, while such a light as would be seen at the longer range would be needlessly and wastefully bright for the shorter ones. Recourse has therefore been had to a lantern which smalled will light the matrow channel, while two series of prisms concentrate and defices a beam equal to a first-class light over the longer distances. The saving is from £400 to £500 a year.

New Architectural Monographs, — The Parisian publishing firm, Veuve A. Morel & Cle., have announced the Inunciate publication in ten or twelve parts of a superbly illustrated monograph, "Le Vulcan et la Basilique de Saint Pierre de Roma." The greater part of the work was some by the two M. Poul Letteroilly, whose "Edifices de Rome moderns" is well known, and has been edical and completed by M. Alphones Simil. Each part will centain twenty-two ongravings and two chromo-lithographs which will make a total of about two hundred and fifty engravings, and twenty-five chromo-lithographs. Those who know the splender of the illustrations usually issued by this publishing house will need no other assurance of the value of this new and most complete work.

Anentrecteral Protochaits, — The Arundel Society is now ready to supply the whole series of photographs, the "Sepalchral Monaments in Italy," which were made by Mr. Stephen Thompson. The series is made up of forty-nice large photographs and can be obtained in pacts containing seven each. They will be issued shortly in chronological order, with descriptions and between written by Mr. Thompson himself, and introduced by a preface by Mr. ti. E. Street, R. A. Mr. Thompson is at present engaged in photographing the architectural remains to be found on the Island of Cypras.

New Expression of Assyria. — Mr. Hermized Rassani, who was a companion of Sir Austen Layard's earliest discoveries in the Emphraies and Tigris Valleys, has succeeded in obtaining from the Porte a most extensive firman for the exploration of the whole of Masoparamin, Assyrian and Babylonian. Mr. Rassam will resume his explorations in the Ninevah districts, at Koyanjik, in the palaces of Sardanapalua, Scanacherib, and Earhaddon, and at Nimrand. The excavations in the mound of Nebhy-Yumas, closs by Koyanjik, if carried on, may lead to the discovery of some ascounts, however meager, of Sennacherih's second campaign against Hezekiah, from the Assyrian point of view, as this is the site of that king's buer palace. In Babylonia, Mr. Rassam will make it a special point to discover the site of the royal record office, which has been kept secret by the Arab and Jawish dealers, through whom we have obtained so may of the tablets, representing every branch of commercial and fiscal transaction found therein, and now in the British Museam. The mounds of Tel Darahin, the site of the city of Kniha, the great sacred university of Babylon, whence Assurbanipal obtained the originals of the excarion tablets, are also within the scope of the new ferman. Mr. Rassam has also obtained a special firman for the exploration of Northeastern Syria, and Carchemish, on the Emphrates, the capital of the accient Hittite Kingdom. This is altogether new ground. — The Spectator.

The Via Sacra, — The Via Sacra of ancient Rome has been entirely uncovered from the Arch of Titus to the Tomple of Romania. Several atractures have come to light, some of which are of the old Roman period, and some of the madiaval epoch, but all of intense interest to historians and archeologies; and besides these, there are fragments of architecture and markle decorations, which will be studied by antiquarians. Three of these are dated 339, 341, and 356.

BOSTON, DECEMBER 14, 1878.

CONTENTS.
Summer: — The Supervising Architect. — President Barry's Address to the Royal Institute of Eddish Architects. — Opinions of the Eng- lish Press. — The Erratle Course of Architecture in England. — Architects' Superintendence. — Mr. Whistler's Soin. — Mr. Lee and the Metropolium Board of Works
THE LEGAL RESPONSIBILITIES OF ARCHITECTS. II 194
The Junustrations:— The Gazette Building, Cinconnati, O St. Lambert's Church, Münster, Westphalia Curio Case Cottages
Connerronnesce: Letter from Paris
Communications: Taxation without Representation, I., II., III.
THE NOMESHILATURE OF MR. WHISTERE'S PICTURES 191
The Return Courteous
Notes and Chippings

AFTER many conflicting reports of what would and what would not be done, and apparently after considerable conflict of opinion among authorities, Mr. Hill has been suspended from his office of Supervising Architect, until the end of his trial under the Chicago indictments. Mr. John Frazier, Super-intendent of the new building for the Bureau of Engraving and Princing, has been assigned as acting supervising architect pro tem. The suspension, which is somewhat unexpected, was made by the President's express order, the Secretary of the Treasury having, it is said, desired that Mr. Hill should be maintained in his position except during his actual trial. Of the propriety of this suspension it is not our province to judge; the question whether a public officer under actual indictment should be maintained in position is a general question of administration, the discussion of which belongs to politics. We may be allowed to say, however, considering the visible tendency to discuss the question on a wrong basis, that it is a question simply of a general public policy with which no opinion of the guilt or innecence of a particular officer ought to have anything to do. The rule ought to be universal, in one way or the other. For any public officer, be he collector, secretary, or president, to he influenced in his official action in a particular case by his belief in the justice or injustice of the prosecution, would be a prejudgment of the action of the courts, and therefore a grave offence against official propriety. Collector Smith has written a letter to the New York Herald, in which he says that he has had nothing to do with the prosecution, not having appeared at all hefore the jury, before whom the matter was brought by the Judiciary Department, in consequence of his report to the Secretary of the Treasury, last spring. He also says that he has no candidate for Mr. Hill's place, and has mover asked the President to appoint anybody to office.

At the first ordinary meeting of the Royal Institute of British Architects for 1878-79, the president, Mr. Charles Barry, delivered an opening address which has many points of general interest. The view presented of the present condition of the British Institute, while by contrast it awakens a feeling of mortification at the shorteomings of our younger society, is certainly instructive, — as an indication of the results possible to organization and effort. The membership has, during the past year, increased from 615 to 645 in active practice, — an unprecedented increment; of these 290 are members not living in or near London. In addition there are 95 honorary fellows and associates. The invested capital of the Institute is \$27,500, and its income for the last year, \$12,000. Its library, exclusive of periodicals, contains 3,500 volumes, which have been used by 596 readers during the twelvemonth, about equally divided between day and evening. In all these details the prosident shows that the increase has of late been unusually large. With regard to the Egyman Obelisk, now at last erected upon the Thames embankment, he takes occasion to express the feeling of regret felt by every Englishman of artistic perceptions at its extremely inadequate and unfortunate position, buried among lofty buildings, and having no relation with any important axis, - a feeling with which Mr. Leighton, the new president of the Royal Academy, and an honorary member of the Institute of Architects, expressed the heartiest sympathy in his speech on

the same occasion, seconding a vote of thanks to Mr. Barry. He also, as representing the guild of painters and sculptors, in referring to Mr. Barry's exceptious to architectural competitions, expressed his doubts whether the "survival of the fittest" usually resulted from this method of selecting professional assistance. In respect to archeology, President Barry asserted that the late discovery of the Greek city Sipontum, in Apulia. buried whole in a volcanic earthquake, had given to the world a new Pempeii, from which results of the most extraordinary importance may be anticipated. He then proceeded to make a few remarks upon sessional papers, suggesting that in these, and in the discussions which followed them, it would be well in the future to have somewhat less of aesthetics and somewhat more of practical matters, such as ventilation, warming, lighting, etc., and closed with an expression of congentulation at the change, from torpidity to activity, from repose to carnest endeavor, which had of late characterized the proceedings of the Instiinto.

THE ARCHITECT takes rather vigorous exception to much of this address, claiming, with some interesting historical affusions, that the alleged change from torpidity to activity is more in appearance than in result, and that the proposition involves an unjust censure upon provious administrations, and more especially upon those in which Professor Donaldson, the founder of the Institute, had borne a conspicuous part. The Architect questions the significance of the increased membership, the increased library, the increased income, etc., and maintains, with reference to Mr. Burry's proposition to substitute for competitions of designs competitions of names, that this ascendancy of "names" is really the very thing that competitions of designs have been struggling to overcome ever since the great fifteenth century. The Building News also maintains that the grievances of the profession with respect to competitions are by no means to be corrected by a resort to President Barry's substitute, which would deprive the profession of the obvious advantage of a system which protects and encourages its junior members, and which, if properly used, would justify the theory that the domain of art is a republic and not an aristocracy. The Building News further states its opinion that competitions of designs have failed to realize this just expectation of their proper functions in the practice of architecture mainly through the failure of the Institute to issue conditions binding upon all its members to enter upon no competition which is not hasod upon principles which shall secure alike to the profession and to the public the best results of honest emulation. As for the character of the sessional papers, this authority avers that of the dozen or more promised in the programme of the Institute for the ensuing session only four are likely to have any real value to the profession, viz.; those on "Bills of Quantities and their Relation to Contracts," "Lighting by Electricity," "The Modern Restaurants," and "Improvements in Glasgow and the City Improvement Act."

Tire comments of the London Times, as reflecting the linpression made upon the public mind by the statements of the official head of the architectural profession, are significant. In the presence of the apprecedented architectural activity of the age, it discovers that any general agreement on questions of taste is absolutely impossible, but takes comfort in Mr. Barry's cheerful address, and in the assertions that modern English architecture can hold its own with that of any other nation. But the visions of the past which are repeated in modern work, following apparently no general plan, in accordance with no convictions of principle, conflicting one with another on essential points, and all denying the ideas in vogue a few years ago, are a constant puzzle to the layman. The Times says: "It may be true that we shall be more distinguished hereafter by the unwearled energy of our aspirations than by our successes in ful-illing them;" that we "scoured the history of architecture to find something that we might at least copy, and repeat with some sense of satisfaction, and that we never discovered any-thing with which we could be content." It is strange, perhaps, that the intelligent layman, viewing the results of architecture from the outside and aninfluenced by the prejudices current inthe profession, does not discover that these successive English fashions of archeological revival must necessarily distract the professional mind from essential principles, out of which a true

and comprchensive system of architectural development may arise, and must fritter away its force upon the mere accidents and accessories of design. Thus, while under the demainion of the Stuart dynasty of architecture, the English professional mind seems capable of finding no virtue in that of the Edwards, and is for the moment alienated even from the perfecting of Greek forms or from the relinements of the Italian Renais-Why the vigitant lay observers do not recall the well organized Areopagus of Conduit Street to a sense of its responsibility as the guardian of principles and not the leader of fashions, why they do not point to the consistent results of four centuries of academical discipling on the other side of the Channel, and demand from the English architects an art consistent with Anglo-Saxon civilization, is not easy to explain. But the critics may yet be inspired to ask some questions which the great practitioners of London and the President of the Royal Institute may find it difficult to answer.

Oxe or two points bearing on the subject of our last week's editorial - Architects' Risks - were lately brought out in the expert testimony given in a case new pending before a South Carolina court, which involves the question of payment for extraordinary services on the part of the person who performed the duties of an architect. To the question what kind of superintendence, and how much time, an architect gives in the usual practice of the profession to the work he oversees, the answer given was the natural one; that the number and duration of his visits was discretionary, being in his judgment sufficient to insure that the work was done as directed by the plans and speci-The question was then asked whether, in case a house was built by the day, and the architect, being a mechanic, supervised the purchase of materials, directed and instructed the workmen, and followed the work into all its details, spending a large part of every day upon it, he should be entitled to extra compensation, and what that compensation should be. The answer given was that the usual five per cent commission does not cover such services, which with " many other details requisite for securing proper materials and workmanship" are ordinarily performed by a "general foreman" or a "clerk of the works" at the cost of the owner of the building, and that if they were rendered by the architect, he was entitled to an additional five per cent, making a whole commission of ten per cent. Assuming it to have been superfluous to say that such special services are not srchitectural services at all, and that an architect had better not undertake to render them, these answers give pretty clearly the simplest statement of the actual practice, and of what is reasonable in such a case. No architect in successful practice, and even no well-to-do contractor, would perform such services. except by proxy, or could afford to, for even the five per cent additional fee, unless in work of exceptional importance. Yet nothing less than this would do, if the plenary responsibility for which many people look were bold to attach to the superintendence that entitles the architect to his mudest allowance of mic and a half per cent out of the established fee.

MR. WHISTLER'S suit against Mr. Ruskin, although it has its amusing side, which is the first that presents itself, has also its serious and instructive side. There could hardly be a better example of the folly of appealing to a popular tribunal to decide an artistic quarrel, for this is what the quarrol really was, Mr. Whistler being, it is safe to say, more concerned about the affront to his standing as a painter than about the thousand pounds' damages for which he brought suit. Mr. Ruskin and Mr. Whistler are both artists whose ideas, diametrically opposed to each other, are caviore to the general, with the difference that Mr. Ruskin labors earnestly to make his intelligible to the publie, and at least succeeds in attracting much of their admiration; while Mr. Whistler, we faucy, hugs himself in the possession of an esoteric quality to be manifested only in a narrow circle. Mr. Ruskin, exasperated at Mr. Whistler's wilful neglect of the things which are to him most precious in painting, and not being much in the habit of controlling his pen, accused Mr. Whistler, in a passage in the Fors Clavigera which has been often quoted, of an ill-educated conceit approaching the aspect of wilful imposture, and added the not very delicate or gentlemanlike fling. "I have seen and heard much of cockney impudence before now, but never expected to hear a coxcomb ask two hundred guineas for flinging a pot of paint in the public's face." Mr. Whistler was injudicious enough to bring into

court, not only his quarrel and his reputation, but his pictures, and the British jury, which naturally had no eye for harmonies in amber and black, or necturnes in blue and gold, had a keen sense of the captivating vigor of Mr. Ruskin's language and of the analogous witticism of the opposing counsel, inquiring of Mr. Whistler which was the bridge in his picture and which was the pier. The disinterested testimony of a painter of the opposite school, Mr. Burne Jones, that Mr. Whistler's work was masterly in its way and especially in color, though only a sketch, and not to be considered a picture, appears not to have influenced the jury greatly, especially in face of the acknowledgment of the actist that such a nocturne was early painted in a day or two, and that two hundred guineas was perhaps a "stillish" price for it. The jury did doubtless the very best thing they could have done when they decided to leave the question exactly where they found it, by awarding a farthing damages without costs. It is not very likely that Mr. Whistler's paintings will have lost any old admirers or gained any new ones from the trial, and the artistic quarrel remains as it was before, while the ensympathetic public is entertained by seeing the two pro-tagonists, whose qualities it ought to honor, displayed before it, with no knightly wounds, but with clothes torn and plumes draggled in a scuffle.

We mentioned some time ago (American Architect, April 6. 1878) the attempt of the Metropolitan Board of Works to make a Landon rector pay for the repair of his own church. Part of one of the pinnacles of the old church of All Saints, in Lamheth, fell down; and since the parish, a poor one, did not find money to repair it, the Board of Works, pronouncing the spire dangerous, itself restored it, and taking a one from the law which allows it to repair a dilapidated building at the cost of its owner, called upon the incumbent, Mr. Lee, to pay the hills, on the ground that he was constructively the owner of the church. The rector naturally refused to pay, and the Board applied to a magistrate for a distress-warrant against his property, which was refused. The question has been carried from one tribunal to another, the Board always getting worsted, but renowing the attack till the case reached the Queen's Bench. The indomitable rector pleaded his own case, arguing that he was not owner of the church, since he could neither destroy nor sell it; and that the Board had recognized the exceptional character of the building, since it had not attempted to force a sale of it. The Lord Chief Justice accepted Mr. Lee's argument, and decided that a rector could peither be required to repair his church at his own expense, nor obliged to beg money for the purpose. Fortunately for the clergy in the United States, they are exposed to no such embarrassments, since all the churches are the property either of private corporations or of individual laymen (unless it be in the Roman Catholic Church, where, we believe, the bishops are the legal owners of the churchbuildings). But the clergy of the Euglish Church will doubtless he thankful to have been represented by a rector who could an valiantly hold his own against the aggressive and uncompromising Board of Works. In a country full of costly churches, which being mostly old can pretty easily full into dilapidation, to compel the clergy to keep them in repair would he to saddle them with a burden which might well prevent a great many men, and thuse the best, from taking orders.

THE LEGAL RESPONSIBILITIES OF ARCHITECTS. II.

An Illustration of the American practice is found in the case of

Newman as Fowler, decided in New Jersey in 1874.

A house after completion proves defective; the report of the case does not say in what respect, but it is found that there was want of care and skill, on the part both of the architectarul of the contraster. On the principle that when several persons are concerned in inflicting Injury upon a man, any one of them is liable for the whole damage, and that the person wronged may choose which he will compel-to pay the indemnity, the owner sucd the architect for the entire damage. The jury was charged that where the negligence of the contractor was such as to be discoverable by the exercise of reasonable care and skill on the part of the architect, the architect and the builder were alike responsible; for the effects of negligence of the builder beyond this measure, he alone was responsible. In this case, the negligence or unskilfulness of the architect being admitted, his sameness of accountability with the builder was a necessary consequence, and the owner had a right, if he chose, to obtain from him the full damages, and judgment was given accordingly.

A point in this case is interesting. The owner had kept back a part of the contract price from the builder, on account of defects not

specially described. The defendant's counsel claimed that by so doing he had already obtained indemnity from the builder, and could not demand further damages from the architect. The judge's reply was that if the builder had seed the owner for the balance of the contract money, and the defence had been that it was retained on account of the same defects for which the present action was brought, and the defence had prevailed, it would have burred the present action against the architect, since the owner was not entitled to obtain dumages twice over, —once from the contractor and again from the architect. But in fact the builder had not seed for his money, and there was no evidence that the owner might not have retained it on account of other defects than those for which he was sning the architest, so that the question of the relatined balance was still open and unlessed, and could not be considered in the present action.

Another case, decided in Missouri in 1876, gives an idea of the care which the law considers to be required of architects. A building was in process of construction, and iron columns and girders had been set to carry some portion of it. By defect probably of the foundation, two of the columns settled after the weight was brought upon them. The architect proposed to raise them with the girders resting on them, apparently so that they might be underpinned. It was in evidence that one of the contractors who furnished the inonwas in evidence that one of the contractors who furnished the ironwork, hearing the architect propose to apply jack-screws under the caps of the columns, advised him not to do so, as he did not think the easting strong enough; but the owners took the architect's view, and on his recommendation employed a professional building mover for the work. It appeared that there was some stipulation that this man should work under the direction of the architect; if it had not been for that the judge's opinion was that the architect would not have been liable for the improper management of the raising, which was alleged by some of the witnesses. On the application of the jack-screws the cap of one column broke at the corner, and the flange of the compound wrought from girder resting on it bent, allowing the girder to fall, bringing down a wall with it, and killing a workman employed in the building, whose willow sucd the architect for compensation for her loss. The architect himself was not in the building at the time, but knew and approved of the method adopted building at the time, but knew and approved of the method adopted to effect the raising.
The judge charged the jury that if they found that the disaster was

due to an improper method employed for effecting the raising, or because of inadequate supports for the serews or unskilled application of them to the columns, while the work was under control of the architect, he must be held to have shown negligence in basiness which be undertook, though he failed to show the care and skill which, having undertaken it, the law imposed upon him, and was liable for

the dimage resulting from his negligence.
Some of the testimony went to show that the design of the girder was buil, and that the columns were weak and bailty east, and the jury were charged also that if they found that defective from work was the origin of the aecident, and that this was designed by the architect in an unskilful manner, or was defective by means of had neutrial or workmenship, which could have been discovered by the defendant, in this case also be was guitty of a negligence which rendered him liable for injury resulting from it. The judge thought that the absence of the architect at the time when so critical an opthat the absence of the architect at the time when so evideal an operation was going on was in itself a failure to show the care required of him, and thought also that he was guilty of neglect in not having the strength of the caps of the columns tested before subjecting them to so severe a strain; and the jury taking a similar view, the defendant was obliged to pay the smoont channed, \$5,000.

The court, in this case, was of opinion that the owners of the building were liable, together with the architect, but it is not very evident why; and in an English case of manslanghter from the falling of a building, the owner, who proved that he had given orders for good and substantial work, but knew nothing of construction himself, and had not controlled the details of the execution, was dis-

himself, and had not controlled the details of the execution, was dis-

charged.

The professional man must not forget that the damage for which The professional man must not forget that the damage for which he may render himself liable by remiseness in duty extends beyond loss by deficiencies in the construction. A distinguished architect in London was accused of negligence in failing to prepare plans for a certain alteration with due rapidity, and the proprietor, who let the rooms in the building to lodgers, claimed the profits which he would have derived from his house if the work had been finished without delay, and the court decided that he was entitled to recover them.

them.

It would seem, therefore, that there is no want of law to hold the architect to his duty to his employer; but it the courts set up a high standard of professional diligence and skill, it must be acknowledged that their requirements are on the whole reasonable and just to all the parties, and the practitioner, conscious of baving done his work with faithfulness and skill, can appeal with confidence to a jury against the oppression of an ignorant or avaricious client. Every step that is made toward a clearer definition of our duties helps us to a recognition of our rights, and if the public should learn to hold us generally to a stricter accountability and a higher standard of skill, those who desire the advancement of the profession will rejoice, not only in the necessity for higher attainment, but in the increased respect and easier relations with the world, which recognized acquire-ment and responsibility will give.

But there are certain branches of an architect's duties towards

others than his clients, which are by no means so well defined. An important case decided in the House of Lords after long and costly Ittigation raises a very interesting point. A contractor named Thorn was invited to estimate on plans and specifications for rebuilding the Blackfriars' Bridge. His bid was accepted, and a contract, of which the specification formed a part, was signed. The engineer had designed to construct the bridge piers by means of iron parts and in the observed the bridge piers by means of iron caissons, sunk in the river and filled with masonry, and the plans and specifications were drawn to that effect. In execution the eaissons proved too weak to sustain the water pressure, with the force of the current, and the upper part had to be removed, and the work finished by the slow and easily process of holiding only when low thies permitted. When the bridge was finished the contractor sted the mayor and corporation for damages for the insufficiency of the plans and specifications, alleging that by offering them for estimates the corporation virtually guaranteed that the bridge could be built in accordance with them. The corporation replied that there was no guaranty, express or implied; that while they placed confidence in their engineer, Mr. James Cubitt, they did not pretend to warrant his work; that the contractors knew as much of him as the corporation. tion did, and it they had wished, they could have had an engineer of their own examine the plans and pronounce as to their practica-bility, and if they had then wished to withdraw their proposal they might have done so; and the unanimous opinion of the judges was that this defence was a good one, and judgment was rendered for the corporation.

According to the Lord Chancellor, the same principle should ap-ply in every case where a man employed an architect to prepare plans

and specifications, and invited estimates upon them.

It being thus settled that the first parcy to a contract does not guarantee the plans and specifications which form a part of the contract, it is of the highest importance to determine whether the expert who drew them could be understood to have guaranteed them. In the case of the bridge the engineer was dead before the action was brought, unfortunately for his professional brethren, who could have derived much instruction from seeing the result of a sair brought than and there are no accorded. against him; and there appears to be few or no recorded cases of the

kind, unless in French practice.

Another subject which gives trouble to a conscientious architect is the proper adjustment of his duties between the builder and the the proper adjustment of his duties between the builder and the owner. In case of dispute between the parties to the contract, he is made the judge by universal custom, and even in court the architect's position as umpire between owner and contractor is so well recognized that his testimony is generally the most important part of the evidence; yet how does such a position agree with the rule of hiw that a man can set only is behalf of one person at a time? The owner engages him, and bears alone the cost of his employment; is he not then solely the agent of his employer? and if so, how can he act as unpire between his principal and the opposing party?

That this is a serious question, every one in practice has occasion to know. Cases happen every day in which a contract open for estimates is awarded at a price which the architect, who has the other

innates is awarded at a price which the architect, who has the other bids as well as his own judgment to guide him, knows to be less than the value of the work; is it his duty as agent of his employer to ac-cept the proposal which he sees to have been based on some misun-derstanding or error, and set himself to drawing up a contract so framed as to protect his principal from loss in case of the hankruptey of the builder which he knows to be inevitable? Or has he a right to constrain his principal to accept a bid at a fair price, or to call the attention of the incantious bidder to the probability of an error in his estimate? in his estimate?

If he takes advantage of the ignorance or carelessness of the builder, to the henefit of his employer, has not the builder a ground of action against him? and if in pity for an honest mechanic who has made a mistake in adding up a column of figures, or who, not being very expert in reading manuscript, has been unable to spell out all the words in the specification, he has given him a hint of his misunderstanding, has not the owner, who is thereby obliged to pay a larger sum than with skilful management he otherwise would have needed to show, a right to accurate him of unfaithfulness to his true. needed to spend, a right to accuse him of unfaithfulness to his trust, and to claim damage from him?

Such questions have a serious bearing not only on the professional conduct, but on the peace of mind of a conscientlous practitioner, and any discussion or citation of cases which have been decided that may tend to a general understanding and uniform practice in similar matters is one of the many things of which the profession is in great

THE ILLUSTRATIONS.

MR. EDWIN AN-THE GAZETTE BUILDING, CINCINNATI, OHIO. DERSON, ARCHITECT, CINCINNATI, OUIO.

ST. LAMBERT'S CHURCH, MUNSTER, WESTPHALIA. WE reproduce these views from the Allgemeine Bauzeitung.

CURIO CASE. DESIGNED BY MIS. F. W. STICKNEY,

ENGLISH COTTAGE, MR. W. H. BAYES, ANCHITECT, BLMIKA, N. Y.

COTTAGE FOR DE. ERRICK PARMLY, OCEANIC, N. J. MR. K. R. ROSSITER, ARCHITECT, NEW YORK.

CORRESPONDENCE.

THE STATE CAPITOD AT ALBANY.

ALBANY, November.

I marrenum to be in the Assembly Chamber when the first attempt was made to show Mr. Hunt's pictures on the walls which they were designed to adorn. The attempt was itself a novelry, as are several other points in this scheme of mural decoration. The artist had already occupied some weeks on his sketches, the studies of single figures, and the culered carroons. When the cartoons were at last completed they were photographed upon glass slides, and an exchange of the helpid the gamers threw them, magnified to their oxylydrogen light brhind the comera threw them, magnified to their full size, into their true position. Two scalfoldings for the use of the painter had been created, one at either side of the room over the upper of its two ranges of windows, and a bridge, some forty feet above the floor and fifteen below the ridge of the groined ceiling, connected them. From one end of this bridge the picture at the other could thus he seen, and judged in all but its color. The artist, with a movement, could shift the picture downwards or upwards, to the right or left, enlarge it or diminish it, at will and when it was finally adjusted, could fix the outline on the wall from the photographic image with such variations as scened acciful on a view of the whole from across the room — a distance of eighty odd fort. As the whole from across the room—a distance or eighty and fact. As you already know, the pictures are painted directly on the stone. The space which each is to occupy is bounded by the line of the vanit above and at the sides, and by the window heads below, and is some fifteen by forty-live feet in area. The subjects are allegories. That on the northern wall (the axis of the room is east and west) represents the Flight of Night. The Queen of Night is driving before the dawn, charloted on clouds drawn by three plunging horses, one white, one black, one red, without other visible restraint than that of a swardly guide, who floats at the left of the picture and whose of a swardly guide, who floats at the left of the picture and whose hand is lightly laid upon the head of the amerimost horse. At the hand is lightly laid upon the head of the amermost horse. At the right of the goddess, and in deep shade, is the reemalent figure of a sleeping mother with a sleeping child upon her breast. The other picture is equally simple in composition. The Discoverer stands upright in a boot, duck against a smoot sky, Fortene erect behind him, trimming the sail with her lifted left hand while the right holds the tiller. The boot is rising to a sea, and is attended by Hope at the prow, with one arm resting on it and one pointing forward. Fairly, whose face is braied in her arms and who is floating with the tille and Science, unrellings advert at the side. Of the effect of the tide, and Science, unrolling a chart at the side. Of the effect of the pictures as mural decorations it is too soon to speak, but there is already matter for admiration in what may be seen of them in black and white; in the manuscutal largeness of the conception, the impressiveness of the individual figures, and the skill with which they are grouped, and, most of all, the repose which is preserved even in the temperatures action which fills the Flight of Night. On the occasion of which I have written, when, after some experiments with single figures, this picture was thrown on the wall, three spontaneous cheers from the little group of people assorbled on the scallolding told of its effectiveness.

You may have a curiosity to know something of the chamber and the building which these pictures are to decorate; for though the architecture of the Albany capitol has been holly attacked and holly defended since you published the modified designs in March, 1876, I do not remember to have seen any description of what has been done. One's first gloups of the building from the river, or the river screens, is of a black road of very screep pitch, with chimners of gray granite emerging from it half-way up, and a range of granite dormers at the comice line. From this point of view the mass recalls at once the charact architecture of Francis I. Scargely anything is at once the château architecture of Francis I. Scarcely anything is to be seen as per from below of the walls thus prowned, and on climbing the hill one finds that the finished work is the central pavilian of the north side with the currain walls which connect it with the corner pavilions. These latter are very nearly as they were left two years ago. The portion which will be ready for occupation when the legislature meets in January is about three hundred by one bundred feet. The side elevation, published by you March 11, 1876, in connection with the original ground plan, published April 15, will give an idea of what is done, though it will give very little idea of how it is done. The massing of the building has been changed alregether from that shown by the sketch. The small, flacking towers rise only to just above the cornice line, where they are roofed with slabs of granite. The main roof rises in an unbroken pitch of sixty degrees to a height of eighty feet above the cornice, becoming thus the crowning and most emaphonous feature of the building. The grouping of the upper openings of the wall, seven the building. The grouping of the upper spenings of the wall, seven over five, is maintained, as shown in the sketch, and the axial fines are disregarded. The modelling of the openings is also as shown, the law requiring a return to the first rivle not having been passed the law requiring a return to the first style not having been passed utili the wall was built to the springing of the arches in the upper story. The columns are finished, however, with classic capitals. A light label moulding, with a leaf ornament, surmounts the upper windows, and the spandhols of the lower arches are decorated with classic detail. The cornier, which is of much greater height than the eketch shows, but not of great projection, has several rows of classic ornament, the most conspicuous detail being a conch. The dormors, thrue in number, aligned over the pilasters below, are high and garrow, composed each of an order enclosing the window and sustaining an untablature, which in turn carries a dwarf order with sustaining an untablature, which in turn carries a dwarf order with

fluted pilasters, the pediment flanked and crowned by acroteria. The work below the upper story is very much as it was, except that the porch has not been built, and that the projecting keystones have been cut off from the whole building. On the court side the work is quite different from that on the street side, the statutory restriction not applying here. The nook shafts have very plain cushion capitals, the cornice, simply and emphatically moulded, is without other ornament, while the dormers are in every way different; they are righly treated, each is composed of two arches separated by a pier, the capital of which is to carry an engle, and flanked by athers which are to bear statues. The gables bear what I have seen described in your columns as "the coats of arms of the commissioners, hut were meant to be the arms of colonial families. The three in place are of Stoyvesant, Livingston, and Schuyler. Mr. George W. Schuyler, the canal auditor, is a manhage of the contraction. Schuyler, the canal auditor, is a member of the capitol commis-W. Semigler, the canal amenter, is a member of the capitol continua-sion. There is no color on the outside of the building except the gray of the granite and the black of the slats. The modifications in the composition are all in the direction of breadth and simplicity. The great roof is perfectly unbroken, and there is a flank of plain wall at either side, and a belt of plain wall above the upper areado. The thing which mainly strikes one in looking at the new work in connection with the old is, that the new work is a modelled wall, while the old is a wall with modelling applied to it. The current walls lack the upper story, in which the difference of treatment. walls lack the upper story, in which the difference of treatment mainly appears, and have dormers similar to those of the pavilion, exergi that they are smaller and plainer, and are aligned over the openings.

ornings.
The staircase, which is nearing completion, is in the well shown.
We Follow's ground plan, to which it was committed. This well on Mr. Fuller's ground plan, to which it was committed. This well is at the sombreast corner of the finished portion of the building, and aints neither in the street nor on the court, but upon the lower stages of the tower. It receives no light, therefore, except from a large skylight at its summit. The well itself is some fifty by thirty feet. The stabrase has two landings in each story. The stairs are built of a harder sandstone than that with which the walls are lined. The inner side of them is earlied upon a wall, pierced in each flight with three arches which follow the slope of the stairs. From the upper and lower columns under are turned to corbels, rieldy carved in foliage on the other wall. This staircase rises from the basement to the gallery flow of the Assembly Chamber, and the wall is carried through the root. There is some talk of filling the wall spaces thus obtained between the top of the stairs and the skylight with a picture in each of the form bares. The basement and ground floor are pretty much as they were left by Mr. Fuller, and need not detain us long. The most striking feature of the latter is the "entrance hall," which is not an entrance, some lifty by eighty feet, with two rows ainsts neither on the street nor on the court, but upon the lower stages which is not an entrance, some firty by eighty feet, with two rows of square grante piers running the long way of it, connected by grante arches. The spaces between are ceiled with very flat brick arches, and the corner of each pier carries one very large round modeling. The next floor, the "entrance floor," of the plan, contains the Court of Appeals, to be used this winter as the Senate tains the Court of Appeals, to be used this winter as the Senage Chanter. A corridor, analyl lighted from the court by seven windows and vaulted in plastered brick, extends one hundred and forty feet along the inner side of the central pavilion. A dada of tiles framed in sandstone skirts the corridor; the walls are decorated with gold and yellow on a ground of red, and the ceiling in blue, red, and amore, on a ground of gold. This decoration is now in progress, and it is proposed to enhance the effect of it by placing a box of growing plants in the recess of each window. The Court of ress, and it is proposed to enhance the effect of it by placing a box of growing plants in the recess of each window. The Court of Appeals, as shown on the plan, is nearly a square of sixty feet with a bright of about twenty-five feet. Its shape and its apparent size have been much cleanged by the removal of the east-iron columns shown in the plan, and the prolongation through the room of the have of a wall which divides it some twenty feet from and parallel to the corridor. The line is formed of granite columns bearing a marble wall. From the capitals of the columns rise the pairs of braces which support the great beams of the ceiling. This is very heavily panelled in oak, to the depth of some feet, and rootsits of three series of beams diminishing in size and righly moulded, while the panels are righty carved. The walls have a dado of tiles, while the wall-screen is wainecoted in oak, with a diaper covering in each the wall-screen is wainscoted in each with a disper carving in each panel. Above this, again, appears a belt of stone wall, as yet left quite plain. The subordinate rooms on this floor are meant for judges' rooms and minor offices ultimately, though the executive

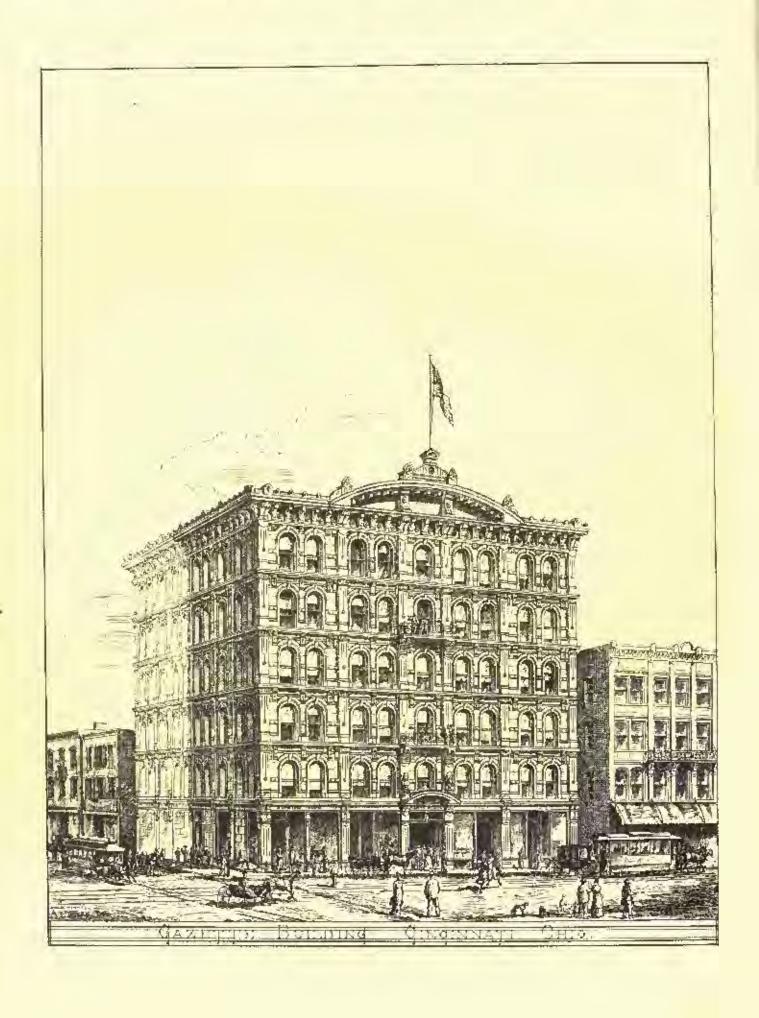
Offices are temporarily lodged in them.

The next floor, some sixty feet from the ground, is the principal floor of the building, and the Assembly Chamber which occupies it may almost be said to be the building. The novelty of a vanited room in this country is not its chief claim to study. The conception of the country is not its chief claim to study. The conception of the room, its treatment, which so evidendly proceeds from the whole to the parts, and its decoration combine to make it the centre of the architectural interest of the building, and, to your correspondent, the most interesting architectural work in the country. I mean strictly to describe, but when one considers that this room is not an unhampered conception of a legislative ball, but has been conceived and executed under the hard limitation of adjusting such a concep-tion to a predetermined hox at the top of a building, it is not easy to suppress some enthusiasm. The ground plan of the room shows

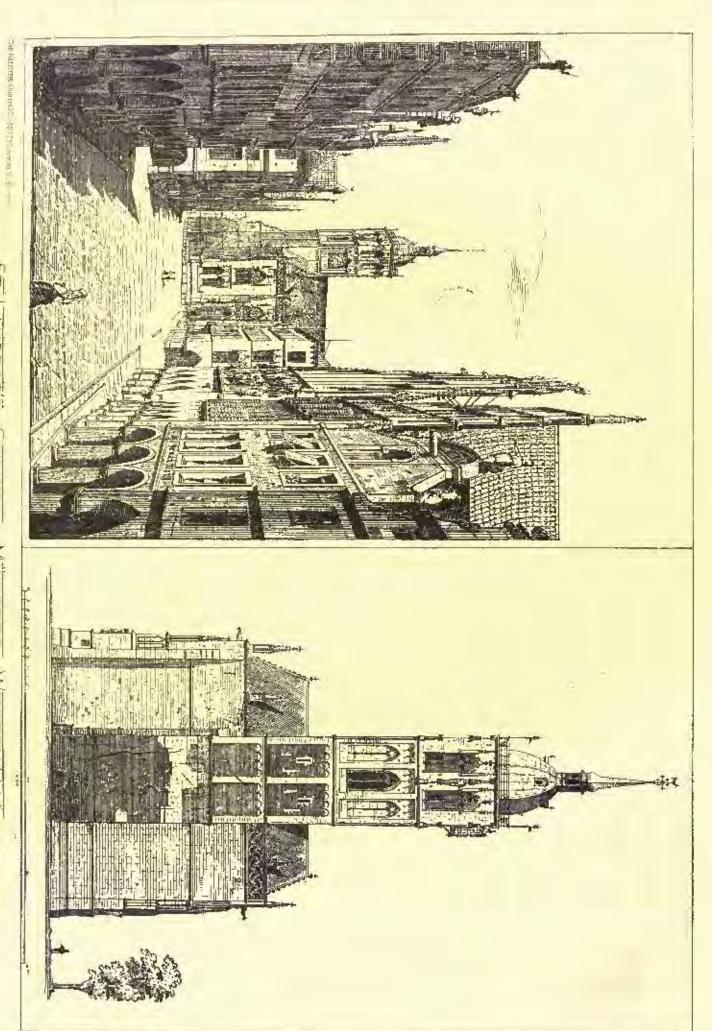
what these limitations were.

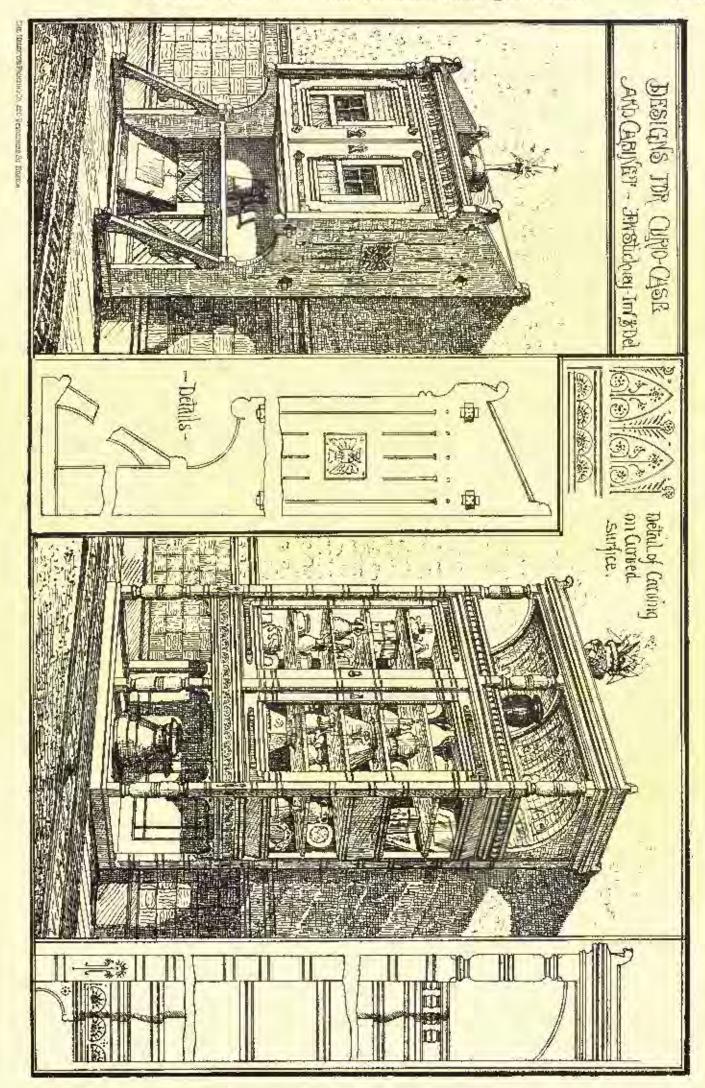
The extreme dimensions of the roum are then one hundred and forty by eighty-lone feet. The extreme length is shown, however, only



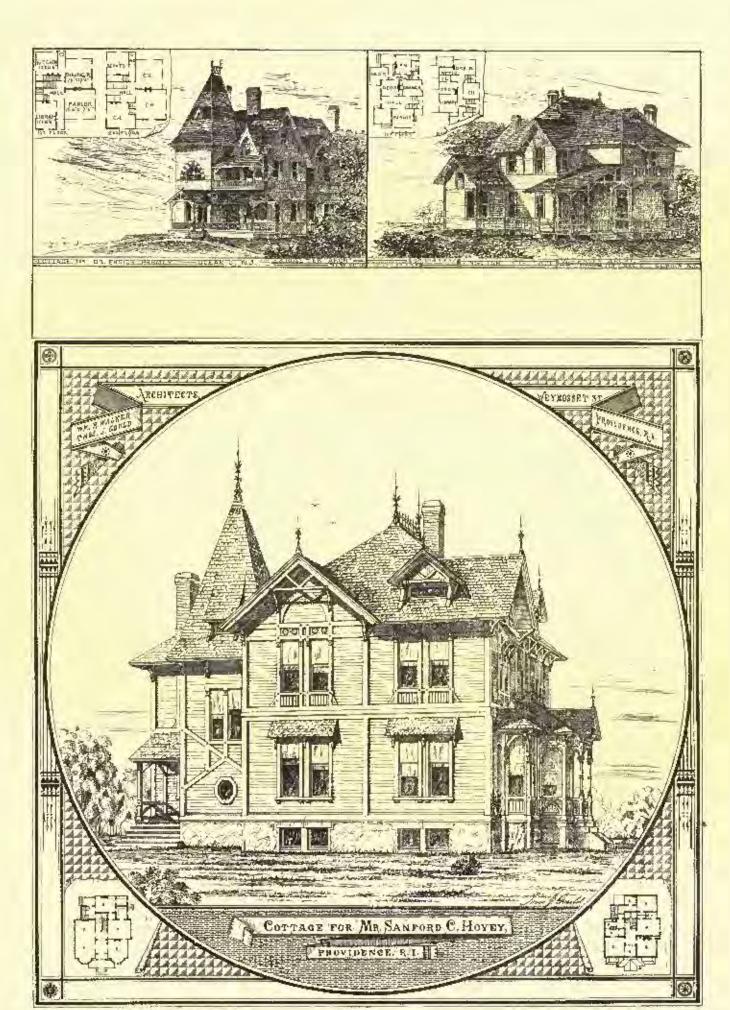








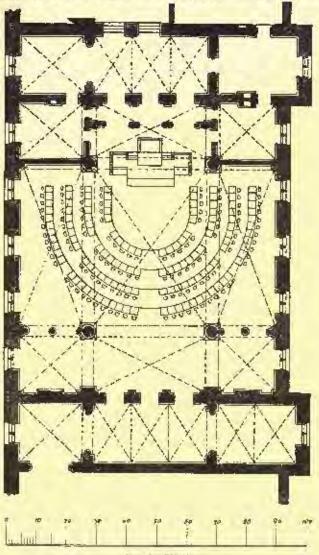




THE BELLOTYPE PROMOBILE AND RESIDENCE (S. P. PROMOB



in the gallery floor and at the ends of the nave, if it may be so called, Each of these extreme spaces is a public gallery. The square spaces on each side of them are walled out of the room altogether. The spaces under them are vaulted lobbies, and it is the vaulting of the lobbies and not of the galleries, each of which is covered with a single rault, which is indicated on the plan. The squares at the corners of the central space are also separated from the main room



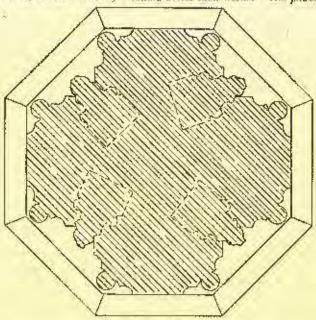
Assurably Charater

on the first floor, at the speaker's end by a solid wall, and at the entrance end by columns carrying a stone screen, and each contains a gallery. It is seavely necessary to point out how this disposition assists the perspective effect of the room, and gives it ruriety and unwement. The Assembly Chamber proper is thus confined to the central transcpt, including the bays at either end, in one of which the speaker's desk is placed. The space bounded by the columns is forty-five by fifty-five feet, nearly, and the keystone of the vanit over it, the highest point of the room, is fifty-six feet from the floor. The four abutting vanits are five feet lower at the apex. The ridges of the values are not horizontal, but have a rise of three or four feet at the centre. There are no ridge ribs and no farmers, the capping abutting directly upon the walls. The range of coupled columns behind the speaker's desk carries the wall which forms the front of the reporters' gallery, the floor of which, consisting of stone slabs, is carried by stone girders laid from this wall to the one behind. The reporters' gallery is thus in front of and lower than the public gallery, which occupies the extremity of the room.

The shafts of the four columns which support the central yealt

The shafts of the four columns which support the central vault are four feet in diameter, each composed of three drums of red Connecticut granite, polished. The capitals and bases are of Westchester marble. The walls and the cells of the vaults are of Ohiosandstone, with ribs and arches of Dorchester-stone. The mosk shafts of the windows are of brown Belleville-stone, with capitals and bases of Ohio-stone. All wall openings in the room, by the way, are considereded. The bood motifds of the windows are of Belleville-stone, the vousvoirs of Ohio-stone, the archivolts within them and the impost moulding of Dorchester-stone. The only wood in the room, hesides the furniture, is in the floor and the floors. It will be seen that, even without pigment, there is already an effect of color attained, and that the constructive features of the room are distinguished by tint as well as by modelling. In the design of the room it is evident that two things have been kept mainly in view, one that the room is a civic apartment, though treated in forms tradi-

tionally associated with thurch architecture, the other that there is already, in pures performing functions, an inherent effect which it is quite possible to injure, and highly desirable to emphasize by the treatment of them. The architect has been less afraid of leaving his great constructive features rude than of fristering them away, of doing too little than too much, and this feeling has cooperated with the other of avoiding an ecclesiastical expression, and the wire-drawn attenuation of late Gothic, to produce the vigor and, so to say, the tersoness of style in the Assembly Chamber. The annexed profile, however, will illustrate my meaning better than words. The jambs,



Section of Plan above Spring Link.

wall arebes, and other features are of the same character as the vault. The mouldings are rather clear and emphatic than intricate.

The carved enrichment of the room is alundant, and ineised erabesques are frucly introduced as well as modelled carving. Of the buter, besides the capitals of piers and columns, of which there must be something like a hundred in all, and the bood models of the windows, are the very rich traceried railings which form the front of the six galleries the room contains, and become important in the general effect of it, the corbels which early the reporters gallery, and the detail of the chimney pieces which are yet to be put in. The spandrels of the arches immediately behind the speaker's desk are covered with carving in diaper, as are also the spandrels of the entrance arches. The solids of the galleries at the entrance and are similarly treated. The springing course of the lower story carries an incised leaf amament, as do the girders of the galleries, and each consoir of the windows is covered with an incised pattern. The decorative detail is, throughout, highly conventionalized.

The color decoration is everywhere a part of the carved decoration. I recall but one piece of stencified work, a narrow border along the ribs of the yardt. The decoration of the vant is completed, but that of the walls which leads up to it and to the pictures, which are the crown of a system of decoration embracing the whole room, is not yet done. Each side of the trans-pt, you will remember, has three windows below and five above. Between these two ranges is to be Mr. Ward's frieze, and above the opper, Mr. Hunt's picture. The wall is left plain up to the springing of the lower windows. The springing course has an arabesque ornament, as already said. The springing course has an arabesque ornament, as already said. The springing course has an arabesque ornament, as already said. The cove of the brown some hood-model is to be filted with ultramarine, the ground of the rousseir with vermilion, and the edges of the ornament gilded. The wall above the springing line is to be decorated, each stone by itself, with an incised ornament, and the ground filted with a brown red. Over this comes the scalpture, over this the second range of windows, the wall plain as before to the springing line, and decorated as before above it, and over this the picture. The decoration of the ceiling is also part of the system. The Ohio-stone, of which it is built, is of a mellow and yellowish gray tint. Each groin bears two belts of decoration, one almost at the ridge, the other not far from the springing, which follow the line of the courses. The ornament in the apper belt, fifty feet from the spectator, is very bold in design, and very boldly cut, the lower belt subovlicate in all respects. The principal ornament is somewhat modelled, the inferior simply incised. The stone is excavated to a depth of some inches, and the ground filted, as before, with vermilion or oltramarine, the ornament eleged with gold. It should be home in mind that the ceiling has not the look of decorated. Thesides the concave curve of the vanil, there is the ris

and movement which it gives the decoration, an advantage over simply stearfilled painting, at least as great in effect as that which a latele woven in colors has over one printed. The ribs and arches are left without color, though the ring of the central vanit, a stone of three tons' weight, is decorated. The white marble capitals of the columns which carry this vault are to be painted in red, blue, and gold, the only colors used in the room. The carpet is to be red. with a border of positive colors, the furniture mahagany upholstered with red leather, and the window heads are to be filled with stained glass.

ENGLISH FURNITURE AT THE EXHIBITION.

be the French lack the divine inspiration of Mahomet to journey to the refractory mountain, they take interest enough in it when it comes to them as a manifestation of their own influences and we find this self-complacent nation keeply examining and fairly criticising the foreign departments at the Exhibition. First, in nearly all claims upon their corrosity, stands England, hitherto their great industrial rival, but now pressing upon them with vigorous efforts in decorative and applied act. The sections which interest them conspienously are those of faience and furniture; and though in the speciously are those of talence and inputting; and though in the former they find the closest commercial competition, from its having been more or less developed by French workmen and traditions, it has less novelty for them than the English furniture, which is purely indigenous. It is the entire movelty to them of the recent revival of the styles of "Queen Anne" and the Jacobeau – why not "King Jacobeau" to complete the travesty – which renders their criticisms achoolic to us who have been see much in the current to induction. valuable to us, who have been too much in the current to judge in-

partially.

I think the first impression, among buth artists and amateurs, was decidedly favorable at seeing such thoroughly developed styles, which from being historically unknown to them seemed highly original. Although they hardly understood many things. — such as seeing a massive haffet grotesquely out up into pigeon-holes, — they were struck by the originality much as they would be by the unit details and terraces of an Iolian temple. They were the more casily deceived, in that the esthetic training of a Frenchman forbids more caprice in design as contrary to the primary laws of art. To be required is a fatal defect to them, and so when they discovered that the same whinsical features were repeated through nearly all the designs, and that the eccentricities were not those of a hold imagination, but stereotyped imitations of past styles, — so celectic often as to lose their true spirit, — then the first enthusiasm was materially modified. The real beauty of the workmanship, however, lost ally modified. The real beauty of the workmanship, however, lost nothing by examination, and an architect, who was at first most enthusiastic about this furnitore, finally remarked to me, "Well, they are clever fellows, these English joinces, but it is a pity they have not better taste." This, I think, was the provailing impression of those whose artistic training remiered them sensitive to ernde captices in design. Much of this capticiousness can be directly traced to Japanese influence, and it may seem strange that the French are as great admirers of this cut as the English; but they are charmed by the exquisite grace and refinement of the designs themselves, rather than by the method of employing them. they are charmed by the exquisite grace and relinement of the designs themselves, rather than by the method of employing themselves it is the religible this latter phase which scenes most to appeal to the English mind. There is no doubt, however, that, in spite of some severe cricicisms, this display of furniture, which is most complete, has greatly raised the English prustige, and given new notions of use and confort, not to the French alone, but to other nations who needed the hints still more. Continental brice-are collectors have found under additional for the first and the second materials. brae collectors have found undergueed of facilities for showing off their per specimens by means of hanging shelves—almost unknown here—of varied designs; mantel shelves also, and étagéros, with convenient apartments and side brackets, must have appealed to many "manias." though the prices were excessive.

So much from a French view; to us who are more familiar with So much from a French view; to us who are more familiar will the English fashions, the Exhibition is a very remarkable one, and shows great progress in the combination of "common-sense furniture" with grace and relinement of form. With Eastlake's crude forms and the heavy mouldings and panels of Talbert, an earnest spirit of refinement has been at work. There is evidence that the presence of ladies with their elegant tallettes is now taken into consideration; instead of the inde, masenline character of the decisions a few wars ago. signs a few years ago, a more feminine delicacy in moddings and decoration appears. Rare and costly woods are brought to the highsecondarion appears. After their certify woods are arought to the men-est polish, and then themselves often serve but as backgrounds for applied or inlaid ornament. The buffets are especially beautiful, and the best of them are sufficiently simple in outline to give full value to the finely worked details, which generally have the merit of being suitable to wood, and to the work of its characteristic tools, the lathe and the clustel. The skilful triumphs of the former have led to an about of colonicities and other turned features, while the chiral is obtained in mellogs havels and observers.

chisel is obtrusive in endless bevels and chamfers,

The medals were fairly awarded; the jury passing by the wildest "Queen Anne," but bravely facing some of the most characteristic Jacobean work, touched, possibly, by pity for the sad plight of this bastard cousin of their own honored Renaissance.

It was satisfactory to find that Junes Lamb, of Manchester, who was hardly noticed by the public, received a gold medal for the only two things he sent, a buffet and an étagère, which, though quite sim-

plc, were so full of dignified refinement that they merited more than far more pretentions displays. Cullinson & Lock, also, received a gold ancial for a large collection of furniture, in general admirable, and medal for a large collection of lurature, in general acommands, and containing some of the most light and graceful pieces shown; such as work-tables, corner shelves, etc. For much the same style, Gregory & Co. took a bronze medal. W. H. Lasseelles's set did not fulfil the promise suggested by the name of R. Norman Shaw, its designer, but it had some good qualities which justified a bronze medal. Messrs. Jackson & Graham were avarshed the grand prize for their beautiful marquetry, which, though little practised in Eng and, would rank with the best examples anywhere. A wonderful variety of exquisively grained and timed woods are most skilfully inlaid in delicate patterns, and their inlaid ivory is of the best. I suspect here, however, the skill is that of French and Italian workmen, and it is known that the firest inlaid cabinet was designed by a Frenchman. The rooms which were completely furnished natural a Frenchman. The rooms which were completely furnished naturally attracted the most attention. Of these, Collinson & Lock showed charming examples in Mr. Shaw's Queen Anne cottage, Rue des Nations. The entrance and staircase-hall are treated with a high dado of lacquered red, and this that is carried, by steneilling, over the yellow bronze of the flock paper. The stairs, separated from the hall by a wooden areade, are lighted by a stained window, which is picture-sque without bring out of place. Let us hope that the reaction from the silly "blue glass mania" will forever banish colored glass from the silly "blue glass mania" will forever banish colored glass from the silly "blue glass mania" will forever banish colored glass from the silly "blue glass mania" will forever banish colored glass from the silly "blue glass mania" will forever banish colored glass from the silly "blue glass mania" will forever banish colored glass from the silly "blue glass mania" will forever banish colored glass from the silly "blue glass mania" will see the same that the reaction from the silly "blue glass mania" will forever banish colored glass from the silly "blue glass mania" will see that the reaction from the silly "blue glass mania" will see that the reaction from the silly "blue glass mania" will see that the reaction from the silly "blue glass mania" will see that the reaction from the silly the second that the reaction from the silly at the second that the reaction from the silly the second that the reaction from the silly at the second that the reaction from the sill the second that the reaction from the silly at the second that the reaction from the silly at the second that the reaction from the silly at the second that from living rooms, from which, if the wondrons beauty of the sky is shut off by narrow space and lefty walls, there is the more surely need of the purest light. The dining-room has seventeenth contary panelled dado and eciling, and the robust though comfortable character is carried out by the stordy side-board, and its projecting cupboard with small brass-set panes. The room complete was offered for £1,700. Delicate sulmon and pale blue tints in the parlor are contrusted with red tiles in the mantel-piece; graceful recewood furniture, and leaning sills to the projecting windows, make a protty and cheerful room. A bedroom, with pink and file ercounce draperies,

completes a charming suite.

Mesers, Gillow & Co., in the pavilion for the Prince of Wales, show good taste and tact in avoiding all appearance of "show" rooms: a dining-room, with high olive-tinted dade, and above, bursh, bluish tapestries; on the left an octagonal library, the walls hing with large panels of faded olive-green velves; a deep frieze of rich Japanese designs, on golden olive ground; the faculture of beautiful execution, but surcharged with colonnettes and bovels, and injured by fatile effort to give a Japanese cachet. The fre-place is bestimm execution, but suremarged with colonic testind bevels, and injured by futile effort to give a Japanese cachet. The fre-place is attractive with its brass flap, which may be raised in front of the grate to hold plates, or for a foot-test, while on each side a bracket offers a brass disc for a emp, etc. But over all this broods a weary, shint in feeting, because the large window is of stained glass. The walls of the Princess's bedroom are covered with moslin over a yellow walls of the Princess's bedroom are covered with muslin over a yellow ground, while lace, simply draped, forms a pretty frieze. In the Prince's bedroom, the good boargeois gape at the "Gillow lavatory," which looks like a sceretary, projecting only eight inches from the wall. Letting down horizontally, the panel reveals, fastened to the inside, a tin basin which is filled by a pipe from a small reservoir above. On shutting up this panel the water is emptied into a tank below. Room is found for a dressing-case, etc. The whole is so next and compact that it looks like a Yankee invention. I was particularly curious to see what English style would be used for the drawing-room. But I found a stiff little Marie Antoinette bouldoir, the walls covered with pale blue silk panels. Two nondescript chairs and two small stands formed the scanty furniture. It was an apoland two small stands formed the scanty furniture. It was ogy for a drawing-room, and with nothing English about it. It was an apol-

Here, then, the attention is forcibly drawn to the fact that, except the marquetry enhinets before mentioned, there is nothing in the whole exhibition suitable to be placed in a drawing-room or degant handoir, nor any drapery or upholstery which gives a clue how they should be treated. To be sure, Messes, Trollope & Sone have fitted up a room panelled in codar from floor to ceiling, and call it a hondoir, though it brings the irresistible consistion that it is really a hall, or anything which does not call for the delicate grace and feminine luxury in which a lady who has a boudoir is supposed to live. James Shoolbred & Co. also have a suite of rooms, dring-room, library, and bed-room, but no drawing-room furniture. It is not because the intention is to exhibit cheap furniture for the middle classes, as the scale of prices in this English section is princely. For instance, the small sitting room of the Prince of Wales is for sale at £5,000, for which figure an exquisite French drawing-room may be had. The fact is, there is no attempt to treat one of the most necessary rooms in a fine there is no attempt to treat one of the most necessary rooms in a fine house. Dining-rooms, halls, libraries, and modest bodrooms are shown, but nothing which can serve for elegant reception or drawing-rooms; no suggestion of luxurious divans or sumptions chairs of state, no righ partiers, or studies of draperies, and not even delicate ball-room chairs, — which, if not for every-day wear, have a specific use in a crowded ball-room, and are quite as serviceable as fragile tea or dimersets of porcelain. There is hardly a piece exhibited which does not smack of slippers and dressing-gown. It may be jestingly noted that no other styles of furniture are needed in langland, where balls and receptions are such notorious "crushes" that all furniture has to be removed, and where the dimers are so long, and the rentlement to be removed, and where the dinners are so long, and the gentlemen remain so much longer after the ladies at table, that they join them only to mke leave of the hosts, so that where no conversational "salon" exists, there is no need of the room which provides for it. But, seriously speaking, the society of the "first court in Europe" must have drawing-rooms, and the fact that nothing for them is exhibited shows that their furniture is so entirely French that it equal

hardly be exhibited in the English department.

hardly be exhibited in the English department.

The English are much elated at their fine show of furniture, and they have reason to be, and to draw encouragement for the future, but—and it seems to be very generally overhooked—their exhibition can fairly be called only one of cabinet-making. The few brass hinges and wall-papers or hangings there are insignificant compared with the vast field of art which is opened by the study of appliquée, bronze-work, uphoistery, and drapery. Of all beautiful effects possible in house decoration, the most purely artistic may probably be found in the use of draperies, where the pliant material sheys the lightest touch of the artist, and offers to him the possibilities which were turned into one of the highest glories of Greek sculpture, and at the same time gives him the splender of mediavial color. I know the feeling is now current that draperies, as receptacles of dust, are not healthy; so much the worse for art, and so much the dust, are not healthy; so much the worse for art, and so much the more room for ingentity to come to its resear. It must be remembered, ton, that I am speaking about festal and not dwelling rooms. It is the fashion in England, and I fear we have eaught the feeling, to think draperies and upholstery are not artistic. The leaders of house decoration in Landon at present eschew them as vulgar attri-butes of rich grocers. If they allow them to be so, they have themselves to blame. Divans of various forms, in which upholatery predominates, are as much a necessity for an elegant recuption-room as a buffet is for a dining-room. Anything as inxurious as upholstery in our age of mingled refinement and comfort cannot be long "tablood" by decrees of our art coterie, and the sooner the same attention is paid to it as is now given to cabinet-making, the better for the minds and bodies of all casses.

TAXATION WITHOUT REPRESENTATION.

December 4, 1878.

To the Editor of the American Architect:

Dear Sir, — I have received a bill for an assessment voted at the last convention of the Institute in New York. As this matter, though in itself small, interests many architects who have doubts whether the amount of the annual tax by the Institute could not be better spent in other ways, will not you or the Institute officers answer a tew questions thus suggested:—

1. By joining our local chapters have we put ourselves in the hands of the annual Institute meeting to tax us who have no votes, as they are negrees?

as they see proper?

II. To put an excessive ease, could the meeting, if it had so desired, have levied a tax of, say, £50 on each non-voting Associate to delray expenses, — possibly without increasing their own assessments?

III. Why cannot the American Institute of Architects accomplish all that is desirable by annual meetings, the slight expense of which

might be borne by the members present, or by a slight tax on the chapters for postage and stationary?

For one, I am quite indifferent to the fact that the receipts were too little to defray the expenses of publishing the records, as your valuable journal gives as all of them that we want to preserve, and money is better invested, in my opinion, in other books than in such This especial tax is small, but the annual contribution extra taxes. from our chapter is large, and if spent, instead, at home on prizes, books, etc., would much help roung men and interest their seniors. We most of us value highly the American Institute of Architects, but gradge the automats it demands when other interesting matters come to our attention also. Perhaps you can put us in the way of the information we want.

Yours with respect,

AN ASSOCIATE

With a tox bill but no vote.

Basron, December 4, 1878.

TO THE EDITOR OF THE AMERICAN ARCHITECT:

Sir. —In view of the present prices of books of all sorts, are the reports of the American Institute of Architects worth eight dollars? The treasurer calls on us this morning for that sum, under a resolution passed at the late convention providing for "an assessa resolution passed at the late convention providing for "an assessment to defray the expenses of publishing the proceedings," etc. One who could not be at the convention should perhaps have nothing to say; but, seriously, when the matter is put in that way, it does seem as though we could make a much better use of the money, and that here is a chance for the reduction in expenses that has here so long asked for.

W. has been so long asked for.

To the Editor of the American Ameritect:

Sir. — I am in receipt this morning of a letter from the treasurer of the American Institute of Architects, in which I am told that over and above the regular assessment an additional one has been levied, to defray the expenses of publishing the Proceedings of the Eleventh and Twelfth Annual Conventions. I am an Associate of the Institute, and therefore have my vote at the annual conventions, and I do not see the justice of being colled upon for these extras,

concerning which I have no voice whatever. Why should not the Fellows vote that the Associates pay the whole assessment, as a punishment for not being Fellows? Least of all, it strikes me, should the Institute ask money for the purpose it does. I have always understood your paper to be the accordingly organ of the Institute, and its proceedings to be promulgated through your columns, and if I had the appears I should cortainly a to account the prover I should cortainly account to account the prover I should be retainly account the prover I should be containly account the prover I should be setting the containing the prover I should be setting to account the prover I should be setting the pr the power I should certainly vote against the innecessary and a man the power I should certainly vote against the innecessary and, as it seems to me, useless expense of having them printed in a book form. It would seem that if the lustitute was really desirous of increasing its membership it must work in some other way than by calling for assessments in addition to its already very large yearly ASSOCIATE.

THE NOMENCLATURE OF MR. WHISTLER'S PICTURES.

"Why not?" said Mr. James Whistler lately to an admirer of his; "why should not I call my works symphonies, arrangements, harmonies, nocturnes, and so forth?"

Mainly, we should say, because these terms belong to music, instead of painting, which, Mr. Whistler loses no opportunity of insisting, should depend for its effects on itself alone, rejecting the aid of all the other arts, insomned that he refuses, if we may believe the annive-mentioned admirer, to call one of his pictures Trottybeck, for the reason that, although the name would be fitly descriptive, "not even the genius of Dickens should be invoked to lead an adventions aid to art of another kind from his." Nay, he goes so far, we learn from the same authority, as to call his own mother's portrait out of its name, exhibiting it as an "Arrangement in Gray and Black."

Now, what is the difference, we beg to ask, between invoking literature, as he deems it, by calling his picture Trottybeek, which he will not do, and invoking music, by calling one picture, as he does, a "Harmony in Gray and Gold," another an "Arrangement in Gray and Black," another still a "Symphony," and so on? There is a difference, doubtless, but it tells against the latter invocation, since giving a picture the real name of its subject, whatever the subject, is in fact not an appeal for accounting to but simply declaration of the subject, and therefore legitimete as any horse theory. ject, is in fact not an appeal for adventitions aid, but simply a declaration of the subject, and therefore legitimate on any honest theory of art, Mr. Whistler's not excepted; whereas, giving a picture a figurative name taken from music is not merely an appeal for aid to a different art, but implies an attempt to produce effects analogous to those of one art by the materials and methods of another, a surt of imitation that deserves to be called jugglery rather than art.

The trouble with Mr. Whistler apparently is that, in spite of his round assertion of the independence of the several line arts, he takes music to be the type of all of them, inferring hence that the ideal pointer should deal with form, and color as certain great composes.

painter should iteal with form and color as certain great composers have dealt with rythm and pitch, regardless of everything external to the composition itself, excepting, of course, the material limitations of the art and the artistic sense of the artist, — that as Beethoven, for example, composed sonates which expressed nothing but thoren, for example, composed sonates which expressed nothing but harmony, so the painter who would be great should produce pictures without subjects and without names, mere combinations of color, light, and shadow, with no more objective significance than concertors, quartottes, or symphonies, to which, indeed, he expressly likens them. This half of his ductrine seems resolvable into the conceit that painting is pictorial nucle, — not itself, that is to say, but a modification of something else. This, to be sure, wipes out the other half of his ductrine, but that is his business. It nevertheless might all be very well, or at any rate would hardly be so bad, if painting in its essence were not, as music is not, a representative act; but unfortunately for the new arrealylikesonly, painting is a representative. fortunately for the new art-philosophy, painting is a representative art, and accordingly the corner-stone of the philosophy crumbles, the product of a representative art which represents nothing being

necessarily a bastard performance.

We do Mr. Whistler the justice to assume that he has never produced a monstrosity of this description. He is, we are willing to the data synter the place of assume that he are keyer produced a monstrosity of this description. He is, we are willing to admit, a better artist than philosopher, and paints, as Wordsworth poetized, without much regard to his theory, which shows itself chiefly in his fantastic terminology. We have no doubt that his "Arrangement in Gray and Black" is a lifelike portrait of his mother, his "Harmony in Gray and Gold" a very faithful representation of the scene from Dickens, and his vacious "symptonies," "nocturnes," "sonatas," and the rest, quite admirable delineations of something or other in heaven above, the earth beneath, or the water under the earth. If he had only called them what they are, and said no more about it, everybody would have admired bitm, nobody would have wondered at him, and the world might have given him credit for being as good a philosopher as artist. The misfortune is that Mr. Whistler talks too much. He might better pass his leisure in the harmless practice for which we infer that the first of his name was peculiarly distinguished. And it would be no bad thing to try it early on his philosophy, whistling it off, and letting it down the wind. — Courier-Journal.

THE RETORT COURTROUS.

Who is the English correspondent of The American Architect and Building News? Is he a disappointed American architect, or a juvenile just out of his time? Whoever he is, no doubt he has been entertained by Mr. Burges at Kensington, and unfortunately over-

looked, possibly snubbed, by Mr. Whistler or Mr. E. W. Godwin, perhaps by both. His misstatements concerning Mr. Godwin's work at Chrisca, especially Mr. Whistler's house, and his extreme bundation of Mr. Burges's house at Kensington can, we feen, only be explained by some personal motive, andess, indeed, the article was more or less inspired by Mr. Burges. He speaks of that gentleman's library as a "symphany in gold," and of his bedroom so flooded with reloc that the scarlet furniture is not too coude. Mr. Whistler's from door is described as small, but, as a matter of fact, it is every way larger than the front doors of the old Chelsea bouses our American critic so much allmires, as our readers will shortly see when we publish the design. He says the door opens directly on a landing can critic so much admires, as our readers will shortly see when we publish the design. He says the door opens directly on a landing of the staircase, when in reality it opens into a lebby or such potely; adding further, that steps lead down to "the large atelier helow," when in truly the "atelier" is at the top of the house. He indulges in other equally with, incorrect, not to say vicious, statements, which would be damaging if Mr. Godwin's reputation was not as much beyond the reach of The American Archives and Building News as Mr. Whistler's painting is beyond the comprehension of this smart critic who "was not surprised to find on Mr. Whistler's easel a "symplant in bine;" as vague as this vagues) of impressionists allower is:" always is."
In this same muddle of misstatements figure Messrs, Gillows' large

houses on the Euriaukment at Chelsea, which were also designed by Mr. Godwin - "an octagonal front is recessed so that the side windows, instead of getting a wider oblique view, look upon the wall of the next house." This is a gross—we might almost add, a delili-erate—departure from that accuracy which, before all chings, should erate—departure from that scenracy which, before all things, should be encouraged by gentlemen who set themselves up as crisics. Again, "a brick architeave without suggestion of arch work," in which is there must be a hidden band of iron," offends. No doubt the appearance of the architeave is as described in the New York journal, but how is it the accomplished critic should have overlooked the fact that hidden bands of iron occur in horizontal heads to opinings of brick construction from the sixteenth century down to the "book fide Queen Anne houses" he seems to mining, and about which be known much that he describes their roofs as "list"?— The tiritish textilizer.

[As it may possibly be known in England who is the regular English correspondent of this journal, we desire to say that the leafer which occasioned the reflections printed above was not from the pen of that gentleman. — Elos. Americas Accurred...]

PUBLICATIONS RECEIVED.

THE OLD HOUSE ALTERIOR By George C. Mason. Illustrated.

New York: G. P. Petnan's Sous. 1878.

The Age of Garansenko Chornettes at Christmas and other Festivals. By Edward Young Cox. With illustrations from original designs and ancient examples. Fifth edition, revised and angmented by new designs and illustrations,

NOTES AND CLIPPINGS.

We wish to draw attention to a change in the publishers' advertisement on page vi. of the advertising page, where it is stated that the munices of this journal fer November and December, 1878, will be given, gentla, to new subscribers who pay their subscription for the cosning year before December 25, 1878, instead of December 15, as hitherto states.

We wish also in draw attention to the prospectus for the ensuing year, and bo the new and enlarged premium list, which we have tried to make attractive and useful, which will be seen on the following page.

The Harronn Warea Screen.—The Plumber mentions a singular piece of manicipal stapidity which may have the most disastrons result. Alarmed at the cute at which water was being used—six million gallon-per dism—and fearing a water famine, the authorities in Harriord, Coun., slan off the reservoir supply and substituted water drawn from the Connection River. Just below the pumping station, not more than three or four teds from it, a large sewer discharges its contents into the river, and tidal action drives the polluted water up to and beyond the pumping station twice each day. The consequence of drawing water from such a source has been that a headrad or more cases of sirkness have occurred amongst bhose who have used the water, the symptoms of the disease heing vomiting and purping. ing vomiting and purging-

The Aux Awards at Paurs.—There is much feed for reflection in the penusal of the list of awards for painting and scalphire mode by the art pitty at the late Exposition to the painters of different nations who exhibited there. France, with 1,421 exhibits, but 128 swards, including medals of honor of the first, second, and third chases, honorable memion, and diplomas to the memory of decrased artists. England, with 522 exhibits has 20 awards of various kinds. Helgium, 398 exhibits; awards, 20. Austria and Huogary, 298 exhibits; awards, 11. Italy, 322 exhibits; awards, 17. Spain, 152 exhibits; awards, 18. Norway and Sweden, exhibits, 166; awards, 10. Holland, exhibits, 117; awards, 9. Russia, exhibits, 155; awards, 4. United States, exhibits, 143; awards, 4. Denmark, exhibits, 85; awards, 3. Greece, exhibits, 92; awards, 4. Denmark, exhibits, 160; awards, 3. Greece, exhibits, 92; awards, 4. Denmark, axhibits, 65; awards, 3. Greece, exhibits, 92; awards, 4. Denmark and Greece, and in propertion of awards to exhibits only of the latter. — New York Hereid. THE ART AWARDS AT PARIS. - There is much look for reflection in

THE PARTICION AT ROSE PLOODED. - The floor of the Pantheon at Rose was recently flooded by a rise in the Tiber.

Cremation in Bayania.—The Bayarian authorities have asked the opinions of the Protestant, Catholic, and Israelite congregations and the Band of Health on the publish of permissive cremation. The Callolles will have nothing to do with exemation, the Israelites refuse to express an opinion, the Protestants say it would only occessitate a change of directions in the Bangy, and the Board of Health recommends cremation in the following contingencies: First, after luttles; second, during epidemics; third, for the conveyable of remains to distant party; and fourth, where the soil is unsuitable for burial purposes. The authorities have presponed their decision of the question. In this connection it is interesting to note the progress that this semi-religious and whelly sanitary rice is making in Italy. Here, from January, 1876, till May lust, twenty-three dead hadies have been cremated in the city of Milan, one of them that of a woman. Four budies, ascertained to be at the weight of sixty-three, sixty-twee, forty-one, and fifty nine kilogrammes, have rielded ashes to the weight of between two and three kilogrammes, have rielded ashes to the weight of between two and three kilogrammes. A kilogramme is about two and one fifth pounds. two and one fifth pounds.

DRAWINGS OF THE OCH MASTERS. - A recent number of the Academy refers to the exhibition at the Giosvinor Gallery, a year age and standard derful series of designs by Lionarda da Vinci which were loaned by her Majesty from the collection of the drawings of the old masters in the Royal Library at Windser. If we understand the allusion, this exhibition enlapsied the wonderful series of quatornical drawings by Lionarde which entaprised the wonderful series of anatomical drawings by Lionarde which for thoroughness and accuracy we believe have never been equalled, and which have never been approached more closely than by the series of drawings made by Dr. William Rimmer, now instructor in anatomical drawing in the School of Drawing and Painting, Boston, which was reproduced by the Heliotype process for private circulation. The exhibition at the throsenor Gallery demonstrated the desirability of having these trawings of the old masters reproduced by some process so that they may be accessible to the artistic public. The Queen has accordingly given her consent and Mr. Stephan Thompson has prepared the photographic negatives of the drawings which are to be reproduced by the Antortype Pernatural Process, and which will be issued sherely in four portfolios. The first two of these will contain one hundred drawings by Lienardo, the third will contain drawings by Raphael and Michael Angelo, and the fourth will be filled with specimens of the works of the early Italian musters together with those of Diver, Chande, etc.

King Atranco's Palace.—The news of an important archaeological discovery at Wedmore, in Somerset, was reported last week to thin Times by the secretary of the Somersetshire Archaeological Society. Wedmore has long been supposed to have been the site of one of the palaces of our early Explish kings. It was here that Ashfrol, in 878, mode his subsampage or "Lith" with the Hanes, when their leader, finthroun, was happitzed, and Wessex for the time delivered from these harassing Karthmon. The thousandth unniversary of this event, which secured for England Ashfred's wise role and peaceful government, was colemated has September at Wedmore. Since then the Rev. Sydenburn Hervey, the rector of Wedmore, has undertaken excarnions with a view of finding the site of the old Saxon palace, which tradition has always pointed ent a lying in a field called the Court Garden, about a mile from Wedmore church. Here, then, the rector commenced his digging, and has been so formate as to light—almost at once, it would seem—upon the very spet for which he was searching. At a depth of about six to ten feet helds the ground he has discovered the remains of massive walls, concented with ancient mortar. Five distinct lines of these have been opened, and Mr. Harvey is new trying to find out their remocration, for they are not merely foundations, some of them being lined inside with plaster. Hitherto no some have been found, but only a large quantity of pottery, both Reman and early English, some of it ornancered in a rude manner, and one pleed, probably the anoth of a jaz, representing a small lost beautiful formate beet. There can be little doubt," says Mr. thant, the secretary, who sends the account, "that Mr. Hervey has ready discovered the remains of the bid palace of our West Saxon kings, the very scene of the high festival at which, one thousand years use, the pace was signed with the Damas, and the fillet was loosed from the live of. Gathorm, or rather Achieletan, to reall aim by his new Christian name. The character of the petatery

A Rateroan across Saitara. — A French engineer him made a report on the project of a railmad across the Desert of Sainara. The projected line would turn from Algiors to Timbuctoe, a distance of seme 1,300 miles, and would rest mainly on layers of saind, and toward the end on primitive volcanic rock, granite, etc. No mentioned obsernations would have to be encountered, and the average heat does not exceed 15° Fabrenheir, but occasionally a very cold night succeeds a temperature of 104° in the daytime. The great difficulty to be overcome would hat the want of water, which is not to be proported in that veglon, but for three trains daily the amount of water would not be too great for engineering skill to supply. skill to supply.

The Value of Sewage as a Feneralizen.—Mr. Alexander Aird, a Scotchman, began seven years ago to utilize the sawage of the city of Dentzic by irrigating with it cartain burrons in the neighborhood of the city. The crops he has raised on this land have been unusually large; for instance, he has raised sixten and one half tone of potatoes to the acre, and he considers the undertaking such a success that he has lately controlled with the inquisipal authorities of Breslau, a city of about 250,000 inhabitants, to remove its sawage during twoire years, and with it he insteads to irrigate and enrich for his own profit about three thousand acres at land.

BOSTON, DECEMBER 21, 1878.

CONTENTS.

SUMMANT: -	
The American Institute of Architects and our Correspondents.	
-The Publication of the Proceedings, - The Position of Asto-	
ciates The Washington Monument Mr. Street and Sir	
Edurand Beckett - Architects and Restorations Building	
Accidents Dr. Schliemann at Hissarlik	21)1
ARCHITECTS' COMPETITIONS, I. TRIAL OF PLANS	202
A REPROSPECTIVE GLANCE AT SOME OF THE ARCHITECTURE OF	
THE FRENCH EXPOSITION. L	204
THE ILLUSTRACIONS:-	
The United States Capitol Episcopal Theological School at	
Cambridge, - The Giralda at Soville House at Oyster Bay.	
- Chapter House of the Delta Psi Francinity	205
ARTIST BIOGRAPHIES.	
Correspondence:-	
Letter from Paris - Letter from New York	207
Notes and Chippings	

In the lack of any authoritative answer to those correspondents who have complained to us of the special tax levied by the last Convention of the American Institute of Architects for publication of its proceedings for two years, we shall venture to give our opinion of the case, not assuming to speak for the Institute, but simply to record the impression of a somewhat careful observer. The difficulty of this year is that which naturally befalls an association that hastens to diminish its assessments without giving up its sources of expense. Two years ago the Convention, under the spur of some of the Chapters which protested against the amount of the annual assessments, arbitrarily reduced them by twenty-live per cent, in spite of the representations of the Treasurer and some of the more cantions members that the income was no greater than the necessary or established expenditures required; and a special Committee on Finance was appointed to consider the question of revenue. The diminished assessment was found inadequate, and at the Eleventh Convention, a year ago, the Committee on Finance reported a scheme for adjusting the annual fees as closely as possible to such expenses as were decided on, by providing an estimate of the expenses, and levying a corresponding tax on the Chapters, to be collected as they saw fit, while the direct tax on Associates and half of that upon Fellows was remitted. This scheme, adopted readily by the Convention, but referred to the Chapters for ratification, was rejected by some of them. possibly for want of anylosly interested to explain its working and purpose to them, and the system of diminished assessments was continued. The report of the Treasurer at the Twelfth Convention (last month) showed that the only thing which had prevented a deficit had been the omission of the publication. This omission, however, did not please the Convention, and a resolution was passed, rather hastily, levying the special tax of which our correspondents complain for the publication of the lapsed Proceedings and of those of the Twelfth Convention.

These things we say in explanation of the difficulty in which the Institute found itself and the way it took to relieve itself. It was an ill-considered way, we think; a better one would doubtless have been to restore the annual assessment to its old rate, which would have provided for the Proceedings of the last Convention and for future ones. The omitted publication might have been made up by private subscription, which would probably not have been difficult, or at worst it might have been allowed to lapse entirely for one year rather than pass a measure so unpopular as that we are discussing is likely to prove. As for the main question of publishing or not, it is pretty clear that the prevailing feeling of the Institute is in favor of the publication. A great many members regard it as their chief means of keeping on rapport with the Institute, and their chief tangible evidence of its work. We believe that it would be a mistake to give it up. The record in the American Architect is of value for immediate information, and for a wider publicity than the Proceedings give, but is hardly sufficient or convenient as a permanent record, nor can it well be made to contain all that it is desirable to preserve. The history of the Institute is a history, directly or indirectly, of the profession in the United States; its debates and reports record pretty accurately and pretty clearly the course of professional thought and architectural development had since they began, as any one will see

who will take the trouble to examine them. The question is not, as one of our correspondents suggests, whether in the present state of the book-market the members' copies of the Proceedings for two years are worth eight dollars, for they are not upon the market, and that is not their price, nor are they sold at full price to Fellows and half price to Associates, but whether their publication and distribution is, on the whole, worth the two hundred and fifty or three hundred dollars which is annually voted for that purpose, and of which our contributors are called upon to raise their share, and whether the Institute is willing to vote it.

As between the Institute and its Associates, one correspondent asks whether they, by joining the Chapters, have put it in the power of the Institute to tax them, who have no votes in the Convention. We understand that they have, as any constituency puts it in the power of its representatives to vote taxes. The Chapters Associates and all, are represented in the Convention by such of their Fellows as choose to attend, or by special delegates for whom the Associates vote, and whom they may and do instruct as to their action in convention. So that the grievance of the Associates is not taxation without representation, but taxation without a direct vote, which befalls many people. It is certainly possible, as the same correspondent suggests, for the Convention to vote an assessment of fifty dollars on each Associate, or, as another instances, to make the Associates pay all the assessments; but this is not even an imagined danger. On the contrary, the reduction in fees from which the difficulty of this year springs was made at the pressing instance, if we are not mistaken, of Chapters in which Associates predominate; and we may remind our correspondents that the very tax against which they protest has thus been already more than made up to thom beforehand by the remitted fees of two years past. We do not undertake to champion the organization or policy of the Institute; we are simply stating what we believe to be the facts, with our belief in the expediency of continuing a publication of its Proceedings. But for the Associates who object to taxation without a vote, there is an easy way to cure It is the policy of the Institute to encourage the transformation of Associates into Fellows, and there are no restrictions, we believe, except the nominal one of two or three years of additional practice as architects. There are a great many Associates whose influence as Fellows would be of value to the Institute, and who apparently have no better reason for remaining as they are then want of interest or the small difference in the annual fees. Dissatisfaction with the policy of an association, or lack of interest in its work, may be helped by lending a hand to reform the one or improve the other; and if the seventy Associates, or the greater part of them, were turned into Fellows, it would so improve the revenues of the Institute that those who wish to abute its assessments would find safer ground to stand apon.

The report submitted to the United States Senate by Mr. Corroran on behalf of the Washington Mommont Commission, of which he is chairman, will perhaps not gratify the persons who are in distress at the deliberation with which the government engineers do their work; but it looks like business, if only the business of preparation. The engineer's estimate of the cost of securing the foundation according to his plan exceeds the part of the congressional contribution appropriated for that purpose, says Mr. Corcoran; nevertheless, "the Commission has limited the cost of that part of the work to the amount named in the joint resolution of Congress." How this discrepancy between the engineer's plans and the intention of the Commission is to be got over does not yet appear, but the engineer's preparations are going on; we may therefore infer that things are expected to come right in the end. A good amount of material has been collected; pugging-mills for the concrete have been set up, and steam-engines to run them; sheds have been built for the workmen; oak and pine timber provided for framing and shoring in the trenches and tunnels of the new foundation; and, what is of great importance, considering the old controversies on the stability of the monument, bench-marks have been set for permanent lovels, by which it is proposed to take daily observations that will detect any settlement that may occur as the work goes on. Contracts have been made for various materials,—humber, stone (blue gnoiss), and broken

stone, cement, sand, and gravel for the concrete. A large array of decricks and tackle has been provided, the old roof and derrick taken down from the top, and a staging built to carry the new derrick and workmen, so that work may be commenced at both ends of the monument. As yet no great inroad has been made on the appropriation, the amount spent being, to the end of November, only \$1,150, and in proparing for the continuation of the superstructure \$7,800; but we doubt if in the long run oven the government engineers will find any difficulty in spending the money furnished for the monument as fast as they get it.

Most of our readers have some familiarity with the name of Sir Edmand Beckett, the thorn in the side of our profession in England, of whose Book on Building and its wholesale attacks on architects we gave some account not very long ago (American Architect, March 30, 1878). It is not a great while since the Royal Institute of British Architects undertook to weave their thorn into a crown by electing Sir Edmund, with several other men of note, to their new grade of Honorary Associate. which might have seemed to outsiders an indication of a change of heart on his part, is declared by our confrere, the Architect, to have been universally recognized as a simple act of propitiation. It would appear that, as propitiatory acts are apt to be, this was fruitless, and the thorn continued still to turn inward. At about the time of Sir Edmand's election the Athenaum reported that Mr. Street, who has been for some years bosy with a careful restoration of York Cathadral, had been superseded in this work by Sir Edmund, who is the bitter adversary of restorers. A rumor so preposterous as this naturally proved untrue; but Mr. Street soon informed the Athenason that nevertheless his services as consulting architect of the Diocesan Church Building Society, whose office it was to revise the designs of churches built in the diocese, had been dispensed with, and that, as he understood, Sir Edmund was reigning in his stead. When the Archbishop replied in a published letter that the office was simply discontinued, and that no one occupied it, Mr. Street re-joined that he had just examined the designs for a church in Yorkshire, whose specification was scored with remarks, "meant to be practical, all of them characteristic, and some of them satirical, as to the authorship of which there could be no mistake, since one of them directed the architect to 'see my Book on Building, page -. "

DOUBTLESS the question of church restoration is at the bottom of this disagreement. Mr. Street has been reproached for his restorations of the cathedral, which nevertheless, touching mainly the thirteenth-century work of the south transept that had suf-fered severely at the hands of earlier and less skillful restorers, have been made, we believe, with great skill and conscientiousness. It is not so strange that persons who have a tender regard for old buildings, and who dread the enterprise of architects, should be willing to put their maintenance under control of men whose only care will be to stay what exists, and who will rigorously refrain from addition or substitution. But as a question of actual restoration, it is fair to ask, How does the restoring of to-day compare with that of a century ago, under Wyatt, instance; or a generation ago under Smirke, perhaps, or Gwilt? and who are responsible for the improvement if not the architects? If the English clergy, whose church-huilding has been the nursery of modern English architecture for this gencration, should break with architects and betake themselves to dabblers, it is hard to tell what would become of their architectore, to say the least. It is very queer to find a paper of the standing of the Athenæum saying that "the appointment of Sir Edmund Beckett is not the only, nor by any means the least justifiable instance of a tendency we observe on the part of custodians of ancient buildings to entrust these remains to others than professional architects." But when we find the Archbishop of York appointing a clever barrister to supervise church designs because he has shown himself an active tormentor of architects, we are not surprised to learn from Mr. Street that "a very formal protest against Sir Edmund Beckett's interference as consulting architect has been sent to the Archbishop by four of the most eminent architects of the day, who have had practical experience of Sir Edmund Beckett's action." It looks like a curious instance of the prevalence, in places where we should look for a better knowledge of human nature, of the popular impression that the one qualification of a reformer is the ability to find fault.

Duning the past week or so we have had our doe share of building accidents, two of which are characteristic. In New York, a pair of unfinished bouses, built by a speculating builder, went to pieces in a storm. They were brick houses " with Ohiostone trimmings," separated by a party wall which is said to have been only ten inches thick. This wall had to support its half of three floors and a roof, of twenty-five feet bearing, in each house. During the storm of a few days ago it crumbled into the cellar, carrying the floors with it, not being blown down, since it was stayed by the floors, but sinking in a heap at the bottom. The only explanation that we see offered of the phenomenon is that the wall was drenched, and the collar full of water. This is an explanation which has been not accommonly given in like cases, from which we may begin to infer that we must expect to see a new building washed away noless it is covered in before it rains. Another case is that of a building in Pittsburgh, where a thousand bushels of malt, weighing source thirty-four thousand pounds, were put into a large room in the upper story with a safe weighing a thousand pounds, and broke the floor through in the night. We are not told over what area of floor the load was distributed, a point which seems in the newspaper view immaterial, while the lessee and proprietor are disputing who is to pay for the damage, -the lesses because the floor was too weak, or the proprietor because it was too heavily loaded. Both this and the other case teach the same lesson, which is the absolute ignorance that prevails among people who own and occupy houses, and even those who build them, of what can be expected from building materials. Building laws specify the proper thickness of walls, but so long as tenants and owners take it for granted that any building may be expected to hold whatever it is convenient to lay on it, the only safe way will be to insist on a maximum of strength every-

DR. SCHLIENANN has written to the London Times an account of his renewed explorations on the site of Troy, which he began with the month of October. The Turkish government oblige him, while doing all the work at his own expense, at a cost of \$2,500 per month, to give to the Imperial Museum at Constantinople two thirds of all his findings. A Turkish officer with a guard of soldiers is set to watch him and see that this condition is fulfilled. He expects in this season's work to ancover the whole western and northern sides of the circuit wall of the four superposed cities, the second of which he considers to have been the historic Troy; and to maish the uncarthing of the great ruins in the northwest corner, which he has described as the Cyclopean foundations of Priam's palace, in and near which his rich collection was found. The nine or ten feet of asbes. red, black, and yellow, with which these foundations are covered give proof to the doctor of a very high and stately wooden building. He has already in continuing his excavations found a considerable number of gold ornaments, pins, carrings, necklaces, and beads, some of them like ornaments found at Mycenæ. One of his most curious discoveries is a wooden distaff eleven feet long, with the thread still upon it, though charred to a coal; and three successive broad gates have been found before the socalled palace, which he expects to domonstrate beyond a cavil to be Priam's. It would be rather curious to know on what principle the authorities will arrange their division of spoil with him. Gold and silver are easily appraised, and duplicates distributed; but in the offsetting of one thing against another the Tarkish officials will be very likely, one would think, having no standard of their own, to gauge their estimate of each thing by Dr. Schliemann's desire to possess it. But Dr. Schliemann is the most disinterested of discoverers, and would prefer, we may be sure, that all the tangible fruits of his explorations should pass out of his hands, rather than that his work should be interrupted.

ARCHITECTS' COMPETITIONS.

I. TRIAL BY PLANS.

We noticed in our sammary of last week Mr. Barry's protest against architectural competitions, and the advice he had given in a case where he was asked what kind of competition he would recommend. An open competition, he said, was the worst course possible, a limited competition was only less bad, and his advice was therefore not to choose from plans, but to select a man. He nominated half a dezen, and following his advice the committee selected Mr. Waterhouse. We, quoted also the Architect's comment on this, — that it was to get rid of

the ascendency of names that competitions were devised; and that of the Building News,—that they are the only means of bringing forward the young men of the profession. The question at issue between Mr. Barry and these journals is the existence of competitions at all, into which we shall not enter here. Competitions have many disadvantages and some advantages; but at present they are the accepted means of choosing a design or an architect for important buildings. Mr. Barry's romarks, intended as an absolute protest against this means, suggest a distinction, which is really important, between two different views of their uses, and two correspondingly different ways of admin-

istering thom, so long as they are accepted.

It may be the purpose of a competition to select a plan, or to select an architect; and though these two things may seem at first glauce to amount practically to but one, they really imply very different attitudes in the client, and lead logically to considerable differences in management. The ordinary building-committee considers that its office is to select a "plan," meaning a design, and this is the theory of common competitions. In this theory the design is everything, and the architect is considered to be imporsonal, or a fixed quantity, - a constant term in a formula, to be allowed for once for all, and without effect in the comparison of values. Therefore, since one architect is like another, the only difference between them being in their plans, or in their power to influence a committee by favoritism, which is illegitimate, the necessary condition is to eliminate the architect absolutely from the trial. Hence the competition must be anonymous, and the names of all but the successful competitor may remain unknown. The architects may be trained or untrained, faithful or nogligent, discreet or reckless, but since the trial is a trial of plans these things must be put out of court, except so far as they are indicated in the drawings, in order to reduce everything to a competition of designs, pure and simple. When it is limited to a selected few it is possible to include in the selection only architects in whose skill, experience, and faithfulness there is reason to have full confidence, and they may be taken from the top of the profession, - if they can be induced to compete, - but in an open competition no such limitations are possible. This is the ideal in which the lovers of competitions delight, and it is the only logical form of trial by plans. It gives an opportunity for young and unproved ability to come to the front, and is intended to exclude favoritism; these are advantages, but they have their offsets.

This sort of thing lends necessarily to certain conditions requisite for due protection of client or architect, which do not always consist very well one with another. A client or a committee, pledged to adopt a design without knowledge of its author, may with some fairness insist on being so thoroughly informed by the drawings and descriptions of it as to know just how it is to be carried out and constructed, and just what its cost is to be. Hence the natural, but to competitors voxations. leadency of building-committees to insist on full drawings, specifications, and estimates, — enough, in fact, to enable them to make contracts. These they are not apt to get absolutely, and their failure to get them often makes misunderstanding and mischief; but their requirements do lead architects to spend an enormous amount of work on competitions, nineteen twentieths of which, in the gross, is of necessity thrown away. The expenditure of so much work on the part of competitors makes the trial a very costly one to somebody. The committee might reasonably be expected to bear the cost, since the benefit is theirs; but usually a committee takes advantage of its position to shirk it, and can imluce a number of architects to compete at smirk it, and can induce a number of architects to compete at their own expense. Except for a trifling premium on two the first of which, by a fine figure of speech, is often declared to "merge in the commission,"—that is, not to exist at all, — no pecuniary benefit incres to the architects who take part, since the successful one gets no higher fee than if he had been diroctly chosen, like any other professional adviser, and the rest get nothing. It is a very cheap device for the client, but is none the less prodigal because the cost falls only on the architects.

It is natural that architects, considering the benefit to the client and the cost to them of such competitions, should incline to insist on some conditions, and accordingly they regard it as a breach of faith if some one of the designs submitted is not adopted, and if the author of it is not employed to carry it out, or even feel injured if in the end the author of the selected design is allowed or obliged to make any important change in its carrying out. Still more inconvenient in practice are the conditions, which nevertheless are strengously insisted on by archi-

tects, and indeed in fairness must be, that the limits of cost and of time allowed for the preparation of designs must not be exceeded. Those things are more or less logical deductions from the principle of trials by plan, or from the way in which they are conducted, particularly from their eleemosynary character; but they hom in building-committees with restrictions which are apt to be found irksome, and which therefore, when it comes to the pinch, are very apt to be disregarded, to the indignation of competitors and the stirring-up of endless recrimination and strife, Yet here there is something to be said for the client, and it would not be altogether strange, from his point of view, if, having set up a trial for designs, and nothing but designs, he should object to being in the end saddled with an architect whom he may have reason to distrust, or to giving up the design he really preferred, because it cost more than he at first intended. Perhaps after all the really consistent form of open competition would be one which eliminated the architect altogether, but this would be far from palatable to the profession. In fact, the whole system is so hedged about with inconveniences, awkward restraints, and temptations to unfair dealing that it is an unending source of complaint, and whatever its advantages, the objections to it, stated in detail, would make a very long catalogue.

But even the effective results are by no means so good as it is common to assume. To say nothing of the showy, ad cop-tondum, and often misleading manner in which architects are tempted to finish their drawings, economy and success in compolitions require great promptness in decision and rapidity in execution; the more because, as we have seen, the logical condition of trial by plan is that designs shall be fully worked out, and fortified by complete descriptions and estimates. means that they must be maturely exceuted without being maturely considered, and the architect having done this with much labor, but with insufficient thought, is mentally, as well as outwardly, committed to a design which with more deliberation, he would have changed, but which, having taken possession of his mind, is therefore an obstacle to progress, even if the fact of having carried his work to completeness were not in itself a strong inducement, and a kind of bond with his committee, to take it as it stood. Thus the result is usually a collection of designs produced at great cost to a company of architects, wrought ont with much completeness but yet immature, presented by architects who are assumed to be capable and trustworthy, but of whose qualification the committee have presumably no knowledge; and a code of restrictions which, having in the beginning been a serious inconvenience to the competitors, is likely in the and to be a serious annovance to the judges, - a very fair opportunity for blundering and disappointment on the one part, for dissatisfaction and recrimination on the other.

Perhaps, however, the greatest practical difficulty of trials by plan is still another, and that the one which those who administer them are least inclined to suspect, — the difficulty of deciding them. An ordinary building-committee is probably inexpert in its duties, not qualified by knowledge or experience to judge of an executed work, still less to prejudge a building by the drawings from which it is to be executed. Here, if anywhere, the knowledge of a professional adviser is necessary; and if it were a sine qua non with a committee to do with as little preressional assistance as possible, we should be tempted to say: "If you must stint yourselves in professional service, get a trustworthy and skilful architect to select for you among your competing plans, and then put the successful design into the hands of a competent superintendent, - if you are allowed, rather than trust yourselves to solvet a design and an architect by an open competition." If it were a company of architects in search of a design, a trial by plan would be a natural resort, for they would know the meaning of the designs, and could, in some degree, trust themselves to draw from them the most necessary inferences as to the architects who made them. more purely monumental the work, to be sure, — that is, the less dependent on practical considerations,— the less important are such personal qualifications as are not indicated in a design; but then the more purely technical are the qualities domanded, and therefore an ordinary jury is the less competent to decide them without professional assistance. But these considerations seem not often to occur to building-committees. They seldom distrust their own capability to judge what is set before them, or imagine that there is anything more in an archi-tect's design than they can see. The natural consequence is that they underrate the professional skill which they do not

measure or even see, and the profusion with which professional labor is offered them makes them undervalue that. The habit of considering the architect's plans as the whole test of his intportance tends to make them rogard his function as simply ministerial, to the loss of his dignity and the injury of his work.

Whatever then may be the benefit to the profession of the system of trial by plans, which is the essence of open competitions as they are commonly understood, it is clear that their faults are very serious. They are extravagantly costly and their cost is borne by the profession; to be fair, they must be hedged about by complicated and embarrassing restrictions; they are breeders of distrust and recrimination, if not of fram); they encourage hasty and immature, and therefore inferior work; they are uncertain and disappointing in their results; and they tend, in some ways at least, to lower the standing and repute of those who take part in them. At another time we shall consider how some of their evils may be modified, - not, as Mr. Barry suggests, by avoiding competitions altogether, but by using them for the selection of architects.

A RETROSPECTIVE GLANCE AT SOME OF THE AR-CHITECTURE OF THE FRENCH EXPOSITION.

Your readers have had opportunities of becoming acquainted with Your readers have and opportunities of nerming sequenced with egeneral plan of the Paris Exposition buildings, as well as of making themselves familiar, from the descriptions and illustrations given in your columns, with their cost, size, and other like details. I will therefore confine myself to the impression left on my mind by the architecture of the main buildings, after repeated visits to them. It is as well from what different witnesses tell us of the effect on them of a work of art, as from detailed statements about it, that those of us who have not seen it usually form an alex of the nature of its merits. And I shall also endeavor to describe what I have to speak of so far as to amble those who have not given attention to plans and illustrations of the Exposition still to form some idea of the adaptability of the Buildings to their site and for architectural effeet.

In the first place as to the site itself. Nothing in some respects can be finer. Every one, whether he has seen Paris or not, knows, in a general way, that the Seine flows through the heart of the city. dividing it into two unequal portions, which are connected here and dividing it into two unequal portions, which are connected here and there by bridges. Most persons know also that on one side of the river is the Latin quarter or students' quarter, with its schools of act and science; the Faubong St. Germain; the dome and hospital of the Invitides; the palme and guidens of the Luxembourg; and that on the other side of the river stretches the major port of Paris, where are the Louvre, the Hötel de Ville, the Tuileries, the Boulovards, the Champs Elysées, the opera houses great and small, the principal theatres, hotels, cates, restructors, and shops. In the middle of the river, on a small island, which itself forms a little city of this vast city stands the Calbedral of Noire Dane, and the mides of this vast city, stands the Cathedral of Notre Dame, one of the most splendid of the monuments which have been spared to us. If one mounts to one of the siry galleries which adorn the west front of the cathedral, and, with his back to the building looks towards the setting sun, he will look down a broad and magnificent unler avenue, fined on each side with palaces and beautiful gardens, perhaps every one famous for its historical interest or as a work of and the whole presenting especially in the wonths of May and June, when the foliage is at its best, one of the most splendid spectacles

that the eye can rest on,

It was in the month of May that the Paris Exposition was opened, and it is at the end of this magnificent vista, and closing it in, where the river takes a bend to the left and is lost to view, that the permanent building of the Exposition, the latest great building to affect the enthusiasm and skill of the present age, stands, on the heights of the Trocadiro. At its feet, on the other side of the river, in the angle formed by the bend of the stream, on a flat, open space used as a parade-ground and known as the Champ de Mars, stand the series of non-permanent buildings, built to hoose the major part of the transfer of o the Exposition. The ground between the permanent building on the heights and the river is laid out in a beautiful garden, embelished with fountains, descending in terraces, and admirably managed so as to give an effect of space and freedom, while not too large for its purpose. The temporary buildings on the other side open on a flowery terrace which forms here the river-bank. This terrace on one side of the river and the garden on the other are connected by a broad, avenue-like bridge, and the two form thus one nomposition, not too wide, not too much filled with shrubbery, but just wide pon, not too what not too much make went shadness, but just while canough, open, smiling, lying spread out in a sort of semicircle before you as you come out on the terrace, of which the terrace on which you stand makes the base or straight side. While the whole is very brilliant and striking, it is also very inviting, and gives a most refreshing change after the heat and bustle of the necessarily long. walk through any of the many avenues of the non-permanent buildings. That the site of the permanent building gives a splendid op-portunity to the architects will be seen even by those who have had no better apportunity of forming a notion of it than that just given.

The Trocadero or high ground on which the building stands is almost or quite the highest ground within the lines of Paris. It in fact overlooks the greater part of the city. It is situated where it is on one of the outer rings of the city, but yet not outside of it. It is close to the most fashionable and in many respects the fuest of the new quarters of the city. The view from it is superh. A building erected on this magnificent site has only to be besutiful to atoms for all lack of architectural display or effect to the temporary and necessarily major part of the buildings required to house a great exhibition. And it is fortunate that this superb site is so close to the river, and to all these buildings on the other side of it, that it is no farigue to pass from one to the other. The one and the other can form thus, not two things, not a sprawling pair of things too wide apart, but a well-combined and concentrated whole.

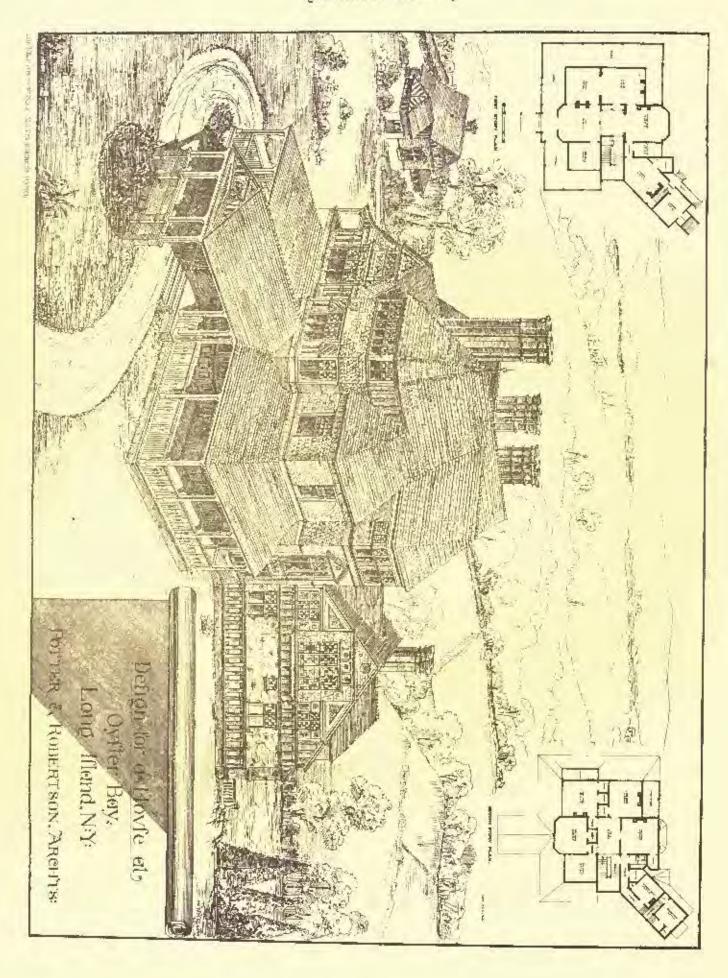
apart, but a well-combined and concentrates whole.

It seems to me that as far as plan goes every advantage has been taken of this splendid site, and the splendid opportunity which the Exposition gives to make use of it. The temporary buildings are convenient, commodious, well lighted, and well arranged in their general relation to each other. There was no occasion to try and make an architectural offert and ensemble with them, as has been the case with other exhibition buildings, and was so successfully ac-complished in the Vienna building. For architectural effect, for which one involuntarily looks wherever there is a great enterprise involving building, one naturally, in this case, turns to the permanear building on the Trocadero, which crowns, dominates, and finishes the whole. In the non-permanent buildings, therefore, the arbelieves seem rightly to have studied use and convenience more than beauty or architectural effect. They are hid out upon a sort of gridition plan. The buildings are big iron-and-glass sheds or galleries, seeming lafty enough when seen from the inside, but not remarkable in any way as exheriors. These sheds or galleries answer to the bars of the gridicon, while the spaces between them form narrow, long courts, used for light, and planted with grass and flowers. Some of these courts are so wide as to have buildings in them. One of these is called the Building of the City of Paris. Another is devoted to the face arts exhibition, and so on. They are frame is devoted to the face arts exhibition, and so on. ings. But the frame is of iron, not covered but shown and the interspaces, when not glazed, are filled in with brick laid in patterns, or sometimes overlaid with tiles, often highly glazed, and so painted that one picture covers a large surface made up of many tiles; besides tiles there is a variety of ornamentation with porcelain and term-cotts work, and much color and gibling is used, principally on the iron-work. These are interesting buildings because of the comparative newwess of the methods of building, and to some extent of decorating, which they show. A small iron frame building of this kind, but with little or no decoration, was sent out to the Philadelphia Exhibition, set up in its grounds, and used for the exhibition of French stained-glass and seclesiastical decorations. Here at the Paris Exposition we have the same method of construction employed on a much larger and more important scale. Tension, which hitherto architectural usage has charily employed, or, when driven to use, has hesitated to handsomely acknowledge its obligations to, is largely employed in these buildings; but, unlike the concealed clain around Brunelleschi's dome, it is here a confessed principle of construction; unlike the tie rods in the areades of the Venetian ducal palace, it is here a decorated and boasted principle of construction. It is carious how a principle sleeps, though always existing, until the moment comes when its general recognition becomes useful to mankind. The invention of railroads makes easy the moving of iron; this stimulates its production; it is the readiest material for ties; since the archeologist says architects may not use them, the profession of engineers arises unhampered to do so; now comes architecture creeping along to take part in the benefit. But that things can be tied up, as well as stood up or propped up, and so kept where you want them, in other than Greek or Gothic fashion, has always been known. Man now comes to employ in architecture a method which he has always couployed in daily life. And as the arch, unknown or neglected by the Greeks, used but not adorned or handsomely acknowledged by the Romans, comes later to be both, until at last in the Gothic it takes our breath away in wonder at its achievements, so the tie, unknown or despised, now coming to be taken in hand, promises a futme probably more wonderful.

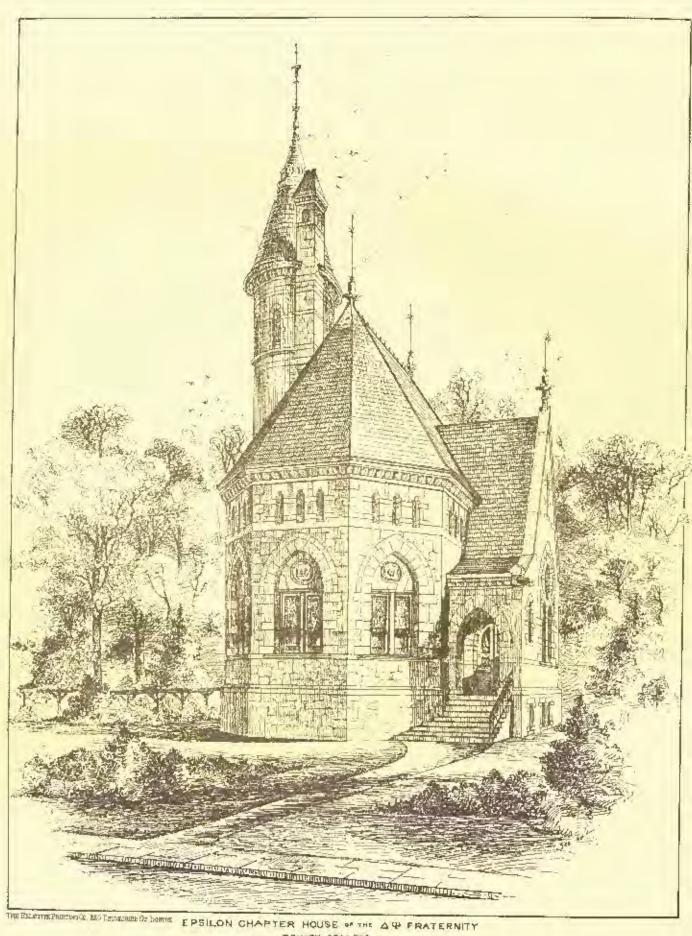
But, though these Paris buildings are interesting from their construction, and also from the great reliance put upon tiles, porcelains, and color in their decoration, all things of which much has been written and hoped of late years, yet they cannot, I think, be fairly called bandsome, or even pleasing. That they were meant to be cancer mandsome, or even pleasing. That they were meant to be pleasing, and more than merely pleasing, we interfrom the expense evidently put upon them. There is an effort, or at any rate a great expenditure of means, to make them admired; but the result is principally incommensurate. The fashion is new, the naterial rich, yet the cut of the roat is not happy. But the first examples of new includes are apt to be ngly; pechaps because the attention of the artist is directed rather to the means the attention of the artist is directed rather to the method than to the importance of using it with grace. Indeed, until an artist is familiar with the use of a new means, he can scarcely employ it with fraction, and so scarcely with grace. And then, even, he must have the gift of grace,—

a care gift. It is opposite these buildings, and in one of the large courts, that the principal nations which have taken part in the Exposition have erected a series of façades, which serve as entrances to the portions









PSILON CHAPTER HOUSE OF THE A SP FRATERNITY
TRINITY COLLEGE
J.CLEVELAND CADY ARCHITECT NY





ARCHITECTS.
STEPHEN L. HALLES (France), 1792-94.
GRORGE BADGERIN (Fingland), 1794-98.
James Hoban (Freland), 1798-1803.

THE UNITED STATES

BUILDING NEWS, DEC. 21, 1878.

Number.]



PITOL, WASHINGTON, D. C. FRONT.

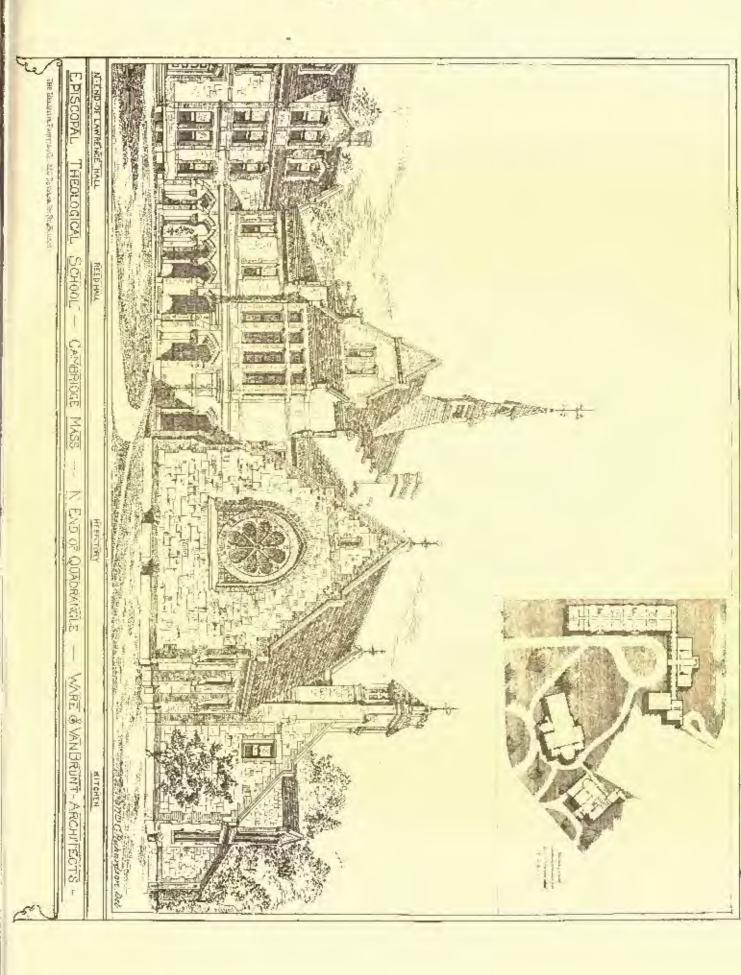
ARCHITECES.

BERSAMIN W. LATERINE (Fingland), 1803-17.
CHARLES BULFINES (Buston, Mass.), 1809-30.
THOMAS U. WALTER (Philodolphia, Fn.), 1830.



* A STREET IN SEVILLE * SPAID * THE GIRALDA * L.S. IPSEN. DEL

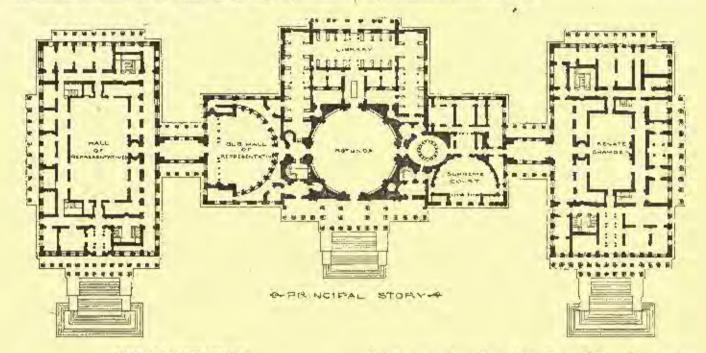






of the Exposition devoted to the products of each of them. Of these the Belgian is remarkable, as seeming much the most costly. It is built of brick and stone, with columns of polished marble. It is several stories in height, and of considerable length. It is also remarkably handsome. Near it is a very pretty, quaint English house-front in the prevailing Queen Anne manner. I happened to see a perspective drawing of this house-front at the Academy Exhibition in London. The drawing was prettier than the house. The house had more quaintness and character than the drawing. The drawing seemed made by one who was rather an architect; the house seemed made by one who was rather an architect than an architect, the house seemed made by one who was rather an architect than an artist. The architect was learned in the detail, and deeply imbued with the isoliton of the day. The artist was imbued with that sense of grace and happy proportion of parts which belongs to no fashion, which no fashion carries with it, however tashionable, and which need be absent from no fashion, however unfashionable. These and the other fronts in this seriest of façades are supposed by the Parisians to be representative of the architecture of the several countries to which they belong. But they are really representative

rather of the temper than of the architecture of those countries. Spain has erceted something with the details of the Albandra and other now scarce Moorish buildings in Spain; and so recalls a past glory, without a future. The material prosperity of Belgium and what it owes to a fiberal and good government, as well as the pieturesqueness of its past and the promise of its future art, are all seen in the Belgian façade. English wealth, individual enterprise, and the lead in matters of taste which England is now taking are all seen in the series of English façades. Again, the American façade, which is tawdry and without character, looks like nothing which I ever saw in American or elsewhere. But the very fact of its not being more a credit to Americans, and not being at all representative of American buildings, is thoroughly illustrative, in the money spent, of the kindly feeling of the American people and government toward the Exposition, and in the carclessness as to the way the money is spent, of the back of material interest in the Exposition intuitively fielt by both the mass of the people and their government; illustrative, in fact, of the adage that what is every-body's business is nobody's business.



THE BLUSTRATIONS

THE UNITED STATES CAPITOL, WASHINGTON. (Gelutine Print.)

The United States Capitol at Washington, of which we publish to-day a double page heliotype illustration, has a varied and not nointeresting listory. In July, 1792, the task of building the Capitol was awarded to Stephen L. Hallett, by birth a Frenchman, whose design was successful in the competition instituted by Thomas Jefferson. On September 18, 1493, the corner-stone was laid by George Washington. Hallett was the object of much jealousy, and was during his short turn of office, which lasted only until July 1, 1794, engaged in a struggle with a would-be usurper of his position, one Dr. William Thornton, an amateur. It was not until 1871 that Hallett's claim to be considered the first architect of the Capitol was finally allowed and his designs restored to their proper place in the archives. The next architect in charge was George Hadfield, an Englishman, who carried on the work until he was driven from office, in 1798, by the same treatment that had banished his predecessor. James Hoban, an Irishman, next sneeseded to the office, and under his administration the north wing was finished in 1800. In 1803, Hoban was succeeded by Benjamie H. Laurobe, an Englishman, who continued in office until 1817. During this period the south wing was finished, and both wings, which, on August 24, 1814, had been partially destroyed by fire set by the British troops then holding the city, were rebuilt. In 1816 the central portion of the building was begun under the direction of Charles Bulfinch, who finished the original huilding in 1827 at a total cost of \$2,433,814.13. The necessity of providing further arcountedations for the ever-increasing body of government officials had become so apparent in 1850, that a competition was beld which resulted in the award of the premium of \$500 to Charles F. Anderson, an Irishman. His design was not, however, carried into execution, as the government had reserved the right to build in accordance with the accepted design, or adopt a new plan which should combine the gool points of the evera

who is the present incombent of the office. Work on the extensions was began by laying the corner-stone July 4, 1851, and was finished in 1867. The original building, the present main building, was built of a parous sandstone, obtained from Aquia Creek, Va., which is painted white so that it may harmonize, as far as possible, with the new portions, that are faced with white marble obtained from Lee, Mass. The wooden dome of the original building was taken down in 1856 to give place to the present from dome, which is said to contain 8,909,200 pounds of iron. This dome, unquestionably one of the great achievements of architecture in this country, was finished in 1805. It is surmounted by a bronze stame of Freedom which was modelled by Crawford. The figure is nincteen and one half feet high, and weighs 14,985 pounds. The spex of the dome is 288 feet above the base line of the cast front, and is therefore a less lofty dome than St. Paul's at London. Its height above the balustrade of the main building is 217 feet; its greatest diameter is 135 feet 5 inches; it surmounts the circular entrance-half known as the Rotunda, which is 95 feet 6 inches in diameter. The interior of the dome is at present being decorated in true fresco by the veteran artist, Brunnidi. The greatest length of the building, which is said to have cost more than thirteen millions of dellars, is 751 feet, and the greatest width is 324 feet, including steps and porticoes. The wings of the building, which are connectly known as the "extensions," are placed at the north and south cods of the building and contain respectively the Hall of Representatives and the Senate Chamber, which are of nearly similar size, and in spaciousness offer a marked contrast to the somewhat gloomy and cramped chambers in which sit the houses of the English Farlianent. The semicircular hall shown on the left of the main building is the old Hall of Representatives, now the National Statuary Hall, or Hall of Recorge Clinton and Robert R. Livingston; New Jersey by General Kearr

PROTESTANT PROSCOPAL THEOLOGICAL SCHOOL BUILDINGS AT CAMBRIDGE, MASS. MESSES. WARE AND VANBRUNT, ARCHI-THE'rs, BOSTON.

The nurginal plan shows the condition of the grounds of the sebout when the additional buildings now in contemplation shall have been completed. Of the buildings already erected, St. John's Chapel buch completed. Of the buildings areasty erected, St. John's Chaper was built by R. M. Mason, Esq. as a family memorial, and presented to the school in 1870; the Dornitory, by Hon. Amos A. Lawrened, also as a memorial, in 1873; and the Central Hall, containing the library and recitation rooms, by the late Benjamin T. Reed, Esq., the founder of the school, in 1875. The drawing exhibits the north the founder of the school in 1875. The drawing exhibits the north end of the quadrangle completed, on its west side, by the northward extension of Lawrence Hall, according to the original plan, and on its east side by the erection of a reflectory with kitchen, waiting-room, and other offices; the Dean's house east of the chapel will be built in 1879. These buildings are of Roxbury "pudding stone," with dressings of ted brick and Piston sandstone. The Dormitary completed will contain chambers for about forty students. The central corridor of the Dormitory, communicating with an open cloister carried along the front of Recoi Hall, will enable the students to obtain access to the library, recitation rooms, and refectory, under cover. The three main buildings of the quadrangle are alors connected by an extension of the cloister in each corner; but they are otherwise suparated. The library and rejectory are open-timbered halls. The library and reflectory are open-timbered halls.

THE GURALDA TOWER, SEVILLE, SPAIN

Soville, the city in which is the Ciralda, one of the most interesting towers in the world, was, during live centuries, held by the Moors, and during that time it was almost whally rebuilt, the mate-The city, which is nearly circular, was furtilled by walls five miles in alread by infleen gateways, and surmaunted by one hundred and sixty-six towers, of which about a hundred have perished. The tower which is the subject of this illustration was begun in the The tower which is the subject of this Hustration was begun in the eleventh contury, and linished about 1195, in accordance with the intentions of its designer, who is commonly supposed to have been Al feeber. It is thus about two hundred years older than the carbedral to which it is attached, which was begun in 1401, completed in 1513, and is attributed to Alfonzu Martinez, architect of the Chaptet in 1886, or to Pedro Garcia, who hold that office in 1421. The carbedral is four bundred and thirty-one feet long and three hundred and fifture from wide for width being divided into seven sides. fifteen that wide, its width being divided into seven aisles. As may be inferred from the bine consumed in building and the different architects employed, the architecture is not purely of one style; but one is not purely of one style; but one is not prepared to find among the last architects of the building Diego du Rianno, a man of such selectic tasses as to design and build in the same year the Gothior Sacristia de les Calices, the plateresque Renaissance Sacristia Mayor, and the modern Italian Chapter House. Gwilt says of the cathedral, a small portion of which is love shown: "The cathedral at Seville was principally rebuilt by Ferdinando Ruiz, who was much engaged in the city, and especially on calarging or raising the well-known tower called the Gralda. This singular edifice was begun in the circuit century, the original idea of it fifteen feat wide, its width being divided into seven aisles. ing or raising the well-known tower called the Gralda. This singular edifice was begun in the descript century, the original idea of it being given by the architect Geber, a native of Seville, to whom the invention of algebra is attributed; and also the design of two other similar towers, one in Morocco, and the other at Rabata. The tower of which we are now speaking was at first two lundred and fifty feet high and fifty feet wide, and was attributed diminution as it rose. The walls are eight feet thick, of squared stone from the level of the pavement; the rest, for eighty-seven feet, is of brick. In the cuatro of this tower is a smaller one, the interval between the two towers being twenty-three feet, which serves for the ascent, one so convenient that two persons abreast an mount it on berselvack. two towers being twenty-three feet, which serves for the ascent, one so convenient that two persons abreast can mount it on borse-back. The rentral lower does not diminish; but as the edities rises in height the walls gather over, so as to allow the passage of only one person. Upon the Mnors of Seville negotiating their surrender, one of the conditions of it was that this tower should not be destroyed; to which Don Alphonso, the eldest son of the king, answered that if a portion of it were touched not a man in Seville should survive. In the coefficient of 12% it was partially informed and analysis of the same o if a portion of it were touched not a man in Seville should survive. In the carthquake of 1395 it was partially injured, and remained in the state of misfortune that then occurred until 1568, when, by the authorities, Ferdinando Ruiz received the commission to raise it one hundred feet higher. This height he divided into three parts, crowning it with a small enpola or lantern. The first division of his addition is of equal thickness with the tower on a plinth, whomes six pilasters rise on each laguale, between which are five windows, are matching a commission of the behaviorally in several over which is an entablature aurmounted by balustrades; the second is lower, with the same ornament; and the third is ectagonal with pilasters, ever which the cupola rises, erowned with a broaze statue of Faith, vulgarly called La Giralda." This statue, although it is fourteen leat high and weighs two thousand eight hundred pounds, is a weathercock, and years with the lightest breezes.

HOUSE AT OYSTER RAY, LONG ISLAND, N. Y. MESSERS. POTTER AND ROBERTSON, ARCHITECTS, NEW YORK.

EPSILON CHAPTER HOUSE OF THE DELTA PSI FRATERNITY, TRIK-ITY COLLEGE, HARTFORD, CONN. MR. J. CLEVELAND CADY, AR-CHITECT.

Extreme width and length sixty by fifty feet. Tower, something over one hundred feet in height. Material (Including cornices, etc.), New Hampshire granks. The situation near the colleges commands

a view of the Connecticut River and Farmington River and valleys, a eicenit of some forty miles.

ARTIST BIOGRAPHIES.4

In these days the conditions for a healthy development of art must involve a knowledge of its past, of its groutest masters, of their greatest achievements, and under what circumstances these achieve-ments were rendered possible; for we very well understand that there can be no art commensurate with the attainments of the nineteenth century in science and literature without some intelligent teenth century in science and literature without some intelligent comprehension of the history of art, at least in its outlines, not by artists alone, but by the public through whom they most live. In our own country, where, notwichstanding its wealth and enterprise, there is existing, out of the countless pictures by the old masters, scarcely a single antheutic example, this desire to know and comprehend the great precedents of art is almost pathetic. The less expensive autotype processes of reproduction, the heliotype and the photograph, are doing something to meet the emergency, and the drawings of the masters are already becoming familiar to those who care to know them; but of course the questions of color, of chiaroscuro, and of the reclusical qualities generally must remain a dream oscure, and of the technical qualities generally must remain a dream of possibilities or probabilities; must of us must be content with etting them at second or third hand in some more or less irregular fashion, by dim copies and by dimmer reflections in the works of modern artists, produced in the armosphere and under the impulse of the great galleries of Europe.

To us, therefore, so ill furnished with the inspiration of high ex-To us, therefore, so ill furnished with the inspiration of high example, the literature of art becomes a more imperant element of knowledge than to others more happily placed, and the eagurness with which cheap books on the subject are purchased is a pretty fair indication that the interest is genuine. Conspicuous among these, and admirably contrived to cuit our conditions, are the biographies of the great masters, issued in an inexpensive and uniform series by Messia Houghton, Osgood & Co. This series comprises the tives of Titian, Michel Angelo, Esphael, Fra Angelico, Dürer, Murillo, Rembrandt, Claude, Guide, Leonardo da Vinel, Van Dyck, Sit Joshua Reynolds, Turner, Landscer, and Allston. These appear in separate volumes of about one hundred and fifty pages each, and in separate volumes of about one hundred and fifty pages each, and contain all that the general student needs to know of the persons through whom, by the will of God, since the Renaissance of classic learning. The arts of painting and sculpture have been transmitted

to modern times and have taken their present form.

Around most of these famous lives tradition, commentary, and conjecture have woren a veil through which the modern eye finds it hard to pierce to the truth, unless assisted by some such intelligence, trained in literary labor and animated by a love for art, as the author of these books, Mr. M. F. Sweetser, has amply evinced. Moscover, the standard lives of the masters, which are the result of the most diligent search, and in which are gathered together all that history has directly an indirectly revealed to modern times in regard to the subjects, are for the most part volunthous and costly works, to be found only in the libraries of specialists. On the other hand, the sketches in the encyclopedias and biographical dictionaries are the sketches in the encyclopedias and biographical dictionaries are mere perimetery outlines, and for the most part take up the familiar traditions and falles without emendation. Other great names, like those of Guido, Claude, and Murillo, founders of schools, the influence of which has been directly felt in all subsequent art, have never received the honor of biography in any distinct form, at least in English. By a strange fate it seems to have been reserved for the author of these modest little books to be the first to present in our own tongue the stories of these three masters, a knowledge of which is so essential to the popular comprehension of the history of arc.

It is, therefore, no superfluous contribution to the literature of art thus to varive for popular use the memories of these great characters. The series is very neat and structive in form; each volume may be comfortably and profitably read in a couple of evenings. In each have been carefully collected, from the most trustworthy authorities near and remote, all the authentic facts and all the best goureal criticisms which have appeared in any language, and each leaves upon the mind a distinct, concrete impression of a man of men. To the realer the result must be a far more intelligent comprehension of historic art, and a greater and more worthy respect for that prolific sort of genius which can not only add to the happiness and delight of mankind and make life the better worth living, but was reach because profitches a property and the beautiful to provide the beautiful to provide the beautiful to provide the beautiful to provide the beautiful to the property and the beautiful to provide the beautiful to provi but can teach how more profitably to onjoy and understand the beau-tiful things in nature. We have carefully examined and compared these little volumes, and first that within their narrow compare not only the essential facts have been carefully set down, but that in each east the idle tales which, by a curious fortune, have survived as a part of the picturesque story of the lives of the masters, have as a part of the phentresque story of the lives of the masters, have been rejected, and that many new facts which have been revealed to the judicial and industrious investigation of modern hierature take their due and fitting place in the narrative. But Mr. Sweetser has exhibited not only an industry fruitful in results, but an ability to draw fresh conclusions. Thus he shows, with regard to the brilliant and occentric Guido, so little known to us as a personality, that the well-known picture called the "Beatrice Cenci" is probably no portrait of that unhappy maiden, and that it is not a work

Artist Blogmphies. Boston: Houghton, Osgood & Co. 1978 and 1979.

of this master; the dark cloud over the fame of Rembrandt is in a of this master; the dark cloud over the fame of Rembrandt is in a great degree dispelled; Murillo is no longer the shadow of a name, but a master, who, following Fra Angelico, stond almost alone, among his contemporaries, as a painter of sections Christian art without taint of the universal paganism which beset the inspirations of his time, a master who prayed as he painted, and painted as he prayed; Turner, with the assistance of Hamerton and other modern investigators, is relieved of the overweight of Buskin's magnificent eulogies, but still retains his due position of mastery in modern landscape art; Claude is shown as a careful student of nature and not merely a composer of pompous landscape effects with classic episodes going on in the foreground; our own Allston, in an extremely well written narrative, is elevated to his proper place in an extremely well written narrative, is elevated to his proper place in the Valhalla; and in short all these fruitful lives are rehabilitated in the spirit of truth and relieved from the factitions atmosphere of runance which imagination has been found of drawing around them, and from the representes and misconceptions to which ordent critics have subjected them that their own ideas might have the bester

chance of life. These librottos enjoy the advantage of having been written not by a schoolman in the interest of any especial set of theories, or by an arrist in the service of any especial school of art, whether pre-Raphaelite or post-Raphaelite, whether Italian, Spanish, German, or English, but by an American scholar with a genuine respect for art, and concerned only to get at and duly set forth the whole truth. Each book is preceded by a preface indicating the principal sources of information, and serving as a soct of bibliography of the subject, and concludes with a list of all the known works of the artist and their present places of deposit so far as they are known. The limitations of space confine the writer to a narrative often condensed, and intense in intense by reason of its abundant incidents, but never crowd out what it is well for us to know of the testimony of the greatest critics with regard to the peculiar character of the genius exhibited in each life. The uniform character of the books genius exhibited in each life. genous extraired in each line. The uniform character of the books anhiests the writer at first sight to the charge of book making, of adjusting facts, in Procentican fashion, to the publishers' limits of space; but the work is really done in a workmanlike manner and with a certain judicial partiality and completeness which are deserving of peakse. It must be confessed, however, that the limitations of these books with regard to number seems arbitrary; for a scheme which admits Landseer and Allston of modern artists, but takes no note of any of the great French leaders, whose characteristics are really exercising more influence over art in those days than those of any other set of men, -a scheme which does not include such distinct masters in art as Rubens, Delacroix, Delacrobe, Hollsein, Teniers, and Gainsborough,—is wanting in completeness. Let us, however, hope that the publishers may be encouraged to make this interesting and useful series more complete in the immediate future; we commend what has already been done very heartly to all who would intoich their minds with a fuller knowledge of the great achievements in art.

CORRESPONDENCE.

PRENCH PURNITURE AT THE EXHIBITION, - TAPESTRY, - FAI KNUE .- STAINED GLASS.

In my last letter I criticised the English furniture in the Exhibition as showing great skill in cabinet-making, but offering little be-yond that; still, as joinery is the anatomy, so to speak, of furniture, it is an excellent foundation for the latter in its broadest sense, where it includes the application of various arts, indead so overlapping it as to form a neutral zone in which it is difficult to determine whether an to form a neutral zone in which it is difficult to determine whether an object is a bit of furniture or a pure work of art, as is the ease with sculpture in mantel-pieces and las-redists, finely worked bronzes, fallences, tapestries, etc., employed where use and ornament are combined. It is into this wide domain of mobilier -- which thus inclades more than our word furniture — one enters as he looks down the long vista of drawing-rooms and bondons which chiefly fill the French furniture gallery. One's attention is at once drawn to an endless variety of sumptions soles, divans, tête-à-têtes and arm-chairs, pours and other pieces, so thoroughly Franch that I doubt if we have over found English equivalents for their names, and all these, as well as rich curtains and portions draped with consummate art, charm the eye by the exquisite tasts with which the tints of costly fabrics have been harmonized and contrasted. It is a feast of color worthy of the old Venetians, from whose pictures many a rich tone has been copied. One is not surprised, then, to some upon some well-known pointer lingering with half-closed eyes before some clever scheme of color; ingering with natt-cosed eyes nearer some there's science of coor; for good as the color of French painters generally is, there seems to me a deeper instinct shown for rich and brilliant harmonics here than is to be found on the walls of the annual Salon. It is carious to note that there seems no prevailing fashion in the tints or their combinations. New shades are of course discovered every year, and the later onus show the influence of the brie-a-brae mania, which, as in excent paintings, shows itself in the use of rich brocades and heavy embroidery, and in some levely faded shades of velver, pale amber, soft mouse-color, dusky maroon, etc.; but then beside these would be the deepest tones of rich color, so it cannot be said that even these new tints especially are the fashion.

The most admired and conspicuous interior is a wonderfully heav-

tiful boudoir. An immense velvet curtain of a strange but lovely dark blue-green is draped in magnificent folds, here and there reyealing inner deaperies of pale coffee-color and light blue silk, over a splendid gilt couch covered with the palest rave satin; a desper rave drupery is arranged behind it, and a white satin coverlet, embroidered in strong colors, is thrown in careless folds across the foot. Behind the couch on the wall is a metallic blue and buff satin, and in the lack ground is a large tapestry picture of nymph and cupids, with prevail-ing thats of pale pink and primrose, while in the foreground stands a bright garnet seal and a picture on a draped casel; on the dark gar-net carpet near the couch is a gilt stand on a tiger skin, and these with a large alabaster pot of palms complete a picture extraordinary for masterly simplicity and beauty of color. (If course words are harda large manager put of paints complete a pietare extraordinary for masterly simplicity and beauty of color. Of course words are hardly less impotent to convey an idea of harmonics of color than they are in the case of those of music, and I give this description to show how few objects finally composed an exhibition to which months of study and experiment must have been devoted. An exhibition so far removed from a mere commercial display shows how high into the regions of pure art furniture may be carried. This exhibit was the regions of pure art fermiture may be carried. This exhibit was rewarded by a gold metal and a decaration. Gold metals were also awarded to Beardeley, Meynard, Sauvrezy, Quignou, all well-known men. But it must not be thought that only upholstery is exhibited, for there is a perfect measure of everything which is best in Prench furniture since the sixteenth century, when Italian art, led by Leonardo da Vinci himself, received a hospitable velcouse to Paris, and the imitations of the cleany work inhabt with ivory then imported may be here compared with the identical work continued in Northman Italia, and now an important manufacture of Milan. So also the may be need to make that the translation of Milan. So also the modern Florentine pietra dora inlaying is confronted with reproductions of Lunis XIII's time. French furniture, however, became thoroughly national under Louis XIV., when Boule invented a variety of inhid and applyine or isometry, which book invented a variety of inhid and applyine or isometry, which were pushed to the fantastic during the succeeding reign. Side by side with these large cabinets and heavy tables are the delicate and refined secretaries and workstands of Louis XVI., where classic taste insisted on lightness and simplicity of form, and twisted spider tegs gave way to slender colonsimplicity of form, and twisted spider legs gave way to slender colonnettes, while the ornamentation was confined chiefly to intaid brass. There are fine examples of carred wood, but nothing Gothic chiefly Renaissance cahinuts, where the extreme delicacy of the carring, or rather of the engraving, is shown off by the highest polish. In these, as in all the previous axamples, the worknauship in the racious arts employed is beyond criticism, and the working out of the details shows the highest art; but what shall be said of the designs in general? "Tanjours tes mêmes documents" was the remark of a Frenchman, and it is a fair criticism. Since the first empire the Frenchinan, and it is a fair criticism. Since the first empire the French have been chiefly occupied in adapting to modern wants historical examples, and perfecting their initiation; and this reached its cubalization in the Exhibition of 1867. Excepting progress made in coloring and upholstery, and an advance in skilled bronze work, at the head of which stands M. Barbadicane, this department of French art has gained nothing, and apparently sought nothing, since the last exhibition. To be thus stationary for long can but lead to a decadence. This danger is appreciated, however, and vigorous efforts doubtless will be made to throw now life into this department. The recent association formed under the applices of distinguished arrists and anatours for the promotion of decorative art promises to give the needed impulse and awaken interest in these matters. A Museum of Decorative Art is to be opened shortly in the Favillon de Flore, with hoth permanent and loaned specimens. I noticed that

on Plore, with notice perinduction and damed spectrums. I notice that numerous examples of English faitures had been purchased for this mostum, which is a deserved compliment to England.

It is, in fact, from England that the idea of this new museum has come. Imitating some of the functions of the South Kensington Museum, it will organize from time to time exhibitions which will make the tout of the provinces, besides establishing in the principal cities permanent branch museums, well supplied with easts, models, euc. For some time the French have felt that, in spine of the techcar. For some time the French have felt that, in spice of the technical skill of the workmen, their decorative act was not what it should be, and needed to be pruned and remodelted in various whys. The rapid progress England has lately made, especially in the ceramic arts, has confirmed this uneasiness, and roused them to pre-

serve their ancient supremacy.
This supremacy, however, never scemed more inapproachable than in their exhibition of the national Gobelins and Beauvais tapestries. From the Gobelins works come two immense carpets of Savorneria work for the Paluce of Fontainebleau, besides aliegorical panels and several wonderful copies of old masters. In all these examples the shading and soft blending of tints are marvellous. The Beauvais work is represented only by panels of fruits and flowers, but they too are perfect in their way. Not only has Franco distanced during the three centuries of these manufactures all former tanced during the three centuries of these manufactures all former foreign competitors, — the present exhibition of the Flander's tapestries, once so famous, measures that distance, — but no private works have ever been able to compete with them in this long and difficult process. Naw, however, M. Clais has havened a different and shorter system, which consists in coloring the threads when in place, instead of laboriously working out the design with the previously dved threads. If he really can due and fix the tints in this way it will enable the artist to work hieracli upon the tapestry, but it is doubtful whether this can be done, and still more so whether the effect of the present Gabelias could be given.

Although the exhibition of the Series works is very complete, and contsios as beautiful specimens in form and color as ever, it does not, contains as beautiful specimens in form and color as ever, it does not as with the tapestries, thus stand alone; for though no other works can produce vases of such exquisite designs, private enterprise is pressing nearer to its perfections, and in the matter of mere coloring can almost rival it in the simpler and smaller pieces. These private manufacturies are scattered over France, Limoges taking the lead with a fine school she has lately established to train her workmen, who include most of the inhabitants. This percelain is generally white with delicate colored designs. From Romen comes the well-known blue china; from Nevers the tint is usually gold or yellow; while quaint ald Bourges sends designs as quaint as herself, with flowers and queer monatera.

Ancient as are these establishments and their advantages, England with her new manufactories fairly rivals them in certain things, and Doulton's exhibition, as well as Maw's and Minton's and the Worsester Works, contained specimens in some ways superior. The English tiles were in general better than anything French of the kind, and attracted much attention. One reason of this may be that in tiles it is particularly essential that the design should never destroy the sentiment of a flat surface, which secret I believe fice at the bottom of the recent improvement of the English in decorative design, and of which reacht improvement of the English indecorative design, and of which the French too often luse sight; for the recognition of the surface to be decorated is essential to good design. The English coloring was unexpectedly beautiful, and had the forms of their vases been as graceful as were the shapes of Mr. Welli's wonderful glass show (grand prize), their success would have been unqualified. There is another department of art is which the English were unrivalled; the strength and delicacy of the woodscuts exhibited by the London Graphic surpuss those of any other paper, and the best Continental work appears coarse and stiff beside it. There was a large collection of the original sketches from their Russian was correspondents, which showed from what messers data their five illustrations are which showed from what meagre data their fine illustrations are

worked up by home artists.

The exhibition of stained glass was one of the unsatisfactory things of the Exhibition. Among the large number of French exhibitors there was little pure and rich toned glass. The small, finely-pencilled heraldie panes and engraved, tinical glass were perfect in their way, but nothing which showed serious approach either to the clear, simple colors of the thirteenth century style, or to the deeper tones and more picture-sque compositions of the succeeding styles. M. Oudfaut, who has sent a number of windows to America, notably to Trining Church. Boston, received a gold medal, and his certainly were among the best examples; but though the drawing is like, and the coloring agreeable, his glasy does not have the clear, pure tone which gives the luminous breadth to old glass. Generally the hest glass in France is done by workers in the calledral towns, where having studied patiently the native glass they will repair or initiate it with skill, but given an original design they lose breadth and parity in fulle details. Larin, of Chartres, showed noticeably these virtues and defects. Although I broked in vain for Clayton and Bell, whom I believe superior to any Continental manufacturers, the English glass seemed nearer to the mediaval models in breadth and purity, though here too there is a number too verdo and nonfuse by stading. Among the English makers I noted Radeliff & Co., Ward Hughes, John Hardman. A gold modal was given to extremely delicately pennilled panes for dwellings by Canon Brothers.

R.

MODEL-TENEMENT COMPETITION.

NEW YORK. A very interesting attempt has been started by the editor of the Plumber and Sanitary Engineer in offering a prize for the best design for a New York temement house to cover a lot twenty-five by one hundred feet. In association with D. Willis James, F. B. Thurber, Henry E. Pellew, and Robert Gordon the chitor has provided a purse Heary E. Fellew, and Robert Gordon the editor has provided a purse of five hundred dollars as an inducement for the architects to prepare designs. The conditions suppose a lot inclosed on sides and rear by huildings of adjoining lats, so that little or no aid from side or rear openings can be looked for its securing ventilation and light. The investigations which have been made of late into the horrors of the tenement house system have shown the need of reform, and, probably, the fact that dividends from this class of property are falling away has induced the real estate owners named above to take part in the offer. They have selected a committee of award consisting of R. G. Hatfield, architect; Prof. Charles F. Chandler of Columbia College, and the President of the Board of Health; Rev. Henry C. Potter of Grace Church; Rev. John Hall of the Fifth Avenue Presbyterian Church; and Robert Hoc, the head of the press works and machine shop. The workmen in the establishment of the last named gentleman have been discussing the project for some time past, and asserveral man have been disensing the project for some time past, and at several man have been discussing the project for some time past, and at several meetings held on the subject of improved dwellings have appointed committees of investigation from among their own number. The points to be particularly looked at by the sommittee in fixing the points for the several designs are: (1) security against conflagration (including fire-print stair-cases open to the air); (2) distribution of light; (3) ventilation; (4) drainage, and other cardiary appointments; (5) seclusion of each suite of rooms, and publicity of access to them; (6) convenience of acrangement; (7) inexpensiveness. Sufficient drawings in line to show the general features, with such detail drawing as will exemplify any pusuliar features, will be required, all to be done in India ink without color or washes.

The drawings are to be accompanied by a concise, clear description of the arrangements and materials of construction, together with tion of the arrangements and materials of construction, tagether with a detailed estimate of the cost of construction, which is to comprise masonry work, ent-stone and plastering, iron work, carpenter work, roofing and painting, plumbing work, sanitary appointments, and other required work and materials, and contingent expenses required to render the building ready for occupancy. The estimate to be given for each of the kinds of work above named separately. The estimates to be made in good faith from trustworthy data, the prices those ruling in the city in which the design is made, and the name of the rite sixen. the city given.

The morto plan will be adopted to prevent the committee of awards from knowing the names of the several authors of designs. The closing hour is fixed for two P. M. on the 4th of Pelsinary, 1879, and the committee of award will on or before the 18th of February give an opinion, numbering the designs from one to the highest number received in the order of their merit. From February 5 to February 15 the designs will be on public exhibition.

To the author of the design "No. 1" will be paid \$250; to the

author of design "No. 2"? will be paid \$125; to the author of design "No. 2"? will be paid \$75; and to the author of design "No. 4" will be paid \$50. The designs will all be returned to the authors, or

unifed to their address.

In all this competition there is no distinct provision that the houses shall possess any distinct architectural merit. This is left, if it is to be looked after at all, to the architects personally, but in securing the several points laid down, a barn, fulfilling the requisites of physical ends hid down, must take the first prize be it as devoid of beauty as

Many architects declare that the idea of attempting anything of this sort widin the narrow limits of a city lot is sure to end in failure, and point to the blocks built for Alfred T. White, in Hicks Street, Brooklyn, as menting the problem of a model tenement. The first block was opened February 1, 1875, and since that date the same plan has been carried out in two larger blocks. Mr. White estimates from his experience that a recurr of seven per sort not appear to the contract of this experience. timates from his experience that a return of seven per cent net upon timates from its experience that a return or seven per sent net upon the capital invested might be realized upon land in this city, supposing the land to cost \$5,000 per lot and the cost of building to be the same as in Brooklyn. But in this competition the conditions are purposely narrowed to single lots in an endeavor to see if they, too, cannot be made profitable and yet supply tenements fit to live in

NOTES AND CLIPPINGS.

Wit wish to draw attention to a change in the publishers' advertisement on page vi. of the advertising pages, where it is stated that the numbers of this journal for November and December, 1878, will be given, gratia, to new subscribers who pay their subscription for the ensuing year before December 25, 1878, instead of December 15, as hitberto stated.

We wish also to draw altention to the prospectus for the ensuing year, and to the new and enlarged premium list, which we have tried to make attractive and useful, which will be seen on the following page.

Buildise Law.—A case was decided lately by Judge Yaple of the Superior Court of Cincinnati, that may be of interest to our readers. It seems that the firm of Louis Stix and Company, owners, contracted with M. Marcus, principal contractes, for the carpenter work of a store building. Stix and Company pud Marcus amounts from time to time upon the estimates of the architect, according to contract, up to a certain time, when Marcus made an assignment. After this assignment was made Stix and Company publior rather advanced Marcus \$1,500 without any estimate from and contrary to the advanced Marcus \$1,500 without any estimate from and contrary to the advanced Marcus \$2,500 without any estimate from and contrary to the advance [so the prosecution stated) of the architect. Messis, Mitchel and Rowland, and Greenless Ransom and Company, bring sait under the lien law to recover the amounts due them, and hold that the \$1,500 was not legally paid, and that the owner had the right to do better for the contractor than his contract called for, and gave Judgment for the Gelence. the defence.

ARCHITECTURAL REFURNES. — Messrs, Hodgson and Brown, architect, of Indianapolis, Ind., and Mr. Charles Crapsay, architect, of Cincinnati, have been appointed by the County Commissioners of Vigo County, Indiana, to examine and report upon a set of plans prepared in 1872, by J. A. Vrydagh, architect, for the Court House it was then proposed to eract to seems that Mr. Vrydagh's plans were prepared and adopted and bids tendered, when at this state of the case a committee appointed by the citizens retoed the whole matter, for what reason is not known to our correspondent. Mr. Vrydagh thereupon entered sait for \$15,000, and this commission of architects is appointed to report as to whether that is a proper amount to pay an architect for plans of a building that was to have sost door \$300,000; the commission is also to report whether the bellding could have been built for that sum according to the plans. The commission commenced its assistant of Terre Haute, Ind., on the 17th inst., and will continue until its labors are completed. will continue until its labors are completed.

ANEROID BAROMETERS. - The Gilland Captive Balloon, at Paris, has, it seems, been made to serve for some interesting experiments with ane-toid barometers. It was discovered that all, or nearly all the harometers, after registering the assent, failed to record the difference in altitude until some time after they had been returned to the earth

Hardenina Corum. - Dr. J. S. Mayer, of Virginia City, Nevada, claims that he has discovered the lost art known to the sucient Egyptians, of tempering copper so as to produce an edge which will cut like steel.

BOSTON, DECEMBER 28, 1878.

SCHMARE: St. Albun's Abbey Church. — Architects against Restorers. — A new Theory. — Underground Telegraph Lines in New York. — Building in Brooklyn. — The Labor Troubles. — Strikes and Labor Statistics. — 209 The Oven Fire-Place. V. — 210 House Drainage in Purlabelents — 212 The Leastrations: — The Salisbury Building. — House at Winchester, Mass. — Sc. Paul's Church, Harrisburg, Pa. — Interior of the Church of St. Lambert, Münster, Westphain — 213 Book Notices: — Vose's Geometrical Drawing — The Old House Albertal — 212 Refort of the Committee on National Surveys — 214 The Assyrian Gayes — 215 Competitions in Interior Decoration — 215 Books Received — 216 Notes and Cliptics — 216

A WARM controversy is going on in England over the pro-posed continuation of the restorations of the famous Abbey Church of St. Alban's. We gave some time ago (American Architect, May 25, 1878), an account of the ingenious method adopted for restoring the warped walls of the nave to their upright position. The church is one of the most interesting in England, being the largest not a cathedral - ranking in length with Winchester, Canterbury, and Ely - and leaving the rempants of one of the finest as well as one of the carliest Norman naves that exist. The restoration was in the hands of Sir Gilhert Scott, and it is possible that if he had fived the controversy would nover have arisen. If our readers will look back to two of Mr. Neale's places of this building, which we copied from the Architect (American Architect, June 29, 1878), they will see that a noble tower and transepts of Norman work are conjoined with an eastern arm of early English and decorated work, the whole much bedevilled - if we can be forgiven the word - by hattle-mented parapets and traceries of various periods. All four arms of the church originally were high-pitched roofs; and our plate of the exterior shows clearly some of the channels of the old roof lines, which exist on all sides of the central tower. transept fronts also retain the springings of the original gables. with remains of a blank areade which crossed the gables at their feet, things not visible, however, in our plate. All the old roofs have been replaced with flat roofs of very low pitch, put on, probably, in the Perpendicular period, when the parapets were added which hide them. The interior view that we gave shows only the three westernmost bays of the pave, which are early English, there being nine bays of the Norman work still left on the north side, and fewer on the south. Over this nave the low-pitched roof carries a flat crilling, which, with the roof, is in a very dilapidated condition. Here is the bone of contention. The committee in charge of the restorations have declared that the present roof of the nave is ruinous, and propose to replace it by a roof following the lines of the old weathering in the tower. The Society of Antiquaries and many of the leading architects, as well as most of the architectural jourmals, have united in protesting against this project, and the Instirute was, at the last account, apparently getting ready to enter the lists.

THE curious thing in the controversy is, that it is the architects - representatives of the profession abborred by the conservators of old architecture, the profession whose zeal for resturation has brought down the anathemas of those who revere old work - that have intervened to keep things as they are by simply repairing the existing roof; while the chief of the party that, in the true spirit of modern restoration, would substitute what they think should have been and must have been for what they find, is - who but Sir Edmand Beckett bimself, whose services in the diocese of York we mentioned last week? Sir Gilbert Scott had decided that the present roof could be repaired to advantage. He believed that the removal of the high-pitched ro is had injured the appearance of the church, but that the difficulties in the way of a return to them were too formidable. Mr. Street, with Mr. Christian, Mr. Neale, and others, has examined the coof, and has reported that, although he can make

out with certainty the form and construction of the original roof, the present one can be and ought to be repaired. It is evident that the real quarrel is not over the condition of the roof, but between a desire to preserve it and a desire to replace The oppositions of "restoration" argue that to replace the roof means ultimately to reroof the whole building, rebuild the gables of the transepts, and replace the western front. The significant point is the change of position on the restoration question that the quarrel indicates. A few years ago no conscientious restoring architect would have hesitated to pull away the later work, roof, parapet, and hattlements, which he would have considered to be simply a disfigurement of the older and purer portions, and to bring the whole back to what he would have considered its original likeness. It is not very long since the Royal Institute, in its published recommendations for restoration and conservation, orged that it should be a main object in restoring "to get rid of modern additions put up without regard to architectural propriety," and that therefore the low roofs added in the Perpendicular period should be replaced by steep ones like their predecessors. It is but little more than a year since Mr. Stevenson, in a sharp easlanght on restorers in presence of the Institute, attacked both Sir Gilbert Scott and Mr. Street for making this very change. To-day we find Mr. Street protesting against a similar change, and citing Sir Gilbert's opinion against it, while the committee in charge of the most important unrestored building in the kingdom is arging it. And we find Sir Edmund Beckett, the amateur corrector of architects, holdly affronting, with the zeal of a catechumen, the difficulties which Sir Gilbert found "too formidable."

It is not known that more than three or four of Turner's pictures have ever been brought to the United States. Those have been in private collections where they were not accessible to the public. One of them, of high rejutation, has been in the hands of a coffector who has persistently refused to let any The only one that has been generally known is the Slave Ship, now in the Museum of Fine Arts in Boston. Mr. Thomas Moran now claims to have discovered one that has lain perdu in the country for a quarter of a contary. It is a picture of Conway Castle, a famous easile in North Wales, built by It is a pierure Edward First, of which Turnor is known to have made several drawings - water-colors and others. This particular picture seems to have passed out of the notice of Turner's admirers. It has not been mentioned by Mr. Ruskin, we think, nor is it named in the voluminous lists of Turner's works given by Mr. Thornbury in his biography. It was not exhibited by Turner either at the Royal Academy or at the British Institution; and, rather curiously, since the subject seems to have been a favorite one with Turner, none of his drawings of it have been engraved, if we can trust Mr. Stokes's catalogue of the engraved works. Mr. Moran, however, has found a very direct and straightforward history for his picture. It was painted, he says, he or near 1810, for Mr. Thomas Goodall, banker, of Abingdon, Berkshire, England, and after his death came into the possession of Mr. John Butterton of Staffordshire. His son of the same name, an arrist, inherited the picture and brought it twenty five years ago to Philadelphia. There Mr. Moran, being then a hoy, saw it, and he has treasured it in his momory over since. Lately he got track of it again by means of an advertisement in Scribner's Monthly, so the story goes. Finding it and Mr. Butterton in Hammonton, New Jersey, he secured it. It is larger than the Slave Ship, being three feet eight inches by four feet eight inches. He is reported to value it at from twenty-five to thirty thousand dollars. This seems rather an enthusiastic valuation of an obscure work of Turner's early period, considering that the highest price ever paid for a Turner was five thousand guineas, and that only three or four have ever brought more than three thousand. What Mr. Moran's purchasing price was we are not told.

A new proposition for burrowing under ground in the streets of New York is that of the company which has just procured an ordinance allowing it to lay "subterranean tolegraph wires and electric conductors" in the streets. These are, by the terms of the ordinance, to be laid under the direction of the Commissioners of Public Works, in trenches not more than two feet wide and two feet deep, and four feet from the curh-stones, so as not

to interfere with gas and water mains, or with sewers. It is proposed to include a bumille of cupper wires in an iron pipe, first separating them by wrapping each with cloth, and then to complete the insulation by pouring in melted paraffine. The purpose of the company that is to lay these wires is obviously to offer them as a substitute for the wires that are carried on poles and through the air; possibly to enforce their offer by a little municipal persuasion, and even with an eye to the officente use of the electric light. The Union Telegraph Company, which has a large amount of money invested in street poles and elevated wires, does not favor the scheme; but maintains that the underground wires would be more likely to get out of order, which dues not look plausible and more difficult to repair, which is plausible, and that the next move of the new company will be to press an ordinance banishing the pules from the streets, so as to bring their wires into demand. Whatever may be the convenience of the telegraph companies, there is no doubt that the poles and air-wires are an annoyance as well as a disfigurement The poles carry anywhere from a dozen wires in the streets. to a handred, which occasionally break, or are blown down together by a gale, and are in that condition of no use to the companies, but extremely obnoxious to passengers. In Landon and Paris the underground railways and sower tunnels give an opportunity to relieve the streets by carrying tolegraph wires as well as the gas and water pipes where they are at once out of the way and accessible. Here is another argument for introducing sub-ways under our streets where it is practicable, and for washing no more money in putting them off. If the city of New York, instead of requiring every new company that wishes to disturb the streets to pay for its franchise, as seems now to be the pet idea of municipal thrift, should require them all to bear their part is building sul-ways, perhaps something might be done.

THE Chief of the Brooklyn Department of Fire and Buildings, Mr. Williams, presents a list of building-permits issued during eleven months of 1878, which shows that the amount of work reported to his department does not differ much from the average of the last four years. The whole number of permiss is given by the Brooklyn Eagle in one table as 1638, and in another as 1738. The estimated cost of the work is set at \$6,525,742. Among these buildings are 882 single dwellinghouses, 213 for two or four families each, 255 shops and dwellings combined, and 45 tenement houses. There were six churches, 21 factories, seven school-houses, six railway stations, one observatory, and one distillery; 1,066 are set down as brick buildings, and 652 as woulden. The numbers and cost reported for the last five years, but for twelve months against eleven in 1878, are: in 1878, the year of the panic, 507 buildings, costing \$1,885,600; in 1874, 1344, costing \$7,774,500,an extraordinary increase: in 1875, 1648, casting \$7,710,000; in 1876, 1743, costing \$8,165,300; and in 1877,1686, costing The growth and decline of tonoment-house haild-\$7,000,000. ing is noticeably illustrated in that there are reported in 1873, six; in 1874, 81; in 1875, 113; in 1876, 124; in 1877, 60; in 1878, 45. This may be assumed to indicate the sudden demand for such houses which the pressure of hard times has developed, and the approximate satisfaction of the demand. In the same years the numbers of private houses permitted were 160, 639, 751, 848, 887, 832. Some suggestion of the relative prosperity of mechanical employments may be inferred from the numbers of workshops reported: two, 37, 38, 47, 80, 70.

This long disturbances of the latter market, here and abroad. do not seem likely to come to an end. There is no great reason to expect that they will so long as business depression and falling prices continue. It is the stumbling-block of the workingmen that they do not feel such depression by direct contact, but only through their employers, and they are therefore tempted not only to resist by force their share of the general burden, but to visit upon their employers the injuries which are only the transmitted shocks of a universal disturbance. Mr. Bishop, of Pittsburgh, touched upon a like difficulty in saying before Mr. Hewitt's Labor Committee that the greatest cause of discontent among workingmen at present is that they do not realize that prices fall with wages. The condition of England is particularly The workings in the building-trades, among whom unsettled. there has been a pretty general reduction of wages of late, have not yet shown a disposition to renew their strikes. The ironworkers of Staffordshire have found it necessary to reduce their

wages, and one of the largest companies, the New British Iron Company, has decided to shut down the greater part of its works. The twelve or fifteen thousand cotton hands who have been on strikes at Oldham hold out with pertinacity, except a few who have gone to work provisionally, pending the discussion of a setflement. The cost of the strike to the workmen during the first four weeks is estimated at \$300,000.

THE weakest phase of the workingman's position was shown in the recent strike of car-drivers in New York, where the refusal of the Third Avenue borse-railroad to take on two men who had been prominent in a previous contest led to a general strike. The company's firmness and the fact that plenty of new men could be had have enabled it to keep the upper hand, Probably there is no field on which the general question of strikes can be fought out with so little ultimate advantage to the workingmon as on the railroads, or like public services, for there is name in which the public is so sure to be enlisted against them. In other husinesses the community feels the injurious effect of strikes only indirectly, in the general depression of the businesses and the disturbance of prices; but here the immediate injury is so direct and socious that the public is aroused at once to oppose the strikers. We notice, on the other hand, as a step in the right direction, the petition of the workingmen of Missouri that their legislature should establish a Bureau of Statisties of Labor; which, however, is at once discredited, and reduced to a piece of class logislation, by the provision that the Commissioner shall be a "botte fide representative workingman."

THE OPEN FIRE-PLACE. V.

In its primitive form it consisted of a simple niche out in the thickness of the wall the sides terminating in small piers supporting the massive hood as shown in perspective view by Fig. 17, from Viallet-le-Duc. The oldest fire-places of the Middle Ages were

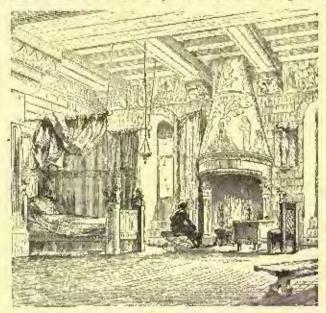


Fig. 17.

often circular in plan, the back of the fire-place forming one segment of the circle, and the mantel and hood the other. Those supposed to be of the twelfth century were not so large as those of a century later, and the mantel was apt to be formed of a single piece or of two pieces of material, as in that of the Cathedral of Pay en Velay, shown above, or in that of the private house in the old town of Cluny, France, represented in Fig. 18. Here, the hood is supported by a single curved timber. In this example the entire thickness of the walf is used, the back of the fire-place being on a line with the outside of the walf, so that the masonry of the chimney shows in projection on the exterior. The bond is cliptical and resolves itself, as it ascends, into a circular flue. On the right and left are little shelves for lamps, corresponding to our modern gasburners on the chimney breast. The low windows near the fire-place enabled the occupants to see what was going on to the street while they sat by the fire.

Fig. 19 represents the old fire-place in Roslin Castle, of colorsal dimensions and extreme simplicity of design. In these great fire-places have trunks of trees six or eight feet long were sometimes because. Seats were placed on and about the hearth, and the screens and jambs of the five-place formed together a complete antechamber as it were, spart from the large halls in which they were built, and

here the family united to pass the long winter evenings and listen to the famous legends of olden times.



Fig. 18. Fire-place in the Villa de Clany, Rue d'Avril, No. 13. From Viollat-la Bue. After the thirteenth century the kitchen, forming part of the main house, and no longer a separate establishment in which whole sheep

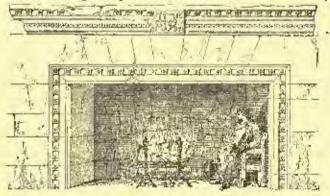


Fig. 19. Fire-place in Rostin Cestle

and oxen were cooked at one time, was furnished with one or more of these massive fire-places, of which Fig. 26 furnishes a beautiful



Fig. 20. Kilchen Fire-place of Granita From Wollet-Je-Duc.

example. It belonged to the Abbey Blanche de Mortain, was built

of granite, and still hears the arms of the abbey and the triple pot-hunger with the iron plate behind the fuel.

Here we have no piers at all, the hood resting on heavy corbels of granite, and the fire-place is built as usual in the thickness of the

Up to the fourteenth century the fire-places of private houses and

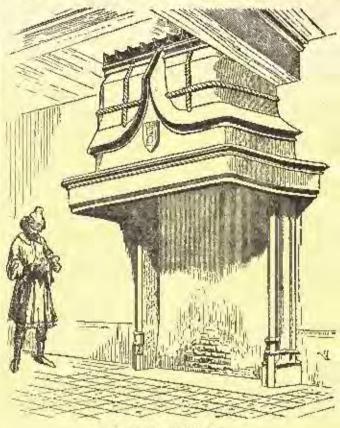


Fig. 21. From Visitet In-Due.

charcaux were generally of great simplicity, and it was only later that we see any artempt at decoration.

Figs. 21 and 22 represent two fire-places of the afternth century, with jamies of stone and hoods of wood plastered and curiously decorated. They are in the little town of Saint Antonin (Tarn-ci-(Garonne).

Fig. 23 gives a section of the first fire-place, showing the construc-

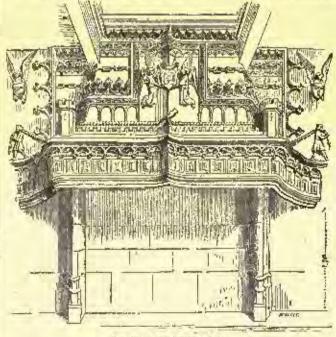


Fig. 22. From Vitilet-le-Duc.

tion of the hood, which stands I mater and 77 centimeters (about 5 feet 9 inches) above the hearth. Fig. 24 gives a detail of a lower corner of the framework. The hood, being plastered and having therefore the appearance of stonework, seemed to the eye too heavy to be self-sustaining. The artist has therefore taken the paints to the proper of the corner above the self-sustaining. carve upon the surface heavy cables, in the hopes of being able thereby to diminish in a measure this disagreeable effect of weak-

The second fire-place is more profusely decorated, and clasins are added as well as man-power on the right and left, to assist the cable in supporting the heavy hand.

Fig. 23 represents one of the righly scalp-tured fire-places in the Châtean d'Arnayle Due, of the sixteenth century. It is two and a half meters long by nearly two meters high, and stands in a room four and two tenths meters high.

The fire-places thus far described have not executed eight or ten feet in width When very large halls or saloons in palaces or public buildings were to be heared they sometimes measured thirty or forty feet. and were deeneated in a most smarttness manner. In this case, however, it was necessary to support the marrel by intermediate piers, as shown in Fig. 26. When these piers extended from the front to the back they formed, ander a single mantel. separate fire-places, each having a distinct the of its own, as shown in Figs. 27 and 28, the furner being from the Château de Coney, France, and the latter from the Grand Hall of the Pulais des Contes of Potiers.

The subdivision of the opening and the into several parts had other disjects headles that if properly supporting the mantel. The itse or withes strengthened the walls, and the draught of each was materially improved by having its own small, independent the. When the fire was first lighted

Fig. 25 or when to s than the ordinary amount of the beat was required.

a single section. By this arrangement each part, besides basine sufficient draught of itself, served also to hear and improve that of the rest.

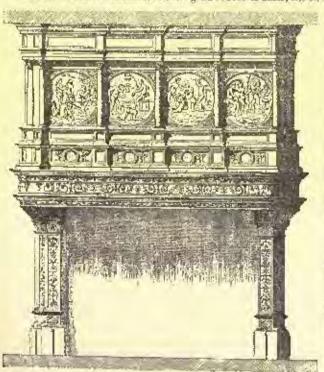
The fire-place represented by Fig. 28 was built in the fifteenth contary, and occupies one end of the hall in which it stands. "It is," says Viol-let-le-Dec. "no less than 10 merers long and 2.80 meters (7 feet) high under the mantel. . . Is the in-terior of the public buildings as well as in the exterior, the Mildle Age

as in the extense, the tribute large tribute and established how to produce imposing Fig. 24.

Fig. 24.

The treatment even of one most important modern buildings seem weak and insignificant by comparison

"When the counts of Poitiers, in their grand robes of state, sat en-



F-F. 25.

through in this ball, surrounded by their officers; when behind the feudal court blazed the three fires on their three hearths; and when,

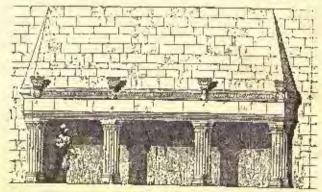
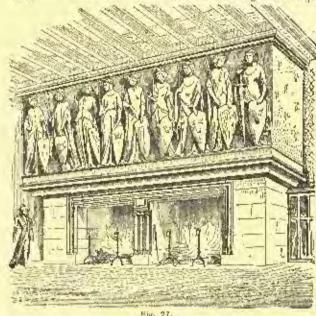
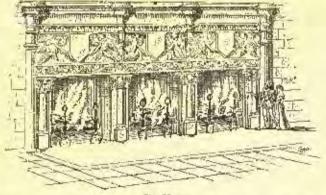


Fig. 26,

to complete the picture, the assistants were scated on beaches before the gargeous windows above the mantel, one can imagine the respect



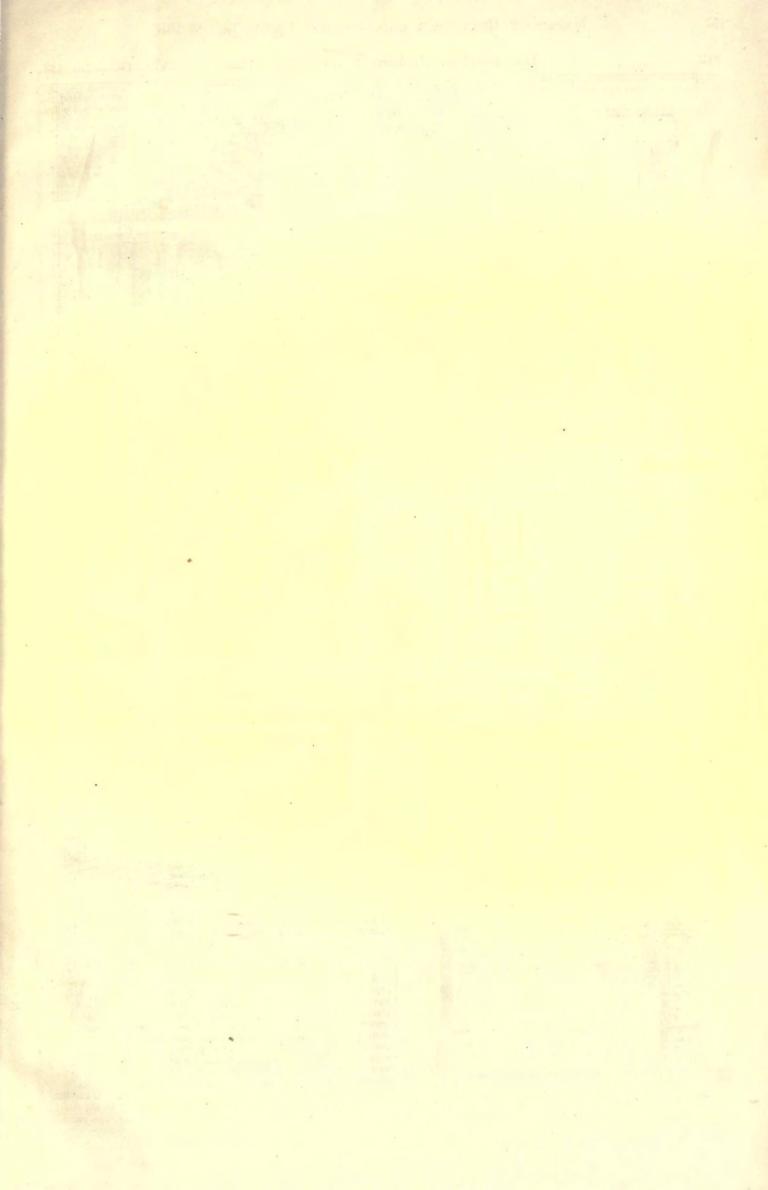
that a scene of such nubility and grandeur ought to have inspired in the minds of the vassals assembled around the court of their lord.

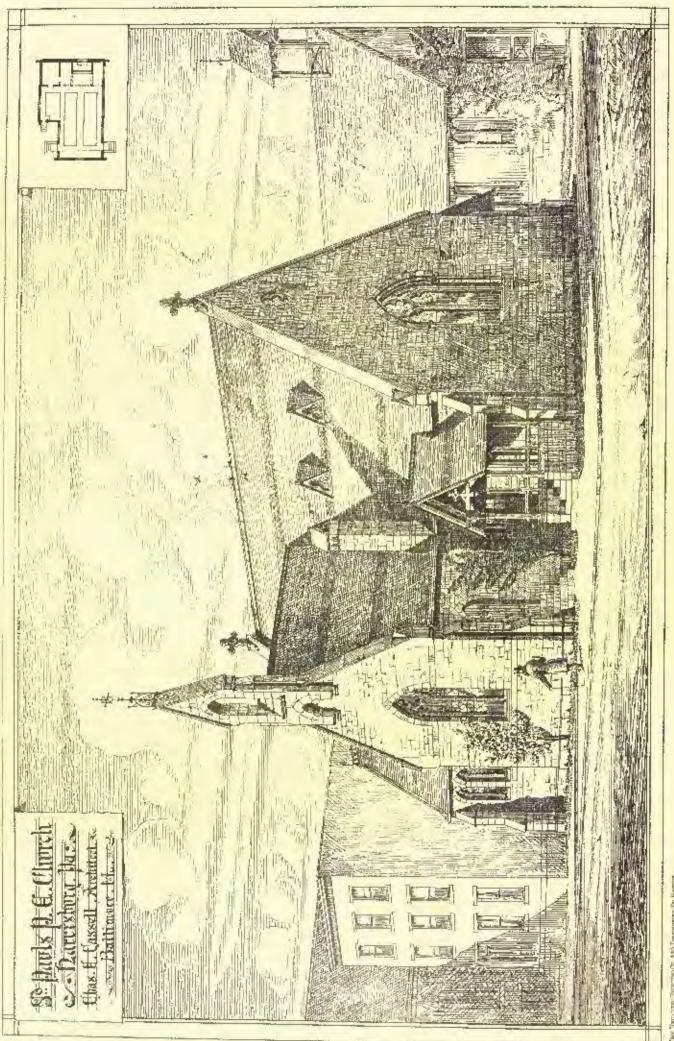


Certainly one should feel himself triply in the right to be able to defend his cause before a tribunal so nobly scated and surrounded."

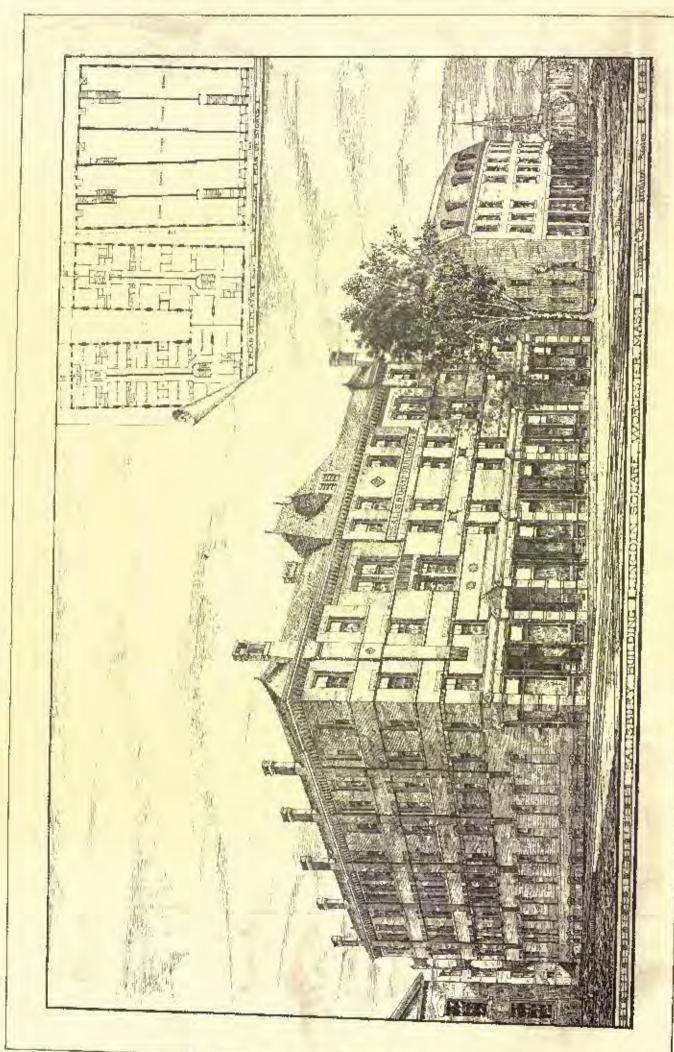
HOUSE DRAINAGE IN PHILADELPHIA.

A TYPICAL case of modern house drainage is now being consid-A TYPICAL case of modern house drainage is now being considered by the College of Physicians. — typical in so far as it is believed to represent the rule rather than the exception among a lurge class of houses of modern construction. In the particular house in question there recently occurred four cases of typhoid fever of the most malignant sort, two of the cases proving tatal. The attending physician, in a communication to the Philadelphia Inquier, says that in a house "S with a handsome exterior, and in a fash-ionable pare of the city bis attention was called to the designance of says that in a house "with a handsome exterior, and to a histionable part of the city, his attention was called to the drainage, on acrount of the ottors that prevailed and the sickness that was insluced thereby. He made, with an experienced plumber, a careful examination of the drainage. The pipe from the roof in the front part of the house was a corrugated galvanized iron one, and passed





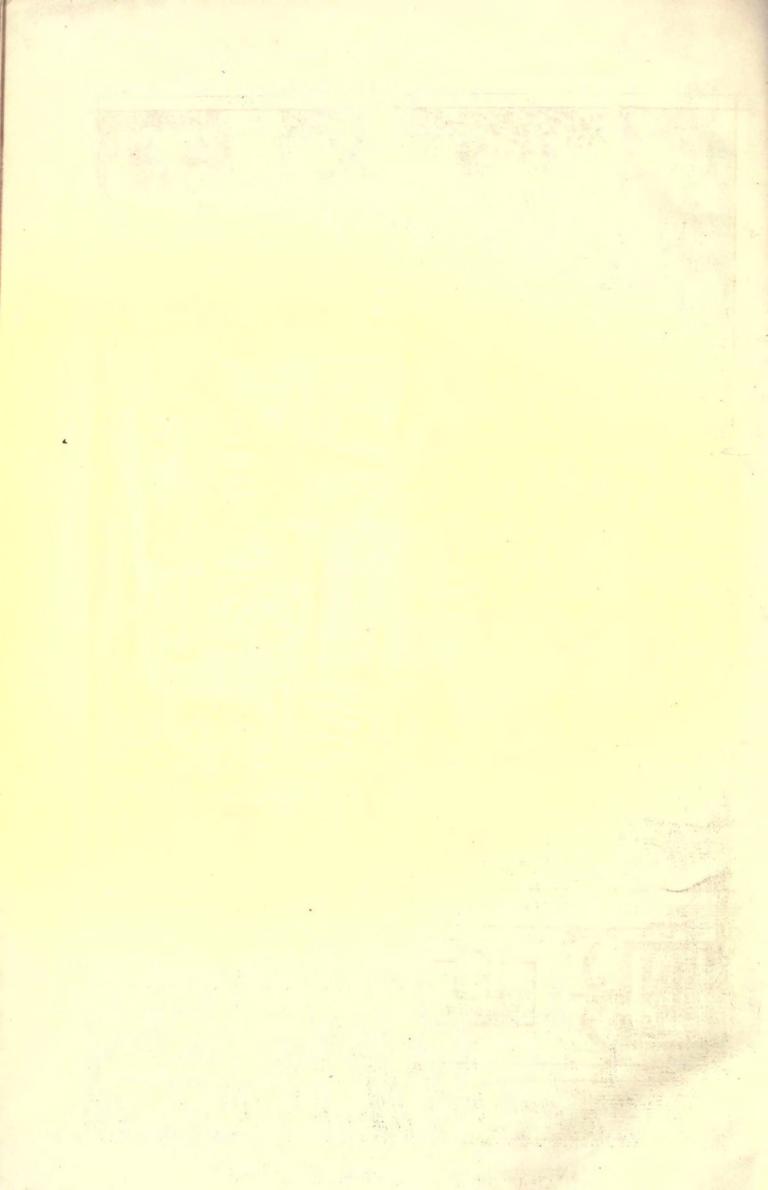


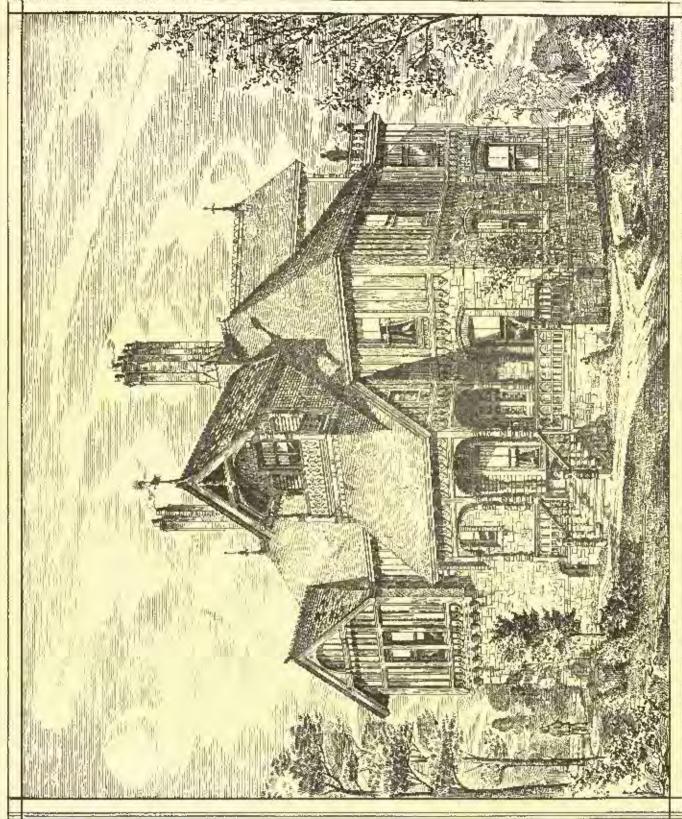


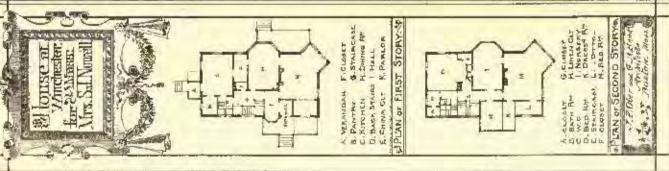
decorde Course Course Con Carlo Contractor Co. Roman



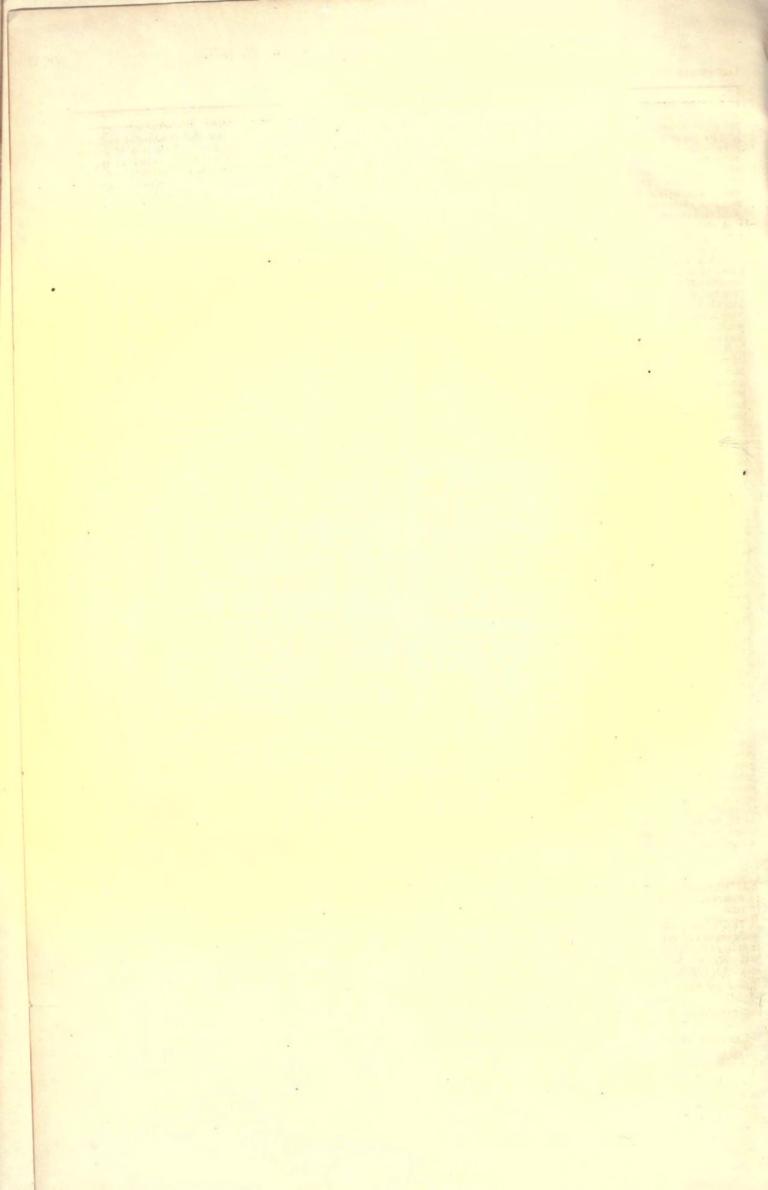
INTERIOR OF THE CHURCH OF ST. LAMBERT MUNSTER, WESTPHALIA.







The Report & Principal of Long And St. Eginton



to the cellar between the studding and the wall; it opened into an

iron one that captied into the terra-cotta drain, and from that into the sower without a trap.

"Its joints were so loose that the sewer gas was noticeable as once in the cellar, and the pipe thus absolutely carried the emanations from the sewer directly into the bouse. The stationary washstands in the second and third stories were trapped by one teop in the cellar alone. Then, again, the roof-pipe in the back building randown the cutside of the house into the terra-cotta drain, trapters, and, as all its joints were loose, sewer gos was carried by every breath of wind into the chambers from the rear."

A strennous movement is now being made, by influential members of the profession, to secure a proper supervision of bouse drainage

by the public authorities.
This is but one of many indications of the attention now being given to this question by mon who five years ago were content to leave it entirely with the plumbers. It is inevitable that their agitation and solicitude must result in a thorough and radical reform of the whole subject. Its importance is unquestionable. It lies at the very foundation of the question of public health, and it is safe to predict that it must soon take its proper position as by far the most important branch of the whole subject of boase building.

It is of the greatest consequence to the architectural profession. It was not to be wondered at that architects, following their profession as a business, should have applied the uselves chiefly to fornishing their olions with the waves for which a denoted exister. It was not to be expected that they, more than any other business men, should interest themselves in matters lying outside of the accustomed line of their trade. Being generally men of artistic training and tendencies, without especial leaning to the dry scientific problems of disease and its causation, it was quite natural that they should pursue their art as artists, and leave to nucleanics the pressic

nurter of plumbing.

Such a course of action will not much longer be prudent: tion being generally called to the subject, the house-building public will naturally demand that it receive the best and most thorough consideration at the bands of those who are employed to prescribe densits of construction. It has frequently been suggested that samilary expects be completed, at the expense of the client, to regulate all matters connected with drawings. This seems to use as unreasonall matters connected with drawings. This seems to our as nucessurable as it would be to require the client to employ an origineer to determine the required strength of material. It is the architect's business to build the bouse, and he should be qualified to do the while work from beginning to cut, - not only as an artist to de-termine its appearance, but as an engineer to determine its averagil, and as a sanitarian to regulate its drainage, its ventilation, and its

remousicums

Indeed, the architect who knows all the details of the structure, from the bottom of the foundation, is ordinarily the only person who is competent to decide precisely what should be done, or, in the case of old haildings, precisely what late been done. The writer was employed to examine a boose previous to its occupancy by a tenant. Everything in sight was in satisfactory condition, and the owner gave assurances that he had himself had every part of the work outside the walls thoroughly renewed. The mason who did work outside the walls thoroughly renewed. The mason who has this work was confident that it was perfectly sound. Latter, indications of diphtheria appearing, this same mason made a second examination, occupying the whole of two days, without finding anything wrong. Pursuing his investigations still further, he found an unsuspected old drain connected with the interior drainage by a concealed pipe, which was clearly the cause of the machief. The most competent expert cannot always discover, without a descriptive amount of overhauling, what the architect should know as a matter of course, - what he should know, but by no means always does know, for we have in prind a case of an architect of much embence whom we found entirely ignorant as to the direction and use of the waste-pipes in his own house.

THE ILLUSTRATIONS.

THE "SALISBURY BUILDING," FOR STEPHEN HALISBURY, JR., WORCESTER, MASS. STEPHEN C. BARLE, ARCHITECT, BOS-TON.

This building was finished in the early part of the season. walls are of face-brick and Longmeadow brown stone, and the inside is finished throughout with hard woods. There are five stores in the first story and twelve dwellings in the three flats above, was about \$70,000. The cost

HOUSE AT WINCHESTER, MASS. MUSSES. J. V. OBER AND G. D. HAND, ARCHITICETS, BOSTON.

ST. PAUL'S CHURCH, HARRISHURH, MA. WH. CHARLES R. CAS-SELL, ARCHITECT, BALTIMORE, MD.

CHERCH OF ST. LAMBERT, AT MENSTER, WESTPHALIA.

This interfor view, like the exterior which we gave in our number of December 14, is copied from the Ailgemeine Bauzeitung.

the Italian workman receives 17 to 20 p r cent of the profit on his work; the Frencham, 47 per cent; the Englishman, 56 per cent; and the American, 12 per cent. Womenex's Surer is Propers. - Becent calculations represent that

VOSE'S GEOMETRICAL DRAWING!

Title is a well-ordered manual, intended to acquaint beginners with the methods of graphical construction. It consists of a series of problems arranged in seven parts or chapters, beginning with the ordinary graphical problems of the construction and division of lines, angles, and ares, the construction of polygons, circles, and tangents, continued with come sections and evolutes, the orthographic projections and penetrations of various solids, development of surfaces, and, finally, isometric projections. The problems are, for the most petri, such as are of common occurrence and use in graphical work, some rather unusual and ingenious ones being added, which will be of value as exercises. The matter is well selected and well distributed, with an occasional layer of symmetry or proportion, which is more a literary blemish than a practical one. Thus, in the problems on conic sections, no description of the ellipse is given, nor means of determining the foot, or account of their properties; nor is the ordinary means of describing the ellipse from its foot alloced to. On the other hand, the characteristic focal property of the parabola is given; but the distinction, very important to a clear graphical idea of the curves, that whereas offices and hyperholas vary infinitely all parabolas are alike except in size, is not united. The chapters on projection and penetrations are remarkably well developed, the method of revolutions used in Descriptive Geometry being a stematically applied throughout, in such a way as ought to lead a learner by easy progression to a very clear and serviceable knowledge of the projections, gression to a very clear and serviceanic knowledge of the projections, sections, and intersections of the various solids that are discussed, chiefly prisms, pyramids, and solids of revolution. A knowledge of geometry is presupposed or ignored; no definitions are supplied, and the solutions are given without desconstrations. The explanations are terse and usually clear, with new and then something that looks like an oversight, as when, in problem 3 of Plate VII, in the ellipse, the stadent is told to hiscert any two parallel lines, meaning chards, the distinction being by no means incessential. The leavuer is recommended in the prefere to begin the book with a master. A student with a fair knowledge of country ought to find no difficulty in using it alone, although he would perhaps here and there meet with a construction of which he would find it hand to see the reason; and a sudent who did not know geometry might, with a good reacher's help, not from it a good working knowledge of most of its substance, introduce he would probably find it rather discouraging, as all stell study is apt to be. It is a book which should be very useful in the instruction of mechanical or architectural draughtsmen, and due study of it would relieve a good deal of belphesances that now exists.

THE OLD HOUSE ALTERED.

EVENT new venture into the field of general literature by an architect, having in mind the incubation of sound principles of building, the creation of a papular sympathy for his processes, and the formation of an intelligent appreciation of the results of his work, should be received by the profession in no hypercritical spirit, if the effort is honest and the workmanship, with per and percil, respecta-ble. It would seem that the development of a design in the mind of an architect, as, in its successive stages, it is set down upon paper, until a result is finally reached meeting the conditions of the prob-lem in a manner to satisfy all the conditions of design, both practical and asthetical, might readily be made interesting and profitable tical and estinctical, night readily be made interesting and pronume reading to the layman. But however familiar the operation of this mental machinery may be to the professional man, it has rurely or never been so graphically set forth as to do justice to the subject. Up to this time Viollet-le-flue appears to have been the only architectural littérateur who has in any degree succeeded in interesting the public in such work, though he has been by no means either the first or the last to athough it.

The latest offert which we have to record is that of Mr. George C. Mason, an architect whose work in Newport is favorably known. This effort takes the form of a series of letters between Fred, the architect, and Mary, his sister, trucking the alteration of an old familiar homestead for her use, so as to suit the requirements of a more civilized and luxurious method of living. There are twenty-nine of the eletters, on the one hand giving professional advice upon practice and theory, and on the other setting forth the questions, the trials, the wants, of the amiable elient, who, in her relations with the trials, the wants, of the annuable elient, who, in her relations with the adviser, exhibits a subordination, an intelligence, an appreciation, which we fear is rare in the experience of the profession. We had to pay our respectful homage to this excellent lady as an ideal employer of professional falent. Were all our clients like her, domestic architecture would indeed be what to the outsider it seems, "the prectiest occupation in the world." Design developed in such a blissful atmosphere of nutual accommodation, with no difficult whims or caprices to reconcile with art, no compromises to make between convenience and beauty, should be Areadian in its results. The temple in Paradise Lost, which

"Hase like an exhalation to the sound of dulest symphonics and voices awest,"

An Elementary Concer of Construction Drawing; contidning Problems on the Right Line-hand Chicks, Goods Sections, and other Chieves: the Projection, Section; and Interaction of Salids; the Development of Surfaces; and Interaction of Salids; the Development of Surfaces; and Interaction of Maintain for Instrument A. M., Professor of Cold Engineering in Bowdedt College, anther of Maintain for Instrument By Thirty-Pight Plates. Boston: Lee & Shapard, Publishers; New York: Charles T. Britishnan.

1. The Life Hamiltonia Alexand. By George C. Mason, Illustrated, New York: U. P. Putchann's Solid-

is the only other example we can recall of architecture so harmonionely created, unless indeed we may refer to the older false of Amnies and voices sweet in these mellifluous letters with a certain feeling of gratitude, recognizing in them an echo of his carliest ideals of practice, now long since forgotten in the midst of the jurning and

earl of actual experience

Thus the prehitectural achievement in this book is unusual rather in its method than in its result. Old things are made new in the customary fashion, and in a manner which hardly challenges professional crisicism. It may be observed, however, that the plan and perspective view of the original house do not comport one with the other, in an essential point; that the olt honest square hipped-roof house becomes a sophisticated Swiss rottage, with balconies, bay-windows, verandas, and described gables, and, withal, with a certain display of black windows, which assuredly is not according to sound principles of design; that the elevations are confused with a curious tangle of cross-haldning, suggesting shadows and shades current tangle of cross-halebing, suggesting shadows and shades which could hardly exist; but that the plans are intelligent and well put together, and that the practical advice for the most part is good. There are various sketcless of Involute and chimney-pieces

in the style of the period.

The digressions relating to theory, those, for instance, entering apon the large questions of honesty in design, color, furniture, and other matters of decoration, contain nothing that we are not used to heaving. The theories of interior observation, in especial, are open to the objection, so common in most books of this class, of substituting absolute assertions for principles logically deduced and retired by demokratic principles assertions for principles to the return should be asserted. toting absolute assertions for principles tography reduced and rationally developed, — principles which in their nature shrink from dogmatic statement. The advice upon these points is very elementary, and the good kely, in following it, can hardly have passed hereaft the limits of the conventional it good taste. Into the region of free and tateligent artistic expression. The scheme of the book is well decided to the property and the first expression. well devised to slow how certain fundamental principles of design may be applied to common things, such as the freatment of walls, floors, and ceilings, and the selecting of Inraffere; but the opportuthours, and ceilings, and the selecting of invalibre; but the opportunity is not used with that mostery of the subject which the architect should display in order to justify his authority. The points which he makes are in the nature of hints of practice; they searcely open any new vistas of thought. The book therefore seems, from an architect's point of view, to have no distinct raison d'êre. It was, however, undoubtedly written for the non-professional public.

REPORT OF THE COMMITTEE ON NATIONAL SURVEYS.

[The Countrition of the National Academy of detences, appointed under Act of Congress to consider and report upon the system of public surveys, has made its report, of which we give the seadeful parts.]

The works which seem to fall especially within the limits of the meaning of the law are the geographical success west of the one hundredth meridian under the War Department, the United States peographical and geological surveys of the Territories and of the Zocky Mountain region mater the Interior Department, and the system of land surveys under the supervision of the Land Office. Besides these, although not enumerated in the law, one of the most important works now in progress in the Interior, ander Act of Congress, is the geodesic work of the Coast and Goodesic Survey. Par-Parfies of this organization are now conducting a systematic triangulation at several points in the interior, and any general system, such as is contemplated in the above law, cannot be wisely devised withas is contemplated in the above as a cannot be wheely devised without taking into account the object and organization of this survey. The objects of these various surveys are: I. An accurate geodesic survey. 2. A general geographical and topographical reconnoissance. 3. Land-parcelling surveys, on which the Government can part title to portions of the public domain. 4. The remunity classification and valuation of the public domain. To these should be sitiention and valuation of the public Jonain. To these should be added the gradual completion of a general accurate topographical map of the whole territory of the United States, which shall serve as a basis for all the scientific and practical needs of the Government and people. All this work may be included under two distinct and separate heads: 1. Surveys of measuration. 2. Surveys of geology and economic resources of the soil.

We will first consider the present operations of the surveys of measuration. Such surveys are now in progress under five different independent organizations: that of the Coast and Geologic

ent independent organizations: that of the Coast and Geo. Jetic Survey; of the geographical surveys west of the one handredth meridian, under the War Department; of the topographical work of the two surveys under the Interior Department; and of the land survey under the Land Office. The final object of all these works of measuration is the necurate determination of position and the laying down of lines and points by measurement. There is at present an enordination between these five surveys; their original determinations of position are independent; their systems of survey discordant; their results show many contradictions, and involve moneously their results show many contradictions, and involve moneously the War and Interior Departments are of little scheefer the War and Interior Departments are of little value for the parcelling of land, while the land surveys are of correspondingly slight ropographical and geographical value. The operations of the Const and Geodetic Survey in the interior do not at present include topography and land parcelling. To attain the desirable accuracy

and economy it is absolutely essential that there should be only one genderic system, one topographical system, and one land-parcelling system, all conducted under the same head. It is evident that both system, all connected under the same deals. It is evapor to a condi-topographical and land-pareelling surveys, to be properly coordi-nated and sufficiently exact, must be based upon a single rigid gen-detic foundation. All these three divisions are departments of measuring, all are based upon accurate determinations of position, and, to be effectively and economically carried out, should be united into to be effectively and economically carried out, should be united into one comprehensive system. After a careful consideration of the facilities at the disposal of the several existing organizations engaged in this work, the committee believes that the Coast and Geodetic survey is practically best prepared to execute the entire measuration system required for the survey of the public domain. Within this domain the domainant interest of the United States is contered in the public lands which remain to be surveyed and sold. The administration of this domain, consisting of 1,101,107,183 acres, is necessarily within the Department of the Interior, while the Coast and Geodetic Survey, having been originally mangarated to meet the wants of communes, has been highest under the Treasury Department. In view of the paramount importance of the public lands. the wants of commerce, has been hitherto under the Treasury Department. In view of the paramount importance of the public lands, the committee recommends that the Coast and Geodetic Survey should be transferred from the Treasury Department to the Department of the Interior, retaining its original field of operations, and assuming also the entire measuration of the public domain; and that, so modified and extended, it should hereafter be known as the United States Coast and Interior Survey. This organization would So modified States Chast and Interior Survey. This organization would then embrace, in addition to its former work, a geodetic survey of the whole implie demains a topographical survey comprising detailed topographical work and rapid reconnoissance and land-pareciling surveys. The Superintendent of the Coast and Interior Survey should be appointed by the President, and should report directly to The best interests of the public domain require, for the purposes

of intelligent administration, a thorough knowledge of its geological structure, natural resources, and products. The domain subtraces a vast mineral wealth in its soils — menals, salines, stanes, clays, etc. To meet the requirements of existing laws in the disposition of the To meet the requirements of existing laws in the hisposition of the agricultural, mineral, pastoral, rimber, desert, and swamp lands a thorough investigation and classification of the agreege of the public domain is importatively domained. The committee therefore vecommends that Congress should establish, under the Department of the Interior, on independent organization to be known as the United States Geological Survey, to be charged with the study of the genlogical structure and economical resources of the public domain; such survey to be placed under a director who shall be appointed by the survey to be present under a director who shall be applied by President, and who shall report directly to the Secretary of the Interior. It should be specially provided that the director and members of the Geological Survey, charged as they are with the investigation of the natural resources of the public domain, should have no personal or private interests in the lands or mineral wealth of the region sonal or private interests in the lands or inner a wealth of the region under survey, and should except no surveys or examinations for private parties or corporations. Officers of the army and navy, when not otherwise employed, may be detailed by the Secretaries of War or of the Naty to take part in the operations of the general survey. With the inauguration of the two surveys above defined, the connectes recomments a discontinuance, first, of the present geographical and geological surveys we stold the one hundredth meridian noder the Way therefore the surveys we stold the one hundredth meridian noder

the War Department, except surveys necessary for military purposes and local internal improvements; second, the geographical and geological surveys now in progress under the Department of the Interior; and, think, the present land surveys under the Land Office. The effect of the abuve changes will be to maintain within the Interior Department three distinct organizations, - first, the Coast and Interior Survey, whose function shall embrace all questions of position and mensuration; second, the United States Geological Survey, whose function shall be the determination of all questions relating to the geological structure and natural resources of the public do-main; third, the Land Office, controlling the disposition and sale of the public lands, including all questions of title and record. With this division should be secured a perfect coordination and cooperation between the three branches. The Land Office should call upon the Const unit Interior Survey for all surveys and measurements required for the sale and disposition of lands. The Land Office should also for the sale and disposition of tands. The Land Order substitute of the pan the United States Geological Survey for all information as to the value and classification of leads. The results of all the mensuration surveys, as soon as completed, should be immediately available for the Land Office, and for the Geological Survey, and for other branches of the Government as required. The Geological Survey should be authorized to execute local topographeal surveys for species. purposes. - such, for instance, as the subterraneous surveys of mining districts and metallic deposits, otc.

Early of the three organizations thus defined should make an annual report of its operations to the Secretary of the Interior. The publications of the Land Office should embrace reports of its busipannearious of the Land Onee should embrued reports of its observed of the constraint to the disposition and sale of land, together with the necessary maps. The publications of the Coast and Interior Survey, besides the annual report of operations, should consist of its geodetic results, geographical, topographical, and cadastral maps, soast charts, and such discussions and treatists connected therewith as the superintendent shall deem of value. The publications are proposed to the content of the tions of the Geological Survey should consider an annual report of

operations, geological and oconomic maps, illustrating the resonrces and classification of the land, reports upon general and economical geology in all its branches, with the necessarily connected paleontology.

All collections made by the Coast and Interior and the Geological Surveys, when no longer needed for the investigations in progress,

should be transferred to the National Museum.

The committee recommends that, upon the organization of the United States Coast and Interior Survey, and the United States Geological Survey, a commission should be formed, to consist of the Countissioner of the Land Office, Superintendent of the Coast and Interior Survey, Director of the United States Geological Survey, the chief engineer of the army, and three other persons to be ap-pointed by the President, who shall take into consideration the codi-fication of the present laws relating to the survey and disposition of the public domain, and who shall report to Congress within one year. a standard of classification and valuation of the pathic land, together with a system of land-parcelling survey. The necessity of this conwith a system of land-parcelling survey. The necessity of this countries in a evident from the fact that by far the larger part of the public domain lies in the region whore, from geological and elimatic causes, the lands are, for the most part, not valuable for field culture, and where the system of homestead, preemption, and sale in accordance with existing laws is both impracticable and undesirable.

In regard to publications of the two surveys above defined, the committee recommends that besides the number of copies of each report which Congress may order for its own distribution, 2000 copies be published for scientific exchanges by the heads of surveys, and for sale at the price of publication; that all literary and charte-graphical material received by the heads of these surveys, in ex-change, he the property of the United Scates, and form a part of the change, he the property of the United Scales, and account property from the libraries of the two organizations; that the money resulting from the libraries of the two organizations; that the Treasury. The comsale of these publications be covered into the Treasury. sale of these publications be covered into the Treasury. The committee recommends that the annual reports of operations of the two surveys accompany the report of the Secretary of the Interior; that the special memoirs and reports of both surveys be issued in uniform quarto stries; that the style and scale of the chartographic publications be determined by the heads of each organization, so as to express the scientific results in the most effective and economical man-

THE ASSYRIAN GATES.

The new session of the Society of Biblical Archaeology was opened lately, the president. Dr. Saoniel Birch, in the chair. Mr. The-ophilus G. Pinches read a paper on "The Bronze Gales of Shal-maneser 111., lately discovered by Mr. Russam at Balawat." Mr. maneser 111, lately discovered by Mr. Russam at Balawat." Mr. Pint-hes confined himself in his paper to the two pairs of branze gates of Shshnaneser 111, a larger and a smaller, as he will also in at least one more paper which is to fullow. The manuel of Balawat is nine miles no-theast of Musul, or say the Ninevah site, and represents an ancient Assyrian fortress, which before the reign of Asstronazirpal, father of Shalmanesec 111, whose reception of pilote from Jehn, king of Israel, is recorded on the famous black obelisk, was known as Kharum. Though so close to Xinevel, it had been taken and held he had been and held the Balabash and held he had been and beld by the Babylomians during a period of Assyria's political decline, perhaps coincident with the epoch of Hebrew ascendancy. But when Assurazirpal, a great warrior, came to the throne, he recovered the city, and renamed it Imgur-Beli, and built there a temple to the gol Makhir, near the city's northeastern wall. These facts are resorded on alabaster tablets found by Mr. Rassam in a coffer of the same material near the entrance of the temple itself. As Mr. Pinches remarked, they shed a fresh ray of light on one of the darkest periods of Assyrian history. The mound is nearly rectangular, and its corners are turned pretty accurately towards the four cardinal points of the compass. The temple rains lie near the northeastern edge, where ran the city wall. In the western half of the mound four stone platforms were found, marking the sides of an irregular square. While digging round these platforms Mr. Rassam anearthed some pieces of bronze, chased, and at length two longs bronze monuments slowly came to view. They were of the strangest shape. Each seemed formed of a centre piece with seven long arms on either hand, like colossal hat-racks, with which the first published accounts compared them. Even after laying them have, the energetic excavator had great difficulty in disinterring them, and was mordified at having the previous bronzes split and cracked as the son dried up the earth in which they had lain buried during so many centuries. According to the explorer's ground-plan the platforms mark the entrances to the court-yard of a noble palace, having two entrances on the north-east and two others on the north-west. The bronzes arrived at the east and two others on the northwest. The bronzes arrived at the British Museum at the beginning of August last. There they not with an enclusiastic welcome, and no less naturally called forth much speculation as to their nature and use. To Mr. Ready, the ingenious artificer of the department at the British Museum, whose task it was to see to the cleansing of the fragments, piecing them together, and usiling them with the original bronze outle on wood of the same thickness as that which underlay the plates thus fastened, belongs the world of solving the riddle. He was the first to see that the brouze plates of the larger of the two monuments had formed the coverings of an enormous pair of rectangular folding-doors, each about twentytwo feet in height and six feet broad, which had evidently turned on pivots, and were held up at the top by strong rings fixed in the me-

soury. The body of the doors was of wood, three inches thick, as measured by the nails, which are found to be elinehed a little more than that distance from the beads, the overplas, being just the thickness of the bronze plates themselves, which is about one streenth of an inch. Each door revolved on a circular post, about a foot in diameter. Each post had a pivot at the bottom. The pivots are at the Museum, but the sockets in which they turned were unfortunately The bronze plates are about eight feet long. were nailed horizontally across each door, but allowing for their uxtension round the post, the total langels across each leaf was but six feet. The style of each leaf was also overhaid with a bronze edging, which overlapped the door by about a couple of inches. On the right it is cut plain, but is indented on the side overlapping the back of the doors. The smaller pair of gates is much more decayed than the other. Its designs represent hunting scenes, and it belongs to the same reign as the larger, whose inscriptions are those of Shal-maneser III. The representations on the plates of both pairs are in the repease style. Those on the plates of the great gates depict Shalmaneser's battles, sieges, triumphal processions, the torumes inflicted on his prisoners, and his worship of the gods. The broaze fletted on his prisincers, and his worship of the gods. The broaze plates covering the styles of the doors are also engraved with historical inscriptions, of which, reserving for another time his account of the extremely numerous and interesting designs chased on the doors themselves, Mr. Finches gave an outline. The record on the styles, he observed, though somewhat fuller than that on the black shelish, and than the Kuckh and Buil inscriptions, is very carelessly exeand than the Kurkh and Buil inscriptions, is very excelessly executed, even the chronological order of events baving been to some extent inverted. The new document begins with Shalmanuser's Babylonian campaign, when he went to help King Marshku Sunaldilia against that Babylonian measureh's revolting brother. Next, it places his war in the region of Mount Aravar, followed by that against Gozan, and los triamph over Akhani, king of Borsipps. against Gorah, and los termiph over Akhuni, king of Borsippa, which parved the way for his compact of Syria and Palestine. A critical comparison of all the sources proves, however, that the Aratral comparison earns first, and then his expeditions against Akhuni and the Dabylonian war. In concluding, Mr. Pinches held out the hope of identifying, in his future paper on the bas-reliefs (which greatly execut in number those in the Nimrond Gullery of the British and the Palestine paper of the British and the British and the Relief of the British and the British and the Relief of the British and the Relief of the British and t ish Museum), some Jewish faves of the ninth century n. c. It is cortain that, as he remarked, this wonderful monument cannot fail to be of great use to the uthnologist, as well as to the philologist and the antiquerian - The Architect.

THE LATE COMPETITIONS IN INTERIOR DECORA-

REFORE we enter upon a new series of competitions, as we shall do early in the following year, we must, in accordance with our promise, give some account of the competitions which have taken place during the present year.

Of these competitions there have been five, the subjects of which

have been (1) a staircase; (3) the interior of a bay window in a drawing-room; (3) the decoration of a flining-room wall; (4) a stone fre-place in a dining-room; and (5) the interior of a vestibile.

five-place in a dining-room; and (5) the interior of a vestibile. Fifty-three conqueitors have taken part in these trials of skill, and have contributed their drawings, ninety-me in all, from many distant cities, as we have received drawings from Boston, Cambridge-part, and Roxbury, Mass; Providence, R. I.; Hartford and Fair Haven, Conn.; New York, Troy, Rochester, and Mamaroneck, N. Y.; Caurden, N. J.; Philadelphia and Lancaster, Penn.; Baltimore, Md; Chicago, Ill.; Cleveland, O.; St. Louis, Mo.; St. Paul, Minn.; Oakland, Cal.; Toronto and Ottawa, Can.

We true that this exhibit will arms our old competitors to receive

We trust that this exhibit will urge our old competitors to renew their contributions, and will encourage others to disregard the fact

that they and our office are separated widely.

The honors have been awarded as follows, the committee of award being composed of different architects for each competition, to whom

The honors have been awarded as follows, the committee of award being composed of dillerent architects for each competition, to whom the authors of the respective designs were wholly unknown.

First Prizes. Competition L. J. T. Kelley, Boston, "A. B. C."
Competition H., P. P. Further and R. D. Andrews, both of Boston, "Midnight Oil." Competition Ill., J. T. Kelley, Boston, "X. F. Z."
Competition V. (no prize was given).

Second Prizes. Competition I. H. M. Stephenson, Boston, "1878 over a shiebl." Competition I. H. M. Stephenson, Boston, "1878 over a shiebl." Competition III., J. W. H. Waits, Ottawa, Can., "A Rough Sketch." Competition III., D. W. Willard, New York, "Bay State." Competition IV., A. Trescott, Camden, N. J., "Hope with an Anchor." Competition V. (no prize was given).

Meations. Competition I. A. Trescott, Camden, N. J., "St. Anstell." W. A. Bates, New York, "Essayons." W. E. Chamberlin, Cambridgeport. "T-Square Pasha." P. Phipps, Boston, "With Hope." J. H. Clough, Boston, "Japanese Fau." Competition II., D. W. Willard, New York, "Ars longa vita brevia est," and the author of the design "H in a circle," whom we cannot identify. Competition III., C. H. Walker, Boston, "Inconnu." A. Trescott, Camden, N. J., "A pain branch crossed by an arrow." Competition IV., C. H. Walker, Boston, "Acanthus." Competition V., A. Matthews, Oakland, Cal., "Hero." J. W. H. Watte, Ottawa, Can., "Sca monen in umbra." R. G. Kennedy, Philadelphia, "Nema." J. J. Dull, Philadelphia, "Echious."

BOOKS RECEIVED.

ART IN THE HOURS. Historical, Critical, and Esthetical Studies on the Decoration and Furnishing of the Owelling. By Jacob you Falke, Vice Director of the American Museum of Art and Industry at Vicana. Authorized American edition, translated from the third German edition. Edited, with notes, by Charles C. Perkins, A. M., author of "Tuscan and Indian Sculptors," one; corresponding member of the French Institute. Illustrated by chromo-lithographs, abertotypes, and typographic eachings. Boston: L. Prang and Company.

Plays of Tuscary-Seven Doord Tuscaries. Taken from the

PLANS OF TWENTY-SEVEN DORK TEMPLES. Taken from the best authorities and drawn on a notional scale. By Charles H. Burr, stadent in the Lawrence Scientific School, Harvard Univer-

sity, Cambridge, 1878.

NOTES AND CLIPPINGS.

NOTES AND CLIPPINGS.

FARMOUNT PARK.—At the seventh annual meeting of the Pairmount Park Art Association the report of the Servetary stated that "since the last annual meeting the Tam O'Shonter group, consisting of four life-size figures in red stone, executed by Theon, has been placed on the river drive upported the boat-houses, in the old park, under a landscene rustic shelter, which was built from a design made expressly for this purpose by Class. M. Buins, Jr., architect." A drinking footation, the gift of Mrs. R. D. Wessl, has been created on the Wisselnickon Unive must the sire of the Ood Log Cabin. Also near the same rice an Italian white marble horse trough, the gift of Mr. Charles S. Kares. A Toughy is haff terra couts and fainance was presented by Mosers. H. Doulton & Co., of Lambeth, London, England, in the Association at the close of the Centennial Exhibition, but it has been discovered that it is so deficitly that it cannot be placed in position; no has than 127 pieces of its screen's limited parts having been lost ar hopplessly broken. An effort has been determined, however, to procure in this city sight pieces of the work necessary to complete the six columns which were designed to support the dome of the Trophy, and then place them is Horticultural Itali, if the Commissioners of Farmount Park approve of such disposition of them.

Washington S. Karea and E. The correct transition of their continuous.

Washington Sawkanes, — The argent accessity of taking some effective measures to complete the coverage of Washington, so as to make it effective in carrying off and righting the city of the noisoner fifth, decaying marter, and pais to one gases which now taken the annoughers, becomes every dry more appeared. The Senate committee on the District appears to have taken the marter into some consmittee on the District appears to have taken the marter into some scale energetic consideration, and in order to avail itself of the widers and last trees de information the subject, some six or sight morella ago remosted Cut fursiaves A. Karwelso, who was then departing for Europe as commissioner for Missouri to the Parls Exposition, to examine the swenge is stems of European critical similarly situated to our own, and draw up and report as effective pion of the adject in Europe, and has recently returned are; submitted a most claimate report, with explanatory maps and drawings, which are now being printed. Colon I Rarweise was once consulting engineer to the liberalize of Egypt, has been engaged in engineering caterprises at and about St. Legis, and throughout the West.

The literans Carron. — A committee, consisting of five architects in Illine's, will make an examination of the new Capital building of that State, to assertable whether reports of its mustic condition are well founded.

State, in ascertain whether reports of its musific condition are well founded.

Wind Priessing and the Countries.—Mr. John Dixon, in reference to a correspondence as in the capability of "Cleoparm's Needle?" to weather the severest gales in its present position, writes: "As to its stability there need be no few,—one hundred and thirty possible of wind pressure? What does it mean? The structure supporting any instrument that fairly registered such must have been strong enough to withstand likelf such a straing and as a practical engineer I unbestrained says no modern building exists in England that will bear caything like it,—certainly not the Schaton Observatory. The new eight pounds pressure per square foot of surface would send a man flying through the air; it would sweap from the rails any pressures train. Seventeen pounds pressure would level the Charing-Gross Station. What Inaction of this would obliterate the Crystal Palace, a Lancashire colton-mill, the Houses of Pacifiament, the dome of St. Paul's, or an ordinary house, I have not taken the trouble to inquire; but it would be a figure to alarm the theorists of such high pressures as have been mentioned. The windows of a building remainly have to bear an equal strein with the walls, and I suppose it would be immaterial to the glass whether it were placed vertically or horizontally. No obolisk has ever been overturned by the wind,—ones never will be. Revolution, commutate, or natural convalsion can alone apset it."

DEALNING THE KOMAN COLOSSEUM. — The big drain from the Arch of Constituting toward the Church S. Gregorio, which is to carry off the water in the Colosseum, is nearly finished, and already the green and polsoman water seems lower. But the heavy rains have interfered with the water seems to that is is not likely that the rain will be drained dry before authors masses. other sesson.

Speciet in Ships. — A speaker at the British Iron and Steel Institute subdy. Should it ultimately be proved that see-water would destroy steel quicker then wought trop, the use of wrought iron for the skips of skips night he continued; but, with present knowledge, acthing, in his opinion, existed to present the whole framework of every steamer and sailing vessel being constructed of Bessemer or Martin-Siemens steel, as an icose one third the weight might be saved at the same time that greater security was in-ured. In the diluted sulphuric-acid but the avidences were quite clear in favor of hald steel and the parest from to resist corresion, but before as much could be said as to the influence of sea or sait water a more extended and careful series of experiments would be required.

Tower at Paris. — The discovery has just been made in Paris of an old tower dating from the time of Philippe Anguste. It is situated her tween the Rues Prance-Bonegeois and Rhaus-Maienzay. It was completely concealed by a mass of houses built up against it, which have now teen pulled down. It is perfectly recognizable both by its cylindrical form and by the nature of its manaxy, and was the tenth, starting from the Tower or "Barbel-sur-l'Youre." the traces of which were found some months ago in digging the foundations for the new market of Ave Maria. The towers and their connecting walls were, in their time, a great work, which excited the admiration of their contemporaries.

Frequency the Sanaha.—It is probable that the question whether or not the Desert of Sahara, or, to speak more strictly, that portion of it lying in Algeria, can be converted into no inhand sea will be definitely scaled by the expedition which has been sent out by the French Minister of Education under the charge of Captain Roudaire. He is to make a thorough examination of the Shotel-Jerid, and will be assisted by two civil engineers.

The Lighthouse Service. — The following extracts are from the an-

The instriction Service. — The following entracts are from the an-hual report of the Lighthouse Board: —

"The lighthouse establishment new maintains, for the protection of life and the safety of commerce, 1,336 lights (including 60% on the Western rivers), 471 day heacons, 55 for signals, operated by steam or bother on-gines, and 3,002 lines."

"An introduce work recombination of the con-

gines, and 3,002 hoves."

"An important work recently undertaken, and for which a large sum is required, is the structure now in course of erection on Standard's Rock, larke Superior. The Heard has, by a modification of the original plants, refused the estimated cost about \$100,000."

"A slight increase in the estimate for repairs and judidental exponent is modered necessary by the fact that the greater part of the exponent is modered necessary by the fact that the greater part of the exponent attending a change in the form of lamps, to adopt them to the nea of mineral oil instead of land oil, must be paid ont of this year's appropriations. The change is only made in lamps of the fourth, fifth, and sixth classes, land oil being found to give hence results in the larger lamps."

Dust on THE ATLANTIC, - About the latitude of the Cano Verda

Direct on the Atlantic it is a frequent experience of conagers to observe falls of red dust and a dry kind of mist. The material of the dust-mass was examined microscopically many years ugo by Ehrenberg, and his opinion was that small particles carried aloft from all countries here formed a transparent dust zone, from which they sunctiones such down, and in whirling movement came to the earth's article. The material of observation open to Ehrenberg was somewhat scanty. The phenomenon has that force hear lately studied anew, and in a more thorough way, by Herr Hellmann, who examined the log-books of 1,196 ships that had passed through the tegico in question during the years 1854 to 1871. He deals with the case thirdly from a metrocological point of view, and the following are some of the facts elicited; Most of the dust-falls occur in the zone of the Atlantic between 9 deg, and 16 deg, north. South of 8 deg, north they are extremely thre, and the intrhest south hitherto was in 2 deg, 56 min west, both about 300 miles from Capa Verde. Dust-falls often occur significancely at very different points of the "Dunkel Moer," or Dark Sen (as Ehrenberg called it); in one case they were 150 miles upon. They also often last for several days, c. q., ten [April, 1853]. Surfaces of very sifferent size, up to 100,000 equate miles, may receive dust-falls. There is a yearly period in the frequency of the falls. It seems that near the African coast mast occur in whiter; father west, in the early spring. The direction of the wind during dust-falls was from the bast quadrant and most frequently morth-nertheast to mortheast. The dust-falls observed are very irregularly distributed over the years in question. Of sixty-three taken at random, there were eight fulls of sand and three of sand or dust. Sometimes sand and dust full simultaneously. The dust-falls with great extent east and west are denier the Dark Sen is in essual connection with the dast-fulls. Herr Hellmann concludes from these facts that the dust-material comes principall

Free Inon in Nature. — Mr. Murray, in examining the deep-set deep-set which had been brought home by the Challenger Expedition, found them to contain many particles of native iron, which, on heing extracted with a magnet and examined under the microscope, showed structure should inder the microscope, showed structure should in netcorites. A Swedish observer also collected particles of native from the clean snow which fell at a discarde from towns. Mr. Ranyard, in returning from America, exposed givenine plates at the prow of the russel when more than one thousand miles from land, and had caught a siggle particle of from which was rather less than the one hundred and twentieth part of an inch in its longest diameter. Ho was anxions that other observers should repeat the experiment at sea, taking every precution to keep the plates free from dose in boxes coated on the inside with glycerine.

THE OFACITY OF FLAME. - Is has been commonly believed that The Oracity of Flame.— Is has been commonly believed that tame is transparent. Some observations have tataly been made by M. Van Elyndhoren on the flome of a bat's-wing borner with one of Sagg's photometers, and he found in two experiments a difference of 1-2 candles, or 17 to 18 per cent, between the narrow and the broad side of the flame—the latter giving most light; whomen he infers that the flame is not transparent. For this rosson, the entire laminous power is not obtained from an Argand broker. For good street lighting, the slit of the burner and the direction of the street should be at right angles to each other.—
English Mechanic.









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