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MAY, 1911

CONCRETE APPLIANCES COMPANY

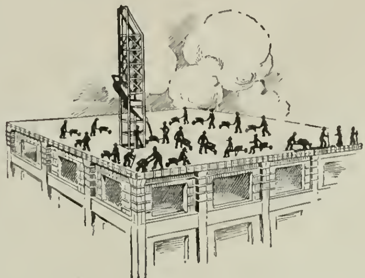
LICENSORS OF

GRAVITY SYSTEM

OF CONVEYING AND DISTRIBUTING CONCRETE

—

LOS ANGELES



THE OLD WAY

1—COST TO WHEELBARROW OR CART CONCRETE, $1 TO $1.75 PER YARD.
2—SLOW AND CONGESTED, 8 TO 10 YARDS PER HOUR.
3—LOSS OF INITIAL SET, VARIABLE MULTILITHIC CONSTRUCTION.
4—CAUSES SEPARATION. AIDS LA TENCE.
5—DAMAGES FLOOR TILE, DISPLACES STEEL AND SPILLS CONCRETE.
6—EXPENSIVE SCAFFOLDING, RUNWAYS AND STAGING.
7—TAMPING

Some Buildings on Pacific Coast now being constructed by the

Gravity System:

WAREHOUSES AT FORT MASON, San Francisco, for the United States Government

FERGUSON BUILDING, Los Angeles

UNION LEAGUE BUILDING, Los Angeles

COLUMBIA HOSPITAL BUILDING, Los Angeles

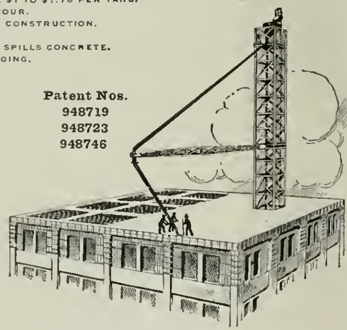
EXPOSITION BUILDING FOR THE STATE AGRICULTURAL PARK, Los Angeles

SWEETWATER DAM, San Diego, Cal.

EDISON ELECTRIC CO., 3 Warehouses, Long Beach

SPRECKELS THEATRE AND OFFICE BLDG., San Diego.

Patent Nos.
948719
948723
948746



THE NEW WAY

1—COST FOR DELIVERING CONCRETE, 25 TO 50 CENTS PER CUBIC YARD
2—RAPID AND EFFICIENT, 25 TO 40 CUBIC YARDS PER HOUR.
3—OBTAIN INITIAL SET, HOMOGENEOUS MONOLITHIC CONSTRUCTION.
4—UNIFORM CONCRETE OBVIATES LA TENCE.
5—NO LOSS OF FLOOR TILE, DISPLACEMENT OF STEEL OR SPILLING.
6—SAVES SCAFFOLDING, RUNWAYS AND STAGING.
7—NO TAMPING.

WILLIAM B. HOUGH COMPANY
EXCLUSIVE EASTERN AGENTS

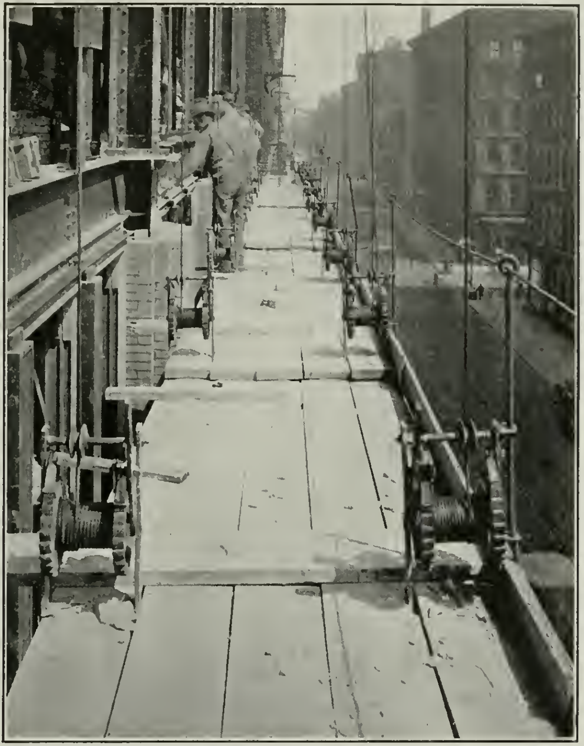
HOME OFFICES
CHICAGO, ILL.

DETROIT MINNEAPOLIS ST. LOUIS DES MOINES INDIANAPOLIS

PACIFIC COAST REPRESENTATIVES

PARROTT & COMPANY

SAN FRANCISCO TACOMA PORTLAND
SEATTLE SPOKANE LOS ANGELES



LAY your Terra Cotta, Bricks, Stone Facings at any story and at any height with perfect Safety. Facing can be installed in one-half the time and the important work of Cleaning down the facing can also be accomplished in one-half the usual time.

The Patent Scaffolding Company

PARROTT & CO.

San Francisco, Seattle, Los Angeles, Tacoma, Portland, Spokane

Medusa

White Portland Cement

Water Proof Compound

Entrance to St. Mary's Hospital, San Francisco. Willis Polk & Co., Architects

EXTERIOR FINISH OF WHITE MEDUSA CEMENT

HIGH-TESTING
STAINLESS

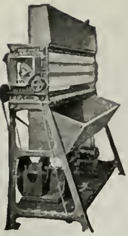
ABSOLUTELY PERMANENT
RESULTS

The Building Material Co. INC.

583 MONADNOCK BLDG, SAN FRANCISCO.

ARCHITECTS' SPECIFICATION INDEX

(For Index to Advertisements, see page 117)



ARCHITECTS' SPECIFICATION INDEX—*Continued*

COLD STORAGE INSULATION
Neponset Waterdyke Felt and Compound, manufactured by F. W. Bird & Son, East Walpole, Mass.; sold by Parrott & Co., 320 California St., S. F.

CONCRETE APPLIANCES
A. L. Young Machinery Co., 26 Fremont St., S. F.

CONCRETE CONSTRUCTION
Peterson, Nelson & Co., Inc., 407 Pine St., S. F.
A. Lynch & Co......185 Stevenson St., S. F.
Esterly Construction Co.......Berkeley, Cal.
Bluxome & Co.......Monadnock Bldg., S. F.

CONCRETE FOUNDATIONS
Peterson, Nelson & Company, Russ Bldg., S. F.

CONCRETE MIXERS
Forte Concrete Mixers, Monadnock Bldg., S. F.
F. T. Crowe & Co., Seattle, Tacoma, Spokane and Portland
Chicago Improved Cube Mixer. Pacific Coast Offices, 789 Folsom St., S. F., and F. T. Crowe & Co..........Portland and Seattle
A. L. Young Machinery Company, 26 Fremont St., S. F.

CONCRETE POURING APPARATUS
Concrete Appliances Co., Los Angeles; Parrott & Co., Coast Representatives, San Francisco, Portland, Seattle.

CONCRETE REINFORCEMENT
The Kahn System, Agents in San Francisco, Los Angeles, Portland and Seattle.
Clinton Fireproofing System, L. A. Norris, Monadnock Bldg., S. F.
Corrugated Bars, sold by John B. Leonard, C. E. Sheldon Bldg., S. F.; International Fabric & Cable, represented by Western Builders' Supply Co., 680 Mission St., S. F.
Twisted Bars, sold by Woods & Huddart, 356 Market St., S. F.
Plain and Twisted Bars, sold by Baker & Hamilton, San Francisco, Los Angeles and Sacramento.

CONCRETE SURFACING
"Concreta," sold by W. P. Fuller & Co., S. F.
"Alkacene" Liquid Concrete, Boyd & Moore, 356 Market St., S. F.

CONCRETE SURFACING—Continued
Concreto, Worden-Meeker Varnish Co., S. F. and Oakland
Glidden Liquid Cement, manufactured by Glidden Varnish Company, Whittier, Coburn Co., San Francisco and Los Angeles, Pacific Coast Distributors.

CONTRACTORS, GENERAL
E. D. Crowley Co....Monadnock Bldg., S. F.
W. H. Bagge & Son., Inc., 3528 Sacramento St., S. F.
Esterly Construction Co........Berkeley, Cal.
F. O. Engstrum Co., Fifth and Seaton Sts., Los Angeles
Hansen & Johnson, Inc..3 Mission St., S. F.
Henning & Burke......242 Russ Bldg., S. F.
Walter Hough Company, 503 Market St., S. F.
Hoyt Bros., Builders' Exchange, S. F., and Santa Rosa
Ransome Concrete Co., Mechanics Institute Bldg., S. F.
Rickon-Ehrhart Eng. & Const. Co., 1859 Geary St., S. F.
Scarritt & Clark...Turk and Jones Sts., S. F.
Geo. H. Stoffels & Co., 830 Pacific Bldg., S. F.
Williams Bros. & Henderson, 351 Monadnock Bldg., S. F.

CONCRETE MACHINERY
Wallace Concrete Machinery Co., represented by The Lilley & Thurston Co., 82 2nd St., S. F.

CONCRETE REINFORCEMENT
Triangle Mesh Fabric, Sales Agents, The Lilley & Thurston Co............82 2nd St., S. F.

CORNER BEAD
"Prescott," sold by Boyd & Moore, 356 Market St., S. F.
Union Metal Corner Company, 206 Summer St., Boston, represented on the Pacific Coast by Waterhouse & Price.

CRUSHED ROCK
Natomas Consolidated of California, 203 Hagelstein Bldg., Sacramento, Cal.
Niles Rock, sold by California Building Material Company............Pacific Bldg., S. F.

DAMP-PROOFING COMPOUND
John L. Fox............207 Monadnock Bldg.
Liquid Stone Paint Co., Inc., Laird & Sinclair and Lilley & Thurston Co., Agts., S. F.
Boyd & Moore..........356 Market St., S. F.
"Pabco" Damp Proofing Compound, sold by Paraffine Paint Co......38 First St., S. F.
H. D. Samuel Co....Monadnock Bldg., S. F.
"Protectorine," Compound, sold by Boyd & Moore..............356 Market St., S. F.
Parrott & Co., agents for Genasco Positive Seal Damp Proof Paint.

ARCHITECTS' SPECIFICATION INDEX—*Continued*

DAMP PROOF PAINTS
John L. Fox....207 Monadnock Bldg., S. F.

DAMP PROOFING FOR BRICK WALLS
"Imperial" Waterproofing, sold by Baker Bros., San Francisco; Braun Chemical Co., Los Angeles; W. O. Stamps, Portland and B. W. Gaisford, Seattle, Wash.
John L. Fox....207 Monadnock Bldg., S. F.

DISAPPEARING BEDS
Holmes Disappearing Bed Company, 687 Monadnock Bldg., S. F.

DOOR OPENER
G. Rischmuller ....Builders' Ex., S. F. 842 37th St., Oakland

DOOR HANGERS
Johns Door Hanger Manufacturing Company, 832-838 Folsom St., S. F.
Pacific Ballbearing Door Hanger Co., 959 Howard St., S. F.
Pitcher Hanger, sold by Pacific Tank Company................231 Berry St., S. F.
Reliance Hanger, sold by Sartorius Co., S. F.; D. F. Fryer & Co., Louis R. Bedell, Los Angeles, and Portland Wire & Iron Works.

DOORS—FREIGHT ELEVATOR
"Cross" Counterbalance Automatic, Boyd & Moore, Agents......356 Market St., S. F.

DOORS—WAREHOUSE
"Cross" Horizontal Folding Doors, Boyd & Moore, Agents ......356 Market St., S. F.

DUMB WAITERS
Energy Dumb Waiters, Boyd & Moore, Agents..............356 Market St., S. F.
Wells & Spencer Machine Company, 173 Beale St., S. F.

ELECTRICAL CONTRACTORS
Electric Appliance Co., 726 Mission St., S. F.
The Turner Co.......278 Natoma St., S. F.
Central Electric Co..185 Stevenson St., S. F.
Butte Engineering Co..683 Howard St., S. F.
Jno. G. Sutton Co......229 Minna St., S. F.
Pacific Fire Extinguisher Company, 507 Montgomery St., S. F.

ELEVATORS
Van Emon Elevator Co..54 Natoma St., S. F.
Wells & Spencer Machine Co., 173 Beale St., S. F.
Otis Elevator Company, Stockton and North Point, S. F.

ELEVATOR CARS
Cleveland Art Metal Co., Boyd & Moore, Agents ....356 Market St., S. F.

ELEVATORS, SIGNALS, FLASHLIGHTS AND DIAL INDICATORS
Elevator Supply & Repair Co., 593 Market St., S. F.

ENGINEERS
John B. Leonard........Sheldon Bldg., S. F.
W. W. Breite...........Clunie Bldg., S. F.
F. J. Amweg.......700 Marston Bldg., S. F.
R. Hancock..............Balboa Bldg., S. F.

EXPRESS CALL SYSTEM
Elevator Supply & Repair Co., 593 Market St., S. F.

FIRE EXTINGUISHERS
Goodyear Rubber Company, 587-591 Market St., S. F.
Pacific Fire Extinguisher Co., 507 Montgomery St., S. F.

FIREPROOF PARTITIONS
Dodds Interlocking Block Co., 356 Market St., S. F.

FIREPROOFING
Gladding, McBean & Company, Crocker Bldg., S. F.
Roebling Construction Co., Crocker Bldg., S. F.

FIRE PROTECTION
Goodyear Rubber Company, 587-589 Market St., S. F.

FIRE PROTECTION—SPRINKLER SYSTEM
Jno. G. Sutton Co.....229 Mission St., S. F.
Pacific Fire Extinguisher Company, 507 Montgomery St., San Francisco; Branch Offices, Portland, Seattle and Spokane.

FLOOR VARNISH
Bass-Heuter and S. F. Pioneer Varnish Works, 816 Mission St., S. F.
Standard Varnish Works, Chicago, New York and S. F.
Worden-Meeker Varnish Works, S. F. and Oakland

FLOORS COMPOSITION AND TILE
"Kompolite"...........350 Mills Bldg., S. F.

FOUNDATION CONTRACTORS
Locke Foundation Company, 1107 Crocker Bldg., S. F.

GARAGE EQUIPMENT
Bowser Gasoline Tanks and Outfit, S. F.
Bowser & Co..........612 Howard St., S. F.

ARCHITECTS' SPECIFICATION INDEX—*Continued*

GARBAGE CHUTES
- Bradshaw Garbage Chute, sold by C. T. Jacobsen....................524 Pine St., S. F.

GLASS—PRISM, ART, ETC.
- Thomas & Schneider Art Glass Co., 610 Howard St., S. F.
- California Art Glass Works, 768 Mission St., S. F.
- United Glass Co.........115 Turk St., S. F.

GRAVEL, SAND AND CRUSHED ROCK
- Bay Development Co....153 Berry St., S. F.
- California Bldg., Material Co., Pacific Bldg., S. F.
- Grant Gravel Co.........87 Third St., S. F.
- Del Monte White Sand, sold by Pacific Improvement Co........Crocker Bldg., S. F.
- Natomas Consolidated, Peoples' Savings Bank Bldg., Sacramento

HARDWOOD FLOORING
- Boyd & Moore.........356 Market St., S. F.
- Dieckmann Hardwood Co., 244 California St., S. F.
- Parrott & Co........320 California St., S. F.
- White Bros., Cor. Fifth and Brannan Sts., S. F.

HARDWOOD LUMBER
- Dieckmann Hardwood Co., Welch Bldg., S. F.
- Niehaus & Co........548 Brannan St., S. F.
- Strable Mfg. Co., First St., betw. Washington & Clay, Oakland
- White Bros., Cor. Fifth and Brannan Sts., S. F.
- Parrott & Co........320 California St., S. F.

HARD WALL PLASTER
- Standard Supply Company, First St. and Broadway, Oakland
- Reno Hard Wall Plaster, sold by Western Building Material Co., 430 California St., S. F.
- Empire Hard Wall Plaster Co., Pacific Bldg., S. F.

HARDWOOD PANELS
- White Bros., Cor. Fifth and Brannan Sts., S. F.
- Niehaus & Co........548 Brannan St., S. F.

HARDWOOD VENEER PANELS AND DOORS
- E. A. Howard & Co.......Howard St., S. F.

HEATERS—AUTOMATIC
- Hart Heater Co., State Savings Bank Bldg., 13th and Franklin Sts., Oakland
- Hoffman Heater, sold by Holbrook, Merrill & Stetson, San Francisco and Los Angeles.
- Humphrey Co., 565 N. Rose St., Kalamazoo, Mich.
- Pittsburg Water Heater, sold by Thos. Thieben & Co.................585 Mission St., S. F.

HEATING AND VENTILATING
- The Turner Co.......278 Natoma St., S. F.
- Machinery and Electrical Co., 351-353 N. Main St., Los Angeles
- Pacific Fire Extinguisher Company, 507 Montgomery St., S. F.
- Mangrum & Otter, Inc., 507 Mission St., S. F.
- Gilley-Schmid Co., Inc., Thirteenth and Mission Sts., S. F.
- Jno. G. Sutton Co......229 Minna St., S. F.
- Pacific Blower & Heating Co., 17th St., betw. Mission and Valencia, S. F.
- Geo. W. Schmitt Heating and Ventilating Co., 1160 Webster St., Oakland

ARCHITECTS' SPECIFICATION INDEX—*Continued*

HINGES
Stanley's Ball-Bearing Hinges, Stanley Co., New Britain, Conn.,
ICE MAKING MACHINES
Triumph Ice Machine Co., H. F. Lyon, Agent, 581 Monadnock Bldg., S. F.
INSPECTIONS AND TESTS
Robert W. Hunt & Co., 418 Montgomery St., S. F.
Smith, Emery & Co., Inc., 651 Howard St., S. F.
INSURANCE
David Duncan ....340 Sansome St., S. F.
INTERIOR DECORATING
L. Tozer & Son Co., 228 Grant Ave., S. F.
Schastey & Vollmer, Inc..518 Sutter St., S. F.
A. C. Wocker.........1370 Sutter St., S. F.
JOIST HANGERS
Western Builders' Supply Co., 680 Mission St., S. F.
KITCHEN EQUIPMENT
John G. Ils & Co......827 Mission St., S. F.
LIME
Standard Supply Co., First St. and Broadway, Oakland
Holmes Lime Company, Mutual Savings Bank Bldg., S. F.
Western Lime & Cement Co., 268 Market St., S. F.
LIGHTING FIXTURES
Adams & Hollopeter....745 Mission St., S. F.
J. F. Kelly Company, 723 7th St., Oakland
The Palmer Shop......1345 Sutter St., S. F.
LOCKERS—METAL
Hart & Cooley Co., Boyd & Moore, Agents, 356 Market St., S. F.
LUMBER
Columbia Lumber Co., Portuguese-American Bank Bldg., S. F.
Santa Fe Lumber Co., Seventeenth and De Haro Sts., S. F.
MACHINERY AND MACHINERY SUPPLIES
Machinery and Electrical Co., 351 N. Main St., Los Angeles
A. L. Young Machinery Company, 26 Fremont St., S. F.
MANTELS
Mangrum & Otter......561 Mission St., S. F.
The J. F. Kelly Co..723-731 7th St., Oakland
MARBLE
Columbia Marble Co....268 Market St., S. F.
MASONRY CONTRACTORS
Farrell & Reed...........Gunst Bldg., S. F.
Ferdinand Wagner .....609 Waller St., S. F.
METAL AND STEEL LATH
Roehling Construction Co., Crocker Bldg., S. F.
METAL CEILINGS
Berger Mnfg. Co.,....1120 Mission St., S. F.
San Francisco Metal Stamping & Corrugating Co.........Treat Ave. and 19th St., S. F.
San Francisco Cornice Co., Inc., 1140 Bryant St., S. F.
METAL DOORS AND WINDOWS
Waterhouse & Price.......59 Third St., S. F.
Dahlstrom Metallic Door Co., Western office, 722 Merchants Exchange Bldg., S. F.
METAL FIRE PROOF PARTITIONS
Collins Steel Partition & Lathing Co., 757 Monadnock Bldg., S. F.
METAL SHINGLES
Meurer Bros., J. A. McDonald, Pacific Coast Agent.....Third, near Townsend St., S. F.
San Francisco Metal Stamping & Corrugating Co..........Treat Ave. and 19th St., S. F.
OIL BURNING PLANTS
Fess System Co., Inc., 125-129 Hayes St., S. F.
OPERA CHAIRS
C. F. Weber & Co.....365 Market St., S. F.
Whitaker & Ray-Wiggin Co., San Francisco and Los Angeles.
ORNAMENTAL IRON AND BRONZE
Golden Gate Structural & Ornamental Iron Works............1479 Mission St., S. F.
Western Builders' Supply Co., Representing The L. Schreiber & Sons Co., Cincinnati
J. G. Braun..........Chicago and New York
Sartorius Co., Inc...16th and Utah Sts., S. F.
Industrial Ornamental Iron and Wire Works, 552 Noe St., S. F.
C. J. Hillard Company, Inc., 211-215 Eighth St., S. F.
PAINT FOR CEMENT
Worden-Meeker Varnish Co., S. F. & Oakland
Vitrolite Cold Water Paint, sold by Boyd & Moore..............356 Market St., S. F.
Bay State Brick and Cement Coating, made by Wadsworth, Howland & Co. (Inc.). [See adv. in this issue for Pacific Coast agents.]
Adamant Cement, Brick and Plaster Coating. Made by Parker, Preston & Co., Inc.
Samuel Cabot Mfg. Co., Boston, Mass., agencies in San Francisco, Oakland, Los Angeles, Portland, Tacoma and Spokane.
PAINT FOR STEEL STRUCTURES
Detroit Superior Graphite Paint, manufactured by Detroit Graphite Company. C. W. Pike Company, Coast Sales Agents, 22 Battery St., S. F.
PAINTS, OILS, ETC.
Worden-Meeker Varnish Co..S. F. & Oakland
Paraffine Paint Co.....38-40 First St., S. F.
Bass-Hueter Paint Company, Mission, near Fourth St., S. F.

ARCHITECTS' SPECIFICATION INDEX—*Continued*

PAINTS, OILS, ETC.—Continued.
Standard Varnish Works, represented by W. P. Fuller & Co., S. F. and Los Angeles
Glidden Varnish Co., Cleveland, Ohio, represented by Whittier-Coburn Co., S. F. and Los Angeles

PAVING BRICK
Vallejo Brick & Tile Co....Mills Bldg., S. F.
Los Angeles Pressed Brick Co., Frost Bldg., Los Angeles

PHOTOGRAPHY
Gabriel Moulin........153 Kearny St., S. F.
Walter C. Scott.......558 Market St., S. F.

PILE DRIVING
San Francisco Bridge Co., Monadnock Bldg., S. F.

PIPE FOR SEWERAGE
Gladding, McBean & Company, Crocker Bldg., S. F.

PLASTERING CONTRACTORS
A. Knowles...........985 Folsom St., S. F.
D. Ross Clarke.......708 Pacific Bldg., S. F.

PLUMBING
The Turner Co........278 Natoma St., S. F.
Fisher & Wolfe Co....207 Tehama St., S. F.
J. E. O'Mara...........447 Minna St., S. F.
Alex Coleman ....706 Ellis St., S. F.
Jno. G. Sutton Co.......229 Minna St., S. F.
Oscar L. Zeis......456 E. 16th St., Oakland
Kiernan & O'Brien....1754 Mission St., S. F.
Thos. J. Ford.........1213 Octavia St., S. F.

PLUMBING APPLIANCES
Brown's Gasket, sold by Sanitary Plumbing Appliance Co.....412 Sheldon Bldg., S. F.

PLUMBING FIXTURES
Crane Co....Second and Brannan Sts., S. F.
Haines, Jones & Cadbury Co., 851-859 Folsom St., S. F.
J. L. Mott Iron Works, D. H. Gulick, selling agent ....135 Kearny St., S. F.
N. O. Nelson Mfg. Co., 978 Howard St., S. F. 406 E. 4th St., Los Angeles

PLUMBING SUPPLIES
California Steam & Plumbing Supply Co., Fifth and Bluxome Sts., S. F.

POTTERY
Steiger Terra Cotta and Pottery Works, Mills Bldg., S. F.

PUMPS, MACHINERY, ETC.
Simonds Machinery Co., 12 Natoma St., S. F.

RAILROADS
Southern Pacific Co........Flood Bldg., S. F.

ROLLING DOORS, SHUTTERS, PARTITIONS, ETC.
C. F. Weber & Co......365 Market St., S. F.
Lilley & Thurston........82 Second St., S. F.

ROOFING OR ROOFING MATERIALS
J-M Asbestos Roofing, sold by H. W. Johns-Manville Co., Agencies in all the principal West Coast cities.

ROOFING TIN
"Scott's Extra Coated," manufactured by Follansbee Bros. Co.............Pittsburg, Pa.
Meurer Bros. Co., A. H. McDonald, Coast Representative..........628 Third St., S. F.

ROOFING AND ROOFING MATERIALS
F. W. Bird & Son, East Walpole, Mass., Coast Agents, Lilley & Thurston Co., 82 Second St., S. F.
Ford & Malott, Mariposa St., at Iowa St., S. F.
Genasco Ready Roofing, sold by Parrott & Co...............320 California St., S. F.
"Ferroinclave," the Brown Hoisting Machinery Co., Coast Agent, Chas. A. Levy, Balboa Bldg., S. F.
Pioneer Roll Paper Co..........Los Angeles
Mackenzie Roof Co., 425 15th St., Oakland
H. D. Samuel Company, 1054 Monadnock Bldg., S. F.
W. H. Wilson & Co....42 Natoma St., S. F.
Meurer Bros. Co., A. H. McDonald, Coast Representative........628 Third St., S. F.
Western Builders' Supply Co., 680 Mission St., S. F.

RUBBER TILING AND MATTING
Goodyear Rubber Co...587 Market St., S. F.
New York Belting & Packing Co., 129 First Street, S. F.

SAFES
Howe Scale Company, 333 Market St., S. F.

SAND
Del Monte White Sand, sold by Pacific Improvement Company, Main office, Crocker Bldg., S. F.

SASH CORD
Samson Cordage Works, Manufacturers of Solid Braided Cords and Cotton Twines, 88 Broad St., Boston, Mass.
Silver Lake A Sash Cord, represented by Sanford Plummer, 149 New Montgomery St., S. F.

SCHOOL FURNITURE AND SUPPLIES
C. F. Weber & Co....365 Market St., S. F. 210 N. Main St., Los Angeles
Whitaker & Ray-Wiggin Co., 776 Mission St., S. F.; 209 E. Seventh St., Los Angeles.

SCAGLIOLA
California Scagliola Co., F. Mayer, 68-70 Clara St., S. F.

SHEATHING AND SOUND DEADENING
Samuel Cabot Mfg. Co., Boston, Mass., agencies in San Francisco, Oakland, Los Angeles Portland, Tacoma and Spokane.

SHEET METAL WORK
Berger Mfg. Co......1120 Mission St., S. F.
Dunlevy & Gettle....79 City Hall Ave., S. F.

SHINGLE STAINS
W-M Shingle Stain, Worden-Meeker Varnish Co....................S. F. and Oakland
Cabot's Creosote Stains, sold by Waterhouse & Price, San Francisco, Los Angeles and Portland.

ARCHITECTS' SPECIFICATION INDEX—*Continued*

SLATER'S CEMENT
Western Builders' Supply Co., Representing Clinton Metallic Paint Co., Clinton, N. Y.

STAINLESS CEMENT
Blanc Stainless Cement Co., Levensaler & Preston, Inc., San Francisco; Quartz Glass & Manufacturing Co., Los Angeles; John Brooke & Co., Inc., Seattle, Wash.

STEEL AND IRON—STRUCTURAL
Boyd & Moore........356 Market St., S. F.
Central Iron Works...621 Florida St., S. F.
Woods & Huddart.....356 Market St., S. F.
Pacific Rolling Mills, 17th and Mississippi Sts., S. F.
Western Iron Works....125 Beale St., S. F.
Brode Iron Works....621 Howard St., S. F.
Mortenson Construction Co., 19th and Indiana Sts., S. F.

STEEL BARS FOR CONCRETE REINFORCEMENT
Jno. B. Leonard........Sheldon Bldg., S. F.
Woods & Huddart......356 Market St., S. F.
Baker & Hamilton. 4th and Brannan Sts., S. F.

STEEL MOULDINGS FOR STORE FRONTS
J. G. Braun, 537 W. 35th St., N. Y., and 322 S. Paulina St., Chicago.

STORE FRONTS
Kawneer System of Glass Setting, manufactured by Kawneer Mfg. Co., Coast agencies at San Francisco, Portland, Ore., Spokane and Seattle, Wash.

SURVEYORS
Sanborn & Corinson....251 Kearny St., S. F.

TAPESTRY AND BRONZE
Eugene Glaenzer & Co., 705 Fifth Ave., New York

TERRA COTTA CHIMNEY PIPE
Dunlevy & Gettle....79 City Hall Ave., S. F.

TILES, MOSAICS, MANTELS, ETC.
Mangrum & Otter....561 Mission St., S. F.
The J. F. Kelly Co..723-731 7th St., Oakland

TILE FOR ROOFING
Gladding, McBean & Company, Crocker Bldg., S. F.

TIN PLATES
Meurer Bros. Co., A. H. McDonald, Coast Representative........628 Third St., S. F.

VACUUM CLEANERS
J. P. Raymond........397 Sutter St., S. F.
American Rotary Valve Co., 702 Balboa Bldg., S. F.

VALVE PACKING
"Palmetto Twist," sold by H. N. Cook Belting Co.............317 Howard St., S. F.

VENETIAN BLINDS, AWNINGS, ETC.
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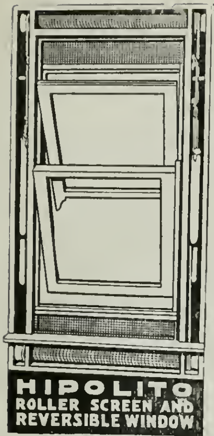

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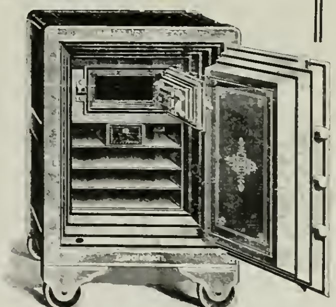
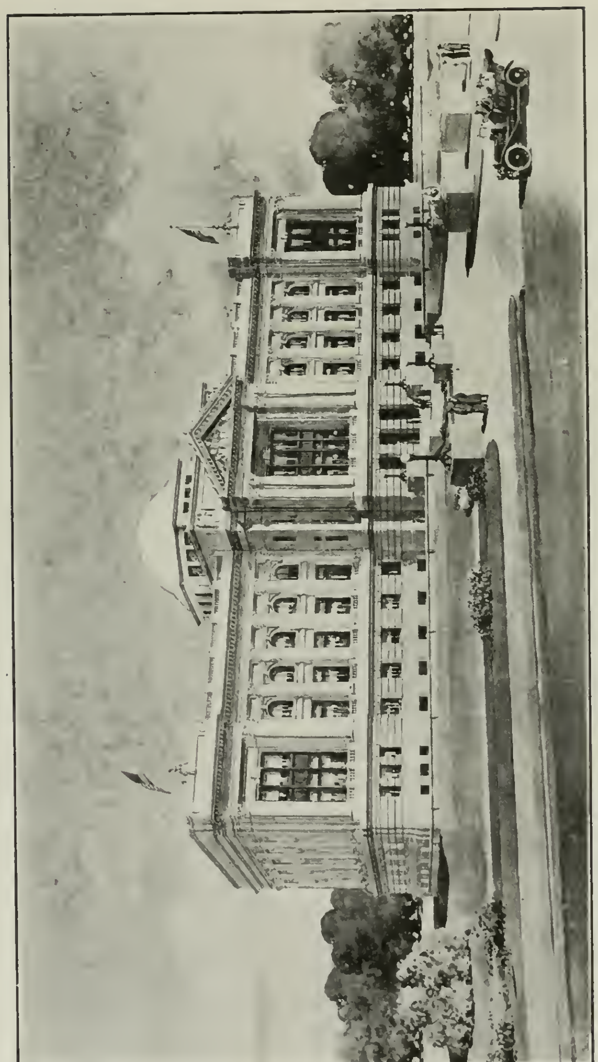


Southern Pacific Car Shops, Oakland, California

In this test the flame of a powerful blow-torch was placed within two inches of J-M Asbestos Roofing. At the end of fifty minutes the roofing was not burned or injured, being only slightly blackened with smoke.



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May, 1911

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Ben. G. McDougall, Architect

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Of California
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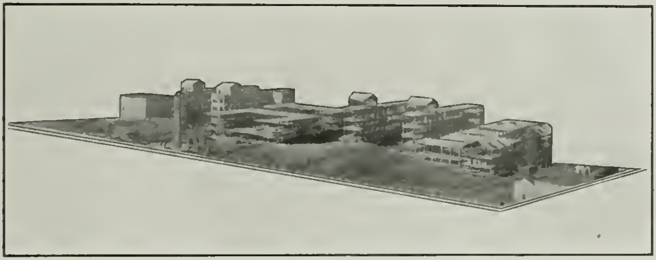


Birdseye View of City and County Hospital Under Construction, San Francisco

The Use of Gravel Concrete in California*

By ALVIN EMIL HORNLEIN, C. E.

ONE of the most pronounced characteristics of the greatly used and greatly abused building material, concrete, is the widely divergent opinion prevalent among architects, engineers and contractors as to what constitutes a proper aggregate, and how the sand and stone should be proportioned to the cement to produce the desired results. In an article of this description it would be well to start with basic, common-sense principles and eliminate as much as possible the ambiguities and mistaken ideas that generally cloud a comparatively simple subject.

Concrete is only another form of masonry, the largest stone corresponding to the blocks or bricks, and the cement and sand to the mortar. The proportion of voids between the stone in the concrete is greater than in masonry, and the proportion of mortar to cement them together is necessarily higher. The strength of concrete, as of masonry, is directly dependent on the hardness of the stone, the strength of the mortar and the adhesion of the mortar to the surface of the stone.

It is easily seen that if the voids between the stone were reduced in amount that a correspondingly smaller quantity of mortar of the same richness would make as strong a concrete, or with the same amount of cement and a proportionate reduction in the sand you would obtain a richer mortar and a stronger concrete.

*The illustrations accompanying this article are of buildings erected in San Francisco and vicinity, and show the possibilities of good concrete construction when the proper aggregates are employed. In every case Niles washed crushed gravel was used.

Lower Sacramenta Road, Paved Under County Bond Issue

Another View of Lower Sacramento Road, Paved Under Bond Issue

The most logical method of reducing the quantity of voids between the stone is to introduce smaller stone that will fit into the spaces between the larger ones. By continuing this process you would arrive at the most compact mix obtainable, and the introduction of sufficient cement to coat all the particles and fill the small amount of voids still left will give a compact concrete.

The necessity of coating the surface of all the particles makes it necessary, to obtain the best results, that a minimum amount of fine material be used. That is, if there are twice as many particles in one cubic foot of one grade of sand as there are in another, the first will have twice the aggregate surface of the other, and will require twice the amount of cement to coat it. The aggregate that will make the best concrete with the minimum of cement is one whose particles range uniformly from fine to coarse.

The hardness of the particles is a very essential element in the strength of a concrete mix, and it is necessary to use the same care in its selection as in that of the cement, the presence of soft or rotten stone making just that number of weak places in the concrete.

Just as important is the adhesion of the cement to the surface of particles, and with good stone is almost entirely dependent on the amount of dirt coating the surface. It is a prevalent, but erroneous idea that cement adheres better to a rough than a smooth surface. As a matter of fact, cement will adhere to clean plate glass so strongly that even after it has attained its full strength, it will often on removing, break away in the cement, leaving the rest adhering to the glass, and showing the bond to be stronger than the cement itself. On the other hand, a rough surface with the thinnest coating of dirt will form no bond and is entirely unsuitable for concrete.

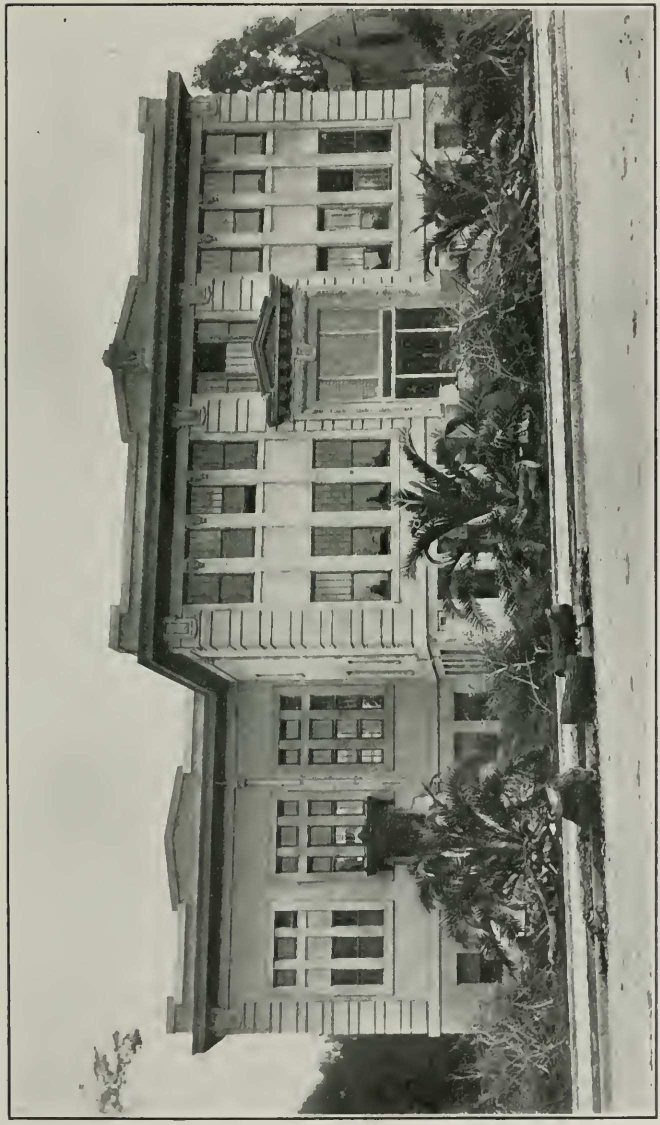
As a concrete material, river gravel fulfills the above requirements admirably. It has been submitted by nature to heavy and continued attrition and erosion, and is the selected material of the country drained by the streams, the softer stone having been disintegrated and removed by the action of water, leaving only the most perfect nodules of the country rock. In quarried stone the various operations of blasting, gadding, sledging, etc., are inclined to shatter the material so that the pieces when delivered on the building site contain flaws and microscopic cracks that may be a menace to the concrete.

The gravel particles are of spherical shape, the angles having been worn off and thus contain less voids, there being no arching effect from angular ends interlocking. It is naturally graded from coarse to fines, and, if separated over screens and recombined by measurement, an ideal grading can be obtained. River gravel is well washed, and if taken from where the water is not so still that sediment is depositing, is clean. If the gravel beds contain sediment the only way of completely removing the surface coating is to wash large bulks in a rotary screen in the presence of ample flowing water. In a concrete mix it rolls readily and smoothly into place, forming a smooth surface against the forms with a minimum of pockets, and making a close bond with the steel.

There has been, up to the last few years, an idea that gravel concrete is inferior in strength to that composed of crushed stone. This was due to the fact that when gravel was substituted for rock the proportions had not been changed to correspond to the reduced amount of voids in the gravel, and the mix was consequently over-sanded. Crushed rock contains from 45% to 55% of voids, and the old rule-of-thumb method of 1 cement,

University Library Building, Berkeley, California

John Galen Howard, Architect



High School Building, San Mateo, California

Havens & Toepke, Architects

New City and County Hospital, San Francisco

Plant of the Hudson Lumber Company, Alameda County, California

Southern Pacific Car Shops, Oakland, California

2 sand, and 4 crushed rock, gave an approximately correct proportion. Gravel contains from 20% to 30% voids, and if 1 cement, 2 sand, and 4 gravel is used a weak concrete will result. A mix of 1 cement, 1 sand, and 5 gravel would have shown a decided improvement, though it would probably still contain too much sand. In correctly proportioned mixes that have come within the writer's experience of a 1 cement, 6 aggregate, the proportion of sand required has been from nothing to 20% of the rest of the aggregate, according to the amount of fine material present in the gravel.

The theoretical idea in regard to a gravel concrete is to use for large aggregate particles of the largest diameter available for the work; the voids in this large aggregate are reduced to the greatest possible extent by the introduction of intermediate sizes down to that of fine sand. The remaining voids are then filled with cement and water and the entire mass joined together as a whole. The strength obtained in this way should approximate to that of cement and water alone.

The ideal condition is modified by the fact that the adhesion of the cement to the surface of the aggregate is not equal to the cohesion of the cement particles between themselves. In the case of a concrete composed of spherical aggregate, when compressive stresses are exerted on a mass, the tendency of the individual particles is to roll over one another, and the

Septic Tank, Santa Clara, California

Masonic Temple, Palo Alto, California
William H. Weeks, Architect

Masonic Temple, San Mateo, California
J. B. Ogborn, Designer

Western Pacific Depot, Oakland, California

function of cement is to retain them in their relative positions. The resultant strength attained by the mass is in direct proportion to the adhesion of the cement to the surface of each individual particle, and to the strength of the stone.

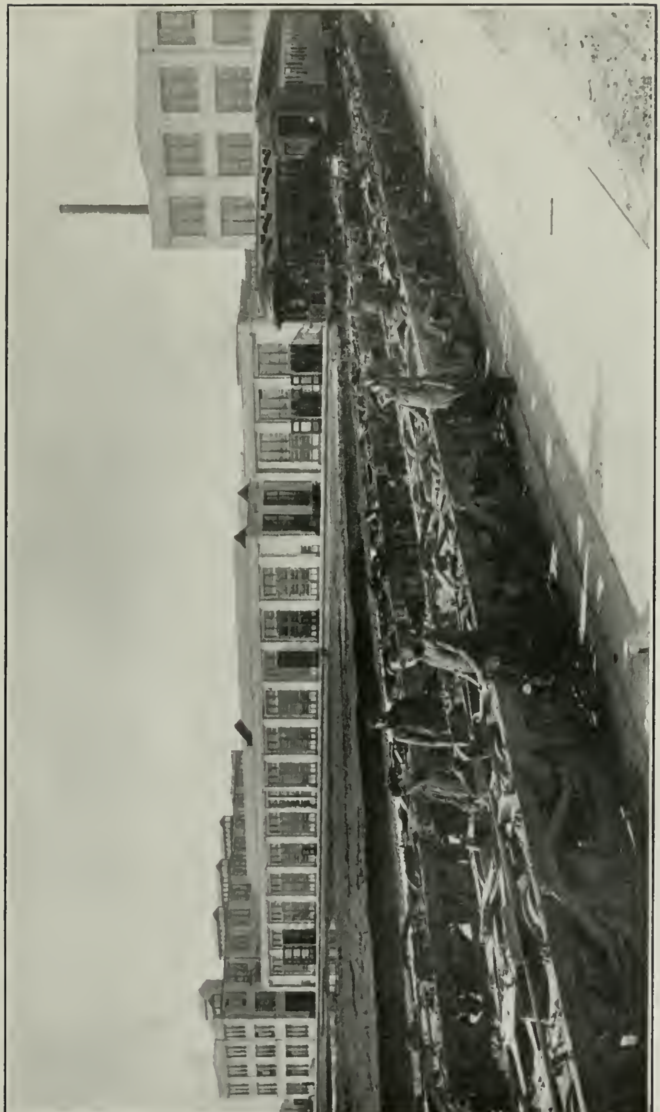
In case of concrete composed of angular aggregate, the rolling tendency is not so pronounced, and thus though the percentage of voids in angular aggregates is higher than in spherical, the concrete composed of angular aggregate approximates in strength that composed of spherical, equal proportions of cement being used in each instance, and the quality of the aggregates in each instance being the same. The generally accepted theory that sharp aggregates or broken stone are better than gravel for concrete is true neither in theory nor practice, the writer having found in his experience that he could obtain as high, and sometimes higher, results with gravel than with crushed stone, all conditions being equal.

The best practical mix is one containing a large enough proportion of rounded surfaces to cause the concrete to mix and flow readily with a minimum amount of water, and a sufficiency of angular fragments to eliminate the rolling tendency under compression at the early periods, before the adhesion of the cement to the individual particles has had time to fully develop.

This object is best served, in the writer's experience, by adding a small proportion of crushed rock for part of the larger sized aggregate, or by the use of crushed gravel.

There are a number of different methods of determining the proportions of the various sized aggregates and the amount of cement necessary to fill their voids. The two most popular and giving the best results are the volumetric tests made with different proportions of the material for determination of yield and density, and the determination of the proportion of the different sized aggregates by sieve operations. The writer prefers the latter method as being quicker, more scientific and yielding better practical results.

It has been established by repeated determinations carried on by a number of independent operators that if the different sizes in the proposed aggregates (stone and sand) are separated over a number of different



The New Pullman Shops, Richmond, California sieves, separating the coarser, and so on down to the fines, and the proportions passing each sieve be let off as ordinates and the diameter of the particles as abscissa, the most compact proportion of the different ingredients will lie along a parabolic curve from zero to 100%.

In practice such proportions of various sizes are aggregated from the proposed stone and sand to be used as most nearly satisfy this condition, and then either the specified amount of cement added in case specifications are to be followed as to richness of mix, or, if no such specifications are used, enough cement added to coat all the particles and to raise the fines necessary to the parabolic curve. This will give the ideal concrete proportions, and will work perfectly in massive work where there can be no arching of coarser aggregates against the sides of the forms or interference by the reinforcements. If the concrete is to be used in thin walls, reinforced, it is necessary to add a little more sand and cement that satisfies the parabolic curve. This is a matter to be determined in each individual application, always remembering that any addition to the fines, if other than cement, will decrease the strength of the concrete very rapidly.

The writer has been able to obtain by this method of determination, under adverse conditions of placing the concrete, a strength in compression at twenty-eight days of 1,300 pounds to the square inch with a concrete composed of 1 part of cement to 18 parts of aggregate, and in case where 1-6 mix was specified, of 3,400 pounds compressive strength to the square inch in twenty-eight days. It might be of interest to state that both the above results were obtained with gravel.

Locally the concrete composition is, in the majority of cases, far from satisfactory. The prevalence and cheapness of what is known as "bank sand," generally obtained from excavations on the building site, has caused it to be used to an excess. It is, in general, clean and composed of hard grains, but altogether too fine for extensive use in the aggregate. In a large number of instances it has been used 2 parts sand with 4 parts coarse rock and 1 part cement. Needless to say, the concrete was entirely unsatisfactory and is in fact dangerous. If for part of the sand and rock, gravel intermediate in size had been introduced, this trouble could have been avoided. This is not a criticism of bank sand, which in its place is an excellent material, but its place is not to compose one-third of a concrete aggregate. The poor concrete in the past has been caused, not by the use of bank sand, but by the use of an excess.

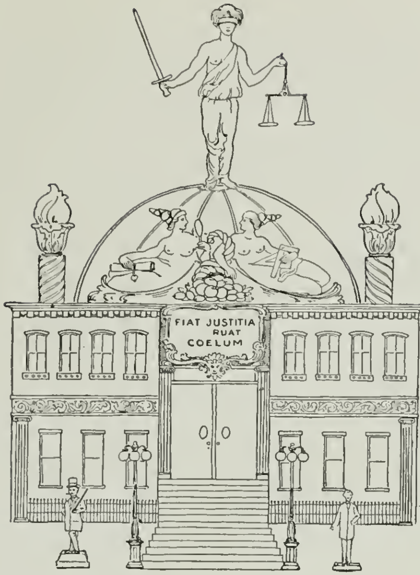
It may be accepted as axiomatic that at least half, and preferably more, of the aggregate surfaces should be rounded to secure a compact concrete. It is equally true that gravel to this extent must be used in a concrete mix to secure the desired results.

Another use to which crushed gravel is being very successfully applied is in asphaltic concrete for road surface. A large amount of such surface has been laid and is proving eminently successful under heavy traffic. The round gravel is not suitable for this class of work, the road surface having a tendency to roll under traffic, but when angularity is given to the gravel by crushing it, makes a durable surface; its compact form giving it better resistance to the shattering effect of heavy-tired vehicles.

* * *

To Bag the Game

Caddie (to Jones, who has missed the ball six times consecutively)—Try it with the bag, sir.—Boston Transcript.



Front Elevation of Placidity Center City Hall

How to Build a Cheap City Hall for $5,000,000

By WALLACE IRWIN

San Francisco will soon spend several millions of dollars for a new city hall, while across the bay the city of Oakland is about to let twenty-seven different contracts for the construction of a million-dollar municipal building. In view of these facts, and as a warning, we are beating from the trodden paths of custom, and reprinting Mr. Wallace Irwin's satire, "How to Build a Cheap City Hall for $5,000,000," which is intended to show what can be done in a community where political harmony prevails. There will probably be nothing like Mr. Irwin tells about, either in San Francisco or Oakland, though instances can be recalled where conditions have been quite as appalling as those described in Collier's.—Ed.

IT WAS Ruskin, I think—or was it Abe Ruef?—who said: "The ideal building must be the one whose occupants get the most out of it." I offer herewith, for the benefit of aspiring municipalities, the plans for a city hall built at Placidity Center, a city of 40,000 solid Republican inhabitants who do not believe in fad politics and have never suffered from the prongs of the malicious and malevolent muckraker. The edifice about which this modest sketch is written is a good example of what can be done in a community where political harmony is the rule, rather than the exception, and the party in power has learned to pull together under the humanizing maxim of, "Boost, don't knock!"

Any enterprising small town can have as expensive a city hall as that of Placidity Center, provided the citizens are patriotic enough to go down into their pockets without asking questions. It took a great faith to build a Pantheon, and it required an unlimited supply of that sublime quality to erect capitol buildings at Albany and Harrisburg. The gods never scorn the treasures of the humble.

The political management of Placidity Center decided two years ago that their old city hall, a depressingly simple Dutch Colonial structure of rough stone with Doric columns in front, was entirely inadequate to the city's increasing commercial glory. The municipality had some money to spend. It is true that the water-works, electric lighting, and sanitary service were inadequate, but as these were provided for by the regular routine of patronage, it seemed a shame to deplete the treasury by experimental reforms. Nothing gives a city a more up-to-date appearance than a new city hall. So, by a brilliant series of financial stratagems—ably conducted by Placidity's enterprising mayor and board of supervisors—sufficient bonds were issued to put the town in debt for the next 500 years. And the architectural renaissance was soon under way.

Placidity, being happily free from that political disharmony which has proved so inconvenient in other localities, stanchly sustained the honest board of supervisors in awarding all contracts, as usual, to Mr. E. Z. Stages, the local Republican manager. Mr. Stages' bid of $3,500,000 was accepted without a murmur, which speaks well for the prosperity and sporting instincts of Placidity's leading citizens. Some one proposed employing an architect. This was quickly voted down—and rightly. Too much good material is being spoiled nowadays by the whim of educated faddists.

To save the city a bill for extravagant architect's fees, the board set to work—paying its members $50 a day for services—to decide on the plans. Photographs of St. Peter's at Rome, The Taj Mahal, Senator Clark's house, the Alhambra, the Colosseum by moonlight, the Grand Trianon, and Buckingham Palace were gone over carefully during the course of six weeks. Although each member of the board had some favorite to play, the debate was settled, as was usual in Placidity's affairs, by leaving the matter to Mr. Stages. He wisely decided that the city hall, to be perfect, must embody some details of all the world's great architectural models.

In awarding sub-contracts, Mr. Stages was confronted by the following civic needs:

Dionysius Peel, mayor of Placidity, had a cousin in the plumbing business.

Major Harrigan, city prosecutor, was a member of a firm of painters and decorators.

Most of the board, with the exception of Herman Katz, its president, were connected in some way with firms interested in building materials.

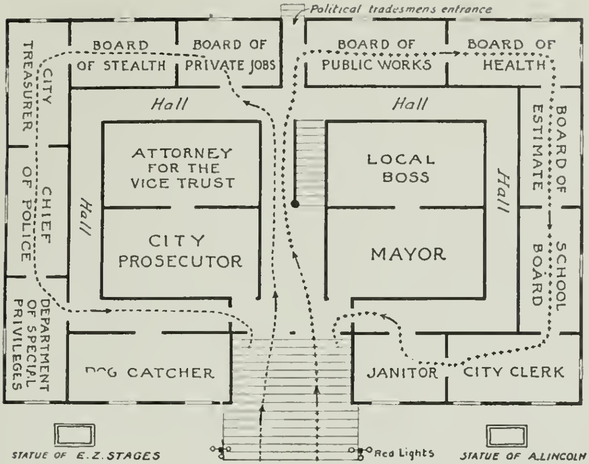
The chief of police owned a brickyard.

Ajax Sterling, city treasurer, had a brother in the furniture business.

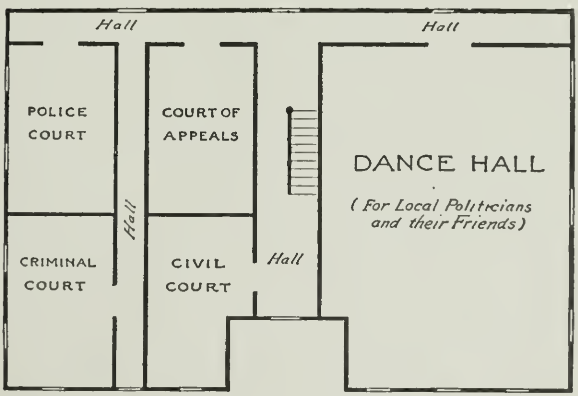
G. Chesterton Nutt, of the board of estimate, owned a corner lot, too far out for business purposes, but a perfectly good location for a city hall.

Ike Smith, the fire chief, had some second-hand lumber to sell.

President Herman Katz, of the board, was a grocer, so he could not sell anything in the building line—something had to be done to appease Mr. Katz.



Ground Floor Plan for City Hall, Showing Convenient Arrangement for all Branches of Modern Government. Crossed lines (xxxx) indicate course taken by a person who wants something and WON'T get it. Dotted lines (. . . .) indicate course taken by a person who wants something and WILL get it



Plan of Second Floor. Note size of the dance hall compared with the floor space occupied by the courts, a splendid idea in municipal architecture

So the sub-contracts were awarded and the operations begun. Ike Smith's second-hand lumber looked quite new when it was planed and varnished and the nail holes touched up a bit. The bricks from the chief's yard were inclined to warp and crumble, but this trait only served to give the building that Old World effect so much sought after nowadays. Mr. Stages was lucky enough to get, at bargain rates, a few carloads of machine-carved stone from a demolished skyscraper in Chicago. This not only saved on the initial expense for material, but enabled the great-souled builder to charge $25,000 extra for sculpture on the bill.

A year and a half had now elapsed since the cornerstone of the Placidity Center city had been laid and solemnly dedicated to the service of mankind by the Rev. Dr. Horatio Bludge. The walls were now standing in their infinite variety of Egypto-Gothic adornment. Work suddenly stopped. The sanctuary lacked a roof, and Mr. Stages feelingly announced that, in view of the fact that the roofing of the city hall had not been mentioned in the original contract, it was his duty as a man and a citizen to hold up the job until $100,000 extra was provided for red Spanish tiling. An extra sale of 6 per cent bonds was provided for the purpose and the roof supplied. It is true that the good contractor quietly substituted tin for tile, but the citizens of Placidity never dwelt on this deficiency, as the roofing was supplied by the mayor's brother.

As soon as the roof was substantially installed, the members of the board looked up and considered the effect.

"There's your city hall according to contract," said the builder.

"Looks sort o' flat," suggested the city treasurer. "Ain't there something more to go on top?"

"What it needs is a few domes and some statues," remarked Mr. Herman Katz. "A public edifice without trimmin' on top is just as bad as a plain spring bonnet."

The seven wise men considered the deficiency. They did not know anything about art, but they knew what they liked. They thought seriously of sending to Chicago and engaging a sculptor of note, when it mysteriously developed that Mr. Katz, who had suggested sculptural adornments, had a nephew employed as foreman in a tombstone works. Mr. Katz swore that nephew Horace could imitate any statue alive. The board, mindful of the fact that Mr. Katz had been neglected in the sub-contracts, permitted that good gentleman to employ Horace and give full swing to the artist's traditional contempt for other people's expense. The result was four colossal pieces in cast iron. The first was a faithful portrait of Mrs. Justice playing blind-man's buff, with a cheese-knife in one hand and a meat-scale in the other. The second was a symbolic group entitled "Progress." It represented "Agriculture" offering a basket of metallic apples to "Commerce." The group was easily appreciated in Placidity, where a railroad freight rate had long done its duty by the annual crops. The fourth and fifth were heroic portraits of E. Z. Stages and Abraham Lincoln, destined to stand on the lawn.

The bill for this work was $150,000—not excessive in this age of wealthy artists. The board made no objection to the price, but Mr. Swineham, corporation attorney for the vice trust, made the point that the figures were almost nude, and that such an exhibition would tend toward blemishing the fair name of Placidity Center. So an item of $15,000 was added for the purpose of draping the cast-iron divinities.

When the statues were about to be hoisted, it occurred to the board that the roof would look better dressed if a gold dome and two or three minarets were added. It was the consensus of opinion that this was considered in good taste among the Greeks. Resolution passed. A motherly zinc dome with a brood of little minarets finally met the approval of the constructors. Price, including setting up and painting near-gold, $75,000.

Ajax Sterling, the furniture man, provided desks, chairs, carpets, etc., at public-utility prices. Major Harrigan's firm of painters and decorators interpreted their contract in a spirit of liberal common sense. For instance, where the agreement called for enamel, they used kalsomine, knowing that the cheaper material was all that Placidity Center could afford.

About the time the operation was completed, Mr. Kickmore, the village muckraker, took pains to inform the public in general that their city hall had never been properly fireproofed.

"You can't expect too much in a low-priced building," was Mr. Stages' reply when interviewed. However, he good-naturedly consented to adjust the defect, provided the people were willing to meet the extra expense by an assessment of a few thousand dollars.

The people, however, were beginning to feel the burden of luxury, so they denounced this foolish extravagance. The matter was dropped.

On the day of the dedication exercises the citizens marched proudly by and declared that Placidity Center could now take her place among the cities. At noon the mayor, the contractor, the chief of police, and all others interested in the great improvement had a quiet luncheon in the little room back of Dan's, and the city treasurer passed out checks to nearly everybody.

That night the edifice was officially opened. After a congratulatory speech by the mayor, Mr. E. Z. Stages, local Republican manager, was requested to make a few remarks. He explained how the city hall was a nearly perfect type of municipal architecture, and how the few faults it now possessed had been the outgrowth of a necessary economy. This could be corrected later at public expense. He called attention to the enlightened arrangement of office rooms, the same being so distributed that the average man could get what he wanted in the shortest possible time.

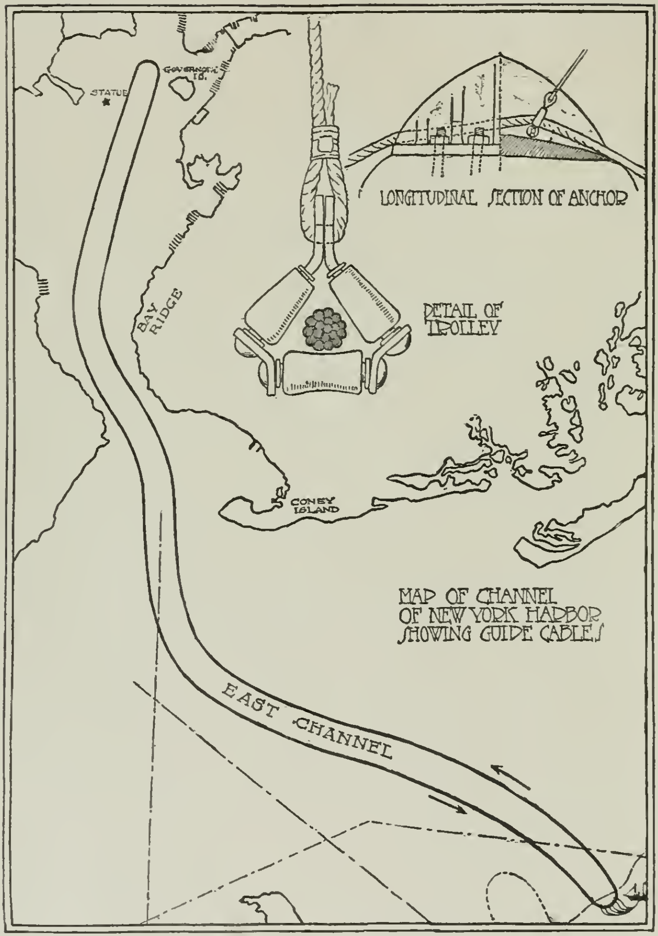
Rev. Mr. Horatio Bludge spoke at length on "Progress," and while he had the floor a storm sprang up, the roof began leaking in several places, and the water, rilling in from above, peeled the paper-marble finish off the beautiful onyx columns. Five or six of Mr. Ajax Sterling's contract chairs broke under the pressure of as many stout ladies, and the goddess of Justice creaked and groaned on the great zinc dome above.

The next day there was a record sale of high-grade automobiles to the city officials of Placidity, most of whom declared for a long vacation and purchased tickets for Europe.

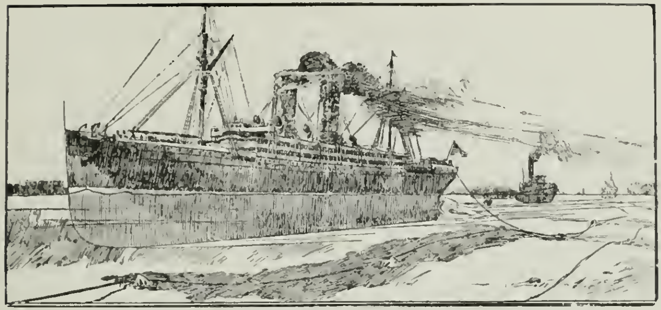
Three days later the goddess of Justice, as though aroused to an iron indignation, crashed through the zinc dome, broke a gas main downstairs, and set the city hall on fire. Everything was destroyed except the colossal statue of Mr. E. Z. Stages, which stood serene amid the devastation.

Mr. Kickmore, the village muckraker, passed the ruin and remarked: "After this I suppose we never can raise the money to build a substantial jail."

He was alone when he said it.



Map of Channel of New York Harbor, Showing Guide Cables



Showing Liner Entering Harbor with Aid of Guide Cables

Channel Trolley Cable Would Do Away with Pilots and Lessen Danger in Foggy Weather

A Scheme for San Francisco Bay that Commuters will Read with Interest

By F. W. FITZPATRICK

FOR the purpose of insuring the safe pilotage of incoming and outgoing vessels and ferry boats through San Francisco's crowded bay and harbor in foggy weather an interesting new scheme has been devised.

Any one who has stood on the deck of an incoming ship during foggy weather and observed the anxious face of his captain, the repeated heaving of the lead, the careful feeling of the way, the snail's pace the ship is making and a thousand other indications that that ship is in dangerous water and her navigators fully realize it, must perceive that such navigation is extra hazardous and absolutely dependent upon the most primitive methods for its direction.

A heavy fog not only prevents one from seeing, but is a distorter of sound as well. One hears the blast of a "siren" or the ringing of bells, but he can not safely judge of their distance. In most cases fog horns mark dangerous points and a navigator has to guess not only where that fog horn is, but just how far he has to keep away from it to avoid the danger it warns him of. So with ships. Often I have heard a warning whistle and imagined a ship well to port or starboard and some distance off, only to have my hair raised a moment later by seeing a great black hull looming up perilously near and on the other side from which I first thought it to be.

Various schemes have been thought of to achieve safe navigation in a fog, such as a continuous line of buoys, electric indicators and channel finders. Most of them are impracticable, and some have been positive obstructions to navigation in fair as well as foul weather.

I have not patented this device nor do I even know if it is patentable. I offer it to the public.

The trolley car suggested this idea. The conditions are somewhat reversed, but there is a resemblance.

The scheme here described has been thought out more particularly for New York's harbor, but is applicable to the San Francisco ferry lines, or any part where the depths are not prohibitory. In the New York harbor I would lay a heavy wire cable from a point near the Battery, through the channel, the Narrows, and preferably the outer east channel, to a point between the Scotland and the Sandy Hook lightship. At that point is safe water, 60 feet deep and more.

This cable I would continue back, at a safe distance from the other course, a half mile or so, to the point of departure, and there splice the ends. Then we would have a continuous cable, a loop, anchored at suitable distances, so that it might not be tugged out of place and become a source of danger.

The two lightships mark deep water. Along the line I have described there is from thirty to sixty feet of water, in some parts a dredged channel. Through the Narrows, as the figures on the chart indicate, is the deepest water, a maximum of 120 feet. No part of this course offers any considerable difficulty to divers in inspecting and repairing such a cable.

At the sea end of this loop there would be maintained another lightship, or one of the existing ones shifted to that point. She would be armed with the most powerful fog horns, bells, guns, or whatever scientists prescribe as the best noise in a fog. It would not be a warning of danger, but a call to safety, and every incoming vessel would steer for it.

On this cable would be a number of specially devised rings, to which other and lighter lines would be attached. These lines or trolleys would be buoyed at a length to insure floating in maximum water—say 125 feet—so as to be marked in case of loss or break. There would be a sufficient length of cable or trolley line to cover the angle of drag and varying depths and for handling, slack, etc., in all, say 600 to 700 feet of line. All these lines, from a sufficient number of rings, would be held on this "safety," or lightship, and a similar number of them held on a tug or other boat at the shore end of the loop.

In foggy or thick weather, or when indications would point to the probability of such weather—or, for that matter, at all times—there should be a harbor regulation prohibiting all sailing craft from entering or anchoring inside of this sixty-foot depth, unless in tow of a tug or steamer, and another regulation compelling all such tugs, boats and steamers whatsoever or by whosoever piloted to steer direct to this lightship and there receive one of these trolleys. In calm weather it could be handed over by a lighter "casting line," such as is used in handling heavy landing or tow lines, and in rough weather it might be shot across a vessel's bow. But there is seldom any sea on in a fog; a heavy sea means wind, and wind means no fog.

This trolley would be taken on astern, and the vessel would then proceed under its own steam at a safe rate, dragging its trolley along the main cable. As long as the pull is fair astern the ship is on its right course. Naturally, the mariner would have to calculate for drift, currents and the angle of descent his trolley line indicates, but it would be a thousand times safer calculation and easier than the constant sounding and the calculation he has to do now. There would be the assurance that he was safe, that no one could run into him sideways. He would have to watch that he did not run into the fellow ahead of him, and to make noise enough to insure that the ship following him would not collide with him from behind. For all the world it would be the same as navigating a cable car, minus the inherent dangers of the cable and the passing of teams and people.

The amount of line he would have to pay out would indicate the depth of channel the pilot was in and would tell him positively where he was. The pilot, in other words, would direct from the stern instead of from the bridge.

Each vessel should have an automatic steam drum adjusted to the drag or pull of the ring along the main cable, virtually lifting that cable a trifle, but not enough to drag it or raise it more than would allow the passing of that ring under its under surface, and so adjusted, too, that the angle would be maintained, paying out and taking in according to the varying depth., but shutting off steam at the maximum depth and then loosely paying out the slack line until the vessel could be stopped and the trouble investigated. If the line were made fast to the vessel any catch or accident would mean the breaking of the trolley line or damage to the main cable or its anchors. Such a machine would render a 14,000-horse-power vessel as light and easy to handle as the smallest yacht.

All incoming vessels would follow along the right cable and deliver over their trolleys to the tug or other boat charged with the mission of receiving them at the shore end of the loop. Outgoing vessels would receive the trolleys from this tug and also follow along the right of the loop, handing over their trolleys to the lightship at its outer end—a system of double-track street cars, pure and simple.

The trolley would be a guide, friend and compass, a sounding line, a guaranty of safety to the holder and to all other craft. The anchorage of the cable would be such that the pull being upward and the trolley ring being provided with rollers, it would be bound to pass through the opening left for it in the anchors.

The cost of laying forty miles of such a cable and anchoring it at every half or quarter mile would be insignificant when compared with the cost of collisions that so often occur, the delays, the lengthened scheduled time that has to be counted upon, the cost of pilotage and towing, not to speak of the imminent dangers and the other disadvantages of our present antiquated way of getting into and out of New York.

If a copper cable would cost too much, why not use a steel wire, one of large members, protected or coated to last as long as possible? They say it would rust out in four or five years; then repair it or renew it. It will have paid for itself a hundred times over.

So with the anchors and trolleys. Salt water, slime, and rock bottom, all will affect them; nothing is absolutely permanent. Repairs and maintenance must be provided for. If Congress will not appropriate for it, then the shipping companies can well afford to do it themselves.

The rules and regulations, the forbidding of casting anchor near this cable to avoid dragging or breaking it, the keeping out of sailing vessels, etc., the protection of this cable as that of lightships, buoys, channels and other harbor improvements are matters for the authorities to devise and enforce. In all radical innovations or departures from long-established customs there is a mass of such matter to be gone into, but, that such details present difficulties, and serious ones, is no sign, nor does it necessarily follow, that the scheme itself is defective.

I claim that it would be equally applicable to any port, to ferry lines or to any navigable courses, provided that the depths be not prohibitory.

Municipal Playground for Planada, the "City Beautiful"

California to Have a Model Municipality

A "CITY BEAUTIFUL" laid down on lines approved by modern civic improvement societies, its streets radiating from a common center, its buildings uniform in beauty and following a general architectural scheme—such will be the new city of Planada, just begun in Merced county, California, nine miles east of Merced, on the Santa Fe railroad.

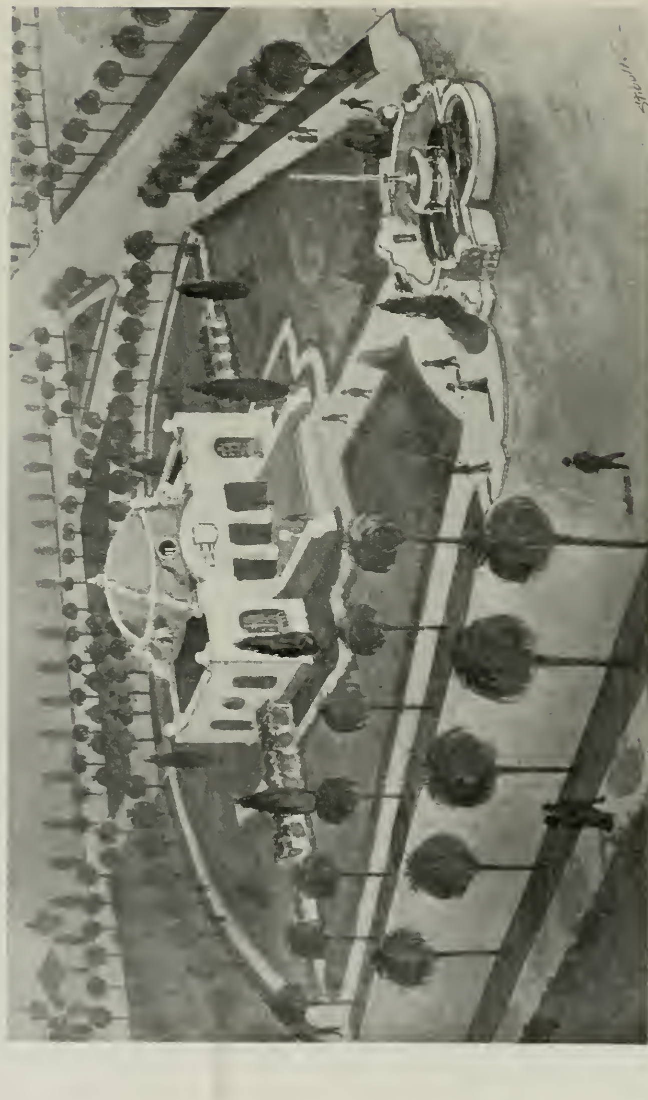
There will be no saloons in Planada. The city will be dry from the start, and will be unique in this respect, as this is probably the first town ever built in California which started out with the temperance idea.

The civic beauties so much desired and which are now being embodied in the larger eastern cities at so much expense, are included in the elaborate and comprehensive plans which the landscape architect has completed. The plan includes a 170-foot boulevard from the railroad station (which is the focal point), for three-quarters of a mile to the city hall square. Adjacent to the space reserved for the municipal buildings are triangular corners for churches, city parks, etc.

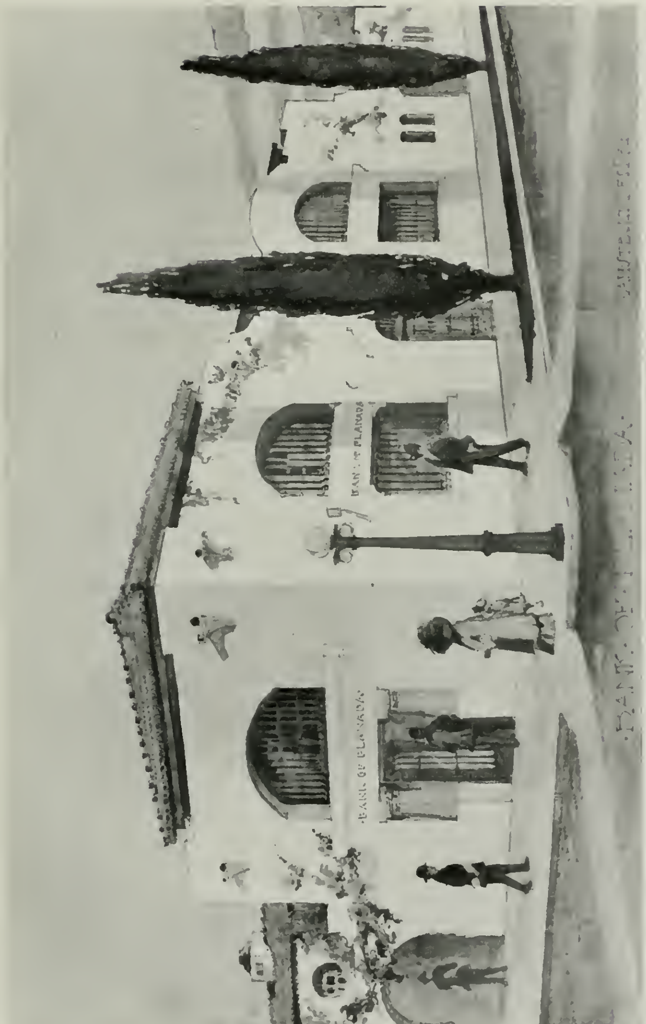
Close to the city hall the plan calls for a municipal playground (Hulme park), an innovation in California cities. This will be a sixteen-acre field, with a field house containing reading rooms, assembly hall, etc. The park will include outdoor gymnasiums, wading pools, running track and every other feature included in modern city play grounds. The main street, Broadway, will have a 10-foot sidewalk and will be brilliantly lighted with electroliers. It will have a 40-foot park strip extending down the center, planted with Cocoa plumosa palms, and will be one of the most attractive business streets of any town in California.

Arthur Henrik Stibolt, a Los Angeles architect, has been retained to design the buildings to be erected by the company. Mr. Stibolt has laid out a comprehensive architectural scheme for the entire city, and the building restrictions for the town are to be sufficiently exacting to have this general idea of consistent architectural development carried out. The architecture of the city will be along the Spanish mission lines, and the residences will be typical bungalows, except that they will lean more to the Spanish than to the mission type. In order better to protect the interest of Planada land owners, the plans for all buildings will have to be submitted to the organizing company for approval.

The streets of Planada have been named after prominent Californians —Senators Stanford, Stephen M. White, Henry T. Gage, while such historic names as Broderick, De la Guerra, Latham, Cabrillo, Carson and Vallejo are found included in the plans. Prominent Los Angeles financiers have also been honored—Huntington circle, Hupp and Haskell streets and Hulme park give indications of this.



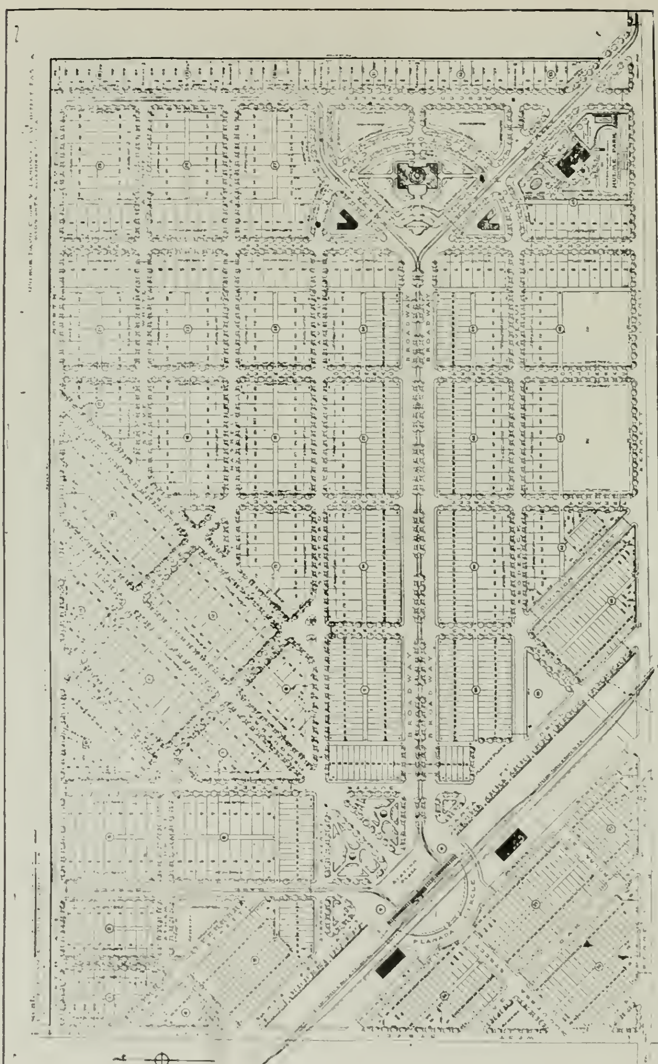
Library and Public Park, Planada, California



Bank of Planada
A. H. Stibolt, Designer

Passenger Depot, Planada, California

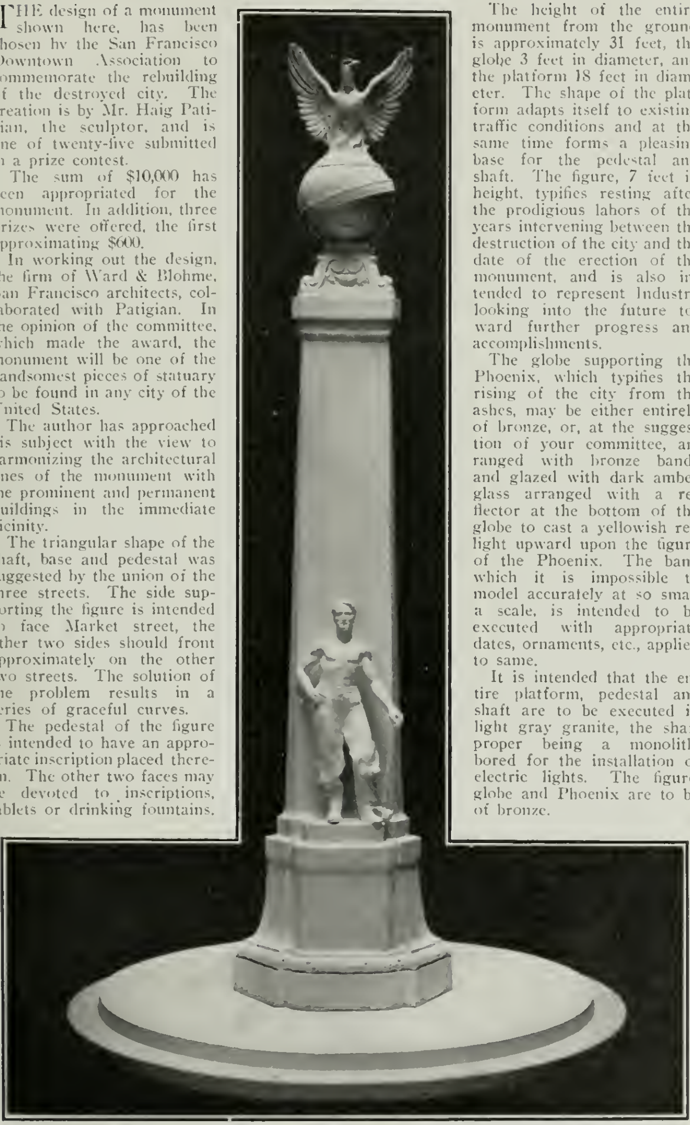
How Homes Will Be Laid Out in Planada, the "City Beautiful"



Plan of Planada, the "City Beautiful"

Wilbur David Cook, Jr., Landscape Architect

Monument Typifies Rebuilding of San Francisco



THE design of a monument shown here, has been chosen by the San Francisco Downtown Association to commemorate the rebuilding of the destroyed city. The creation is by Mr. Haig Patigian, the sculptor, and is one of twenty-five submitted in a prize contest.

The sum of $10,000 has been appropriated for the monument. In addition, three prizes were offered, the first approximating $600.

In working out the design, the firm of Ward & Blohme, San Francisco architects, collaborated with Patigian. In the opinion of the committee, which made the award, the monument will be one of the handsomest pieces of statuary to be found in any city of the United States.

The author has approached his subject with the view to harmonizing the architectural lines of the monument with the prominent and permanent buildings in the immediate vicinity.

The triangular shape of the shaft, base and pedestal was suggested by the union of the three streets. The side supporting the figure is intended to face Market street, the other two sides should front approximately on the other two streets. The solution of the problem results in a series of graceful curves.

The pedestal of the figure is intended to have an appropriate inscription placed thereon. The other two faces may be devoted to inscriptions, tablets or drinking fountains.

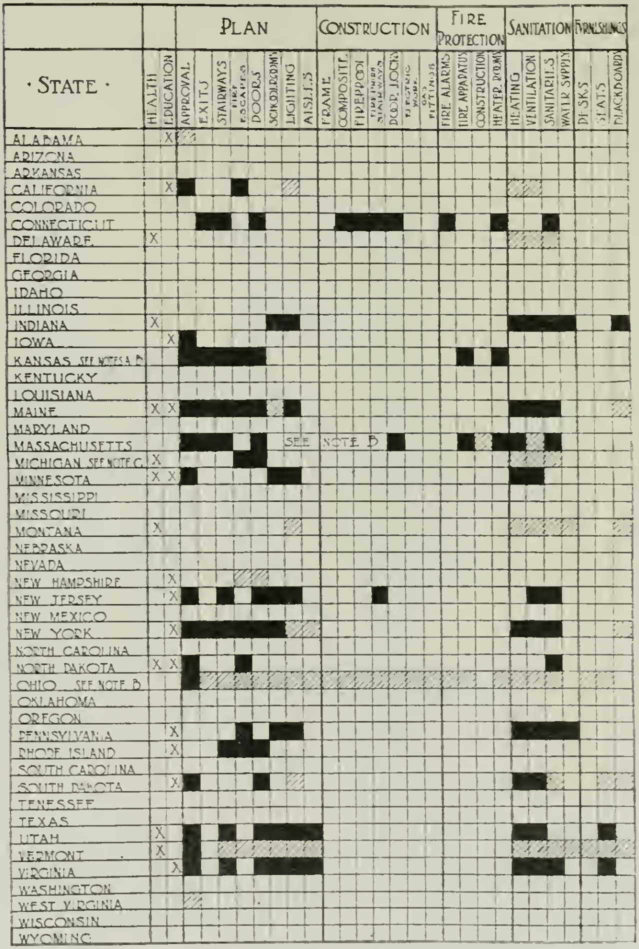
The height of the entire monument from the ground is approximately 31 feet, the globe 3 feet in diameter, and the platform 18 feet in diameter. The shape of the platform adapts itself to existing traffic conditions and at the same time forms a pleasing base for the pedestal and shaft. The figure, 7 feet in height, typifies resting after the prodigious labors of the years intervening between the destruction of the city and the date of the erection of the monument, and is also intended to represent Industry looking into the future toward further progress and accomplishments.

The globe supporting the Phoenix, which typifies the rising of the city from the ashes, may be either entirely of bronze, or, at the suggestion of your committee, arranged with bronze bands and glazed with dark amber glass arranged with a reflector at the bottom of the globe to cast a yellowish red light upward upon the figure of the Phoenix. The band which it is impossible to model accurately at so small a scale, is intended to be executed with appropriate dates, ornaments, etc., applied to same.

It is intended that the entire platform, pedestal and shaft are to be executed in light gray granite, the shaft proper being a monolith, bored for the installation of electric lights. The figure, globe and Phoenix are to be of bronze.

CHART SHOWING STATUS OF COMPULSORY REGULATION OF SCHOOLHOUSE CONSTRUCTION IN THE UNITED STATES IN 1910.

COMPILED BY FRANK IRVING COOPER, BOSTON



X INDICATES DEPARTMENT CONTROLLING THE ENFORCEMENT OF THE LAWS

NOTE A THE PLANS FOR SCHOOL BUILDINGS IN THIS STATE MUST BE APPROVED BY STATE ARCHITECT

NOTE B THESE RULES ARE PREPARED BY THE DEPARTMENT OF INSPECTION OF WORKSHOPS FACTORIES AND PUBLIC BUILDINGS.

NOTE C THESE LAWS AND REGULATIONS APPLY TO STATE BUILDINGS ONLY

■ INDICATES LAW ▨ INDICATES REGULATION

Perils of Inferior School House Construction*

Unsafe Conditions Due to Lack of Laws

By FRANK IRVING COOPER, Architect, Boston.

At its April meeting the Southern California Chapter of the American Institute of Architects adopted a resolution to send a committee before the Board of Education of Los Angeles demanding that the school board adopt fireproof construction for all school buildings to be erected in the future. This action was taken on the belief of the architects present that the safety of the pupils demands better construction than has prevailed in the past, and that a more permanent construction is needed by the city from the standpoint of economy in investment and upkeep.—Ed.

SCIENTISTS, architects, engineers and other men interested in the erection of ideal school buildings are eager at present to co-operate in order that hygienic conditions of the buildings in which the children are housed may be as perfect as possible.

In seeming contradiction of this statement is the deplorable fact that school buildings continue to be erected throughout the breadth and length of the land with little regard to safeguarding the life of the child.

To the tinder-box construction peculiar to the American frontier and the evils of cellular construction is due the state of mind of the child which causes panic at the mere alarm of fire, as recently at Newark, N. J., where on January 26th a false alarm of fire caused a panic among the 1,800 children, when many were knocked down and injured.

In Collinwood, Ohio, children became panic stricken and 174 died within sight and in some cases within touch of their agonized parents.

At the slightest alarm of fire, panic among the children is the first thing the principal and teachers have to guard against.

I have blamed the dread of fire which causes panics to the evils of tinder-box construction peculiar to the frontier, and the reader may now ask how Newark and Collinwood can be quoted after speaking of a construction peculiar to the frontier. The fact is that this cellular construction is not limited to the rough wooden buildings of the frontier, but is just as noticeable among the more costly buildings of our towns where it is disguised behind a mere shell of brick or stone.

Even the high premiums by which the American insurance companies are combating this dangerous form of construction is not sufficient to do away with it, because the cause lies chiefly in the habits of carpenters, masons, and workmen of other building trades, who have been doing the same thing in the same way since the beginning of American carpentry in its modern form. A recent report states that on an average of 156 school buildings are burned to the ground every year.

During the past summer I have made an investigation of the State laws and regulations of the States of the United States of America in regard to schoolhouse construction and the result is here shown in chart form.

Observe only eight States have passed laws worthy of the name bearing on schoolhouse construction. Of this number only two States, Ohio and Connecticut, have regulations on fireproof construction, and only one State, Massachusetts, has passed regulations on fire-retarding construction. Sixteen States have passed regulations controlling the plan, but

*School Board Journal.

of the forty-eight States of our country twenty-two States have no laws or regulations whatever to prevent school buildings being built as crematories.

In nine States the control is rested in the boards of health; in thirteen States control through the boards of education, and two States, Massachusetts and Ohio, have regulations through their departments of district police. It should also be noted that the police have enforced regulations to a far greater extent than the boards of health and education. Three States have a dual responsibility, as a general principle, but dual responsibility results in confusion and should be deprecated.

In a majority of cases the regulations state that plans for school buildings must be submitted to a superintendent or other authority for approval.

This means a control by men and not by law; it opens the way to corruption and favoritism or at best to regulations that are changed with the ideas or change of administrators. The present tendency to put the responsibility of making the law on the shoulders of inspectors, commissioners or trustees and the tendency to allow each sub-authority to make rules for his own district is filled with evil possibilities.

Each State should pass school building laws to govern the construction of all of its school buildings, and these laws should be administered by a strong general authority with as many inspectors as may be needed to cover the work.

The State of Massachusetts expends nearly two and one-half million dollars each year for the erection of new school buildings. What Massachusetts is doing other States in the Union are doing, and this great expenditure of money is being made for the most part without control by law.

Does the present situation show the intent of the American people? Does the wonderful perfection of the schoolhouse fire drill, the skill and the heroism of American fire departments, aided by automatic alarms and signals, excuse the public authorities for such school buildings as are now being erected throughout our land?

* * *

Fire

By F. W. FITZPATRICK

FOR some reason or other we Americans seem to be able to apply our fire-prevention safeguards only in piecemeal doses, and then only because of some especially awful specific lesson. We know the danger that lurks in every inferior construction and the potentialities for loss of life that exist in every unsafeguarded building, but we only got busy with theaters after the Iroquois fire, and with schools after the Colinwood disaster, and now with factories—most especially with shirtwaist factories—after the New York horror. Of course, it seems like wasted energy to think about or try to prevent similar horrors in our ancient fire-trap hotels, our flimsy apartment houses, our over-crowded department stores and such, until something terrible happens in each one of those classes of buildings. But we should think about them, and most earnestly.

In new buildings it is comparatively easy to get at least the minimum of safe construction and reasonable installation of fire-fighting agencies.

but in the old, the existing ones, it's like pulling teeth to have any changes made or anything new installed. Councils are appealed to, influence brought to bear, heaven and earth turned topsy-turvy to have the poor building owners saved from the grinding rapacity and exactions of the heartless building departments. Why, it would have cost the owners of that New York shirtwaist factory at least $1,800 to have provided some safety for their employes. True, those 143 lives might not have been lost, but think of the $1,800. Have building owners no rights?

Even in cities with curative and adequate building laws the work of revamping old buildings is distressingly slow, almost insuperable obstacles are encountered at every step. Real estate owners are rather powerful, and it is conceded they are good fighters, though it is deplorable that such splendid energy should be wasted upon such a cause—the keeping of bad conditions as they are. (Yet most of those men are honest, as the word goes; church-going, and would be horrified and righteously indignant if you accused them of being "accessories before the fact" to the murders by fire that are yet to be committed.) And in the cities where the laws are ancient and forgotten that work can not be begun, let alone anything accomplished.

Fire prevention authorities agree that more may be gotten by persuasion than compulsion. The "persuasion" is a trifle drastic, but if properly applied it will be effective. This is the persuasion suggested: The International Society of Building Commissioners is now having printed its model building code that will at once be adopted by very many cities and eventually will form the basis of uniformity in the essential requirements of all the cities. It, like other regulations, provides penalties for non-compliance and all that sort of thing, but one of its features, that the society's executive officer, Architect Fitzpatrick, has so long advocated, is purely persuasive, yet it will be one of the strongest points in the code. It does not provide imprisonment for the delinquent building owner, nor flogging nor fine, but just leaves him to public opinion, the best judge, jury and sheriff there can be.

That particular requirement recites how a building shall be built to be fire-proof, what safeguards there must be for tenants and occupants, what fire appliances and so on, and how the existing buildings shall be fixed up in a similar manner so as to be reasonably safe. Then it directs that at once the building department shall begin the inspection of all buildings in which numbers of people live or work or congregate, and that each such building shall be officially and conspicuously labeled at its entrance, "Safe" or "Dangerous." Safe, if all the requirements have been fulfilled, and dangerous if any one of them has been neglected. This labeling works both ways. Heaven help the building department if anything happens to a building it has marked "Safe." From the commissionership down there would be vacancies to be filled, it would keep the department excessively keen, and the officer would be daring indeed who would, for gain or for friendship, paste "Safe" on a dangerous building. And the owner with "Dangerous" over his door would have a sweet time of it with tenants and employes. There would be a splendid rush for fire-escapes, water pails, enclosed stairs, protected windows and such, for in the real estate language public opinion has gotten up a sort of simplified spelling move that means that "Dangerous" marked on a building spells n-o r-e-t-u-r-n-s, loss of interest, vacancy.

Methods and Cost of Laying Five Kinds of Composition and Gravel Roofs

By H. LUNDT, in Engineering-Contracting

COMPOSITION and gravel roofing for flat roof buildings has come into extensive use during past years. During my twenty-five years of experience I find it the cheapest and most lasting material as compared with iron, tin, or other material used on flat roofs. The following costs of five different kinds of roofing will illustrate that a cheap and good roof may be obtained proportionately with the quality or amount of material and workmanship put into it, and that the life of the roof will be proportionately greater for the larger amount of money expended.

The cheapest composition roof is three-ply tar and gravel, using 45 pounds of saturated felt, 70 pounds of tar and pitch, 1/8 yard of screened gravel, and lath and nails at a total cost for material of $1.50 per square (10 x 10 feet.). The labor cost of the work varies from 40 cents to $1 per square, depending upon the number of squares in each job. It requires four men to each gang of roofers, common labor receiving 25 cents, and skilled labor 50 cents per hour. This would make the total cost of a three-ply composition roof, with tar and gravel, from $1.90 to $2.50 per square. This roof, for ordinary uses, will last from five to eight years.

A better roof is a four-ply composition roof laid in the same manner as a three-ply, but having one extra ply, or 15 pounds more of saturated felt and 30 pounds more of composition, which will make the total cost from $2.50 to $3 per square. This class of roof will easily last ten years.

The next better roof is the solid mopped roof with a cap sheet over the four-ply, laid as follows: Each of the four layers of felt is mopped over the entire surface and laid eight inches to the weather. The entire surface is then covered with a cap sheet which is coated with the hot pitch compound. In this way every seam of the four layers is covered. Over all, the pitch and tar and screened gravel is laid. I have one of these roofs which has been laid fourteen years without recoating. The cost of labor and material on this class of roof is $4 per square. The material used per square is 75 pounds of saturated felt, 150 pounds of composition, 1/8 cubic yard of screened gravel and lath and nails.

Any of the foregoing roofs can be laid with Pioneer asphalt in the same way that the tar and pitch composition is used. This will increase the cost from 75 cents to $1 per square. I put on some of these roofs ten years ago and they are in good condition today. Asphalt retains its life, but the tar and pitch crumble to dust and require recoating after about five years. The cost of recoating is about $1.50 per square. In recoating, all the loose gravel is swept off and the felt is cleaned of dirt and dust. Then the composition is placed with not less than 60 pounds to the square.

The best of all these roofs is the Actinolite roof, but it is also the most expensive. If this roofing is laid in accordance to specifications it will last fifty years. The Actinolite is mixed with hot tar and used as a mortar. The foundation is started with one layer of flax felt and five-ply solid saturated felt mopped both ways. The entire surface is then mopped with hot pitch and the Actinolite is put on this surface with a trowel. The layer is 3/4 inch to 1 inch thick. This material will not run in summer nor crack in winter. The cost of such a roof is from $6 to $8 per square. Several factories and school buildings which I have roofed in Hammond, Ind., and vicinity have borne evidence of my conclusions in regard to this material.

Novel System of Bridge Flooring

MANY county engineers and supervisors throughout the Pacific Coast States, are taking keen interest in the tests that have recently been made of the McMillan system of bridge and wharf flooring. The inventor is J. G. McMillan, member of the American Society of Civil Engineers, and surveyor of Santa Clara county, California. The invention makes possible, at no material increased expense, a water-tight, durable and noiseless roadway over wood and steel bridges. The flooring is beyond the experimental stage as evidenced by satisfactory tests made recently of bridges built a number of years ago, the flooring in every instance being found in perfect condition.

The California state engineer, Nat Ellery, after an inspection of several of the McMillan bridges in Santa Clara county, declared that for economical, durable and lasting construction the flooring is without an equal. "Of course," said Ellery, "the work must be properly done. It is possible to spoil the most carefully thought-out system, if left to incompetent or unskilled hands. A finely designed steel frame may become a complete failure if certain rivets are left out. An engineer may figure out the factor of safety in a concrete wall and prescribe the correct aggregates for the mixture, but his calculations and formula count for naught if the job falls to an unscrupulous contractor. I tell you it pays to employ competent help to oversee your work and make sure the plans and specifications are being followed to the letter.

"The McMillan scheme is a good one. I have known of it for a long time. It is better than the ordinary plank covering, for many reasons. With the growing tendency to pave country roads, the need of a paving basis for our bridges is apparent. The McMillan floor has a solid base with an asphalt or concrete wearing surface."

Speaking of the system, its inventor, Mr. McMillan, says: "In the usual construction of bridge flooring with plank and joists, the plank is exposed to wear and is very soon destroyed, necessitating, of course, a new flooring. This is not only a considerable expense, but oftentimes is a great inconvenience to the public through temporary closing of the bridge. To cover the floor with bitumen or other plastic wearing surface, would prove but a temporary relief, since the spring or vibration of the plank would have the effect of disintegrating and cracking the surface. My system consists essentially of a solid timber floor, with the timbers resting upon beams or girders or other primary supports; the timbers to be of a greater and lesser height, alternately (Fig. 1), so as to form channels for the reception and keying of the concrete or other wearing surface. These timbers are generally placed lengthwise with the bridge (Fig. 2).

"As to the size and depth of the plank, the same judgment must be used, as in the designing of any other floor system. The nature and weight of the loads that are likely to pass over it must be taken into consideration.

"The timbers should be so placed that there will be grooves or channels on top of not less than one inch square. The timbers are to be thoroughly tied together, each run of timber is fastened to the other with nails or spikes. The nails in each run to be not less than eighteen inches apart and staggered is preferable. It is preferable not to nail the timbers to the supporting beams. The timbers being thoroughly spiked together, the floor itself becomes a solid beam and adds to the component strength of the structure.

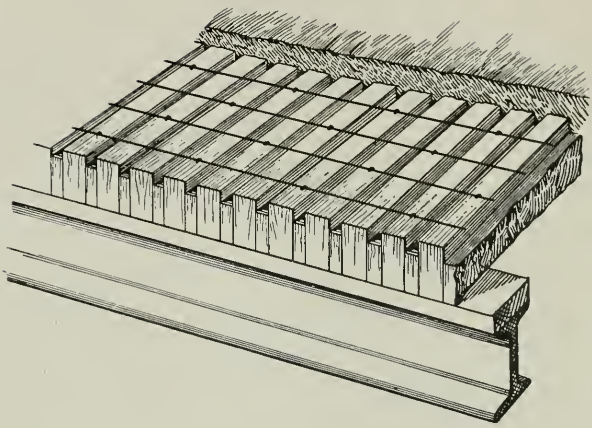


Fig. 1, Showing Method of Laying Floor

"After the completion of the timber work, the concrete or asphaltum wearing surface is put down and thoroughly compacted, so as to fill all the channels, and to be about two inches deep over the timbers. It is advisable to coat the surface of the timbers with hot liquid asphalt. However, when the wearing surface is bitumen or asphaltic it is not advisable to use gas tar, as gas tar often destroys the life of the bitumen. Wire mesh or fabric could be used instead of the rods if desired.

"I fasten a series of steel rods, not necessarily more than one quarter inch in diameter, across the timbers with wire staples such as are used in building barbed wire fences, the timber to be thus secured about each fourth run. This is to counteract the possible shrinkage or improper nailing of the timbers. The steel rods act as a binding for the whole system, prevent possible separation of the timbers, surface cracks, etc., and add materially to the strength of the structure, and also bind the wearing surface more securely to the substructure.

"The flooring thus built is absolutely water-tight, and therefore protects the timber work and the lower members of the bridge or structure from moisture or slush. Timber thus protected will last a great many years."

The system has been used with success in Santa Clara, San Joaquin, Sacramento and Ventura counties in California. Of the ten or twelve bridges in Santa Clara county equipped with the method not one has shown any signs of wear or disintegration, and all have been built at least five years. Mr. McMillan says the system can be applied to many other uses besides bridge construction, being especially adapted for the deck or flat roofs of large buildings, warehouses, etc., as shown in one of the illustrations.

Bridge on Line Between Sacramento and San Joaquin Counties, near Galt, California

Fig. 2, Showing Timbers Placed Lengthwise of the Bridge, and Concrete Wearing Surface on Deck Span

Shop Inspection of Iron and Steel

By E. O. RITTER

THE duties of the inspector at the shop are many.· He should watch the work closely as it proceeds through the various stages, to see that none of the material is injured in any way, and that the workmanship is good. He should have in his possession at all times a copy of the specifications, a bill of the materials, report of mill tests, and a complete set of the working drawings, and should examine closely all finished members, check the field connections, and have all errors corrected. Any material which may have been bent in handling, should be first straightened before being laid out, and again after punching, if it has bent or buckled during the process. If this is not done, oftentimes in assembling different pieces they can not be made to fit properly, are difficult to draw together when fitting up, and the spring in the material is likely to loosen some of the rivets before they have thoroughly cooled.

In punching, the dies should be looked after continually, to see that the edges are sharp and unbroken, and the diameter of the die in most cases should not exceed that of the punch by more than one-sixteenth of an inch. In assembling the material, all parts coming in contact should be well painted, care should be taken to get each piece in the proper place to see that web splices and all abutting sections close tightly, and that plenty of bolts are used to draw and hold the various parts in position. If the holes do not match exactly, they should be reamed and not drifted, as is often done, as this enlarges the hole and is likely to injure the metal around the same. Where field riveting is to be done in heavy or special work, the various parts should be fitted together in the shop and reamed; or, where this is impracticable, an iron template should be made and the parts reamed to fit it. After the rivets have been driven and allowed to cool, they should be tested, and if any are found to be defective they should be taken out at once and replaced. Caulking or re-cupping of loose rivets should under no circumstances be allowed, as this only bends or wedges the rivet in the hole, and does not make it any better. In reamed work, or where the holes match well, defective rivets may be removed without difficulty, but in cases of mispunched holes, or where the holes are poorly matched, it frequently becomes necessary to drill the rivets out to avoid injuring the metal.

In facing members, care should be taken to get the exact length and bevel desired, and the inspector should compare his steel tape occasionally with the standard at the shop and see that they agree. As parts are finished they should be examined and measured for length, cross-section, etc., the field connections checked, and if in accordance with the drawings and specifications, should be stamped with the mark of approval and carefully stored for shipment.

* * *

Rusting of Steel Inside Concrete

A CIRCULAR letter was issued at the beginning of 1909 by the Concrete Institute, asking for the results of experience and examination on the question of whether rusting of steel takes place when covered by concrete. The letter was sent to 1,000 engineers and others engaged in concrete construction, and 111 replies were received. Forty-seven contained results of definite observations. In these the writers gave twenty-six cases of rusting which had come under their notice, and forty-three cases where no rusting had been found. An abstract of the replies giving definite observations is given.

As a result of these observations and investigations, the committee has drawn the following conclusions: Reinforced concrete will last as long as plain concrete in any situation, provided that certain special precautions are taken during its construction. The precautions to be taken are as follows:

Concrete—The materials (cement, sand, and stone) must be of good quality. They must be most carefully and thoroughly mixed and scientifically proportioned, so as to be practically water-proof and air-proof. The mixture must be fairly wet, and must be well punned into position, so as to minimize voids. The aggregate should be as non-porous as possible, and any aggregate which is known to have a chemical action on steel should be avoided. The aggregate should all pass through a ¾-inch mesh. The concrete covering should in no case be less than ½ inch, and it is suggested that if round or square bars be used, the covering should not be less than the diameter of the bar. In structures exposed to the action of water or damp air the thickness of covering should be increased at least 50 per cent, or the size of the aggregate should be reduced so as to insure a dense skin. In the case of structures exposed to very severe conditions, the concrete might be covered with some impervious coating as an extra precaution.

Steel—The reinforcement should be so arranged that there shall be sufficient space between one piece and its neighbor to allow the concrete to pass and to completely surround every part of the steel. All steel should be firmly supported during the ramming of the concrete, so as to avoid displacement. It should not be oiled or painted, and thick rust should be scraped and brushed off before placing.

General—The scantling of the various members of the structure should be sufficient to prevent excessive deflection. If electric mains are laid down, very great care should be taken that no current is allowed to pass through the reinforced concrete. Fresh water should be used in mixing, and aggregates charged with salt should be washed.

These recommendations have regard only to the prevention of corrosion of steel, and not to fire resistance or any other property of reinforced concrete.

* * *

Hardwood Flooring

Have you ever glanced down the columns of your local paper, under the caption of "Residence Property for Sale?" If you have, you must have noticed how owners, investors and real estate dealers feature the most important parts of the construction. If hardwood flooring is used, whether maple or oak, they always draw particular attention to that fact. There are good reasons why they do this. Hardwood flooring is a most important factor when it comes to renting or selling a residence, as there is no other part of the construction that helps more to beautify a home. Its colors are soft, rich and cheerful, and it tones up a home the same as fine furniture. It gives an air of refinement and elegance to a home, whether it be in a humble cottage or a mansion.

Capacity of Brick Structures to Resist Fire*

By E. H. KORRER

BRICK structures have come into vogue rapidly in recent years, owing to the increasing cost of lumber and stone and the improvement in brick making. Different colored pressed brick, enameled brick, and various sizes and shapes of the material have enabled the architects to design buildings of great variety and beauty.

Possibly nothing has contributed more to the demand for burnt clay products, and brought more clearly to the attention of the public their value as a fire retardent, than the great fires in Baltimore, Rochester, Chicago and San Francisco.

Without considering, however, these occasional catastrophes, it is estimated that the United States yearly sustains a fire loss of $250,000,000, a sum almost double the combined value of all clay products manufactured in this country during the same time, and nearly three times the total value of all the brick, fireproofing, lumber, hollow building blocks, as well as roofing and floor tile.

With such an enormous annual property loss and with the thinning out of the forests of the country, it is reasonable to believe that a change in building methods is imminent, and that the new era of construction will be of immeasurable benefit to those engaged in the manufacture of clay building materials.

It is claimed that the annual fire loss in this country during the past five years amounted to about $2.50 per capita, as against 33 cents per capita in the larger European countries.

This unsatisfactory showing for the United States has resulted in a growing demand for a fireproof brick that can be used in the construction of moderate priced buildings..

The question of fireproof material is a very simple one, and any one who is so disposed can make a most convincing test by taking a piece of brick and a small fragment of cinder concrete and holding a piece of each in his hands, expose the other end to the flame of a blow-pipe. He will drop the piece of concrete first. Some time afterwards he will have to drop the brick. If while hot they are dropped directly into a bucket of water, so as to have the same effect as when water is thrown onto a burning building, the most casual inspection will satisfy any one that the concrete is hardly the material that is most desired for the protection of a building. Concrete is cheap, cheaper concrete is mostly used, and while terra cotta and brick cost a trifle more, the heat these materials are subjected to before being placed on the market makes them immune from destruction by heat after being placed in a building.

A test of materials was recently made in Chicago by the National Board of Fire Underwriters, and various materials used in the construction of buildings were subjected to the direct application of heat for two hours in the laboratories, the temperature reaching that of a conflagration. After being exposed to the fire, the materials were withdrawn from the furnace and quenched with water, in order to get the conditions that would obtain after the firemen had begun their work on a burning building. The investigations, which were conducted under the direction of Richard L. Humphrey, engineer in charge of the structural materials laboratory of the United States geological survey, are the first of a comprehensive series undertaken with the object of determining the fire-resisting properties of various building materials and comparative efficiency of the various methods of fireproofing.

*Read before the Eleventh Annual Convention of Wisconsin Clay Manufacturers' Association.

The test showed that the brick panels probably withstood the test better than the other materials. The common brick test comprised the new Chicago brick and used St. Louis brick. Fifty per cent of the new bricks were split, while 60 or 70 per cent of the old bricks were not damaged. Lime knots seemed to be responsible for most of the damage to the new bricks, as they were found in the bottom of nearly all the cracks. The bricks at the back of the panels were entirely unaffected. While the strength tests are not conclusive, there was apparently little difference in the strength of the bricks before and after firing.

The hydraulic pressed brick withstood the test very well. No damage was apparent after the firing and before the water was applied, and although a number of the bricks cracked, 70 per cent of them were found to be sound after quenching.

Fireproof construction methods are gaining ground in the United States. This is shown by the government report on building operations in 1909, just issued. Of the cost of new structures in 128 large cities, 73 per cent, or $661,640,000, in round figures, went into the kind classified as "fire-resisting."

The total cost of building operations in Greater New York last year was $250,314,778. Chicago was second, with $95,238,380. San Francisco's outlay for buildings, $26,184,068, represented a decrease of $5,484,273 from 1908; it was the only one of the large cities to show a decrease.

The lessons taught by the conflagrations at Baltimore and San Francisco had been a potent factor in the movement toward better construction. At both the big fires the effectiveness of the few instances of modern fireproofing was demonstrated. On the other hand, buildings not properly fireproofed, even though made of steel, were powerless to resist the fierce heat.

Steel itself, though non-inflammable, is not "fireproof," as experts understand the term. It is the practice now, among the leading architects and builders, to provide for the protection of the metal by burnt clay blocks. These hollow blocks, which have passed through a temperature of 2,000 degrees in the process of manufacture, are used to incase the columns and beams of the frame. They are also used for floors and partitions, to make impossible the spread of fire from one part of a building to another.

The United States government attempts to set an example to builders by the thoroughness of its methods. Practically all the important buildings put up in recent years are of the steel-and-hollow-tile type.

At Fond du Lac, Wis., a fire originated in an automobile garage, where it secured a vigorous start from the inflammable materials and oils, and spread, reaching several other buildings. Among these buildings were the Congregational church and St. Joseph's Catholic church, both being of brick construction. In each case, the brick walls withstood the fire test in excellent shape, St. Joseph's building coming through with the brick almost perfect, even the pinnacles and decorative brickwork remaining intact. These walls could doubtless have been used for rebuilding almost completely, but the congregation desired a larger structure.

The walls of the Congregational church withstood the fire nobly, with the exception of the rear wall, which fell, and could also be utilized to a great extent in rebuilding.

These are not isolated instances, by any means. There is not a city of any size but what has buildings in use which have been burned out and rebuilt, the brick walls standing and serving for the second structure quite as staunchly and securely as for the first.

A class of fire-resisting buildings in the Baltimore fire includes those which have been well described by the word "monumental." The court house and city hall offer examples of this type, being heavy stone buildings, with comparatively few window openings, offering a small area for the entrance of fire, and, with a non-inflammable exterior, these buildings withstood great heat, with no damage except from the spalling of the stone and charring of window frames. It should not be assumed, however, that the fire was driven toward these buildings with such fury as that which it expended on some of the steel-frame buildings, as accounts indicate that a change in the wind diverted the fire from them at the most opportune time. On the whole, these monumental buildings demonstrate the effectiveness of a minimum window area in reducing the danger of ignition rather than anything else. They further call attention to the frailty of stone. The modern steel construction, popularly called "fireproof," was exemplified by some half-score of buildings in the edge and center of the burned area. These buildings furnish material for much study, and, from their defects as here demonstrated, I have no doubt that we may learn much that will go far to prevent even the partial destruction of such buildings built in the future.

The general condition of the steel-work itself is apparently good; neither the fire nor corrosion preceding the fire has sensibly affected it, if we may judge from its appearance. The "fireproof" buildings of steel-frame construction show in general, failures along the same lines. Where the walls are substantial and of good brick, they stood the test fairly well. There was some spalling and in some cases a crumbling, but good bricks seemed to have lived up to their earlier reputation. Where brickwork of a higher color, ornamented with terra cotta, was used, considerably more damage was noticeable, especially after the snow storms of the week following the fire. Stone trimmings, almost universal on the lower fronts, demonstrated the unfitness of that material beyond all question. Granite, marble, sandstone and limestone all fared alike, even when, as near as can be ascertained, very little or no water was thrown upon it. In general, all outside wall material suffered, but brick much less than the rest.

For many years after the first appearance of iron pillars and beams it was believed that a building could be made really fireproof by substituting pillars, beams and brick arches for wooden posts, girders, joists and floors. Disastrous fires, however, demonstrated the untenability of that assumption.

This led thinking and progressive constructors to conceive the idea of completely incasing the structural members of a building with substances slow to conduct heat and incapable of destruction or even serious injury by fire.

Almost from the very beginning burnt clay in various forms became the preferred incasing material. It was easy to mold into the required shape; it could be made light of weight in the course of manufacture; it had been exposed to higher temperatures than those of a blazing building, and could be applied by ordinary building artisans at a moderate cost in all weathers. For these and other reasons it took and held possession of the field for many years with little molestation.

It finally came to be believed that if burnt clay were used to some extent as an essential part of a system of alleged fireproof construction, building and contents were certainly secure against destruction and probably safe from serious injury by fire. But now this belief is assailed by reports of the damage suffered in the course of fierce and long-continued fires in buildings in which burnt clay had been used as fireproofing material, and still more by fierce and persistent attacks upon burnt clay made by advocates of other and more recently invented systems of fireproof constructions.

This tendency to an anti-burnt clay spirit must be fought, not, however, by resting upon the road to perfection and falling back upon the undisputed statement that clay products, having once been subjected to furnace heat, are indestructible by fire, or that the application, of clay fireproofing materials, having been sanctioned by a quarter century of experience in manufacture and application, has achieved a status like that of the thirty-nine articles of the Magna Charta, because if there are observed facts which show that there may be buildings so constructed that the burnt clay used in them fails of making them fireproof, why, then so much the worse for the facts.

There is a less sentimental and less romantic way of facing the attack and of re-establishing and maintaining the claim that burnt clay is in most instances the most reliable material that can be used as fire protective covering of the structural members of buildings. In organizing and marshaling the forces of the burnt clay industries the defensive warfare which its friends must wage until their former position is reconquered, there is no room for boasting memories of the bloodless victories won in the days when no other material had been thought of, nor is it allowable to consider tenderly the perpetuation of the plants, the machines and the processes by means of which the burnt clay fireproofing industry was established and maintained before its wicked and unscrupulous enemies had the temerity of proposing other materials, wrongfully of course, but vigorously and persistently vaunted as superior to burnt clay in its every shape.

It is therefore essential that thorough-going study be made of the damage which the ordeal of fire inflicts upon clay fireproofing materials, of the causes of such damage and of the means by which it may be prevented in the future. Of the injuries noted, some were due to the introduction, as in the building of the Chicago Athletic Association, of wooden strips between the individual blocks of hollow tile; others to absence of protection upon important structural members, as in the Home building at Pittsburg, where the harm suffered seems to have been due to an effort to combine a maximum of exposure, to attack of fire from without, with a maximum aggregation of combustible material within, and the opposition to this of a protective covering of burnt clay barely sufficient to meet the minimum of fire danger characteristic of the ordinary office building. That the Home building remained for the most part structurally intact is, therefore, in itself a victory for burnt clay, even if the general design of this building intended to be fireproof was a disgrace to its author.

* * *

The Reason for Using Tiles

THE reason for using tiles about the fireplace are both sentimental and practical. Tile is a product of fire. It is fire-made, fireproof, and appropriately associated with fire. It is simple and effective treatment of what should be the most important spot in the room. It is the material that has been used about fireplaces for centuries.

The association of tiles with fire comes down through our German, French, Dutch and English ancestors, which, taken in connection with the great number of beautiful tiles offered for modern use, makes it almost absolutely necessary that the fireplace should have tiles.

For centuries the fireplace has been a necessity to mankind. Like all things which serve a useful purpose, it soon came to have a beauty of its own, as shown by the fireplaces in old houses, some of which furnish the best models for today.

As modern methods of heating came into use, the fireplace fell into disuse. It was then resurrected as an architectural feature of the room, until now very few modern houses are built without at least one fireplace. In the large cities even some of the tall apartment houses are being equipped with real fireplaces, while all of them have gas-log fireplaces, which offer an equal opportunity for attractive treatment with tile. If anything should be honest, well constructed and serviceable, it is the fireplace. This is the focus of the home. The old Latin word for fireplace was "focus," the gathering place, where the rays of the family met. It is the object most looked at by every member of the family every day.

As it is the most conspicuous feature of the room, it ought to be the most attractive. It ought to be decorated, and the decoration should be attractive. As people get back to an appreciation of the real beauty and beautiful necessity of the fireplace the use of tile suggests itself as the only logical and natural treatment of the space between the opening and the mantle.

Tile offers every color scheme needed for the treatment of any kind of room. It lends itself to any kind of architecture. It can be as grand or as simple as you desire. It is always in good taste. And no safe and appropriate treatment can be used at less expense.

Wood should not come too near the fire. It might be separated from the fire opening in some way. There is no material that fits into this service so well as tile both from the point of view of utility and the point of attractiveness. Utility includes a material that is unaffected by heat and also a material that can be kept absolutely clean. Its smooth surface will not retain the dust from the ashes. It can be wiped off with a damp cloth and made absolutely clean and fresh. It keeps its color and is unfaded by the action of anything.

In appearance it offers in both texture, color and in the breaking of its surface by the lines of the tile, the most pleasing and harmonious arrangement that can be devised.

The colors that are offered in tile are legion. No matter what the color scheme of the room, you can select from tile either the harmonizing color or the contrasting color, and you can secure almost any shade of each color. For instance, in reds from the most delicate pink to the deepest terra cotta; in blues from the palest blue to the darkest ultra-marine, and so on.

Tiles are offered not only in plain, but also decorated in every way, meeting all tastes and representing every school of art ranging from the simplest decoration to an elaborate design.

In addition to these, picture tiles are offered, giving nursery stories, familiar proverbs and other kinds of illustrations, for use in certain kinds of fireplaces. In brief, there is almost no desired combination that can be made from tile that cannot be bought in the open market.

In comparing tile with other material you should consider the durability of tile. Tile is made from clay subjected to a heat of from 2,000 to 3,000 degrees; it becomes vitrified in the process, and the resulting material is absolutely imperishable. It is very difficult to break; so that a fireplace or anything else laid up with tile, properly cemented with the right kind of mortar, makes a solid and durable wall which will outlast any building in which it has been put up. This alone makes the tile cheaper than any other material that you could use, even if the first cost were higher, but in the case of tile both the cost of tile and the laying is no more than that of other material, such as plaster, concrete, brick, iron and other things that are sometimes used for the surface of the fireplace.

The chief cost in laying tile is the cost of labor, and the cost of labor is about the same no matter what material is used for facing the fireplace. You cannot, however, get such good effects with other materials as you can with tile.

Supervising Architect Rebuffs California State Mineralogist

THE efforts of State Mineralogist Aubury to get high officials of the Treasury Department of the United States to co-operate with him in showing the discriminations practiced by the Supervising Architect of the department against the producers of California's structural materials have met with an unexpected and decidedly positive rebuff. Letters have passed in considerable number between the State Mineralogist of California and the Treasury Department. Recently the officials in Washington have declined to permit Aubury to inspect the plans and specifications for public buildings in California, in the construction of which, so Aubury alleges, the discriminations have taken place.

As the plans and specifications contain evidence made by the Supervising Architect, concerning what he has directed shall be done, at least in some instances, and, moreover, as the plans and specifications are public documents and Aubury is a State official, the denials that have been made of his right to view the official papers have finally led to a somewhat caustic letter from Aubury to the Supervising Architect, J. K. Taylor, which is, in part, as follows:

Replying to your recent letter, will say that the same suggests that you would prefer to have me submit such facts as are in my possession. Permit me to say that the method I may adopt to have the facts brought before the public may not be your plan, and that your last suggestion concerning what you prefer has no relation or relevancy in this connection. I have asked for what is the right of every citizen, so far as I am informed—the right to see the plans which, as you intimate, you prefer I should not see. What occasion there is for you to conceal them from me, or why you should see fit to put obstacles in my path, when I respectfully ask to see them, may be better answered by you than by me. Your action is certainly suggestive of anything rather than a desire that I shall make good in my assertions. The plans and specifications set forth just what we complain of—that they are so drawn that we do not have fair play. I would suppose that you would be particularly anxious to have the plans and specifications inspected by me. Any obstacle placed in the way simply convinces the unbiased spectator that there is something that the Supervising Architect of the Treasury Department and his superiors in office desire to conceal. If you do not desire to conceal anything, why do you prevent me from inspecting the records that are official?

Believe me, that the State of California is in earnest in this matter, and will not be satisfied until I am allowed to pursue my investigation in my own way, and not in accordance with the suggestions that may emanate from the person or persons whose acts are under question, and have been under question for a long time.

I understand that as a citizen I have a right to see the plans and specifications, to make copies of them, to make them as public as I may desire, to compare them for the purpose of determining how near intention and performance, in the matter of discriminating against California, have come on a number of highly interesting occasions. I would ask that you either give me the authority to see all the papers or else deny me the power. Anything else is subterfuge and is unworthy of a high official in the service of the United States government, and this is especially true when it is considered that the great State of California has its rights in this matter and that you are deliberately placing yourself in defiance of these State rights for some purpose which, I know, may be wrongly defined by thousands of your fellow citizens under the present status of affairs.

This letter was signed by Aubury as State Mineralogist.

To producers of structural materials in this State who inquire how the proposed investigation into the alleged discriminations against California stands, Aubury is ready to show a file of letters recently received by him from Washington. In these, in the order of their dates, the following extracts are found:

From C. D. Hilles, Assistant Secretary of the Treasury, dated March 27: Referring again to your contention that the supervising architect has

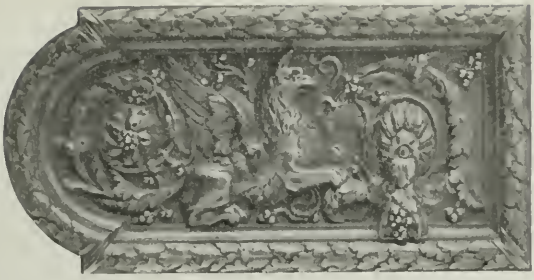
A Popular Contribution to the Recent San Francisco Architectural Club Exhibition

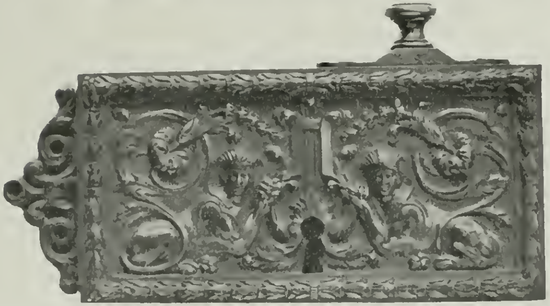
habitually discriminated against California producers of structural material and to your request for authority to examine the records in federal buildings in California, and particularly the plans and specifications, I beg leave to say that I would prefer to have you submit such facts as are in your possession, and that the further investigation will be made by the department. Plans and specifications of public buildings are on file in the department in Washington, and the investigating committee, if it is deemed necessary to appoint such a committee, can readily secure such necessary data."

From J. K. Taylor, April 10: "This office is in receipt of your letter requesting permission for a representative of your department to make inspection of certain plans and specifications in the office of Superintendent J. W. Roberts of your city. Until you shall have produced some basis for your accusations more tangible than mere assertions, this office feels justified in doubting your good faith in this matter and deems it inadvisable to comply with your request."

As this answer came from the man who is accused of discriminating against California, State Mineralogist Aubury was not surprised: he has continued the correspondence and another letter has been received. This last mentioned one came from R. O. Bailey, assistant secretary of the Treasury Department. It is as follows: "When you are ready to submit your report to the department please address it to me and it will receive the proper attention."

The State Mineralogist is still gathering material for his report. Denied by the Treasury Department of access to the evidence made through the plans formulated by the Supervising Architect, a mass of data has been gathered. Possibly the denials of his right to see public documents in behalf of the State of California in this matter may be heard of in official circles in Washington before Aubury finally sends on his report, which will include particulars concerning the method that has been adopted in Washington to deprive him of facts that he desires to use in making his report as complete as possible.





Figs. 2 and 3 Lock in Use on a Library Door at Versailles, of the Louis XVI Period, and Lock in the North Apartments at Versailles, Designed by Le Brun

The Ornamentation of Builders' Hardware as a Decorative Art*

DECORATIVE art is the application of decoration, not a separate and distinct creation, as in painting or piece of sculpture, but as an accessory accomplishing a well-defined purpose. Good ornamentation or decoration of any character has qualities which appeal with special force to the educated and refined taste by reason of its significance. It is well to know that unnecessary decoration is not only poor art, but is contrary to the fundamental laws of architectural and decorative design. Historic or period decoration is a decorative form used by various nations at different periods or epochs; and, while the general compositions and results greatly differ, some similarity in detail may be found in each. L'Art Nouveau which is most recent, and seems the most original, is possibly suggested by the oldest nation.

Renaissance is the revival of the classic which is Greek, and the art of Greece was inspired by that of Egypt. Greek fret was used by the Chinese before the birth of the first Greek, and the Chinese fret was suggested by the sea waves. And so the different styles or schools are

*Illustrations are examples of imported hardware handled by the Russell & Erwin Manufacturing Company, of New Britain, Conn., and San Francisco.

Fig. 1—Door Knocker by Benvenuto Cellini, on the Door of a Paris House

evolved from what has gone before, always retaining to a greater or less degree some detail of ornament of the past. France of the several nations that took part in the movement of the Renaissance, alone created a "school of hardware."

Italy contributed Benvenuto Cellini, a silversmith and metal worker of renown, who was familiar with the mysteries of the foundry and the secrets of hammering and chiseling. But little of his work is left in the way of hardware. The object best known today is the beautiful door knocker, which is illustrated in Fig. 1. It appears on a door in Paris in the Rue Tronchet, back of the Church of the Madeleine.

In France builders' hardware has attracted both designers and the public. From the time of Francis I, who induced skilled Italians to come to Paris, French hardware has kept abreast of every decorative school and process of metal.

American architects on seeing the value of artistic and appropriate door and window fastenings, first turned to French work for inspiration. The French are enthusiastic in the field of labor, developing truly French characteristics regardless of Italian influences. They worked away from iron toward bronze and brass, which make sounder castings and are better for smaller architectural fittings. These metals became the materials of Louis XIV's day. The best of them were chased, an art still in the hands of Italians, and gilded, an art in which the French surpassed all other nations.

However well an object may be chased, it will have no character if the finish is not perfect. Besides it must be the particular finish adapted to the style of design. Louis XIV, XV and XVI styles stand only gilt, and it was under these reigns that the masters of gilding became famous. They knew only mercury gilding, but had no means of protecting themselves against its deadly, poisonous fumes.

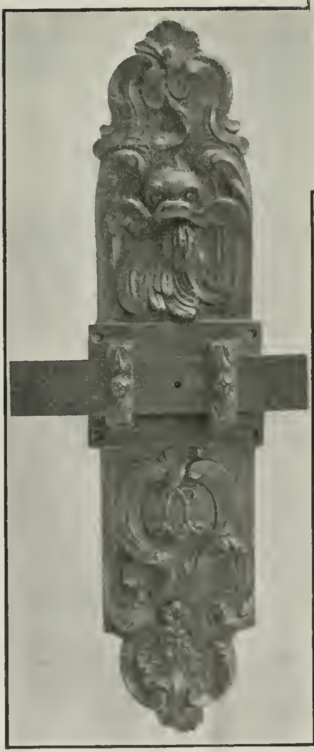
Their process was to heat to 212 degrees about one part of mercury mixed with three times its weight in gold. This amalgam was made into small balls, and by means of a wire brush rubbed into the piece to be gilded. After a thorough rubbing, the piece was held over a slow fire and kept there until all the mercury had evaporated in poisonous fumes. This left the entire surface evenly covered with a greenish yellow gold, to restore which it was necessary to dip the piece into a mixture of oxalate of potash, salt and sulphate of alum. It was then again held over the fire until the mixture melted, when it was plunged into cold water; the salts having been dissolved there emerged from the bath an evenly gilded surface of most brilliant high lights and dull background. But many a human life was sacrificed in obtaining the beautiful effect.

This process had to give way eventually to the safer, 50 per cent cheaper, but less beautiful nitrate gilding. Mercury gilding is yet occasionally applied in France, the workmen being protected by devices none too satisfactory. The process is prohibited in New York.

Louis XIV hardware was heavy, but in keeping with the massive character of the interiors. The lock illustrated in Fig. 2, as of that period, is in the north apartment in the Palace of Versailles. It was designed by Le Brun, painter to the king, and modeled by the sculptor, Domenico Cucci.

The period of the regency is the connecting link between that of Louis XIV and Louis XV. It is plainly a stepping stone between the classical Renaissance style of Louis XIV and the true Rococo of Louis XV. It

Three Striking Examples of Rococo and Louis XV Bolts and Handles



Espagnolettè Handle by Jules Aurele Meissonier

The Demand for Richly Ornamented Hardware for Costly Homes is Particularly Noticeable Just Now loses the dignity and classical strength of Louis XIV, and does not arrive at the graceful and elaborate richness of Louis XV, but in many ways it is charming. The regency product was one of those transitions or intermediate styles that always connect great style periods.

After the long reign of Louis XIV, French art became gayer and more graceful, influencing the hardware of that period. Louis XV examples are literally covered with ornament. Rock formations, shells, dripping water, icicles, etc., were brought into play. Acanthus leaves took on the form of shells. The history of Louis XV was an era of luxury, and the prodigality of the people was reflected in the character of the decorations, extravagant and full of the details known as Rococo (roc et coquille, or rock and shell).

Another historical bit of hardware is an Espagnolette handle of this period by Jules Aurele Meissonier, leader of the Rococo style under Louis XV. He was a goldsmith, painter, architect and designer. His art is based on the graceful curve as opposed to the straight line. The handle is in the Palais Royal, residence of the Duc D'Orleans.

The Louis XVI work illustrated in Fig. 3, arrives at a point where elegance is the distinguishing feature. It became a period of elimination, and was an interval of emancipation. This king was himself a master in lock mechanism, and naturally took great interest in its ornamentation. It is the wealth of locks, keys, hinges, espagnolettes, cremones, etc., bequeathed by this period that inspires most of our modern hardware. The illustration of a lock case of this period, Fig. 3, is classic in detail. It was reproduced from a private collection and was in use at one time on the library door of Louis XV in the Palace at Versailles.

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Polychrome Concrete

A large concrete vase, made of what is termed "polychrome concrete," was shown at the recent exhibit of the Architectural League in New York, in order to show the effects that can be produced for garden ornaments, decorative panels, balustrades for bridges and similar purposes. The materials were crushed black and yellow marble screenings all passing a No. 8 screen, ⅛-inch mesh; black and yellow marble chips all passing ½ inch and retained on a ¼-inch screen, and Vulcanite Portland cement. Mr. Albert Moyer states that the aggregates were mixed wet and moulded in a plaster mould. As soon as the concrete was hard enough to hold its shape, which took about forty-eight hours, the inside core was removed. Inspection of the interior indicated that the outer mould could be removed, and as soon as it was taken off, the surface was scoured with a stiff scrubbing brush and water. Where this failed to remove the surface coating a wire brush was used. The concrete was brushed until the larger aggregates all appeared, and in order to obtain texture the brushing was continued until they were thrown slightly in relief. The vase was then cleaned with water and kept damp for a couple of weeks, after which it was washed with a solution of one part of dilute muriatic acid to five parts of water. The acid was left on for a couple of minutes and then scrubbed off with clear water and a scrubbing brush. The effect as to color, texture and form of such concrete, Mr. Moyer states, is permanent.

Brick or Concrete

By JAMES STEPHEN, Architect, Seattle, Wash.

IN DEALING with this subject we shall confine our remarks to these materials as related to modern building construction.

The tendency of late years has been to substitute monolithic concrete construction for brick work in heavy foundations and walls and the hollow tile floor construction has been superseded by metal reinforced concrete slab floors, which admit of much greater spans than the tile floors. Hollow clay tile fire protection for steel columns has also largely given way to concrete protection. In heavy construction we are bound to concede that concrete is much superior and cheaper than brick work.

In moulding form only does concrete attain its logical development. Concrete blocks and concrete brick need not be seriously considered, as no architect of artistic temperament and having in mind his client's best interests would think of using concrete blocks.

Concrete brick need not seriously engage our attention, as the cost of production and difficulty of securing a sharp arris in the moulds, the delicacy required in handling and their appearance generally puts them clearly out of the race when compared to the clay product.

Although concrete enthusiasts maintain that a satisfactory facing for buildings may be produced in the concrete itself, by manipulation of the moulds, compressed air tooling, wire brushing and other finishes, the results have been rather disappointing.

The architects generally prefer a brick or terra cotta facing or a stone veneering for the finished exterior of their buildings, brick being the favorite material, admitting of greater variety of form, color and texture.

It might appear from the foregoing statements that the common brick is nearly out of the running; nevertheless the clay brick and terra cotta manufacturers need not fear that their product will become obsolete, or that the demand for it will fail. It is true that the demand for poor brick has fallen off and that concrete has taken its place in heavy construction. In no small measure are brickmakers responsible for this condition. There is no discord in the brick manufacturer's game as now played. All brick burned (and some that has not been very hot) are shipped out to a job, to be rejected or sneaked into the wall under a lax supervision. This, you will say, is the contractor's fault and not the brickmaker's. Is it?

In all other lines of manufacture quality and reputation are factors in the production. But with the brickmakers a brick is a brick and if it will just hold together until it reaches the work it will still be a brick and a unit in the thousand on which he will collect his price, and seemingly that is the only element in this transaction which appeals to him. So much for the brickmaker.

On the other hand, the contractors fail to appreciate quality: to them a brick is only a brick when it is a big brick, the bigger the better.

The architects of Seattle complain sorely because they cannot get a good common red brick fit for face work and must of necessity use clinkers, pavers, and what not because this market does not afford a common brick that will make a good facing.

You must get together on a standard brick, both as to size and quality. You must do this for your individual protection and for the protection of the trade. I speak more particularly for the quality standard, as the dimensions are less serious.

Concrete Surface Treatment*

By ROBERT CATHCART of Cleveland, Ohio.

THE cement age is in its primitive stage, but its future is destined to eclipse all modern idea or thought. In the natural sequence of things and conditions, no other building material offers such advantages to the builders of our national homes and factories.

A primitive age usually has many things to discover and work out for the future knowledge of the coming generations, but as we live in an age of progress in art, literature and science, the world looks to us to make these primitive conditions ideals to theirs, in accordance with their thought and advancement.

Thus we have before us the problem of concrete surface treatment: The plans and modes of surface exterior treatment, to large massive work, such as "bridges," abutments, reservoirs, etc., sometimes to exterior factory construction, are both operated by the mechanical and chemical treatment.

Mechanical treatment is executed either by skilled or unskilled labor, or mechanical devices, in the following manner: Picked, scraped, rubbed when green, bush hammered, tooled, sand blasted, etc. All of the treatments are more or less expensive; in many cases the workmen have stunned the corners, and the surface generally gathers dust and dirt from the atmospheric gases, which tend to destroy or disintegrate the surface in time. They generally are for effect only, and give no greater weather resistance to the surface. In fact they are unfavorable to many conditions of construction and in some cases only a makeshift to betterment.

Chemical treatment is also an unskilled or skilled labor treatment, with commercial muriatic acid, acetic acid, etc., diluted in water, consisting of cutting the scum surface to relieve the hidden aggregates. It is also a more or less expensive operation, and the non-uniformity of the surface, combined with its chemical action, does not put it into special favor, although such processes have been patented. The muriatic acid is liable to stain the surface, and leave salts that will form a soluble alkali in combination with the concrete and produce an efflorescence on the surface.

The veneer treatment to outside walls, with plaster, has proven quite unsatisfactory for many reasons. The bond to the concrete has generally been weakened by the percolation of water through the plaster to the concrete surface and caused a loss of adhesion, strength and permeability.

The outward influences, such as the sun's rays, frost, rapid wetting and drying, cause shrinkage of the veneer surface, loosening all soundness of adhesion, causing cracking and scaling.

Thus it would look as if no plaster should be applied to exterior walls where dampness could possibly lodge itself.

Coated surfaces are those generally speaking that have had cement grouts or washes applied to them. They are never stable, and generally used to fill up the unevenness of the surface without regard to their lasting qualities. In fact they are dangerous surfaces to apply any surfacing materials to, because of the unstableness of the bond.

Floor surfaces are tricky, because no man finishes the entire area or surface, and they should be rigidly covered by inspection before operating any treatment.

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*Read before the Canadian Cement and Concrete Association, Toronto, Can., March, 1911.

Obstructions or Obstacles to Concrete Surfaces, That Demand Treatment for Preservation and Service

External influences on concrete surfaces, such as heat, cold, sunshine, water pressure, percolation, show their effects in two forms of disintegration—Mechanical and chemical, defined as follows:

Mechanical: A consequent washing away of the softer constituents from the surface by the softening action of water, due to frost, the alternating action of the sun's rays, resulting in a periodical expansion of the other surface.

Chemical: The proportion of carbonic acid gas, oxygen, water and gaseous products of combustion in the atmosphere, a separation of scales, sometimes thin and thick, which by accumulation and an infiltration of strange matter into the pores cause a peeling from the surface. In other words, you get a condition of disintegration or corrosion, both from within and without, which has been termed "wall rot proper."

The lodging of the soluble salts upon the surface is efflorencence, and mainly due to such conditions as above mentioned, although local conditions and materials govern its area of trouble.

Coatings: The Need of, and Kind of Materials

To produce a material for surface coating on concrete has been widely discussed pro and con by all scientific bodies. Plaster has been found to be unreliable for exterior surface. Grouts are unstable.

To obtain an alkali and acid-proof vehicle with a pigment that will have sufficient wearing body has been the aim of the engineer, contractor, consumer and manufacturer. Thus we will consider a few of the essential factors:

1st. Materials should contain a vehicle and pigment working in harmony with the conditions upon the surface.

2nd. They should contain an acid and alkali sunproof color and pigment.

3rd. They should be sufficiently heavy to fill the surface voids and stop suction.

4th. They should have a sufficiently hard wearing surface to allow successive coats, without further treatment of the surface.

5th. They should produce a finish sufficiently close to the texture and originality of the surface.

Treatments

Treatments of concrete surfaces are divided into two divisions as follows:

The shallow or superficial method or treatment is a filling of the voids near the surface without discoloration. It is one that was much sought after in the early stages of concrete work, especially on concrete blocks, etc.

Although the monolithic type of construction has gained more favor in larger construction, the mechanical and chemical treatments of surfaces, as outlined, are the surfaces most in need of a shallow or superficial treatment.

Cement bricks, blocks, cast stone are also surfaces that need a light treatment.

The physical or external method or treatment is a coating of natural materials as a prevention of contact between the elements and the construction. The treatment should be defined under two divisions:

1st. Damp-proofing and decorative, without complete obliteration of the texture of the surface.

2nd. Water-proofing only, without the decorative feature, and complete obliteration of the texture of the surface.

Under the first division you have a combination of results, against the mechanical and chemical disintegration of the surfaces, as defined for exterior surfaces. The operation should be twofold in its purpose: Damp-proofing and decorative in one operation, without destroying the texture of the surface.

Under the second division comes the subject of water-proofing (defined by Webster as proof against penetration), which may mean everything or anything—and we are sure the word has been handled improperly as to its meaning, because of our undying enthusiasm on the subject—although it may only mean damp-proofing, instead of water-proofing.

Water-proofing is an engineering problem of much discussion pro and con and does not enter into the subject of concrete surface treatment.

The following essentials should be strictly adhered to to insure results for the surfacing of concrete:

All exterior or interior surfaces must be free from loose scales, sand, grit, grease, oil or other foreign matter.

Surfaces can be freed of such materials by either scraping, wire-brushing, or scrubbing with carborundum brick.

No muriatic acid or other acid treatment should be used, unless the surface is thoroughly neutralized by water or a light alkaline solution.

Green surfaces should be treated with a thin coat of surfacing materials to aid the neutralization of the free lime, and fill the voids upon the surface.

After the first coat is applied, evaporated patches should be re-coated to insure evenness on the future coats.

All surfaces should be dry and free from moisture to give perfect adhesion.

Exterior surfaces of buildings should be protected from rain or heat while drying.

Physical or External Treatment

The figures, including the cleaning and preparing the surface under ordinary conditions on two-coat work are generally estimated at 25c to 40c a square yard.

The shallow or superficial method or treatment on coating two coats costs about one-third to one-half per square yard less than the superficial or external treatments, depending upon conditions.

The operator must be careful of the first or priming coats as they are the foundations for a perfect bond and neutralization of the surface for successive coats.

The operator should produce a surface texture without destroying the originality of the surface.

No surface is free from dirt and foreign matter and it requires the removal of such substances either by wire brushing or a light acid treatment to remove stained portions in order to secure a firm bond and penetrating quality to the surface.

In conclusion, I have endeavored to lay before you a few of the various methods for surfacing concrete and their treatment for a decorative structure.

Schedule of Charges for Chicago Architects

THE following schedule of minimum charges and professional practice of architects has been recommended by the Chicago Architects' Business Association:

1. The architect's professional services consist of the necessary conferences, the preparation of preliminary studies, working drawings, specifications, large scale and full size detail drawings, and of the general direction and supervision of the work, for which, except as hereinafter mentioned, the minimum charge, based upon the total cost of the work complete, is 6 per cent.

2. On residential work, on alterations to existing buildings or monuments, furniture, decorative and cabinet work and landscape architecture, it is proper to make a higher charge than above indicated.

3. The architect is entitled to compensation for articles purchased under his direction, even though not designed by him.

4. If an operation is conducted under a general contract, it is proper to charge a special fee in addition to the charges mentioned elsewhere in this schedule.

5. Where the architect is not otherwise retained, consultation fees for professional services are to be paid in proportion to the importance of the questions involved and services rendered.

6. Where heating, ventilating, mechanical, structural, electrical and sanitary problems are of such a nature as to require the services of a specialist, the owner is to pay for such services in addition to the architect's regular commission. Chemical and mechanical tests and surveys, when required, are to be paid for by the owner.

7. Necessary traveling expenses are to be paid by the owner.

8. If, after a definite scheme has been approved, changes in drawings, specifications or other documents are required by the owner; or if the architect be put to extra labor or expense by the delinquency or insolvency of a contractor, the architect shall be paid for such additional services and expense.

9. The architect's entire fee is itemized and proportionate payments on account are due to the architect, as the following items are completed:

Preliminary studies, .2 (two-tenths).

General drawings, .2 (two-tenths).

Specifications, .1 (one-tenth).

Scale and full size details, .2 (two-tenths).

General supervision of the work, .3 (three-tenths).

10. Items of service are comprehended as follows:

(a) Preliminary Studies consist of the necessary conferences, inspections, studies and sketches modified and remodified to determine the client's problem and illustrate a satisfactory general solution of same, both as to plan and elevation. Illustrative sketches for this purpose need not be to accurate scale, but should be approximately correct as to general dimensions and proportion.

(b) General Drawings include figured scale plans of the various stories, elevations of all the fronts, such general vertical sections as may be necessary to elucidate the design, and such detail, drawn to still larger scale as, with the assistance of printed notes, and of the accompanying specifications, may make the whole scheme clearly evident to the mind of the competent builder and give him a full and complete apprehension of all the structure conditions as they affect the vital questions of quality and quantity of materials, of character of workmanship, and of cost.

(c) Specifications consist of a supplementary statement in words of at least all those items of information regarding a proposed building which are not set forth in the drawings.

(d) Detailed Drawings include all the necessary drawings required for the use of the builders, to enable them to so provide and shape their material that it may be adjusted to its proper place or function in the building with the least delay, and the smallest chance for errors and misfits. If not prepared until after the contract for the building is let they must not impose on the contractor any labor or material which is not called for by the spirit and intent of the "General Drawings" and "Specifications."

(e) The Supervision of an architect (as distinguished from the continuous personal superintendence which may be secured by the employment of a clerk-of-the-works or inspector of construction) means such inspection by the architect or his deputy, of work in studios and shops or a building or other work in process of erection, completion or alteration, as he finds necessary to ascertain whether it is being executed in general conformity with his drawings and specifications or directions. He has authority to reject any part of the work which does not so conform and to order its removal and reconstruction. He has authority to act in emergencies that may arise in the course of construction, to order necessary changes, and to define the intent and meaning of the drawings and specifications. On operations where a clerk-of-the-works or inspector of construction is required, the architect shall employ such assistance at the owner's expense.

11. Drawings and specifications, as instruments of service, are the property of the architect.

* * *

New Method of Bonding Layers of Concrete

The problem of securing a perfect and durable bond between successive layers of concrete, is solved, according to the Cement World. It is the discovery of Mr. J. A. Jamieson, of Montreal, Quebec, and is said to have been employed with highly satisfactory results in a variety of work, including the construction of a reinforced concrete elevator and a reinforced concrete conduit 10½ feet in diameter and 8,000 feet long, working under 33 feet head.

The surface of the concrete, approximately horizontal, is allowed to stand until water which may have flushed to the top has disappeared. When this result is attained, and while the mass is still moist, the entire surface is covered with a one to one dry mixture of cement and sand, to a thickness of about ½ inch. If necessary, this is protected with tarpaulins or boards. The moisture on the fresh concrete produces a partial set in the dry mixture. This is true of the particles in direct contact with the green concrete, the effect diminishing rapidly, and the upper portion of the dry mixture remaining unaffected. The next layer of concrete is applied without removing the dry layer, the moisture in the fresh concrete completing the set through the half-inch dry layer, and producing a decided bond of the two courses. Briquettes made of cement mortar in two parts and joined by this method developed a strength more than half as great as others made of the same material in a single piece.

Villa D'Este, Tivoli, Italy *August G. Headman, Designer*

The Science of Mixing Mortar

THERE are just reasons to marvel at the carelessness with which an average batch of mortar is mixed and plastered on the walls of a structure. This is a matter that has been so long neglected that most of our builders are inclined to consider it in the light of a subject that has nothing to concern them beyond the mixing of the lime and sand. In this age of supposed progressiveness, when every detail is, or at least should be, given careful consideration the subject of mortar has been permitted to remain comparatively unnoticed, and the work of mixing the same left to almost any one.

It is true that we are in a hurry, and that, in order to get our contracts completed, we must adopt the methods that will insure the quickest results. In this way there are liable to be some serious mistakes made, and to avoid these we must have due regard for all of the details. Mortar properly mixed and permitted to stand (this is the whole secret) will naturally insure excellent results when the same is applied to the walls of a building. How often is this done with care? Is it not the rule to mix the mortar and use it too soon? We make the bed, slack the lime and in a day or so add some sand; then the plasterer goes to work and if the plastering falls off within a few months what else can we look for as a result of this haphazard method of work?

Any one who has the least knowledge of lime and its properties is fully aware of the fact that it requires a certain temperature to properly disintegrate the same, and that the quality of the lime must be of the best to get the desired results. Overburned or underburned lime will be unfit for use where we hope for the best results, and this is, of course, the primary consideration. But with good lime we must add care in the slacking of the same and also permit it to undergo the chemical changes which it requires before it will be in a state to give satisfaction.

Perhaps there are many who do not know that lime will undergo some chemical changes for some months after it has apparently been properly disintegrated or slacked. How we shall avoid the damage that will naturally ensue from these changes is a consideration that should be foremost in the mind of every builder. In Germany, for instance, the law requires the lime to be slacked at least six months previous to being used in mortar, and this is placed in wells especially dug for that purpose, where it may undergo these chemical changes, so that it is in a perfect state when it is mixed with the sand, and the plaster does not fall from the walls after being applied.

In this country it is the most common sight to see a laborer, one who has very little knowledge of lime, further than what he has learned from every-day experience, mixing mortar on the street and the same being placed on the walls a day or so later. What possible chance has the lime had to undergo any real chemical change? Is the mortar made in this way in a proper condition to be applied to the walls of a structure? The slightest consideration will readily convince one that there is grave danger of unsatisfactory results in such cases.

Why should we not have laws governing this matter? The contractor and builder owes it to himself that more care be taken in this respect. Our patent hard plasters, and wood fiber plasters where used, do away with this possibility, but there are so many cases where the common mortar is used that there should be some action taken by our municipal authorities and building departments regulating the time limit shall be used after it has been slacked. Is this not a theme that should be given a deeper consideration? We are too prone to permit this matter to be done in a way that will bring the least desirable results from our labors.

Consider that after the mortar has been placed upon a wall, when it has been mixed in the ordinary way, that there are continual changes undergoing in the ingredients, what are the results, and why does the plaster fall, causing loss, inconvenience and labor? We would have more regard for every other portion of the building, and there is no excuse why this portion of the structure should not be entitled to the same care as any other. There is but one way to obtain this end, and that is by co-operation on the part of every architect, contractor and builder to have laws made governing the same. It is a matter that has been treated too lightly in the past, and one that must be more carefully considered in the future, because there is reason for the matter being remedied. What the builder wants is the best of everything in his line and his workmanship to be above reproach, and in this matter he can at least improve the condition of one feature, and the results will amply repay him for the labor entailed.

Let us add that it is not necessary to use sand in the mixing of mortar, because there are cases where ground limestone, crushed granite, or even crushed cinders, have made a most perfect component part to be used in conjunction with lime. The mortar made from any of the above commodities has been proven to give the most satisfactory results, and makes a hard, durable plaster. The cost, where sand is scarce, is such as to make it very reasonable, and it is a matter that is deserving of consideration, along with the foregoing question of improved mortar.—National Builder.

* * *

Color Washes for Concrete

THE Department of Commerce and Labor has furnished Cement Age the following formula for white and color washes for concrete:

Whitewash—Slake half a bushel of unslaked lime with boiling water, keeping it covered during the process. Strain it and add a peck of salt, dissolved in warm water; three pounds of ground rice put in boiling water and boiled to a thin paste; half a pound of powdered Spanish whiting and a pound of clear glue, dissolved in warm water; mix these well together and let the mixture stand for several days. Keep the wash thus prepared in a kettle or portable furnace, and when used put it on as hot as possible with painters' or whitewash brushes.

Cement Wash for Outside of Lighthouse Towers—Take of fresh Rosendale cement three parts, clear sand one part, and mix them thoroughly with fresh water. This will give a gray or granite color, dark or light, according to the color of the cement. If a brick color is desired, add enough Venetian red to the mixture to produce that color. The cement, sand and coloring matter must be mixed together. If white is desired the walls, when new, should receive two coats of cement wash and then whitewash. After the work has received the first coat a single coat every three or four years will be sufficient. It is best to thoroughly dampen the wall with clean, fresh water, and follow immediately after with the cement wash. This course will prevent the bricks from absorbing the water from the wash too quickly and will give time for the cement to set. Care must be taken to keep all the ingredients of the cement wash well stirred during the application of it. The mixture must be made as thick as it will admit of to be conveniently put on with a whitewash brush.

The department adds that the whitewash made from this formula has been found by experience to give nearly as good results on wood, brick and stone as oil paint, and to be much cheaper. These washes have given most satisfactory results in the lighthouse service.

Some Advantages of Hydrated Lime

By R. K. MEADE.

THE use of hydrated lime is a growing one with contractors and builders, but many do not appreciate how useful an article it really is, and what numerous advantages it possesses over lump lime.

Hydrated lime can be used for every purpose for which quick lime is used, and also for all purposes for which lime putty is used. It has also some uses which neither have. It, however, does not trowel quite so easily as lime putty, and this has been the greatest objection on the part of the mason to its use. By employing a good deal of water in the mortar, however, this objection can be to a great extent removed. The greater convenience with which it can be handled and used, however, and the thoroughness with which it has been slaked, to a large extent make up for this trouble. No mortar box is required and the hydrated lime and sand may be mixed upon a board, just as are cement and sand. It is, therefore, especially convenient for doing small jobs, such as repairs to plaster, etc.

It is estimated that it costs 25 cents per barrel to slake lime in a mortar box. This expense is saved by the use of hydrated lime. Furthermore, the mixing can be done indoors and in cities the streets are not blocked.

In using hydrated lime the mason should remember that not quite as much water would be required as is the case with lump lime, because in the case of quick lime some water is needed to combine with the lime, and in case of hydrated lime this water has already been supplied by the manufacturer. Where a mortar box is used, it is usually considered best to first place the water in the box and then the lime. More water and then lime can be added as necessary, the idea being to get a thorough mix of water and lime. It is usually considered better to allow the mixture to remain over night. Such a mortar can be used just as lime putty, and if plenty of water has been employed, will trowel very similarly.

One place where hydrated lime can be used, where ordinary lime putty can not be employed, is with Portland cement. The addition of lime to Portland cement is not an adulteration, but confers a great many good properties to the latter. It has long been known that slaked lime would waterproof concrete. This is due to the fact that it exists in the form of an extremely fine powder, many times finer than the finest ground cement. This fine powder fills in the pores of the concrete and stops them up, thus excluding the water. Owing to the difficulty of mixing the wet lime putty with the dry cement and sand, however, it has only been since the introduction of dry hydrated lime that slaked lime could be used for waterproofing. It is generally considered that hydrated lime is the best waterproofing compound which can be added to cement, and that it is superior in lasting qualities to any of the waterproofing compounds at the present time advertised for this purpose. The writer has tested some eight or ten of these compounds. In every instance, without exception, they decreased slightly the strength of the cement mortar made therefrom, and he does not think that any of the manufacturers claim that they add to the strength of concrete. Hydrated lime, on the other hand, not only waterproofs the concrete, but numerous tests made in different laboratories by disinterested parties show that additions of hydrated lime up to 15 or 20 per cent increase the strength of cement mortar.

As an actual waterproofer, hydrated lime is not surpassed by any of the waxes and paraffin compounds at the present time used for this purpose.

Many of these compounds are organic, and in time will volatilize, leaving the concrete porous. Hydrated lime, on the other hand, is inorganic or mineral, and will remain where it is put.

As an example of the waterproofing properties of hydrated lime, this was employed upon a large gas holder at Kingston, Ont., which had been practically a failure, owing to the leakage of the concrete wall of the gas holder. A number of waterproofing methods were tried, all of which failed, and it was not until this wall was chipped back from three to six inches by means of pneumatic chisels and a new wall composed of concrete, containing about 18 per cent of the weight of the cement of hydrated lime had been added, that the tank was waterproof.

The addition of hydrated lime to cement makes the latter more plastic and easily trowelled. It also improves the adhesive properties. A mixture of equal parts of hydrated lime and Portland cement makes an ideal mortar for laying brick. The addition of hydrated lime to concrete blocks makes the latter whiter, tougher, and waterproof.

For household, agricultural and industrial purposes, where only a small quantity of lime is used, and where storage in the cellar or a shed upon the premises is desirable, hydrated lime is unsurpassed, owing to the fact that it can be easily mixed and handled, keeps indefinitely, is put up in small paper packages (40 pounds), and finally that there is no danger of fire from it. Lime has long been used as a disinfector, for whitewashing, for fertilizing, for spraying fruit trees, for purifying of water, for marking lawn tennis courts, and for all of these uses hydrated lime possesses every property of quick lime. For such uses as water purification, disinfecting, fruit spraying, etc., magnesian hydrated lime has only about one-half the value of the high calcium hydrate.

Hydrated lime is usually packed in 40-pound paper bags or 100-pound cloth bags. The paper bags are of the valve type, and are pasted shut at both ends, presenting a square package, which can be easily handled and, owing to the absence of the rough tied end found in cement bags, can be closely packed. Below are some standard formulas for the use of hydrated lime:

First cover bottom of mortar box with water and add the hydrated lime and more water as is necessary. Some mechanics prefer to soak the hydrated lime at least twelve hours before using, claiming more plasticity in its manner of working.

For Plaster Mortar—First or Scratch Coat: 350 pounds hydrated lime, ¼ yard screen sand, 2 bushels hair. Should cover about 100 square yards.

Second Coat: 200 pounds hydrated lime, ½ yard screen sand. Should cover about 100 square yards.

Putty or White Coat: Use about one-half as much plaster to gauge with as is commonly used with putty made from lump lime. If wall is dry sprinkle or dampen with brush before putting on white coat, as labor will be lessened.

Float Finish: 300 pounds hydrated lime, ¼ yard screen sand. Should cover about 100 square yards.

For Stone Mortar: 200 pounds hydrated lime, ⅝ yard screen sand and add water.

For Brick Mortar: 250 pounds hydrated lime, ⅝ yard screen sand.

Hydrated Lime and Portland Cement Mixture for Laying Brick and Stone—For hard mortar for these purposes use equal parts by weight of hydrated lime and Portland cement. Add required amount of sand to properly gauge up mortar.

For Waterproofing Concrete and Concrete Blocks—Replace 15 to 20 per cent of the weight of the cement used in the mortar by hydrated lime.

To Sum Up the Advantages to the Dealer—It is first of all a fixed product which does not deteriorate or change with age, nor swell and burst its packages, consequently it is always worth the market price of lime. Second, it can be handled without risk of fire, and, third, it can not only be used for all purposes for which lime is used, but also has many new uses, and is more convenient of application.

It has been aptly said that hydrated lime is the twentieth century way of handling the lime trade.

* * *

A Defense of the Skyscraper

JUST at this time when there is observable both here and abroad a growing disposition to antagonize the skyscraper order of building, it is a bit refreshing to find in a volume fresh from the press a strong, vigorous and logically reasoned defense of this much maligned institution. Los Angeles has recently placed the maximum height of a structure of the skyscraper variety at 150 feet. Chicago, normally a law unto itself, exhibits a tendency to follow suit, while New York, the home of the skyscraper and the city in which this class of buildings has attained its finest development, actually seems to be seriously discussing a move in the same general direction, especially in regard to factory buildings.

In "What Is Art?" from the pen of Professor John Van Dyke, of Rutgers College, the abused skyscraper has a champion abundantly able to plead its cause. "What is wrong with the skyscraper?" asks Professor Van Dyke. "Has it any vice save its novelty, its originality? It was started as an expedient to utilize valuable ground in the congested part of cities, to increase floor space by increasing the height of the building, also to increase revenue and thus meet tax assessments and interest upon invested capital. In this it was successful, and being put forth honestly and without pretense as a business necessity, its designers builded better than they knew.

"For perhaps they developed a new building principle, and, I am disposed to think, a new style of architecture. The Egyptian and the Greek had used the upright and the crosspiece as a child builds a block house. The Roman had beveled the blocks and keyed them in an arch; the Goth had raised them in pointed windows and roofs and sustained the outward pushing walls by piles of buttressed blocks. None of them had used anything that held the blocks together or kept the buildings from falling apart by settlings of the foundations. They were all of them more or less agglomerations of loose stones.

"The skyscraper is the first structure wherein steel is used, and the frame of uprights and crossbeams is riveted together by girders and stays, so that it cannot get away or settle or warp. Here is not only a new construction, but a new building principle. And why not, also, a new architectural principle? To decry because it is neither classic nor romantic, nor any other style that was, is to repeat the denunciation of innovation that has always been since the world began.

"Wherein or how is it 'hideous,' to quote the common expression. Thirty years ago they used the same word in connection with the Brooklyn bridge. But both the bridge and the tall buildings are sane in proportion, in composition, in sky lines, in use. The skyscraper is characteristic art that justifies itself in use and purpose."

Vive le "skee scrap!"—to quote Mr. Joseph Pennell.

Among the Architects

American Institute of Architects

(ORGANIZED 1857)

Next Convention in Washington

OFFICERS FOR 1911-12

President.............Irving K. Pond, Chicago
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Second Vice-President..F. M. Wheelwright, Boston
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Board of Directors for 1910-11

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For Three Years—Thomas R. Kimball, Omaha, Neb.; Milton B. Medary, Philadelphia; Alfred F. Rosenheim, Los Angeles.
*Executive Committee.

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Architectural League of the Pacific Coast

Next Convention, Los Angeles

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President................Alfred F. Rosenheim, Los Angeles, Cal.
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OFFICERS FOR 1910-11

President.......................Myron Hunt
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Vice-President............David L. Williams
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Oakland Architectural Club

President ....Hart Wood
Vice-President ....E. B. Mead
Secretary-Treasurer..........W. J. Wilkinson

Directors

John G. Howard — Louis C. Mullgardt
Oswald Spier — C. E. Richardson

Oakland Architects' Society

Meets Third Monday Each Month.

President......................Louis S. Stone
Secretary-Treasurer ....William J. Wright

Invite Plans for Lincoln Memorial

The Lincoln Memorial Commission, provided for by the Congress which has just adjourned, held its first meeting at the White House in March. It decided to ask the National Fine Arts Commission to suggest various plans for the proposed memorial to be erected in Washington to Abraham Lincoln. The commission will be asked to take three or four sites in the national capital and give its opinion as to various forms of memorial which might be appropriate to these places. The amount granted by Congress for the memorial was $2,000,-000.

Los Angeles' New Charter

The new Los Angeles charter amendment requires that no awards of contracts for city work can be made by the board of public works unless the bidders supplement their proposal with an affidavit that they were not in league with any other party to hold up the city or taxpayers. No collusion must exist or the bidder will be disqualified.

The following is the law:

Section 207b. Every proposal to perform a contract with the city, or with any board, commission or officer thereof, shall have thereon, or attached thereto, the affidavit of the bidder that such proposal is genuine, and not sham or collusive, or made in the interest or in behalf of any person not therein named, and that the bidder has not directly or indirectly induced or solicited any other bidder to put in a sham bid, or any other person, firm or corporation to refrain from bidding, and that the bidder has not in any manner sought by collusion to secure for himself an advantage over any other bidder. Any bid made without such affidavit, or in violation thereof shall not be considered. If at any time it shall be found that the person, firm or corporation to whom a contract has been awarded has, in presenting any bid or bids, colluded with any other party or parties, then the contract so awarded shall be voidable at the option of the city council, or the board, commission or officer making the same on the behalf of the city, as the case may be, and the contractor and his bondsmen shall be liable to the city for all loss or damage which the city may suffer thereby; and the council, board, commission or officer, as the case may be, may advertise for a new contract.

Tribute to the Late John M. Carrere

The San Francisco Chapter of the American Institute of Architects, has adopted the following resolution in memory of the late John M. Carrere, the same having been drawn up and submitted by a special committee:

"Fellow Members of the San Francisco Chapter, American Institute of Architects:

"It is our mournful duty to formally advise you of the loss to the architectural profession of John M. Carrere, F. A. I. A., who expired on the first day of March, 1911.

"His loss to the American Institute of Architects, of which he was a director, the architectural profession and the world, will be keenly felt, as his influence in the world of art was a conspicuous factor for many years.

"The success attending his practice would indicate his close attention to the profession which he so brilliantly adorned, while his ability and strict integrity gave him a standing both attractive and inspiring.

"We respectfully submit the accompanying resolution for your consideration:

"Whereas, Death has suddenly removed from our midst a valued and esteemed fellow laborer, and

"Whereas, The degree of respect with which we viewed his many successes and invaluable work for the architectural profession in America, makes it fitting that we should express our appreciation of the services rendered by the late John M. Carrere during a long period of years, and to express the profound sorrow in the great loss sustained by his untimely death.

"Resolved: That the above preamble and resolution be entered on the minutes, and that copies be sent the American Institute of Architects and the family of the deceased.

"(Signed): CLINTON DAY,
LIONEL DEANE,
WM. CURLETT,
"Committee."

The Francis J. Plym Fellowship in Architecture

We are just in receipt of the following announcement from the University of Illinois, Urbana, Ill.:

The board of trustees of the University of Illinois announces a gift by Mr. Francis John Plym, of the class of '97, amounting to $1,000 per annum for a term of years, for the purpose of establishing an advanced fellowship in architecture.

The name adopted by the trustees to designate this gift is the Francis J. Plym Fellowship in Architecture.

The administration of the fellowship and the nomination of candidates have been placed in the hands of a committee to be known as the Francis J. Plym Fellowship Committee, and to this committee there have been appointed, for the current year, Messrs. J. C. Llewellyn, I. K. Pond, George C. Nimmons, practicing architects, and Professors F. M. Mann and C. N. Ricker, of the department of architecture of the University of Illinois.

The first award of the fellowship will be the year 1911-12.

Information regarding the award may be had upon application to Professor Frederick M. Mann, department of architecture, University of Illinois.

Mr. Plym is the inventor of the Kawneer system of store fronts, and is the president of the company manufacturing the same.

Designs for the San Diego Exposition

Architects' designs for the unique buildings that are to form the Mission City in Balboa Park for the Panama-California Exposition at San Diego, are soon to be submitted to the Building and Grounds Committee of the exposition. They are now being prepared by Bertram G. Goodhue, the world's foremost exponent of the Spanish-Colonial type of architecture. Ground will be broken in July for the first of these exposition buildings and as rapidly as possible they will be completed, the object in this early completion of an important part of the exposition being to make certain that ample time is given for the preparation of the remainder of the exposition work by 1915

The Mission City will be one of the many unique features of the Panama-California Exposition. There is no architecture precisely like that which the padres of early California used for their edifices. It was a rudimentary adaptation of the salient phases of Spanish architecture. Its outlines are severely simple and its detail was but slightly diversified in the individual taste of the builder.

But this architecture, modified to some extent, and made more artistic and ornamental, perhaps, is to be the base of San Diego's exposition architecture. The Mission City will be one of the salient features of the exposition, and it is intended that it shall be such a striking contrast to other exposition cities of the past that it will remain long in the memories of the people who visit San Diego in 1915.

Frank P. Allen, Jr., who built the Alaska-Yukon exposition, has been chosen as director of works for the San Diego enterprise, and he is now organizing his staff, and directing the energies of more than one hundred men preparing the ground for the first building operations.

Architect Meyers Makes Correction.

Editor, The Architect & Engineer,
San Francisco, Cal.:

Dear Sir—The April number of your publication is largely given over to the work of Willis Polk & Co., and I noted among the illustrations one of the Hayward Building, or as it is now known, the Kohl Building, at California and Montgomery Streets.

This illustration is credited as being the work of "Percy & Polk, Architects," and erected "under the supervision of H. H. Meyers."

I hope that the titles to other illustrations under your leading article lean more closely to facts.

Mr. Polk has long claimed the credit of being the architect of the Hayward Building, and I have refrained from publicly correcting him, for if it pleased his vanity and helped him in a business way I saw no reason to knock the pedestal from under him. However, in your magazine I see I have the doubtful credit of being the tail of his kite.

I am sure that you will gladly listen to the facts in this matter:

The Hayward Building was first conceived during the life time of that firm of worthy architects, Percy and Hamilton, but did not assume definite form until some time after Mr. Hamilton's death, and when plans were finally perfected they appeared under the title of "G. W. Percy, Architect," and not with the caption of your illustration.

On Mr. Percy's untimely death shortly after the building was started, the completion of the work was intrusted to the writer by Mr. Hayward, and all plans and drawings were designated as "G. W. Percy and Henry H. Meyers, Architects."

The contractors working under contracts awarded by Mr. Percy were notified by Mr. Hayward of the change in architects and each required to acknowledge in writing an acceptance of his selection of the writer to represent him as architect of the building.

Subsequent contracts were signed by Mr. Hayward and the contractors under the authority and direction of the writer.

All of the above are established facts and can be verified by various contractors who performed work in the building.

Under the circumstances as related, it should not be surprising that I question the title to your illustration. Do you not think it warrants a correction?

(Signed.)
HENRY H. MEYERS.

MR. POLK'S LETTER.

May 3, 1911.

Editor, The Architect and Engineer,
San Francisco.

Dear Sir: Referring to the letter of April 27th addressed to you by Mr. H. H. Meyers in regard to the Kohl Building:

We know nothing that would warrant his request for a correction of the credit given in your April number to the architects of the Kohl Building. Should you desire to publish Mr. Meyer's letter, we would suggest that you request Mr. Meyers to eliminate extraneous comments contained therein. If Mr. Meyers takes pride in the manner in which he secured the superintendence of the construction of the building in question, we have no desire to lessen same.

Very truly yours,
WILLIS POLK & CO.

Another Tourist Hotel

Architect Elmer Grey, of Los Angeles, has been commissioned to prepare plans for a large tourist hotel to be erected on Beverly Hills by Percy H. Clark, M. H. Sherman, H. E. Huntington, W. G. Kerckhoff and others. The hotel will contain about 200 rooms and will probably be of reinforced concrete construction. A number of bungalows will also be provided for. The site chosen comprises 11 lots or about ten acres and will be beautifully parked. It is about three blocks from the civic center of the Beverly Hills tract.

The Tenement House Act

Senate Bill No. 1221, known as the tenement house act, provides considerable latitude for the inspection of buildings now existing and the enforcement of sanitary measures. Many of the old structures now doing duty will have to submit to the requirements of the new law. Owners, lessees and agents are also required to register their names and addresses with the health department.

San Francisco Chapter, A. I. A.

By Sylvain Schnaittacher, Architect.

A special meeting of the San Francisco Chapter, A. I. A., was held at Tait's cafe, in April, in honor of the annual joint meeting of the northern and southern district boards of the State Board of Architecture, and for the transaction of such other business as might be brought before the meeting. After dinner the meeting was called to order by President Mooser. Members present were William Mooser, president; Geo. B. McDougall, vice-president; Sylvain Schnaittacher, secretary and treasurer; James W. Reid, trustee, and members: Messrs. Antonovich, Bakewell, Binder, Bliss, Crim, William Curlett, Day, Deane, Faville, Headman, Joseph, Knowles, Lofquist, F. H. Meyer, Mullgardt, J. C. Newsom, S. B. Newsom, Matt O'Brien, Paff, Page, Merritt Reid, Rushforth, Scott, Frank Shea, Vogel, Voorhees, Ward, Welsh, Woollett, G. A. Wright.

Messrs. Morgan Hebbard, Krempel and Roehrig, of the State Board of Architecture, Southern District, were present as guests of the chapter.

Mr. Joseph, of the legislative committee, reported that the bill introduced at the instance of the chapter to provide for a State Department of Architecture, died in the judiciary committee of the Senate. In connection with the report of the legislative committee, Mr. Bakewell reported regarding the State tenement house law that the same had passed out of the hands of the housing committee after having received the recommendation of the joint committee. Mr. Mooser reported that the tenement house act had this day been signed by the governor.

Mr. McDougall, secretary of the competitions committee, reported the necessity of notifying the committee concerning competitions, and read a letter from Frank Miles Day regarding modifications in the code, and stated that a letter would shortly be sent chapter members advising them of the changes, together with a new copy of the code.

Mr. Headman, for the committee on architectural league and education, submitted a written report regarding the chapter seal, which was ordered received, and the suggestion that the premium be paid to Mr. Bagley was adopted.

Mr. Faville, for the committee on the Voorhies table, reported that he had had an interview concerning the same, and believed that the table could be purchased for a sum under $1,000. On motion of Mr. Shea, duly seconded and carried, the committee was given full power to act and use its discretion toward acquiring the table; and, if it deemed same advisable, to start a subscription list for the purchase of the table and its presentation to the institute.

Atelier Scholarships

Addresses by Architects A. F. Rosenheim and Arthur B. Benton were features of the April meeting of the Los Angeles Architectural Club. Mr. Rosenheim made a strong plea for observance of the ethics of the architectural profession and said that much could be done by the club to teach and encourage draftsmen to conduct themselves in the true spirit of the profession. He related that at the meeting of the Philadelphia chapter of the American Institute of Architects, Prof. Laird of the University of Pennsylvania had urged the institute to request all the institutions teaching architecture to adopt a course of study in ethics.

Mr. Rosenheim said the executive council of the Architectural League of the Pacific Coast, at its meeting held at San Francisco, had arranged for a scholarship of $1,000 to be given the person doing the best work in the atelier classes during the current year. This prize is to be raised by an assessment of the seven organizations affiliated in the league, apportioned according to membership. The work will be judged by the committee on education of the league, and the prize awarded at the next meeting of the league in November. It was the intention, Mr. Rosenheim said, to raise a fund of $25,000, the income from which was to be applied to the scholarship, but it was deemed best to start the scholarship at once and raise the larger fund later by subscriptions.

Mr. Benton gave the members of the club a heart-to-heart talk on the work of an architect. It is a big game, he said, and no man in the profession ever learns it all.

The California Bungalow

The growing popularity of the California bungalow type of architecture is illustrated by the fact that a bungalow sanitorium planned and designed by a California architect is to be erected near Marion, O. Dr. C. E. Sawyer is the owner, and the sanitorium will be known as "The White Oaks Farm Bungalow Sanitorium." Dr. Sawyer spent several weeks in Los Angeles last winter and the plans were prepared by Architect Arthur S. Heineman, Union Trust Building, under the physician's personal direction. There will be twelve bungalows arranged about a central court and joined by a cloister. There will be houses for patients, electropathic and hydropathic buildings, dining and living hall, culinary building and office building. The bungalows will be constructed of hollow clay tile, plastered on the exterior, and will have tile and composition roofs. The estimated cost is $50,000.

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ENGINEER ATTACKS VOTERS OF BERKELEY

John D. Galloway, the structural engineer, has gotten himself into the lime light by attacking the city of Berkeley, presumably because the recent municipal election did not turn out to suit him. In an article over his signature, Galloway refers to the college city's electors as "grafters," "criminals" and "cranks," which uncomplimentary appellations have naturally aroused the indignation of the Berkeley voters, who have demanded that the engineer retract his slanderous words. The Berkeley Gazette offered its columns to Galloway that he might explain his position, but it may be Galloway don't read the Gazette, for the paper's liberality has thus far failed to bring forth the desired apology. Somewhere there is an adage about sticking to the T square, drafting table, etc., and it appears to us that Galloway may well have followed this homely advice and thereby saved himself a lot of undesirable notoriety.

NEED FOR ARCHITECT'S NAME ON EXECUTED WORK

While the subject of architects signing their buildings has come before the American Institute and other architectural bodies, a number of times, the discussion has always taken the direction of its propriety rather than its utility. It was decided by the Institute that it would be proper for architects to sign their best work. But there is another and more necessary phase and that becomes more imperative as the aesthetic quality vanishes. Lofts, store buildings, warehouses and other buildings constructed for commercial purposes frequently change ownership, and are altered to suit other needs. The work of the architect in charge of these alterations would often be greatly simplified if he could find the plans upon which the original building was constructed. This search often occupies days, as otherwise he must make his calculations from measurements and observations. The Western Architect thinks that to have the name of the architect subscribed on the building would not only benefit the designer, but the owner, as with little trouble the floor-carrying capacity, its construction, whether fire-proof or not, could be ascertained.

THE QUALIFICATIONS OF A CONTRACTOR

In the course of a speech at the annual dinner of the Contractors' Protective Association of New York, Capt. D. L. Hough, president of the United Engineering and Constructing Company of New York, summed up in a few words the qualifications required of a contractor. He said:

> There is no class of work that takes as varying qualities or so many qualities as contracting. It appeals to men who are optimistic and to those who have born in them the longing for doing things. The contractor must be a man, first, of that most uncommon thing, common sense; and he must have physical sense, the sense that tells a man without calculating where lies the center of gravity; the sense that tells a man values without estimating; the sense that tells a man quantities without measuring. He must have magnetism in order to gather his men about him. He must have a reputation for justice in order to hold them. He must be forceful in order to inspire energy in others. He must be a lawyer and buyer. He must have the ingenuity of the inventor and the grasp of the field marshal. He must be a diplomat, and he must be a politician. He must also know when not to be a politician. He must be a financier, and, I regret to say in these days, an advertiser, and he must be a prophet.

CARE NEEDED IN CONCRETE WORK

The Cleveland Chapter of the American Institute of Architects, the Cleveland Engineering Society and the Builders' Exchange joined in appointing a committee to investigate the collapse of a four-story reinforced concrete building which was being erected for the Henke Furniture Company, of that city. The collapse was a disastrous one, accompanied by the death of four persons and the injury of seven others. The commission paid nine visits to the ruins, held seventeen public sessions, at which eighty-six witnesses were examined, besides twenty-eight private sessions.

The commission held that the initial failure was due to the premature removal of forms and supports in the third story, and found that the architectural supervision was deficient, that the concrete used was of poor quality and not properly placed, while the owner and the city had a share in the responsibility for failure to watch the work and enforce the ordinances.

The conclusion of the committee was that the collapse gave no reason to condemn the use of concrete in combination with steel, provided the concrete was composed of proper materials, accurately measured and thoroughly mixed; the steel sufficiently strong and properly placed; the work installed by competent contractors and workmen, and the specifications, drawings and construction properly executed under the direction of competent designers and inspectors—a reiteration of what we have been preaching for five years!

EQUIPMENT OF SCHOOL BUILDINGS

While the recent disastrous factory fire in New York has directed public attention in such a shockingly tragic manner to the lack of fire protection in all buildings where any large number of people are assembled, municipal authorities might well make particular inquiry regarding the better safeguarding of the children in the public schools. One method thus far overlooked is the equipment of school basements and stairways with automatic sprinklers. Since they are required in all theaters, why not in school buildings? Fire drills, enclosed stairways and ample fire escapes are good, and necessary, but they do not extinguish a fire once started, nor create a damp, safe passage to the open air and safety. From the standpoint of parents alone any reasonable expenditure in this direction would be justifiable.

HEATING AND LIGHTING
Plumbing and Electrical Work

Architectural Illumination

THE possibilities that lie in correct illumination as an aid or adjunct in the architectural treatment of interiors are apparently just beginning to be fully realized. Perhaps this is due to the comparative newness of the illuminant that has come into almost universal use within a few years. Its advent has given rise to a pursuit or profession practically unknown when the torch, the oil lamp or even the gas flame, was depended upon for illumination. The calling of the illuminating engineer is now one of acknowledged and growing importance. Architects are learning to call to their assistance men technically trained in the science of illumination, as they have for many years called sanitary engineers, heating and ventilating engineers and other specialists in the various departments who, taken together, constitute the working force of a well organized office, equipped to handle the complex problems arising in the construction of a modern building. It is not surprising that some time has been consumed in learning to adapt and make the most of this new agent. The engineer beginning his work knew little of architecture or its requirements, and few architects realized, even in part, the potentialities of this modern invention. Gradually, however, the necessity of some measure of knowledge and understanding of architecture on the part of the illuminating engineer, and a technical understanding leading to a fuller appreciation of the possibilities of this wonderful illuminant by the architect became apparent. In obedience to this demand a situation has been developed that is evidenced, at least as far as the engineer is concerned, by the following sentiment which found expression at a recent meeting of the Illuminating Engineering Society in New York:

"'We who light buildings, must learn to realize what characteristics it is desired to bring out. The shadows must not be too deep, the colors must not be too greatly mixed. We must bring out the ideas which the architect wished to express as clearly at night as they are to be seen by day.'

"It will, probably, be conceded that architects on their part are giving greater study than formerly to the science of illumination, so it would seem that conditions are most favorable for development in a direction that has already progressed to an extent that could not be foreseen or imagined less than a quarter of a century ago."—Exchange.

Improved Method of Laying Out Heating and Ventilating Work

By RALPH HANCOCK, Balboa Building, San Francisco.

AFTER many years' experience and practice in all classes of heating and ventilating work, both in Europe and the United States, the writer has perfected an improved method of laying out heating and ventilating work and testing installations.

By the introduction of the Multivane type of Centrifugal Fan of which he is the inventor, on a practical commercial basis, to the largest maker of this class of machine in this country, he brought into the market a highly efficient fan as compared to the old type of paddle wheel fans. The latter are rapidly being discarded for the improved type.

At the time of his introduction of this new machine the writer also established the correct basis for applying same, which brought this application to the point of an "exact science" as compared to the old guesswork methods previously employed, and still relied upon in many instances.

The introduction of the new type of fan brought to notice the existing methods of "laying out the general plant of an installation," where the same elements of guesswork existed, as with the paddle wheel fans, the installation being designed without proper regard for the actual efficiency of the plant, particularly the power required to operate same, as well as in the "laying out" of the heaters, air washers, ducts, flues, pipes, etc.

To review these facts the following few points may be taken to indicate in a general way the lines along which an installation should be laid out, to produce efficient operation, this being the most serious constant charge to the user.

First—The air washer should be chosen and installed with a view to setting up the least possible frictional resistance to the passage of the air.

Second—The heaters should be designed and arranged so that while the heating surface can operate efficiently, all unnecessary friction or opposition to the air passage is avoided.

Third—The flues, ducts and pipes should be most carefully planned so that they offer the least possible back pressure to the flow of the air to the various rooms or points of discharge.

Fourth—The proportion of the various ducts, flues, or pipes, should be arranged so that each of these channels will as nearly as possible have the same back pressure as each other, by which means only can a perfectly even distribution of air be obtained.

Fifth—The fan should be chosen and specified to supply the required volume of air at the correct speed and power, so that it is installed to work at an efficiency of at least 50 per cent, and its tip speed should be suitable for operating against the actual total frictional resistance in the installation. This can only be done when the installation has been laid out on correct lines, and so that the actual resistance can be known, as by that means only, can the fan be chosen from the correct point of its characteristic curve, all other methods are guess work and the power used by the fans chosen on such methods is likely to be twice as much as actually necessary had the correct method been employed.

There are many other points to be carefully attended to when correctly laying out an installation to give satisfactory results, and the writer has in course of preparation a full work dealing with these, for publication at some future date.

The present method of "testing" installations when completed, is also largely a matter of "guess work," and the employment of competent advice is most essential if satisfactory results are to be attained.

Popping Lime Results in Heavy Suit Against Cowell Company

The Cowell Lime and Cement Company continues to have trouble with popping lime. Its San Jose agent, Fred Figel, has brought suit against the company for $50,000 on various claims, one of which is $5,705 alleged to have been paid to various plasterers on account of popping, or defective lime furnished by the Cowell people. It is stated that several of the new buildings at the Agnews Asylum, and many others in and about San Jose, after they were completed recently, were rendered almost useless by the finished coat of plaster popping off. Contractor F. O Engstrum is now engaged in scraping the finishing coat off and replastering the entire job at Agnew.

Mr. Figel claims the further sum of $25,000 as damages to his business on account of the sale and delivery to him of this unmarketable lime and building material which destroyed his customers' confidence in him.

Contractor Engstrom will bring suit against the Cowell Company, Agent Figel and the sub-contractor Jones.

The New Mechanic's Lien Law

Attorney R. L. Horton, of Los Angeles, one of the committee that attended the Legislature for the Southern California Materialmen's Association in behalf of a new mechanics' lien law has written the following opinion regarding its provisions:

"The principal change made provides for a direct lien upon the real estate for the value of material and labor entering into the construction of any improvement placed upon the property. This accords with the constitutional provision of the constitution of 1879. The technical contract that always hampered materially under the old law has been eliminated. The rights of owners and contractors in that regard have been restored to the common law rule of contract. They can enter into any contract that they see fit for the construction of any structure or improvement upon real estate, and pay for the same in any manner that they may agree upon, unimpaired by the technical provisions of reserve payments or the question of filing before work was commenced.

"However, the new law does contain a provision which permits an owner to demand from a contractor a good and sufficient bond of at least 50 per cent of the contract price, which, if the same shall be filed together with a contract, before work is commenced, then the court, if it shall deem it equitable so to do, may limit all liens to the contract price and give judgment for any balance that may be due to lien claimants against the sureties upon the bond, and the law provides that no alteration in the original contract or in the work shall invalidate the bond or release any surety upon the bond.

"It is believed that the ultimate effect of the law will be to have all payments that are made upon building contracts applied first to the payment of labor and materials, and after that, if there is anything left over, it will go to the contractor. It will practically eliminate the dishonest and fraudulent contractor who under the old law might receive several payments under a building contract and still pay no portion of the moneys so received upon either labor or materials, and particularly the latter. This ruse was frequently resorted to by unscrupulous contractors and after they had received something in the neighborhood of fifty per cent of the payments, they abandoned the contract and informed the owner that they could not proceed. The result was litigation and in case the original contract was declared void, then the owner would suffer because he would be compelled to pay twice. And on the other hand, if the contract was declared valid, then the materialmen and laborers would suffer because of the limit fixed in the contract upon their right to recover, and also because the contractor had fraudulently misappropiated the funds which should have gone toward the payment of labor and materials. Still the old law had such an operation that even an honest contractor sometimes worked a great injustice upon both the owner and materialman by taking several contracts at once, some of which were losing propositions, and paying money that he would receive under a profitable contract to save his losing contracts, and thus be compelled to abandon an otherwise profitable venture because the moneys were not properly applied in the payment for labor and materials used upon that particular job.

"As far as the bankers and money-lenders are concerned, they stand in the same position that they stood under the old law. The rights of priorities relating to incumbrances upon the property still remain the same as formerly. There is hardly any doubt but what litigation will be very reduced because the effect will be under the present law to make every tub stand upon its own bottom, that is, all moneys paid under each contract will be applied for labor and materials entering into that particular contract, and where the owner follows this course of practice, he will not afterwards be drawn into litigation over liens for materials and labor. Such litigation as develops will no doubt be between the contractor and the owner, which will be easy in comparison to the old law suits, where frequently from fifteen to twenty or thirty suits would be filed against an owner's property to enforce claims for liens, piling up the expense enormously in the way of court costs and attorney's fees. This will now practically be eliminated. The only man that will suffer by the new law is the lawyer, but this will not be as serious as it seems, for clients can then afford to pay better fees for good advice."

The Office of State Architect

(From the American Architect.)

While there are many who stoutly maintain that we are still a boss-ridden people, with no power to appoint or continue in office faithful and efficient public servants, there are evidences on every hand that the old political spoils system is fast breaking down. The number of public offices falling under the protection of the civil service is constantly increasing, and by common consent of all political parties. Other offices not strictly protected by law have nevertheless in some instances been generally regarded as belonging to a class where the common good seemed to be best served by infrequent changes. To this latter group the office of State architect might be considered to belong. It has nothing to do with politics. There is no more reason for inquiring concerning the political faith of an architect than of a physician. Integrity and ability alone should determine the appointment of an architect to public office, and failure to exhibit these qualities in the discharge of his public duties alone should dictate his removal. It is generally conceded that there is a distinct loss sustained where an official is replaced by one of only equal qualifications and ability. This is particularly true of an architect in public office. His work is of such complicated character that much time would necessarily be consumed by a newcomer in familiarizing himself with office routine and work in hand. After that is done, unless better fitted than his predecessor, he can only perform what might have been secured without interruption had no change occurred. No business can prosper with frequent interruptions and changes, and the State's business transacted through the State architect's office is no exception. A State executive would scarcely appear to be serving the best interests of his State if he were to sanction the removal of a State architect except for cause, or the undoubted opportunity of securing services of a much higher order. No exigency arising from political considerations could possibly justify such action.

Builders and Advertising

(Builders' Guide, Philadelphia.)

Why do not builders advertise? Building construction is today a business of big and growing importance. To carry it on successfully calls for the exercise of qualities that, summed up, approximate closely the most commanding order of business genius. Vast capital is essential, rare good judgment, a high order of intelligence, a measure of tact and administrative force such as is exacted of few other callings.

No ethical restraints, such as supervene to debar professional men, operate to dissuade the builder from employing the methods of publicity common to other walks of mercantile business. He is in every sense of the word a free agent. If he doesn't advertise it is because of one of two things. Either he has reasoned himself into the fantastic notion that he is too securely established to require it or he doesn't believe in it. In either case he is wrong. John Wanamaker is the most widely known, the most securely-established merchant known to the business world today. He is admittedly the world's foremost merchant. His name is known and his fame has penetrated into highway and byway until it is not too much to say that it has become a household word wherever people meet or live or talk or foregather. Does John Wanamaker, trusting to this enormous popularity, foreswear advertising as an expense needless, unwise and unnecessary? Does he? Does John Wanamaker believe in advertising? Here in Philadelphia we have some builders who have accomplished big things; men who occupy deservedly distinguished places in the vanguard of modern structural activity: who are more than mere contractors and whose work entitles them to be so regarded Within a limited circle these men are known. Beyond this zone they are unheard of. Even in the trade press of their chosen calling they figure, if at all, in gratuitous notices. Should this condition be? Builders advertise successfully elsewhere. Why not here? The Guide would like to hear upon this topic from the builders themselves. Is it possible that parsimony is, after all, at the bottom of this studied disregard of modern business methods?

Recent Patents Relating to Building Construction

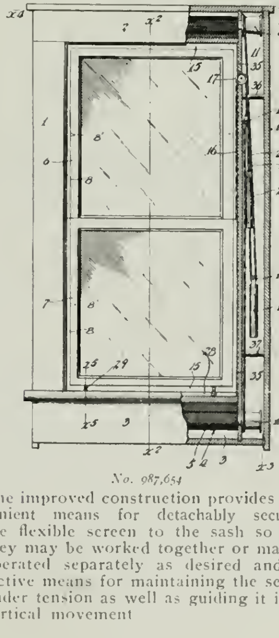
Material for this department is compiled expressly for The Architect and Engineer by Watson & Boyden, patent and trade-mark lawyers and solicitors, 918 F street, Washington, D. C., and to them all inquiries in regard to patents, trade-marks, copyrights, etc., and litigation affecting the same should be addressed.

A complete printed copy of the specification and drawing of any United States patent in print will be sent, postpaid, to any address for ten cents.

William Thompson, of Los Angeles, Cal.—Window Screen.

987,654. Patented Mar. 21, 1911

This invention relates to that type of window screens in which a flexible screen is provided which is drawn into position to occupy the space when the sash is open, and is automatically withdrawn from such spaces as the sash is closed.



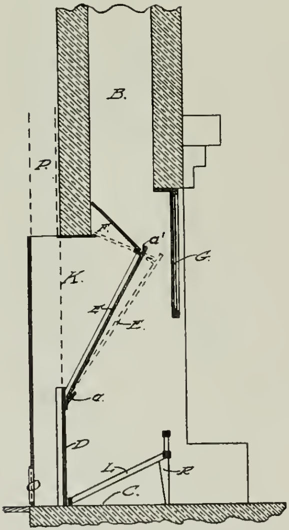
No. 987,654

The improved construction provides convenient means for detachably securing the flexible screen to the sash so that they may be worked together or may be operated separately as desired and effective means for maintaining the screen under tension as well as guiding it in its vertical movement

Philip G. Hubert, of Los Angeles, Cal. Open Fireplace.

987,882. Patented Mar. 28, 1911.

The object of the present invention is to increase the amount of heat given out of an ordinary open fire place. To this end the upper part of the fire place is



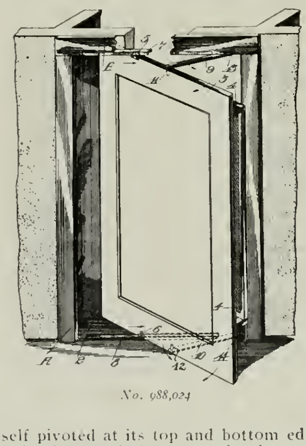
No. 987,882

closed by a thin metallic screen G, and inside the chimney above the fire is arranged an adjustable reflector E which is adjustable toward and from the screen G and which serves to throw the heat outwardly against and through such screen.

Charles O Pelletier, of San Francisco, California, assignor to N. B. Douglass, of San Francisco, California—Wall Bed.

988,024. Patented Mar. 28, 1911.

This is an improved wall bed which embodies several novel features of construction. The bed itself, 4, is hinged at one end to a panel, 3, which may be ornamented as desired, and which is



No. 988,024

itself pivoted at its top and bottom edge in the frame of the recess in the wall. This panel is so mounted that it may be reversed. When in use the panel is turned so as to bring the bed on the outside, and the bed may then be lowered in position, the panel serving to close the opening in the wall when the bed is in use as well as when it is stowed away.

Personal

Architect Lewis M. Gardner has moved from 1123 Leavenworth street to offices on the seventh floor in the Phelan building.

The Architect and the Public

That the general public is gradually coming to a realization of the true relation of an architect to the buildings for the design of which he is responsible there is ample evidence, to which more is added almost daily. One of the most graceful acknowledgements of the architect's services that has been brought to our attention, and one that bears directly upon this subject of credit in the public mind, was recently made by the chairman of a building committee upon the occasion of the dedication of a public building in a neighboring city. Himself a layman, but a man of culture and refinement, he gave expression to the following sentiment during the course of his address:

"It is the misfortune of the architect that his name is not so intimately associated with his creations as is that of other artists. In music the name of the composer quite overshadows the name of the composition. In literature the book and the author are always coupled. But probably not one-half of one per cent of the residents of this city know now or will remember the names of the architects of this beautiful building. The speaker is sure, however, that the directors, trustees and officers will ever bear in mind the skill, fidelity, zeal and patience shown by the firm of Messrs. ——— in preparing the plans and superintending the erection of this building."

If architects can so conduct their work that upon completion their grateful clients will not only make public acknowledgment of their appreciation, but deplore the fact that credit for their work is not generally accorded the designers of even the more important buildings, it does not seem that the day is far distant when the name of an architect will be as closely associated in the popular mind with the material evidences of his ability as is that of a successful writer or composer under present conditions.—American Architect.

Household Plumbing and Sanitation

This is an illustrated and exceedingly interesting volume embodying the results of more than a quarter of a century's study and research in sanitary plumbing from both the practical and the theoretical standpoint.

The work is written in a simple, popular style with a view to interesting and meeting the practical needs of the general public as well as those of legislators and sanitary engineers. The editor of "The London Sanitary Record" (perhaps the leading journal on sanitary engineering in England, if not in the whole world,) writes: "By permitting me to reproduce these admirable articles in 'The Sanitary Record' you will greatly oblige me and serve the cause of sanitary science in England." There are many illustrations. Net, $3.75, postage 35 cents. Address Doubleday, Page & Co., New York.

How to Read Plans

By Charles G. Peker. Industrial Book Co., New York, N. Y. Cloth, 4¾x7¼ ins.; 104-pp.; illustrated; 50 cts.

The purpose of this book is to furnish mechanics an explanation of the various conventions used in making architectural working drawings. It is not the aim of the author to make draftsmen of mechanics, but so to describe the ordinary conventions used in making working drawings that their interpretation will become easy to mechanics.

The first 43 pages deal with what the author calls the A B C's of drawing. This portion of the book illustrates the difference between perspective and working drawings. Plans, elevations and sections are defined and illustrated. Conventional methods of section lining to represent various materials of construction are shown. Dimension notation, center lines, and projection lines are fully discussed and illustrated. Four pages are devoted to the explanation of scales.

Instructions for reading simple plans cover 37 pages. This portion of the book is fully illustrated with perspective drawings of several houses, and working drawings of the various floor plans. All the conventions used are pointed out and their meaning explained.

The remaining part of the book contains a complete set of architect's plans for a six-room frame cottage. The object of this section is to afford the reader an opportunity to test his understanding of the principles earlier enumerated and illustrated. Several pages of text follow these specimen plans and the application of the various conventions is pointed out. The book is concluded with a few remarks on the relation of plans and specifications, and a final word of caution relating to common errors in reading plans.

The book is well arranged throughout and is written in a style which will surely appeal to the class of mechanics addressed. The present is the second edition.

New Books on Concrete

Recent books issued by the Norman W. Henley Publishing Company, 132 Nassau Street, New York, include the following:

Concrete Wall Forms. By A. A. Houghton. This work treats on an automatic wall clamp, which is superior to any on the market. The lifting of the forms causes the core mold to collapse and the outside wall molds to draw away from the concrete; when lowered into position again, the forms are automatically locked, ready for filling. This is easily and cheaply made and is not patented. Other types of wall forms, centering, clamps, separators, etc., are fully illustrated and explained. 50 cents.

Concrete Floors and Sidewalks. By A. A. Houghton. The construction of squares, hexagonal and other forms of mosaic floor and sidewalk blocks or tiling are fully illustrated and explained. The construction of floor slabs, ventilated floors, etc., with reinforcement and molds for same are described. The subject of plain and ornamental floors and finishes is so completely treated that this book will be of the greatest value to every one that has any use for concrete. 50 cents.

Concrete Silos. By A. A. Houghton. Complete working drawings and specifications are given for several styles of concrete silos, with illustrations of molds for monolithic and block silos. Every farmer or contractor who is interested in concrete silos will find the tables, data and information presented in this book of the utmost value in planning and constructing all forms of concrete silos. 50 cents.

Moulding Concrete Chimneys, Slate and Roof Tiles. By A. A. Houghton. The construction of concrete chimneys by block and monolithic systems are fully illustrated and described, with easily built collapsible core molds that permit their removal from the work with success.

The manufacture of all types of concrete slate and roof tile is fully treated, with working drawings of a simply constructed machine that is self-tamping, moulding accurate reinforced concrete slate and tile with great rapidity. This machine may be easily built and will enable any plant to successfully engage in the manufacture of an excellent form of concrete roofs are also given. 50 cents. Valuable data on all forms of reinforced concrete roofs are also given. 50 cents.

Moulding and Curing Ornamental Concrete. By A. A. Houghton. The proper proportions of cement and aggregates for various finishes, also the methods of thoroughly mixing and placing in the molds is fully treated. The proper methods of curing and remedying defects in the surface finish is carefully explained, also the many methods of coating molds with a non-adhesive compound to prevent the concrete from sticking to surface of mold are given.

Mr. Howard Returns

John Galen Howard, architect of the University of California, has returned from a tour of Europe. He was granted a sabbatical leave of absence of six months in July, 1910.

Mr. Howard visited the principal cities of Greece, Italy, Sicily, Spain, France, Germany and England. He paid especial attention to the classic piles of Athens and Rome, making observations for his guidance in carrying out the "greater university" plans.

Mr. Howard will draw plans at once for the campanile, for which Mrs. Jane K. Sather has given $120,000 to the university.

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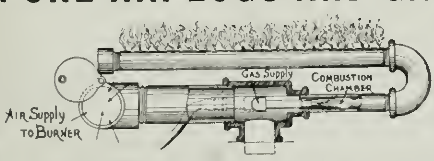

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By the Way

Some Industrial Information Worth the While

Interior Decorators Occupy New Home

Shastey & Vollmer, Inc., have moved into their new home at 518 Sutter Street, above Powell, San Francisco. This firm had been located at 1930 Van Ness Avenue since the establishment of its business after the fire in 1906. The new location brings them in close touch with the retail shopping district of the city and by its accessability, offers the architect the opportunity to visit the studio and inspect the many interesting decorative products which this establishment handle. By their rather unusual connections, many specialty products and woven fabrics are to be seen, together with wall coverings, carpetings and wall papers made into decorative harmony, after exclusive designs. The shop in which furniture of every class, of draperies and upholstered work are produced will be located on the premises in connection with the studio and will be under the personal direction and supervision of the members of the company.

A distinctive feature in the development of its business was the organization of a painting department, originally established to cover its own requirements, where painting was done in connection with decorative contracts. This department is now so developed that it offers architects its services in connection with plain exterior and interior painting of not alone the high class, but also of a commercial character. Many contracts of the latter nature have recently been carried out so satisfactoriallv that this department of the business will at once appeal to the architect.

Protection of Concrete Surfaces

One of the most important questions that presents itself today to the contractor, engineer and architect is that of taking care of cement surfaces along protective, decorative and damp-proofing lines. Cement surfaces dry out with an unevenness of color and they often set un-uniformly, causing a variation in texture and hardness of the surface which causes disintegration in cement floors, due to frictional wear.

Due to the fact that cement construction has assumed such enormous proportions, in keeping with the progressive spirit which has been the keynote of the success of the Glidden Varnish Company, of Cleveland, Ohio, about three years ago they turned over to their research and chemical laboratories the investigation of suitable materials to be blended for the purpose of producing perfect mediums for the treatment of cement surfaces along protective, decorative and damp-proofing lines.

After exhaustive tests conducted by the best research chemists, assisted by practical cement workers, they have brought out a most excellent line of materials, covering every requirement of the architect, contractor and engineer for the treatment of concrete surfaces. The products which make up their line are briefly as follows:

Concrete Floor Dressing, which is applied to cement floors by means of a brush, protecting the floors from dusting and abrasion due to frictional wear, preventing absorption of water, grease, oil and disease germs. Two coats were used, applying the material over a clean, dry surface. The product is made in light and dark drab, terra cotta and tan colors, also transparent. For factory floors the Transparent Concrete Floor Dressing is very much preferred, while for floors of schools, hospitals, office buildings, and similar buildings, the colored Concrete Floor Dressing is mostly used. Glidden's Liquid Cement is especially intended for uniforming the surface color of concrete, cement stucco, brick and stone. This material also damp-proofs the building, and besides producing a pleasing decorative effect, insures a damp-proof building. This material is applied by means of a brush —the same as any paint or varnish.

Another product that is being used

very largely is Glidden's Transparent Waterproofing, which is intended for damp-proofing brick, concrete and cement construction without changing the color or texture of the surface. They also make a material known as Liquid Rubber, which is especially intended for use upon exterior surfaces of substructural work with the view of preventing the inroads of dampness into basements. This material is applied by means of a brush, two coats being used. Liquid Rubber is also used upon interior surfaces of exposed walls applied directly to the brick or wall construction, previous to plastering, thus affording a perfect waterproof bond between the plaster coat and the wall proper. Liquid Rubber thus applied prevents the inroads of dampness through the plaster and protects the wall decorations from disintegration, staining and injury.

One of the most successful products which the company has brought out is known as Glidden's Waterproof Flat Finishes, especially developed for the interior treatment of rough and smooth plastered walls, interior cement and composition surfaces. These flat finishes produce a washable, sanitary finish in soft, rich tones. The Glidden Varnish Company has just issued its latest booklet on "Advanced Finishes for Modern Building Construction," which fully describes the above products and the other materials which they have developed as pertaining to modern building construction, covering concrete and steel structures, and it will be an unusual pleasure for the company to forward, without charge, a copy of their booklet to all who are interested.

San Francisco Chamber of Commerce Journal

The Chamber of Commerce of San Francisco has published the first number of the "Chamber of Commerce Journal," a very creditable publication which is designed to place all the interests of

California in touch continually with other portions of the world. The number contains, among other things, a list of the foreign connections that the Chamber has established and has for many years maintained. The Chamber of Commerce also has a great number of influential connections in the United States in which California finds a good market and upon which the state depends largely for increase of its capital, new enterprises and population. The Chamber works for San Francisco and, not less zealously, for all California.

The first page of the Journal contains an outline of the work which the Chamber hopes to accomplish. The Journal bids fair to enjoy the same splendid success that has marked the progress of the big organization behind it.

Concrete Reinforcing Bars

Messrs. Woods & Huddart, the well known dealers in iron and steel for Class A, B, and C construction, have published a booklet covering concrete reinforcement bars and giving the weights and areas of same, also weights of steel bands and steel wire. Included in the book are the Standard Specifications for concrete reinforcement bars as adopted by the Association of American Steel Manufacturers. These books are invaluable to architects, engineers and contractors and Messrs Woods & Huddart will be pleased to send a copy to any one upon application. Address, 356 Market street, San Francisco.

Safe Handlers in New Home

The permanent home of another of San Francisco's old-established business firms, the Howe Scale Company, has been completed. Located in the busy section of the lower end of Market street, and occupying a new, modern, five-story building, this company has established quarters commensurate with its importance.

As agents for the New York Manganese Steel Safe Company and the Hall Safe & Vault Company, this office has been a factor in equipping the Pacific Coast institutions with necessary protection from fires and burglary. The two makes of safes are of proven merit, having been given a strenuous test in the recent conflagration in San Francisco. The stock of safes carried, which is displayed on the main and second floors, usually numbers something over one hundred, of various sizes and shapes. The remainder of the building is devoted to the other lines handled by this company.

The manganese steel bank safe is made of genuine toughened manganese steel and is said to be without an equal for resisting burglars and mobs. It is by far of the highest tensile strength of any metal ever employed in safe construction. In short, it is too hard to cut and too tough to break. No other known metal has the power to absorb and resist without breaking or shattering the energy resulting from the action of nitroglycerine or other high explosives. Its use for security purposes constitutes the only advance in safe and vault material brought forward in over forty years, or since the introduction of welded chrome steel and iron plates now proven by burglars to be worthless. These welded steel and iron plates are tempered artificially, but the hardness thus produced is not inherent and can easily be drawn out by heat. Manganese Steel is self-hardening, i. e., its hardness is inherent and is not produced by any treatment. It cannot be softened by any annealing process.

Father and Son to Build

Architects R. B. Young & Son, 701 Lankershim building, Los Angeles, have prepared plans for a six-story and basement reinforced concrete apartment house, 85x140 feet to be erected on West Fifth street opposite the State Normal School for F. E. Engstrum, vice-president of the F. O. Engstrum Co. It will be known as the "Gerold" apartment house and will be one of the finest structures in the west. The construction will be absolutely fire-proof, being entirely of reinforced concrete with artificial stone exterior trim. The building will contain two hundred rooms and ninety bathrooms and will have hardwood interior trim throughout.

Plans are now being perfected and actual construction will commence in a few months on a six-story fireproof hotel building at the corner of Washington and Toberman streets, Los Angeles, for F. O. Engstrum, head of the F. O. Engstrum Company. The structure will be 135 feet square of reinforced concrete throughout. The first story will be faced

with tapestry brick, and the upper stories with pebble dash cement. The roof will be of Spanish tile, and the gables will be ornamented with parapets and hung with Mission bells. A central court 60 feet square will have a fountain and garden. The cost of the building will be about $300,000

San Francisco's Splendid Masonic Temple

Contracts are being let and construction work will be started at once on a new Masonic Temple in San Francisco. It will be an imposing marble structure at the corner of Van Ness avenue and Oak street. The general style of the building will be Byzantine, of monumental pronortions. Its dome will be imposing and the windows in it will be fashioned after the mosque of St. Sophia in Constantinople.

The building will cost $750,000. It will be 120 feet high, with a frontage of 120 feet in Van Ness avenue and 156 feet in Oak street.

The ground floor is to be devoted to a marble vestibule with walled ceiling leading to the elevators and staircase, with renting area in Van Ness avenue and a large auditorium in the rear, 65 by 129 feet.

The second floor will have four lodge rooms, each with its accompanying parlor, tyler's room, preparation room, hat and coat room and two lunch-rooms.

The third floor will be devoted to the commandery quarters with their reception room and adjacent facilities; the large banqueting room, with its adjoining kitchen, and the Eastern Star lodge, which has adjacent to it a parlor, reception room, tyler's room, preparation room, hat and coat room, banqueting room and kitchen.

On the mezzanine floor there is to be a large social hall, with library and 22 offices for the officials of the organization; also the armory.

At the rear of the basement will be a large drill hall, 65 by 140 feet, with a kitchen adjoining so that the drill hall may be used for banqueting purposes.

The building is to be finished inside in the detail of the Florentine period.

Great attention will be bestowed on the interior finish of the various lodgerooms, and beautiful wood will be used on the walls with ornamented ceilings. It has been the aim of the building committee to erect the finest Masonic temple in America, and one which will compare favorably with the great temples abroad. Bliss & Faville of San Francisco are the architects.

Arthur Scholz Moves Downtown.

Architect Arthur Scholz, of San Francisco, who has been doing some aggressive reform work in the Mission district, has moved into new offices in the Phelan building. He has plans under way for an $80,000 apartment house besides several flats and residences.

An Index to the Advertisements

[Index Continued on Page 124]

May Change Local Situation

A decision rendered by the Interstate Commerce Commission in Washington, D. C., Thursday, concerning the rates railroads shall charge for the shipment of cement from trans-Missouri territory to California, may have the effect of changing the entire complexion of things so far as awarding the contract for 100,000 barrels of cement for the State Engineering Department.

Bids recently received at Sacramento showed the Henry Cowell Lime and Cement Company to be the lowest, the price being $1.50 per barrel, on cars at the factory, which would mean a saving of approximately $35,000 to the State over the market price for cement.

But that Interstate Commerce decision comes along, and may turn things upside down so far as the award is concerned. The decision refuses to grant the railroads the right to advance their rates on cement from half a cent to 5 cents a hundred in trans-Missouri territory.

The Iola Portland Cement Company, of Iola, Kan., bid on the job, making their price $2.37 per barrel, f. o. b. Sacramento. If this decision by the Interstate Commerce Commission has the effect it is thought to have, the price of the Iola product will be reduced at least $1, making $1.37 the price, as against $1.50 for the California concern. This would be a saving of 13 cents on a barrel, and $13,000 on the 100,000 barrels.

State Architect Resigns.

State Architect W. D. Coates has resigned and Engineer Nat Ellery who appointed him, has accepted the resignation. Ellery's term has already expired and there are rumors that Governor Johnson will name a new man for the place in the course of the next thirty days. Assistant State Engineer Ralph Barker, with headquarters in San Francisco, has also been relieved of his duties.

ADVERTISERS' INDEX — Continued from Page 121

The New Lien Law

"Assembly Bill No. 278," the name by which the new lien law is designated, is, as far as the owner's standing is concerned, practically the same as the old law. The section giving the lien claimants the right to enforce their judgment on the improvements and sell them without regard to mortgage preference, except on the land, is stricken out entirely as a result of vigorous objections raised by the bankers, who had declared they would make no loans for building purposes if the mortgage was restricted.

Another new section provides that no lien shall exceed the cost price fixed in the contract or the price fixed by any modification of it and that contracts, no matter of what value, shall be recorded and when so recorded are actual notice to all concerned.

Triple Device for Garage Doors and Openings in Churches, School Rooms, etc.

Latest Devices Described in New Catalog of Reliance Door Hanger Company

The Reliance Ball Bearing Door Hanger Company, of New York, is just out with its new 1911 catalog, a copy of which has reached this publication. Besides being most attractive typographically, the book contains double the number of pages of any catalog issued by the company heretofore.

The enlargment was evidently made necessary by the extra amount of detail information given, which will undoubtedly be appreciated by both the architect and builder, also many new devices brought out by the company since their last catalog.

One of the most notable and ingenious hangers evolved by the Reliance Hanger Company during the part year is a triple door device whereby three doors are hung on a single hanger, the center door alone being attached to the hanger while the other two doors swing on hinges, fastened directly to the center door. This is an exceptionally appropriate hanger for garage doors, or for closing large openings in churches, school rooms or private residences, as a 9 foot opening can be covered by such doors with only 3 feet of pocket room needed for the doors to slide into when folded.

Accompanying this article are cuts of this device, showing three doors opened and closed. Note that the third door can be fastened both top and bottom with flush bolts, and the first door can be used as an ordinary entrance door.

For the front of a garage it would also be feasible to make the center track longer, so that the three sliding doors could be moved over to the left instead of to the right as shown in cut and then the stationary panel shown could be hinged so that it could be thrown open, thus giving the same width of opening on either side, right or left hand, as desired. In this way, with four doors each 3 feet wide, it would be possible to have a 9 foot opening on either side.

Several new style of elevator door locks of Reliance invention are also being put on the market. One of these locks is designed to do away with noise and rattle so often heard on the ordinary kind now for sale. All bumpers are of soft rubber, while working parts are so guarded by composition material, that the operation is as nearly noiseless as possible for elevator doors.

Another lock shown is so constructed that it can be locked with a key from the loft side of the door, and although the operator cannot open the door from the car side when locked, neither can any one open same from the loft side even if unlocked, thus preventing accidents. The mechanism of this lock is worked by a rod inside of a hollow tube, which prevents any person on the outside of the car reaching through a grille door and opening it. This tube can be made of any length according to the width of the door. The working parts of the lock are of drop steel forgings. A modification of this lock is also shown in the Mortise lock.

Almost every conceivable kind of ball bearing door hanger and elevator door lock, together with their working parts, is fully illustrated and clearly described in this catalog and any one interested in

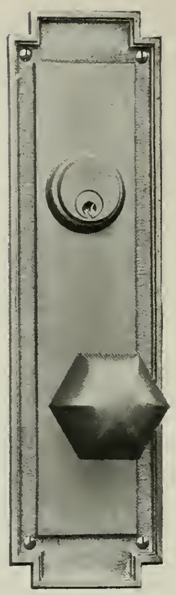
Another Reliance Lock That Promises to be Popular building construction should write for a copy of same either to the main office of the company, No. 1 Madison Avenue, New York City, or to any one of their Pacific Coast agents: Mr. Louis R. Bedell, 1108 Story Bldg., Los Angeles, Cal.; The Sartorius Co., San Francisco, Cal.; The Portland Wire & Iron Works, Portland, Oregon; Messrs. D. E. Fryer & Co., 305 Lumber Exchange, Seattle, Wash.

Medusa White Portland Cement

Some exceedingly interesting information regarding white Portland cement is contained in an attractive publication, profusely illustrated by means of halftone engravings, which has been issued by the Sandusky Portland Cement Company, Sandusky, Ohio. The product is known under the name of "Medusa," and is used in the same manner as ordinary Portland cement, from which it differs in no respect except in its pure white color. Among the many uses for which it is suitable, mention may be made of building ornamentation, stucco, concrete building blocks, interior decoration in connection with staircases, wainscoting, panels, reliefs, floors, etc., statuary, cemetery work, and in the production of white or colored tiles for mosaic floors, bathrooms and fireplaces. Reference is made to the fact that, with the addition of small amounts of ordinary pigments, "Medusa" white Portland cement gives a concrete of brilliant and lasting colors, thus enabling architects to produce effects not readily heretofore obtainable.

It is pointed out that one part Medusa white Portland cement mixed with two to three parts crushed marble or white sand will give a strong rich mortar which will cling to new mortar, metal lath, etc., or can be used as finishing coat in constructing stucco work. The face of this mortar after it has set hard, the company states, should be washed off with dilute muriatic acid, which will remove any stains which might have been produced by impure water, and will leave a wall of pure white color. The half-tone illustrations relate to buildings and work in connection with which the Medusa cement has been used. There are also reports of tests which have been made of the material, and testimonial letters show the estimation in which the material is held by engineers, contractors, builders and others who have made practical use of it.

The same company has also issued a pamphlet of companion size in which are set forth at length the merits of the Medusa waterproofing compound, which, it is pointed out, makes concrete impervious to water and prevents discoloration and efflorescence



Architects

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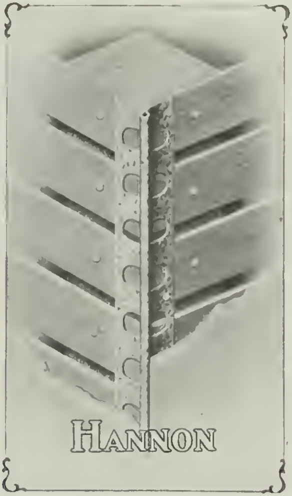

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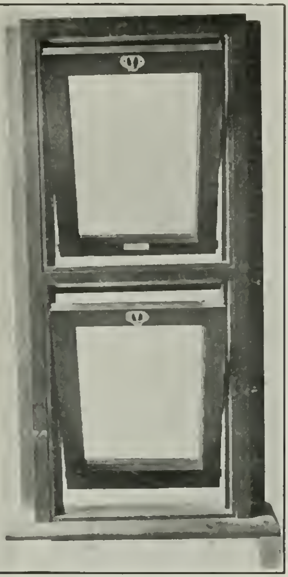

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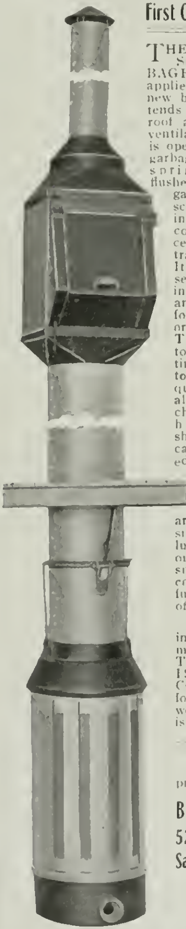

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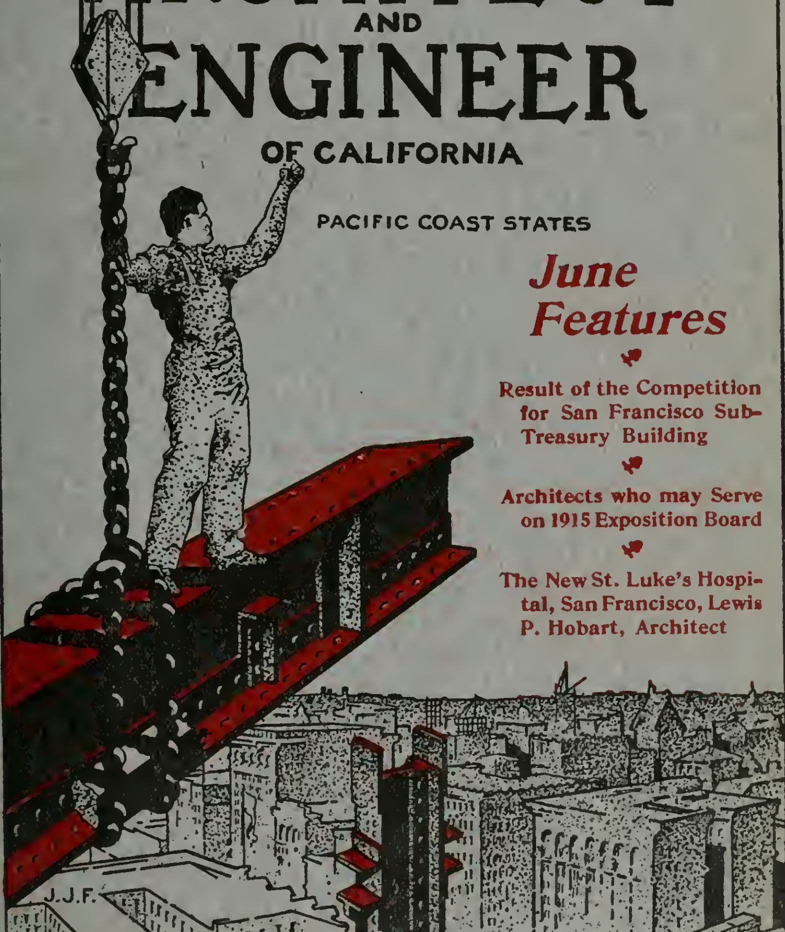

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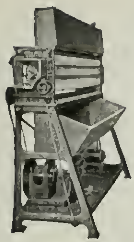

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ARCHITECTS' SPECIFICATION INDEX—*Continued*

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Backus Patent Gas Grates and Logs, Boyd & Moore, Inc., Agents, 356 Market St., S. F.

GLASS—PRISM, ART, ETC.
California Art Glass Works, 768 Mission St., S. F.
United Glass Co.........115 Turk St., S. F.

GRAVEL, SAND AND CRUSHED ROCK
Bay Development Co....153 Berry St., S. F.
California Bldg., Material Co., Pacific Bldg., S. F.
Del Monte White Sand, sold by Pacific Improvement Co........Crocker Bldg., S. F.
Grant Gravel Co.........87 Third St., S. F.
Natomas Consolidated, Peoples' Savings Bank Bldg., Sacramento

HARDWOOD FLOORING
Boyd & Moore.........356 Market St., S. F.
Dieckmann Hardwood Co., 244 California St., S. F.
Parrott & Co........320 California St., S. F.
White Bros., Cor. Fifth and Brannan Sts., S. F.

HARDWOOD LUMBER
Dieckmann Hardwood Co., Welch Bldg., S. F.
Niehaus & Co........548 Brannan St., S. F.
Parrott & Co........320 California St., S. F.
Strable Mfg. Co., First St., betw. Washington & Clay, Oakland
White Bros., Cor. Fifth and Brannan Sts., S. F.

HARD WALL PLASTER
Empire Hard Wall Plaster Co., Pacific Bldg., S. F.
Reno Hard Wall Plaster, sold by Western Building Material Co., 430 California St., S. F.
Standard Supply Company, First St. and Broadway, Oakland

HARDWOOD PANELS
Niehaus & Co........548 Brannan St., S. F.
White Bros., Cor. Fifth and Brannan Sts., S. F.

HARDWOOD VENEER PANELS AND DOORS
E. A. Howard & Co.......Howard St., S. F.

HEATERS—AUTOMATIC
Hart Heater Co., State Savings Bank Bldg., 13th and Franklin Sts., Oakland
Hoffman Heater, sold by Holbrook, Merrill & Stetson, San Francisco and Los Angeles.
Humphrey Co., 565 N. Rose St., Kalamazoo, Mich.
Pittsburg Water Heater, sold by Thos. Thieben & Co................585 Mission St., S. F.

HEATING AND VENTILATING
Gilley-Schmid Co., Inc., Thirteenth and Mission Sts., S. F.
Jno. G. Sutton Co......229 Minna St., S. F.
Machinery and Electrical Co., 351-353 N. Main St., Los Angeles
Mangrum & Otter, Inc., 507 Mission St., S. F.
Pacific Blower & Heating Co., 17th St., betw. Mission and Valencia, S. F.
Pacific Fire Extinguisher Company, 507 Montgomery St., S. F.
The Turner Co.......278 Natoma St., S. F.

ARCHITECTS' SPECIFICATION INDEX—*Continued*

ARCHITECTS' SPECIFICATION INDEX—*Continued*

PLASTERING CONTRACTORS
A. Knowles............985 Folsom St., S. F.
D. Ross Clarke.......708 Pacific Bldg., S. F.

PLUMBING
Alex Coleman ....706 Ellis St., S. F.
J. E. O'Mara...........447 Minna St., S. F.
Jno. G. Sutton Co.......229 Minna St., S. F.
The Turner Co.........278 Natoma St., S. F.
Thos. J. Ford.........1213 Octavia St., S. F.

PLUMBING APPLIANCES
Brown's Gasket, sold by Sanitary Plumbing Appliance Co.....412 Sheldon Bldg., S. F.

PLUMBING FIXTURES
Crane Co....Second and Brannan Sts., S. F.
Geo. H. Tay Company, 617 Mission St., S. F.
Haines, Jones & Cadbury Co., 851-859 Folsom St., S. F.
J. L. Mott Iron Works, D. H. Gulick, selling agent ....135 Kearny St., S. F.
N. O. Nelson Mfg. Co., 978 Howard St., S. F. 406 E. 4th St., Los Angeles

PLUMBING SUPPLIES
California Steam & Plumbing Supply Co., Fifth and Bluxome Sts., S. F.

POTTERY
Steiger Terra Cotta and Pottery Works, Mills Bldg., S. F.

PUMPS, MACHINERY, ETC.
Simonds Machinery Co., 12 Natoma St., S. F.

RAILROADS
Southern Pacific Co........Flood Bldg., S. F.

ROLLING DOORS, SHUTTERS, PARTITIONS, ETC.
C. F. Weber & Co......365 Market St., S. F.
Lilley & Thurston........82 Second St., S. F.

ROOFING AND ROOFING MATERIALS
J-M Asbestos Roofing, sold by H. W. Johns-Manville Co., Agencies in all the principal West Coast cities.
Pluvinox Roofing, sold by Boyd & Moore, Inc.................356 Market St., S. F.

ROOFING TIN
"Scott's Extra Coated," manufactured by Follansbee Bros. Co.............Pittsburg, Pa.
Meurer Bros. Co., A. H. McDonald, Coast Representative..........628 Third St., S. F.

ROOFING AND ROOFING MATERIALS
"Ferroinclave," the Brown Hoisting Machinery Co., Coast Agent, Chas. A. Levy, Balboa Bldg., S. F.
Ford & Malott, Mariposa St., at Iowa St., S. F.
F. W. Bird & Son, East Walpole, Mass., Coast Agents, Lilley & Thurston Co., 82 Second St., S. F.
Genasco Ready Roofing, sold by Parrott & Co...............320 California St., S. F.
H. D. Samuel Company, 1054 Monadnock Bldg., S. F.
Harry Larkin,............Builders' Exch., S. F.
Mackenzie Roof Co., 425 15th St., Oakland
Meurer Bros. Co., A. H. McDonald, Coast Representative........628 Third St., S. F.
Pioneer Roll Paper Co..........Los Angeles
W. H. Wilson & Co....42 Natoma St., S. F.
Western Builders' Supply Co., 680 Mission St., S. F.

RUBBER TILING AND MATTING
Goodyear Rubber Co...587 Market St., S. F.
New York Belting & Packing Co., 129 First Street, S. F.

SAFES
Howe Scale Company, 333 Market St., S. F.

SAND
Del Monte White Sand, sold by Pacific Improvement Company, Main office, Crocker Bldg., S. F.

SASH CORD
Samson Cordage Works, Manufacturers of Solid Braided Cords and Cotton Twines, 88 Broad St., Boston, Mass.
Silver Lake A Sash Cord, represented by Sanford Plummer, 149 New Montgomery St., S. F.

SCHOOL FURNITURE AND SUPPLIES
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Whitaker & Ray-Wiggin Co., 776 Mission St., S. F.; 209 E. Seventh St., Los Angeles.

SCAGLIOLA
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SHEATHING AND SOUND DEADENING
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SHEET METAL WORK
Berger Mfg. Co......1120 Mission St., S. F.
Dunlevy & Gettle....79 City Hall Ave., S. F.

SHINGLE STAINS
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W-M Shingle Stain, Worden-Meeker Varnish Co.....................S. F. and Oakland

SLATER'S CEMENT
Western Builders' Supply Co., Representing Clinton Metallic Paint Co., Clinton, N. Y.

STAINLESS CEMENT
Blanc Stainless Cement Co., Levensaler & Preston, Inc., San Francisco; Quartz Glass & Manufacturing Co., Los Angeles; John Brooke & Co., Inc., Seattle, Wash.

STEEL AND IRON—STRUCTURAL
Boyd & Moore.........356 Market St., S. F.
Brode Iron Works....621 Howard St., S. F.
Central Iron Works...621 Florida St., S. F.
Mortenson Construction Co., 19th and Indiana Sts., S. F.
Pacific Rolling Mills, 17th and Mississippi Sts., S. F.
Western Iron Works....125 Beale St., S. F.
Woods & Huddart.....356 Market St., S. F.

ARCHITECTS' SPECIFICATION INDEX—*Continued*

STEEL BARS FOR CONCRETE REINFORCEMENT
Baker & Hamilton, 4th and Brannan Sts., S. F.
Jno. B. Leonard........Sheldon Bldg., S. F.
Woods & Huddart......356 Market St., S. F.

STEEL MOULDINGS FOR STORE FRONTS
J. G. Braun, 537 W. 35th St., N. Y., and 322 S. Paulina St., Chicago.

STORE FRONTS
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Thorne Hold-Fast Metal Store Front Construction, Boyd & Moore, Inc., Agents, 356 Market St., S. F.

SURVEYORS
Sanborn & Corinson....251 Kearny St., S. F.

TAPESTRY AND BRONZE
Eugene Glaenzer & Co., 705 Fifth Ave., New York

TERRA COTTA CHIMNEY PIPE
Dunlevy & Gettle....79 City Hall Ave., S. F.

TILES, MOSAICS, MANTELS, ETC.
Mangrum & Otter....561 Mission St., S. F.
The J. F. Kelly Co..723-731 7th St., Oakland

TILE FOR ROOFING
Gladding, McBean & Company, Crocker Bldg., S. F.

TIN PLATES
Meurer Bros. Co., A. H. McDonald, Coast Representative........628 Third St., S. F.

VACUUM CLEANERS
J. P. Raymond........397 Sutter St., S. F.
American Rotary Valve Co., 702 Balboa Bldg., S. F.

VALVE PACKING
"Palmetto Twist," sold by H. N. Cook Belting Co.............317 Howard St., S. F.

VENETIAN BLINDS, AWNINGS, ETC.
C. F. Weber & Co....365 Market St., S. F.
Ericsson Swedish Venetian Blinds, Boyd & Moore, Inc., Agents..356 Market St., S. F.

VENEERS
Dieckmann Hardwood Co., Welch Bldg., 244 California St., S. F.
White Bros., Cor. Fifth and Brannan Sts., S. F.

VENTILATORS AND SHEET IRON
Meurer Bros. Co., A. H. McDonald, Coast Representative........628 Third St., S. F.

VITRIFIED CLAY PIPE
Steiger Terra Cotta and Pottery Works, Mills Bldg., S. F.

WAINSCOTING
"Kompolite"...........350 Mills Bldg., S. F.

WALL BEDS
The Turner Wall Bed Co., Mission, near Fifth., S. F.
Marshall & Stearns Co., 1154 Phelan Bldg., S. F.

WATERPROOF FINISHES
"Trus-Con" Finish, sold by Western Lime & Cement Co..........268 Market St., S. F.

WATERPROOFING FOR CONCRETE, ETC.
"Ceresit," manufactured by the Ceresit Waterproofing Co., sold by Parrott & Co., San Francisco, Los Angeles and Portland, and Julien A. Becker Co., Seattle, Wash.
Hydrex Felt & Engineering Co., Boyd & Moore, Inc., Agents..356 Market St., S. F.
"Imperial" Waterproofing, sold by Baker Bros., San Francisco; Braun Chemical Co., Los Angeles; W. O. Stamps, Portland, and B. W. Gaisford, Seattle, Wash.
Parrott & Co........320 California St., S. F.
Samuel Cabot Mfg. Co., Boston, Mass., agencies in San Francisco, Oakland, Los Angeles, Portland, Tacoma and Spokane.
Te-Pe-Co Waterproofing, sold by H. G. Clinton, 34 Ellis St., S. F.; Bass Hueter Paint Co., Pacific Coast Distributors.
The Building Material Co., Inc., 587 Monadnock Bldg., S. F.

WATER SUPPLY
Kewanee System, Simonds Machinery Co., sole agents....12 and 14 Natoma St., S. F.

WEATHER STRIP
Monarch Metal Weather Strip, Boyd & Moore, Agents ......356 Market St., S. F.

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Velvo-Tone, Worden-Meeker Varnish Co., S. F. and Oakland

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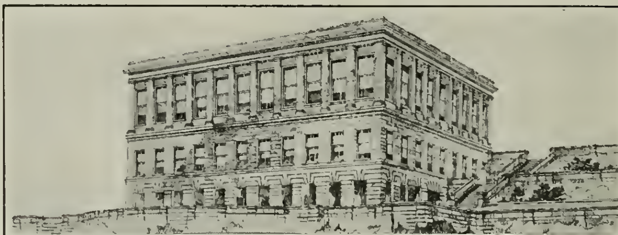
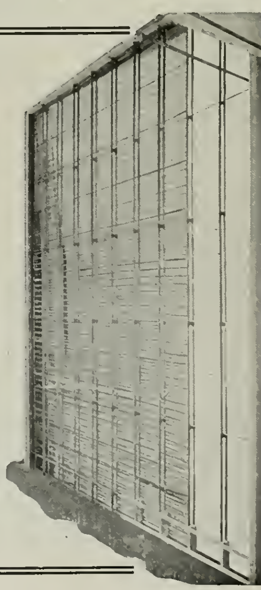
Blanc Stainless Cement Co., Levensaler & Preston, Inc., San Francisco; Quartz Glass & Manufacturing Co., Los Angeles. John Brooke & Co., Inc., Seattle, Wash.

WINDOWS, REVERSIBLE, ETC.
Dean Reversible Window Co., 551 Brannan St., S. F.
Hipolito Screen & Sash Co., 634 Maple Ave., Los Angeles
Tabor Sash Fixture Co., Boyd & Moore, Agents..............356 Market St., S. F.

WOOD FINISH
Bridgeport Wood Finishing Co., New Milford, Conn.





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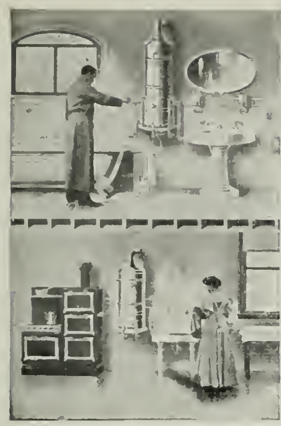

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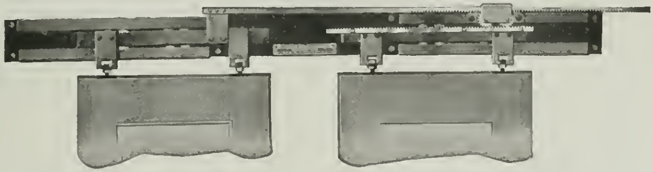

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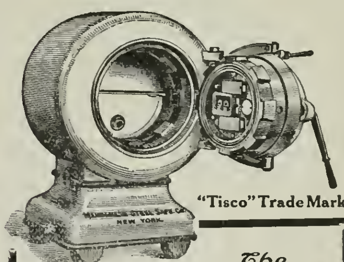

Southern Pacific Car Shops, Oakland, California

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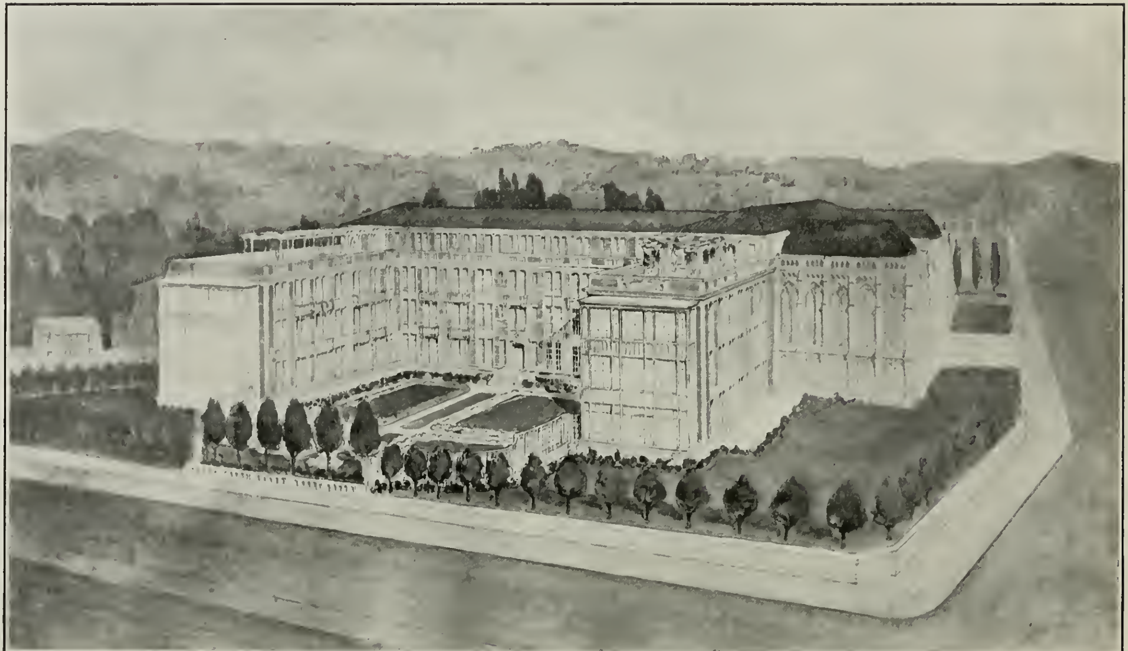
Contents for June



Frontispiece
The Architect and Engineer
June, 1911

PERSPECTIVE OF ST. LUKE'S HOSPITAL, SAN FRANCISCO, CALIFORNIA
Lewis P. Hobart, Architect

THE

Architect and Engineer

Of California

Pacific Coast States

Vol. XXV. JUNE, 1911. No. 2.

The New St. Luke's Hospital, San Francisco

By GEORGE A. BOS, C. E.

THE site of St. Luke's Hospital, which covers practically the entire block bounded by Valencia, Duncan and Army streets, and San Jose avenue, San Francisco, is now occupied by a number of old buildings standing at the south end of the block. These buildings have been kept in condition for hospital work by constant repairs, but do not have the latest modern appliances and apparatus, and not being fireproof, are not suitable for first-class permanent hospital work.

The Hospital Corporation has been enabled to begin the plans for a new group of buildings by a munificent gift received from Mrs. Louis F. Monteagle, Mrs. Whitelaw Reid and Mr. Ogden Mills. This gift, amounting to $400,000, of which one-half was contributed by Mrs. Monteagle, and the other half by Mrs. Reid and Mr. Mills, jointly, is intended for a memorial to two of the close relatives of the benefactors, Messrs. Calvin Paige and D. O. Mills.

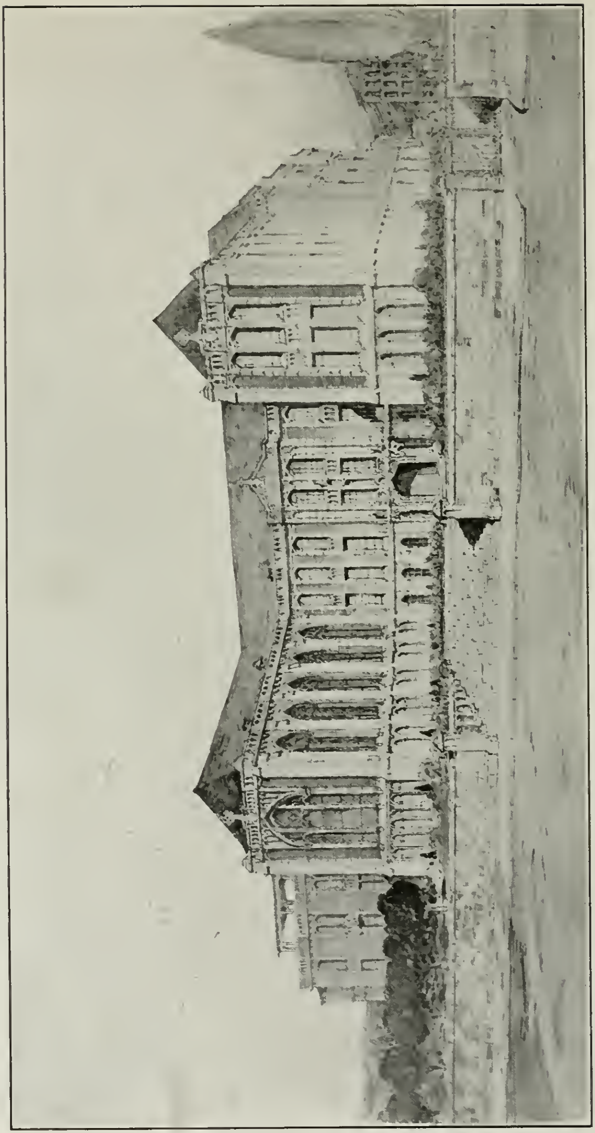
The donation will make it possible to erect a complete and modern hospital, capable of accommodating 150 patients, and fitted with all of the latest apparatus and features which are now required for the safe, efficient and sanitary conduct of hospital work.

The scheme presents certain features which vary from the common hospital plan, of a central administration building flanked by two hospital wings. This latter arrangement has many unfavorable features, including duplication of service and consequent expense and inefficiency. The attendance in a modern hospital, which necessitates practically one employee for each patient, not counting special and private nurses, makes it imperative that the service be facilitated as much as possible; that distances traveled during the day by the various attendants be shortened, and that the entire portion devoted to the patients be made as compact as possible.

The kitchens should be centrally located and sufficiently removed from the patients' rooms so as not to be a source of annoyance.

In the endeavor to adjust these various conditions the Valencia street side of the lot, which affords the street car service, is taken up by the administration group, consisting of a central building and two wings. The central building comprises the administrative offices, apartments for the superintendent, resident physicians and matron, pathological department, research study space, and the entire operating department with four operating rooms, three sterilizing rooms, two anesthetizing rooms, locker rooms, wash rooms and other necessary adjuncts. One of the wings is occupied by the chapel. The other wing is occupied by the superintendent's quarters and part of the operating suite.

The hospital proper faces south toward Duncan street, and is divided into a central building with two lateral wings, enclosing a large court.



Showing Chapel Portion of St. Luke's Hospital, San Francisco, California
Lewis P. Hobart, Architect

The north side is taken up wholly by elevators, stairs, diet kitchens, bathrooms and other similar features. The rooms and wards all face east, south or west, giving an abundance of sun every day at all seasons of the year.

The first floor is devoted to the ward patients, while the upper floors are mainly given to private room patients.

Each floor is subdivided for purposes of service into three portions, each served by its own service unit. The service unit consisting of utility room, work room and chart room, these being the rooms used by the nurses for cleaning, sterilizing, instrument and drug storage.

The power house, kitchen, dining room and internes quarters will be segregated into one main service building. The separation of these portions into one separate building apart from the hospital proper, prevents the odors, noises and vibration from the power house and kitchen from annoying the patients, and removes these more or less objectionable features from the immediate vicinity of any patient's room. At the same time it permits these rooms to be compact and permits their location to be central, with easy access to all patients' rooms.

It is intended that the equipment of the hospital shall be most complete, and particular care will be given to furnish every facility and every piece of apparatus which is considered desirable in modern hospitals.

The power house will include boilers for supplying heat to the rooms and live steam to the kitchens, sterilizers and other apparatus. The electric current necessary for the light and motor systems will be generated in the power house. All of the machinery, pumps, engines, etc., being in duplicate, to insure against breakdown.

A complete fan system for ventilating purposes will be installed, together with a vacuum sweeping plant.

The laundry will be provided with all of the usual laundry machinery, including washing machines, drying machines, mangles and other accessories.

An ice plant will be installed in the basement, with refrigerator pipes running to the general kitchen and also to the various diet kitchens.

In the basement a rubbish incinerating plant will be provided.

A system of electric signals with a drop cord push button at each patient's bed which will light simultaneously above the bed, in the hall and at the nurses' station, will be installed.

The operating suite will be large and finished with a view to giving the most sanitary results. Four operating rooms, with necessary anesthetizing and sterilizing rooms, are contemplated, with ample provision for physicians' requirements, such as locker rooms, shower rooms and other similar features.

A special maternity wing will be provided for both ward and private patients.

The main kitchen will prepare the food for the ward patients and for all the physicians, nurses and other hospital attendants. For the private room patients there will be a special diet kitchen on the third floor. In addition to these kitchens, diet kitchens will be installed on every floor to supply the special cooking which may be necessary for the patients.

Many of the private rooms are provided with a balcony on which the beds can be wheeled out in good weather.

The wards on the first floor open out on a terrace so that the ward beds can be wheeled out into the sun.

At the ends of each hospital wing glass enclosed sun porches will be built which will be accessible from the private rooms as well as the wards. The roofs of the hospital wings will be treated as roof gardens, screened from the wind with glass screens and attractively finished as pergolas, which will eventually be covered with vines. They will be large enough to accommodate all of the convalescent patients in the hospital.

The nurses' home is to be a separate building connected to the main building with a covered passage. This building is intended to provide accommodations for sixty nurses, with reception rooms, lunch rooms, library, lecture rooms and every other feature necessary for the proper comfort and instruction of the nurses' training school.

In the basement of the nurses' home will be installed the ambulance garage for the hospital ambulances and cars of visiting physicians.

The buildings will be of fireproof construction throughout, the frame, floors and roofs being of reinforced concrete construction, the walls of brick, with terra cotta trimming and granite base, the color being a light buff. The sloping roofs are to be of concrete covered with slate, the flat roofs under the roof gardens are to be finished with tile.

The corridors, operating rooms, kitchens, diet kitchens, bathrooms, laboratories and other rooms used for similar purposes, will have floors and wainscot of enameled tile. The floors of the other rooms will be of narrow strips of beechwood. The partitions will be of terra cotta of sufficient thickness to make the rooms as sound proof as possible.

The hospital, having for one of the important architectural features, the chapel on Valencia street, the English perpendicular Gothic style afforded the logical treatment of elevation. The Gothic composition with its long continued vertical lines affords at the same time an ideal hospital elevation, permitting of a maximum of light and air and getting a unity of treatment of the various wings.

While the construction of the buildings is in progress the present wooden structures which are being moved to the Army street side of the lot, will continue to be used for hospital purposes. After completion of the new buildings all of the old buildings, except the Mills building, will be dismantled, the old Mills building being used as a contagious ward.

The architect, Lewis P. Hobart, hopes to have the buildings completed in July, 1912.

* * *

Architects who may Serve on Exposition Board

SAN FRANCISCO architects are to have an important part in planning the architectural features of the Panama-Pacific Exposition buildings. This is as it should be, and if care is taken in the selection of the members of this committee, there should be originality, beauty and harmony in abundance, and a scheme of architecture should be evolved that will make San Francisco's fair famous the world over for all time.

At the suggestion of President Charles C. Moore, San Francisco Chapter of the American Institute of Architects, on June 12th held an election of twelve of its members, from which twelve Mr. Moore has promised to select five architects, who will compose the Architectural Advisory Board, and upon which will rest the responsibility of determining the scope, style and general arrangement of grounds and buildings. It will be a stupendous task, indeed. Just who will design the different buildings will also be determined by this committee. There is a disposition to have the latter act merely in an advisory capacity in so far as working out the plans of the buildings; it being suggested that the actual preparation of drawings be left to the younger members of the profession.

Following is the committee of twelve elected by the Chapter and from which Mr. Moore will select five:

John Galen Howard, Willis Polk, William Curlett, Albert Pissis, James W. Reid, Clarence R. Ward, Henry A. Schulze, Clinton Day, Sylvain Schnaittacher, William Mooser, Frank T. Shea and Cather Newsom.

Front Elevation Sub-Treasury Building, San Francisco
Bakewell & Brown, Architects

Competition for San Francisco Sub-Treasury Building

THE result of the competition for the new sub-treasury was announced at Washington on May 10th, and the judgment of the jury placed the successful competitors in the following order:

First, J. Milton Dyer, Cleveland, Ohio.

Second, Abraham Garfield, Cleveland, Ohio.

Third, Dennison, Hirons & Dabyshire, New York, N. Y.

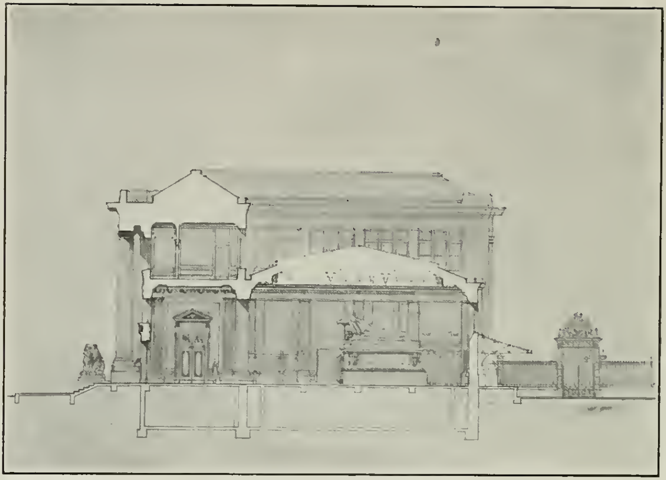
The following is a list of the competitors: Ward & Blohme, Bliss & Faville, Coxhead & Coxhead, John G. Howard, Bakewell & Brown, and L. P. Hobart, all of San Francisco; Potter & Merrill, Tacoma, Wash.; Lazarus, Whitehouse & Foulhoux, Portland, Ore.; Wilder & Wright, Kansas City, Mo.; E. G. Garden, St. Louis, Mo.; F. P. Dinkelburg, Chicago, Ill.; Abraham Garfield and J. Milton Dyer, of Cleveland, Ohio; Garber & Woodward, Cincinnati, Ohio; Maynicke & Frank, Dennison, Hirons & Daybyshire and Davis, McGrath & Keesling, all of New York.

The program was as follows:

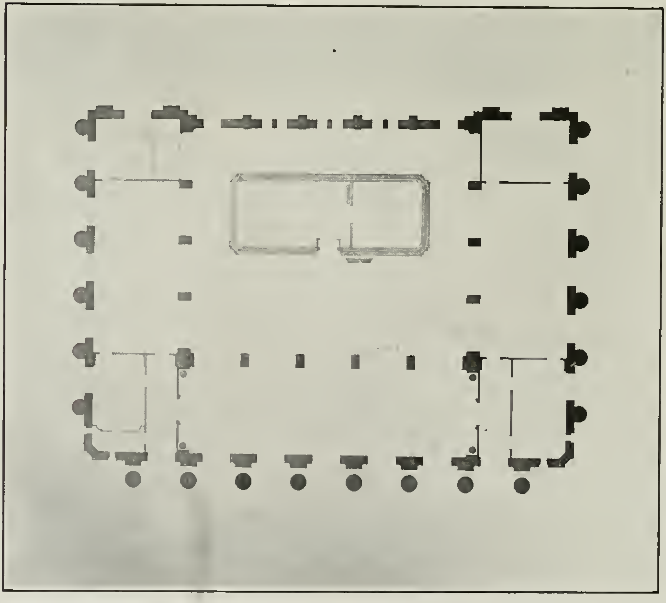
In compliance with the act approved February 20, 1893, and under amended regulations approved by the Secretary of the Treasury, February 24, 1903 (copies of which are hereto attached), the regulations being amended as follows:

Paragraph 18, page 6, is amended by striking out the figure five (5) in the fourth line, and substituting figure six (6), so that the clause will read: "A fee computed at the rate of six (6) per cent upon the cost of the work executed from his drawings."

The invitation to enter this competition is personal to the architect invited, and the competitive drawings are to be prepared by the competitor in his own office, and without assistance other than the usual force of his office. The



Longitudinal Section — Bakewell & Brown, Architects



First Floor Plan — Bakewell & Brown, Architects invitation is not transferable to a new partnership including an architect not invited by the department.

The cost of the building must be kept within $300,000, and is to include the plumbing and gas piping, electric conduits and wiring, heating and ventilating apparatus, generating plants for heat, light and power, elevators and approaches, but is exclusive of lighting fixtures both for gas and electricity, mural painting, and vaults.

Special attention is called to the above stated limit of cost, and drawings must not be presented which can not be estimated within the limit at the rate of 62 cents per cubic foot, reckoned from floor of lower story of building.

The building must be of fireproof construction, the exterior to be of such material as each competitor deems best suited for the execution of his design, and the interior to be finished generally in the same manner as a first-class modern bank.

The site of the building is shown by the plat hereto attached, and is level. A fire limit of forty (40) feet, including streets and alleys, to be reserved around the building.

The treatment of the several fronts and the arrangement of entrances is left to the discretion of the competing architects, according to the arrangement of the interior devised by them.

Provision to be made for a separate outside entrance, lobby, and stairway to second floor; there will be no stairway from the sub-treasury lobby to the second floor.

The following statement furnishes approximate information as to the accommodations required.

The ground area of the building to be about 8,000 square feet.

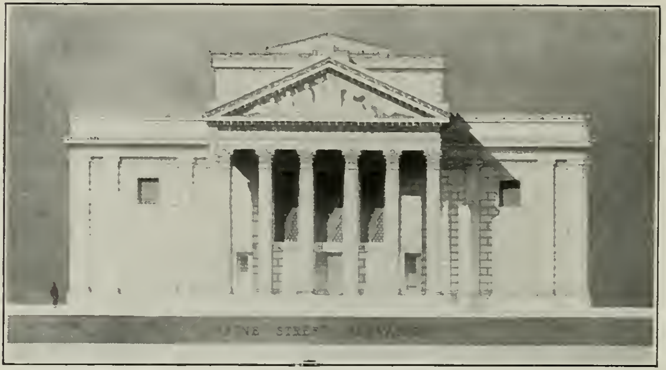
BASEMENT

The basement to be arranged to receive the heating and power plant, toilet rooms, fuel storage and

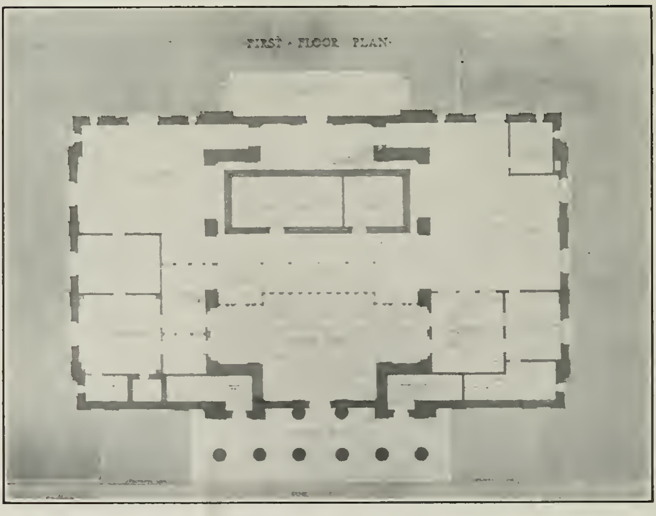
	Sq. ft.
Storage vaults for coin	2,250
One document room	600
One store room for janitor's supplies	400
One stationery and office supplies room	200

FIRST FLOOR

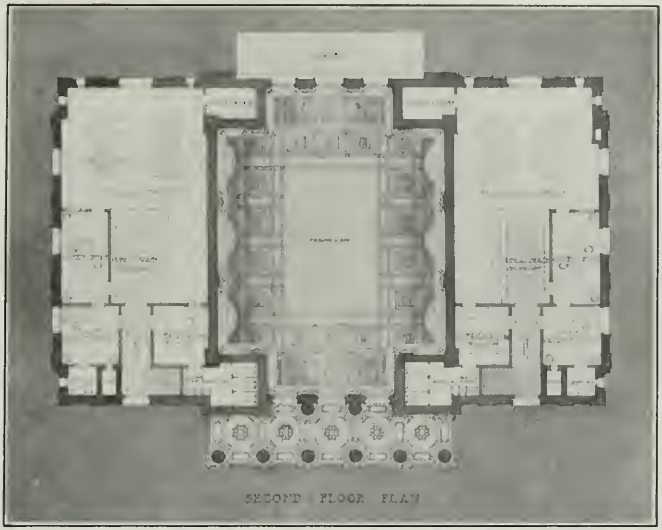
Office for Assistant Treasurer (one person)	400
Vault with outer and inner doors for Assistant Treasurer's office	36
Assistant Treasurer (private)	225
Assistant Treasurer (lavatory and toilet)	64
Cashier and Chief Clerk (one person)	225
Locker room (16 persons)	200
Paymasters' room for coin counting and checking (varies from one to three persons)	300
General toilet room	170
Lavatory and dressing room for women	120
Daily working double compartment vault and gold reserve vault, 44 by 15 feet, with doors opening into the general business office of the Assistant Treasurer, in two compartments, one for gold, 15 by 16 feet, and the daily working compartment, 28 by 15 feet	660
Rear lobby for the handling of coin on trucks, receiving and delivering, 10 by 40 feet	400
Main business office behind the screen to accommodate 13 clerks, and the lobby on outside of screen	5,200



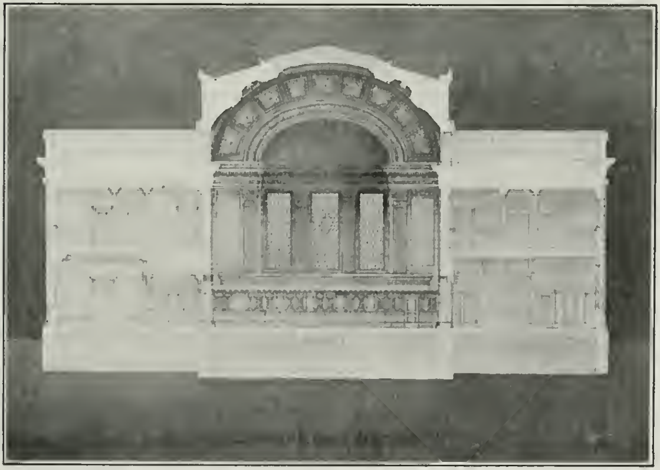
Ward & Blohme, Architects



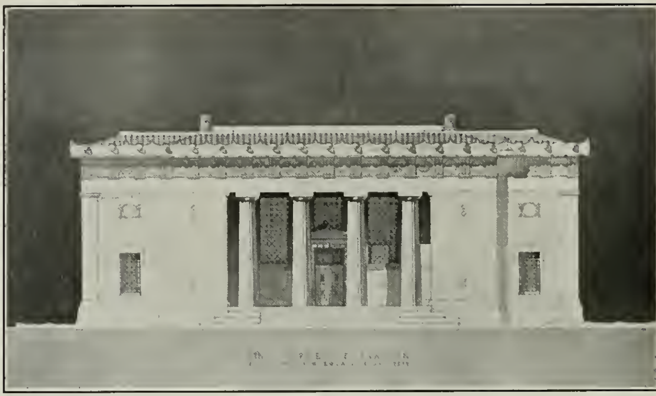
Ward & Blohme, Architects



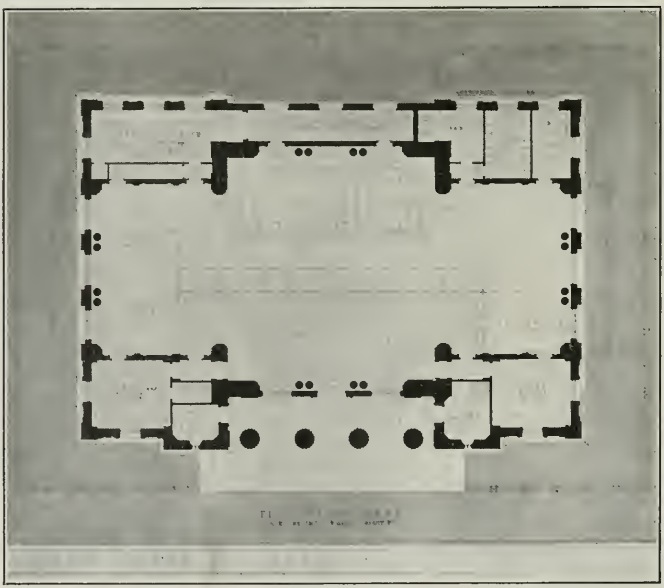
Ward & Blohme, Architects



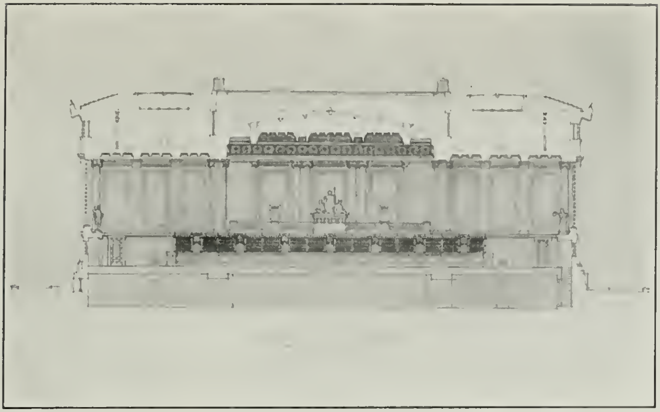
Ward & Blohme, Architects



John Galen Howard, Architect



John Galen Howard, Architect



John Galen Howard, Architect

SECOND FLOOR

The second floor to be arranged in two suites of office rooms, each to be divided as follows: Business office with counter, Clerk's room and toilet, Chief's office, Chief's private room and toilet.

Each design shall consist of the following drawings only, at a scale of one-eighth (⅛) inch to one (1) foot (no alternate design will be considered), and shall be inclosed in a portfolio, or between stiff cardboard, and shall be securely wrapped, sealed, and addressed to the Secretary of the Treasury, office of the Supervising Architect, Washington, D. C., and plainly and conspicuously marked with the NAME OF THE BUILDING under competition, and with no other marks whatever. (See paragraphs 8-9 of the Regulations.)

1. The plan of the first floor.
2. The plan of the second floor.
3. The elevation of the principal front (Pine street) rendered in India-ink wash, with shadows accurately cast with the light falling at an angle of forty-five (45) degrees from the left side of the drawing.

One figure only may be shown on this rendered elevation to give scale.

4. Section showing treatment of main office.
5. Outline sketch elevation of the other street front with no brush work or shading; may be in pencil on tracing paper.

No perspective sketch will be received.

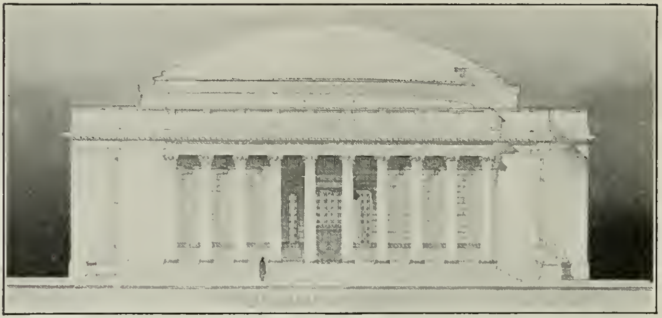
All drawings must be on white paper, unmounted, 18 by 21 inches.

Drawings to be titled "United States Subtreasury, San Francisco, Cal.," with only such other words or figures as may be necessary to designate their parts, etc.

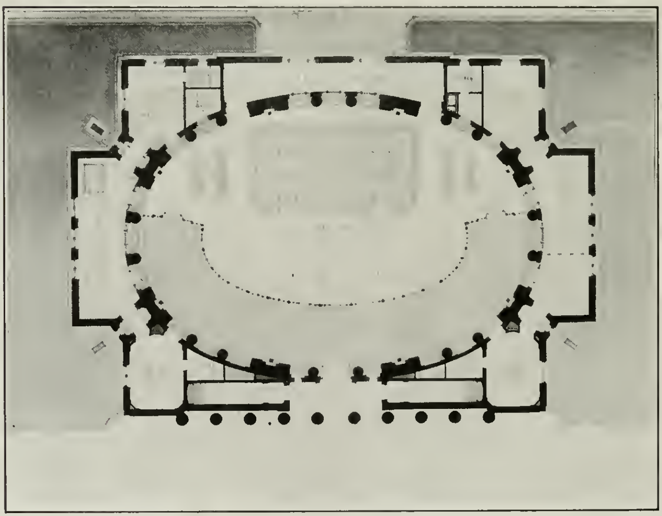
All words and figures to be simple lettering and not script or writing.

Inquiries for additional information must be made in writing only and forwarded by mail to this office, and any replies made will be simultaneously communicated by mail to each competitor by circular letter, but no information will be given after April 1, 1911.

Designs must be delivered at the office of the Supervising Architect,



Lewis P. Hobart, Architect



Lewis P. Hobart, Architect

Lewis P. Hobart, Architect

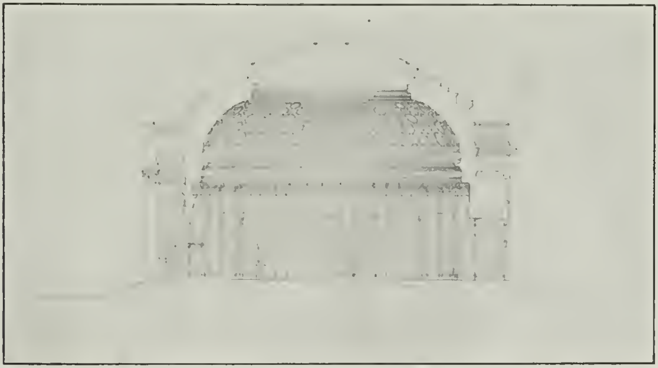
Treasury Department, Washington, D. C., not later than 2 o'clock p. m. Monday, May 1, 1911.

A brief description of the building, typewritten, on plain legal cap, calling attention to any special points of the design, materials proposed, etc., must accompany the drawings.

An estimate of the cost must also be forwarded with this description.

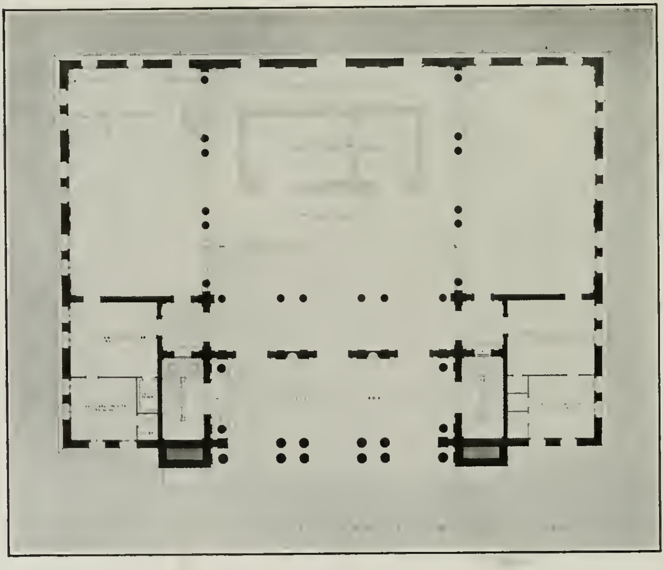
As yet the successful design has not been published, but the local designs all show a very high standard and do credit to their authors—in fact, it is one of the best set of competition drawings that we have yet had in San Francisco.

The selected design no doubt will give a very successful result, as Mr. Dyer is an architect of highest standing and has, for a young man, a brilliant record of achievement, being perhaps the leading architect of Cleveland, where he is building a group of municipal buildings of the first importance, as well as having a large private practice. He was a graduate of the Ecole des Beaux Arts in 1900.

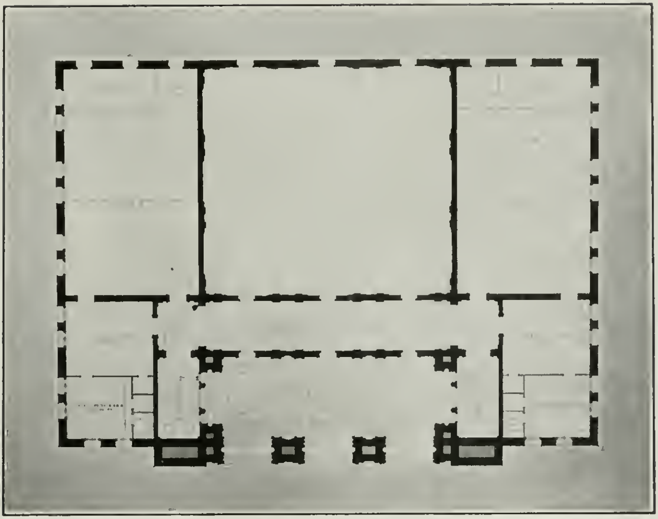


Lewis P. Hobart, Architect

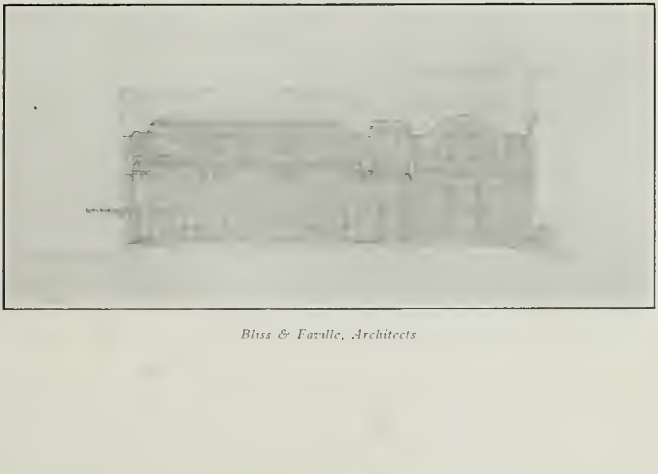
Bliss & Faville, Architects



Bliss & Faville, Architects

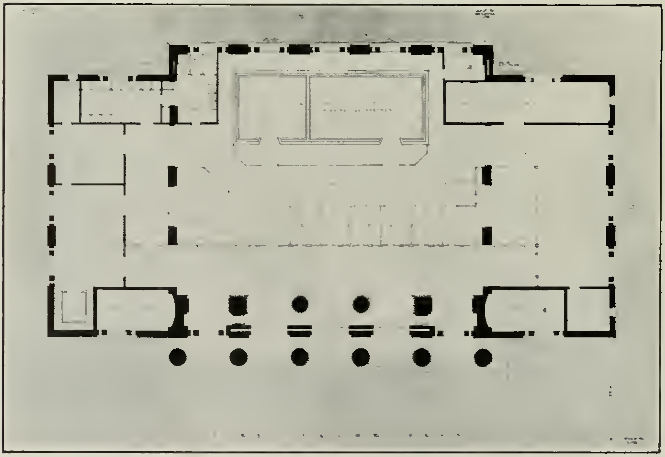


Bliss & Faville, Architects

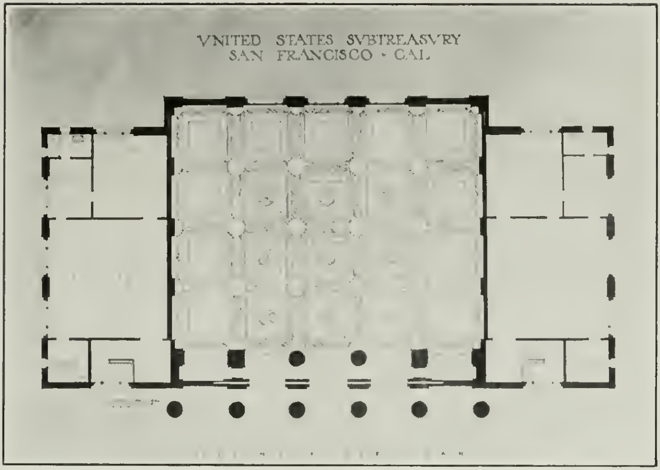


Bliss & Faville, Architects

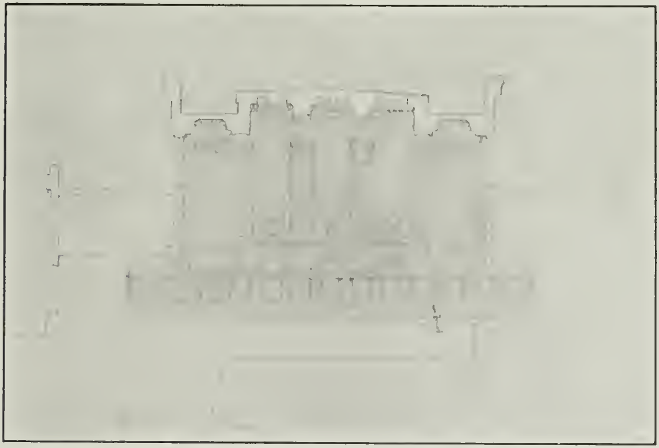
Coxhead & Coxhead, Architects



Coxhead & Coxhead, Architects



Coxhead & Coxhead, Architects



Coxhead & Coxhead, Architects

Some Phases of Modern Architectural Practice*

By WALTER H. KILHAM, Architect, Boston, Mass.

IT IS a difficult matter to suggest at this day any questions of architectural business importance which are not already clearly understood by the members of that enlightened profession. Questions of specifications, contracts and general business relations are pretty definitely settled in the minds of both architects and the general public, and but little can be said that will add anything new to the general fund. It is sometimes profitable, though, to talk over familiar points that constantly arise in the daily office routine, perhaps gaining by discussion a new point of view or a better grasp of some of the less firmly established principles.

The direction of the complicated operations which form the daily duties of the modern architect requires, in addition to the regular professional knowledge and skill derived from early training or natural aptitude, a considerable amount of executive ability which must be employed both in placing before the builder in clear and definite form the directions necessary for the successful execution of the work and at the same time, keeping the owner, the most vitally interested of all parties to the affair, fully informed as to the character of every part of the building which is under construction.

An architect's principal duties are threefold; he designs buildings and produces clear and intelligible working drawings and specifications; he secures tenders from contractors and arranges the letting of the contracts, and he secures proper execution of the work and certifies as to the amounts due to the contractor from time to time under the contract.

Proper fulfillment of these duties is impossible unless the architect has at his disposal a business machine or "system" so well adjusted and lubricated that its method of operation will never make itself evident either to the clients or contractors who do business with the office. This system must work so well that every drawing, sketch, letter or memoranda will always be producible at a moment's notice; nothing must ever be forgotten from a specification; no mistake occur in a certificate and no "extra" or "changed" work be done except on a special order countersigned by the owner prior to its execution. An ideal state of affairs some may say. But it is a good one to strive for and the result is not impossible, barring the human element which at the best is liable to an occasional error.

To carry out the above state of affairs the filing system should be simple and efficient, and free from all unnecessary complication. The stationery of the office, blanks, forms, etc., should be of uniform size, or at least of sizes to fit the standard filing cases. Where to stop in the provision of printed forms and filing arrangements is often a problem. The story is told of an enterprising agent for an office furnishing house calling at an office where he had installed his complete line of labor-saving devices a month before. "How is the filing system working?" he inquired of the head of the firm. "Great," was the reply. "A complete success." "Fine," said the agent, "and how is business?" "Oh," said the merchant, "We aren't doing any. We have given up business to attend to the filing system."

The letter file for correspondence will also carry the specifications if, as is our own custom, the latter are typewritten on standard size letter sheets opening at the side like a book. A case of smaller drawers (4 x 6) will take

*Presented before the Congress of Technology at the fiftieth anniversary of the granting of the charter of the Massachusetts Institute of Technology.

the receipts for drawings, the card reference specifications, if such are used, and the address list. Drawings can be kept flat in drawers, and great convenience results from adopting standard sizes of sheets and making "full sizes" wherever possible on bond paper or "Alba" from which blue prints can be readily taken. The convenience of this system extends also to the contractor's shanty, where fewer valuable drawings would be lost behind piles of cement bags if it were easier to keep them in a neat pile.

While I am speaking of uniform sizes I wish that the concerns which put out advertising matter relating to the building trades could be induced to agree on standard filing sizes for their output. A vast quantity of costly advertising material, much of it containing information which the architect needs and knows is valuable, goes directly to the waste basket because it can not be kept in form for ready reference. An attempt has been made by the Chicago Architects' Business Association to bring about the above result, and a similar campaign is being considered by the publicity committee of the Boston Society of Architects, but it seems strange that the advertisers themselves, whose interests are of paramount importance, can not take up the matter. Incidentally one may well inquire as to how much expensive advertising adds to the "cost of living." A certain large manufacturer called up the other day asking to have his "Z" roofing used on a certain building. In the course of the conversation he said his "X" roofing was equally good, but cheaper. On being asked why it was cheaper he claimed that they had spent so much money in advertising the "Z" brand that they had to get more money for it, and that the "X" brand, which had been but little advertised, was an equally reliable product.

Every floor plan should show the points of the compass and every column, pier, window, room, space and electric outlet should be numbered on the plans according to a relative system; thus column 42 on the second floor should be called column 2-42; room 23 on the sixth floor should be known as room 6-23, and so on. It is far easier to refer in a letter to pier 3-16 than to say "the second pier from the southwest corner on the third floor," and simplicity is of the essence of all building operations.

Possibly the greatest bugbear of owners and many architects in the past has been the bill of extras which used to follow every building operation. Verbal orders or instructions given by the owner to the architect and repeated by him to the builder and then forgotten or not confirmed, on the theory that "it wouldn't cost much," have caused the shipwreck of many a promising young career and brought what was in many cases deserved reproach upon the profession. The remedy is simple and absolutely effective. Have special order blanks printed and numbered in triplicate. Let each one have a blank space large enough to contain a clear definition of the work to be done and the agreed price, with a notice to the effect that the order shall not be considered valid until signed by all three parties, owner, contractor and architect, and make them all sign all three copies before issuing the order. This takes time, sometimes several days, but the architect should insist upon the signatures even if the work stops. Occasionally an inexperienced owner, who may often be a sharp business man in his own line, will protest against the architect who "can not take his word," but firmness on the architect's part will bring its reward at the final settlement of the contract. The three copies allow each party to retain one for his files. I have followed this system through a fairly active business career of thirteen years and have never had the slightest difficulty in settling any of the some 300 building operations conducted during that period, as every change, whether "extra" or "allowance" which went through the office, was fully vouched for in writing by all the parties interested. I believe it is well to have certain general clauses of the specification printed in fine type at the bottom of the order to assure the relation of the extra or changed work to the general contract. The above suggestion must seem unnecessary to most of the profession, but that it is not yet universally followed I have gathered from many recent Massachusetts court cases brought to my attention by a busy Boston lawyer. One of the most constant cares of an architect is to assure himself that the owner, who apparently has more or less definite ideas as to the building that he is to pay for, understands clearly what result is to be brought about by the plans and specifications. The ability to read plans and understand technical wording is given to few outside of Tech graduates, and the difference between paints and stains, "water struck" and "common" brick, "rift" and "heart rift" must ever remain a sealed book to the majority of the laity. Add to this the multiplicity of misleading trade adjectives, such as "double thick" glass, which the unfortunate client will generally read and expect the thickest of French plate, or "standard" thickness of slate, which means the thinnest (Why is "standard" or "first quality" always used to mean the poorest grade?), and the care which devolves upon the architect to properly inform his client becomes quite considerable. All this care must be taken, however, as part of the day's work and vigilance of this sort must never slacken.

Disappointment sometimes ensues, not through any particular fault of the work, but from faulty drafting of the specifications or contract requiring impossible performance from the contractor. For example, architects have for years been accustomed to insert at the beginning of their specifications a clause stating that no sub-contractors shall be employed except such as are approved by the architect. This clause, which is a necessary one to prevent portions of the work being let to irresponsible or disagreeable sub-contractors, should be followed by a clause stating that a list of the proposed sub-contractors shall be handed in with the bid which is stated to be based on such sub-proposals. If then it is desired to use a different sub-contractor, the difference between his bid and the one used as a basis of estimate should be added to the contract price then and there. The ideal way is really for all sub-bids to be sent to the architect, who selects the lowest received from reputable concerns and sends them to the contractors. This involves so much painstaking labor on the part of the architect that it is not likely to be generally adopted at the present rate of compensation.

General clauses are in many cases an unexpected disappointment. It is of little use to say "all the painter's work must be done in the best and most thorough manner known to the painting and finishing trade," when you only expect a three-coat job for a low-priced building, for to the owner the clause will mean that his North Carolina pine will come out looking like Circassian walnut. Neither should the contractor be required to guarantee a piece of work for which an elaborate specification has been written. Either let him do it his own way, if he is to guarantee it, or have him do the work your way and it won't need any guaranty, if you are sure of your ground. The average contractor will sign anything any one may put into his contract, but he is apt to think that in the last analysis, even if the contract makes the architect the sole arbiter of every detail, the courts can not be ousted and that he will be able to force a payment, even without a final certificate from the architect. It has, however, been repeatedly decided that architects are free to adopt, for purposes of their decision, such legal principles as they honestly believe are applicable, and to act on such evidence as they choose to receive. Norcross vs. Wyman, 187 Mass., 25.

The supreme court has also stated that "It is well established that where a building contract makes the architect an arbitrator between the parties, to determine practical questions of construction that arise under the plans and specifications in the execution of the work, his decision upon these matters is binding.

An interesting point is also made that a distinction exists between the judgment of an architectural firm, acting in a purely professional architectural capacity and their judgment acting as referees, it being held that in case of a firm being called upon to act as referees in case of a difference between an owner and a contractor, they must give an independent inspection and judgment as to whether the work in question is performed according to specification.

The building contract often provides, for certificates by the architect at various stages that the work done is in accordance with specifications, which throws the responsibility on the architect for determining that fact. The attempt is sometimes made to avoid that responsibility by inserting a clause to the effect that said certificates shall in no way lessen the total and final responsibility of the contractor. Such a clause, however, does not authorize the architect to furnish a certificate that the work has been done in accordance with the specifications if in any particular he has reason to believe the contrary, for the courts have construed the above language to apply only to deficiencies afterward discovered. The architect, although given the authority to decide whether or not the contract has been performed and to give the final certificate or withhold it, must act in good faith in the matter. If the architect dies or wilfully and in bad faith refuses to give the final certificate, the contract will be treated by the court as if the clause requiring the final certificate were stricken out, and the builder will be allowed to recover the contract price, but if the architect, on the other hand, acting in good faith, refuses the certificate, even though in the opinion of the court under the particular circumstances he ought to have given it, his refusal is final and the contractor can not recover the contract price, but must be left to recover the value of materials and labor furnished. (Herbert vs. Dewey, 191 Mass., 403.)

The claim is sometimes put forward by architects that on account of some detail of minor importance having been overlooked by the contractor the final or completion certificate can not be issued. An interesting decision on this point is found in the case of Handy vs. Bliss, 187 Mass., 25, which stated that if the contractor has honestly attempted to carry out an honest intention to fully perform his contract, he can recover even if there are omissions which can not be supplied exactly as called for by the contract, except at great expense or risk, such as taking down the building to the foundations, provided such omissions affect the value of the building for use or otherwise so slightly as to be hardly appreciable.

The practice of specifying materials by their trade names, is a dangerous one. If a contractor, for instance, supplied a cement of a specified brand and the lot was found worthless, he might, through some loophole, try to evade liability. It is usual to specify, rather, that the cement shall conform to the requirements of the American Society of Civil Engineers. It is worth noting, however, that some cements behave much better in frosty weather than others, and this ought to be taken into account in carrying on masonry work in the winter time.

So much for a few of the ordinary aspects of the regular verbiage of specifications. A much wider subject is the designing and specifying of the materials of which a building is constructed in such a way as to bring about the desired results with a minimum of cost and in a minimum amount of time. Most buildings are wanted complete by the owners in an incredibly short time after completion of the plans, and every means should be taken by the architect to simplify the task of the contractor. Much time can be saved in the erection of a building if the different materials which constitute the structure are specified in such a way that none will be specified to be used in the early stages of the work which will cause delay on account of processes of manufacture. For example, ornamental terra cotta should not be specified for any part of the construction where it will be wanted within six weeks of the date of signing of the contract, for it is rarely that a shipment of this material ever arrives on the site in less than that time after the order for it is placed. In ordinary buildings, therefore, some more easily procurable material should always be used for the trimmings up to the first floor level.

Another point, somewhat less generally understood, is the reduction as far as possible of the number of operations involved in the construction of a building. Take, for example, the case of a public building. In many buildings of this sort it has been a common custom to use brickwork, steel frame and terra cotta block filling, galvanized iron and even reinforced concrete in construction of the walls, flues and partitions of one and the same building, each done by a different gang of workmen, with a different sub-foreman. In our experience we have found that in most cases the same gang of bricklayers under the same foreman has carried out the whole construction in brick at a saving which sometimes has amounted to 1 cent per cubic foot on the entire building. There is no loss of time between the departure of one gang and the arrival of another, and no waste of odd lots of unused material, and the building is a homogeneous whole.

Many public buildings of ordinary size, such as libraries, gymnasiums and schools, are contrived in an unnecessarily complicated manner on account of the prevalence of "hobbies" among the officials who control their erection. Probably more money is wasted in this manner than is ever expended for purposes of mere architectural adornment in buildings of this class. This form of extravagance can seldom be controlled by the architect, but he ought to remember that the so-called "conveniences" strenuously urged by one official will be as strenuously condemned by the next, and he should try to preserve an open-minded view over the entire situation.

The above are a few suggestions for the smooth and pleasant conduct of an ordinary architect's business. It only remains to be added that no human machine will operate for very long without attention, and no system, however perfected, will work successfully without constant oversight. An American sage has said that "The doors of opportunity are marked 'push' and 'pull.'" The successful architect has generally found, however, that to the above will have to be added those legends "progressiveness," "punctuality" and "prudence," and then as many more as constantly suggest themselves. But no time spared from the harassing daily duties of a modern architect will yield better results than that spent in the perfecting of a system which shall help to keep the varied interests of builders and owners directed toward the quick and efficient securing of the results which both are seeking.

* * *

It's a wise man who knows enough to secure employees possessed of virtues that he himself lacks.

High School Annex, Santa Rosa, California. William H. Weeks, Architect.

Building the School

By WILLIAM H. WEEKS, Architect.

THE construction of a new school building is so rare an occasion that it makes an epoch in the average school system. The fact is, that so few schools are built in the average district that the trustees are at a loss as to just how to proceed, on account of lack of precedent for guidance. One of several methods of procedure may be adopted in taking the initial steps. A lack of proper precedent and advice many times leads to all kinds of complications and trouble.

The common tendency is to figure out just how much the district will vote, before calculating the actual needs. A set sum is fixed in the minds of the school board before the full meaning of the cost of a modern structure and full equipment becomes clear. Consequently the appropriation is made before plans are considered or expert advice secured. As a result, it too often proves to be insufficient in securing the right building and proper equipment.

After the bond election, it is usually found that the building must be cut down and the equipment cheapened, before the work can proceed. The things not thought of before, are continually coming up. The building is too large for the money available and the equipment costs more than was anticipated. The result is that when the building is ready for occupancy, many necessary things have had to be omitted entirely and the material cheapened, to the detriment of the building. The result is—cheap workmanship and material, an unsatisfactory heating and ventilating system, fire-trap stairways, etc.

The economic maintenance of a school building is of more importance than the first cost of construction and equipment.

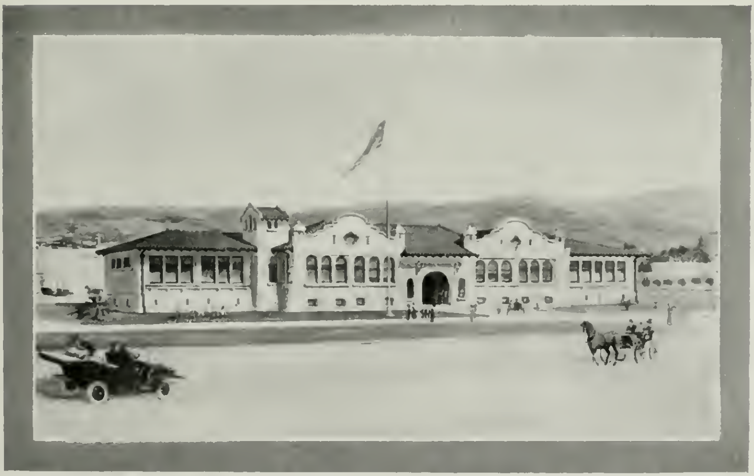
The right way to begin is to first ascertain the actual needs. Then the probable cost, based on the estimate of experienced men who know the requirements of modern school work, and who have learned by practical experience what is best in design, material and equipment for a modern school building. By so doing, you will avoid many of the mistakes, annoying and costly, seen in so many school buildings.

The accompanying illustrations show a few of the recent school buildings designed by the writer. They represent various styles of architecture—per-

Grammar School, San Leondro, California
William H. Weeks, Architect

High School, Watsonville, California
William H. Weeks, Architect

High School, Pacific Grove, California
William H. Weeks, Architect



Grammar School, Gustine, California
William H. Weeks, Architect

Administration Building, California Polytechnic School, San Luis Obispo, California
William H. Weeks, Architect

Design for Proposed Del Norte County High School
William H. Weeks, Architect

Primary School, Watsonville, California *William H. Weeks, Architect*

haps the most popular being the Mission or Spanish. This type is peculiarly adapted to California, both in respect to climate and environment. The Mission type of school is necessarily low, and where there is ample ground area a one or two-story schoolhouse is preferable to a three or four-story structure. The buildings illustrated have been built at costs ranging from $70,000 down to $12,000.

Turlock Grammar School, Turlock, California *William H. Weeks, Architect*

Accepted Design, Grammar School, Elko, Nevada
William H. Weeks, Architect

San Benito County High School, Hollister, California
William H. Weeks, Architect

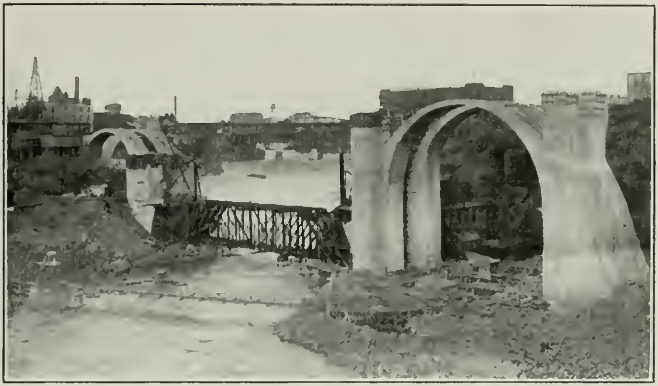


Fig. 1 View Showing Spokane Arch With Steel Trusses in Place to Receive 281-Foot Timber Center

The Centering for a 281-foot Concrete Arch at Spokane, Wash.

THE city of Spokane has under construction a concrete arch which will be one of the largest in the world. Its main arch, which has a span of 281 feet, is the largest concrete arch in the United States, there being one at Cleveland, however, which is of 280-foot span. This Spokane bridge, known as the Monroe street bridge, was designed under the direction of Mr. J. C. Ralston, formerly city engineer. The work of construction was started late in 1909, under the direction of the present city engineer, Mr. Morton Macartney, and the work is being done by the day labor system.

The most interesting construction problem so far has been the centering for the main arch over the river, which has a span of 281 feet and a rise of intrados of 114 feet. This arch is of the twin-rib type, the ribs being placed 36 feet center to center. The ribs are 16 feet wide by 6 feet 9 inches deep at the crown, and flare toward the haunches to a width of 19 feet 9 inches and a depth of 18.5 feet. The first center designed and built for this arch collapsed during a wind storm on July 21, 1910.

The following notes on this first centering and a description of the conditions leading to its collapse have been furnished by Mr. Macartney:

Monroe street runs north and south, and the Spokane river is crossed by it at the foot of the last of a series of falls, the total drop in which approximates 135 feet. In the course of the ages a basin has been formed on the line of Monroe street, in which the water varies in depth from 50 feet on the east property line to 30 feet on the west property line. The low water flow of the river is 2,000 cubic feet, the high water flow 40,000 cubic feet per second. During the period of high water the stream is very swift and turbulent. Just above the falls there are situated several lumber mills, and the breaking of a log boom would precipitate an immense number of logs over the falls.

The power plant building of the Washington Water Power Company abuts on the east property line of Monroe street and extends north from the south pier

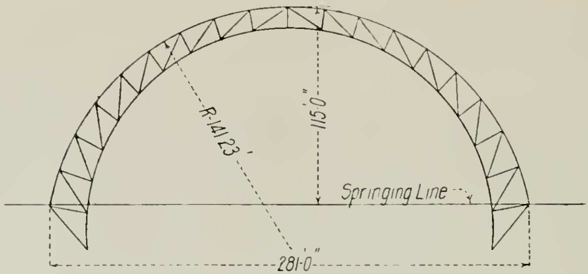


Fig. 2—Sketch of Original Timber Arch Center

of the river span to the south border of the deep basin that has been described. The tail-races of the power plant traverse the line of the bridge. These several circumstances eliminated from consideration not only the use of falsework supported on bents in the river, but also the use of falsework which would require many temporary river bents for its erection.

On the other hand, the existence of a steel bridge on the line of Monroe street offered a means of erecting falsework by suspension therefrom. This steel bridge was of the cantilever type; the anchor spans 189 feet long and the cantilever and suspended span crossing the river 277 feet long. By placing one pier upon a rock shelf rising between two of the power plant tail-races, and another pier upon a similar shelf on the north edge of the deep water basin, it was possible to obtain a span of 192 feet for falsework symmetrically located with respect to the 281 feet concrete arch. In the 44.5 feet between such falsework piers and the piers of the concrete arch, a simple system of vertical post falsework could readily be constructed. The span of 192 feet was therefore chosen for the center falsework.

After comparison of arch and truss spans for falsework, an arch was determined upon. The large steel bottom cords required in a truss by the heavy load of the concrete arch made a combination arch, in which the heavily stressed members were all in compression much cheaper. A combination arch of the type shown by Fig. I was designed, consisting of seven timber ribs, spaced 3 feet apart on centers. A wider base was not given to the structure because of the location of the power plant upon the east property line of the street. Wind pressure was to be taken care of by guy cables in addition to the bracing.

Construction on the falsework arch was begun late in June, 1910. Cables suspended from the steel bridge supplied the means of erection. It was possible to erect the four westerly and the two easterly ribs without any interference with the steel structure. The third rib from the east, however, came directly in line with the easterly cord of the steel bridge and interfered in its upper four panels. Consequently, after six ribs were completed and the seventh brought up to the point of interference, really active operations were suspended until the steel could be removed. Due to the fact that the uncompleted rib was kept blocked up in order to insure its ready adjustment when meeting at the crown, it was not feasible to put on the final bracing. The ribs were all tied together with temporary braces, and there were 22 guys, up and down stream, upon the structure.

The timber arch was cut free from the steel July 13th, and the work of removing steel was begun. On July 20th the last piece of interfering steel was removed. The following day, July 21st, a squall of unusual nature occurred, during which the timber arch collapsed. With the resumption of work after the noon-hour, the clear weather of the morning continued, with the wind blowing 10 to 20 miles per hour, from the southeast. At 1:40 p. m. there were evidences of a storm gathering in the west. According to the local weather reports, the first thunder clap came at 1:45 p. m. and at 1:46 p m. the wind changed from 20 miles per hour southeast to 42 miles per hour southwest. There followed a brief wind squall accompanied by rain.

The weather bureau is located about one-third of a mile southeast of the river basin. The river gorge at the bridge site runs from southwest to northeast, and in all likelihood the storm following the ravine caused a higher wind than on top of the building wherein the weather bureau is located.

From the testimony of eye-witnesses the structure raised and collapsed, all members holding well together. Due to the excitement incident to such events and the brief space of time offered in which to make observations, the condition of the debris after the collapse offers perhaps a more noteworthy indication of what actually happened than the evidence of excited witnesses. The debris was piled high on the north shore and, of that portion which fell in the water, the most distant piece was scarcely over 50 feet from the original line of the arch. There was no debris on the south pier, and some timber which had been lying there was left undisturbed. Although positive conclusions are impossible, it seems reasonable to infer from the above circumstances that the sudden wind from the southwest, striking the structure at an angle of about 45°, lifted it clear of the south support and did not merely cause it to topple sideways as would have occurred had the arch not been guyed. An examination showed all the guy cable anchorages intact and none of the guys themselves broken.

The collapse of this timber arch presented anew the problem of centering. To re-erect the arch would necessitate the replacing of that portion of the old steel bridge already removed. Such a procedure was not only a step backward and therefore undesirable, but it was also deemed unwise because those portions of the removed steel members which were inaccessible in the erected structure showed that the 20 years of over-stressing service had made their future use unsafe, and the structure had in consequence already been condemned for re-erection as a highway bridge, without car service, farther downstream, as was originally intended. It was then decided to adopt a system of centering composed of timber bents supported on four steel trusses of 192-foot span, the four trusses to be used later in pairs to form part of the proposed bridge downstream. The work of dismantling the old steel bridge was continued after the accident and provision was made in building the piers of the main spans for anchorages and toggles to allow of the erection of the steel trusses as cantilevers.

The steel for the trusses began to arrive in Spokane in the middle of February, 1911. Erection was started March 2d and was completed in eleven working days of eight hours each, at a cost of $10 per ton.

The adopted construction of the new centering is shown by the accompanying plans and photograph taken from Engineering Contracting. The steel support for the timber falsework consists of four 12-panel Baltimore trusses. The trusses are 35 feet high and the panels 16 feet long, all pin connected. The timber falsework is erected on the steel trusses, except beyond the ends of the trusses where it is carried to the ground. The falsework is built of 12 x 12-inch timbers with 6 x 12-inch braces. The load is carried to the panel points on the steel trusses, as shown by the drawing, by means of radial posts. This system of radial posts divides the falsework into two parts which may be called,

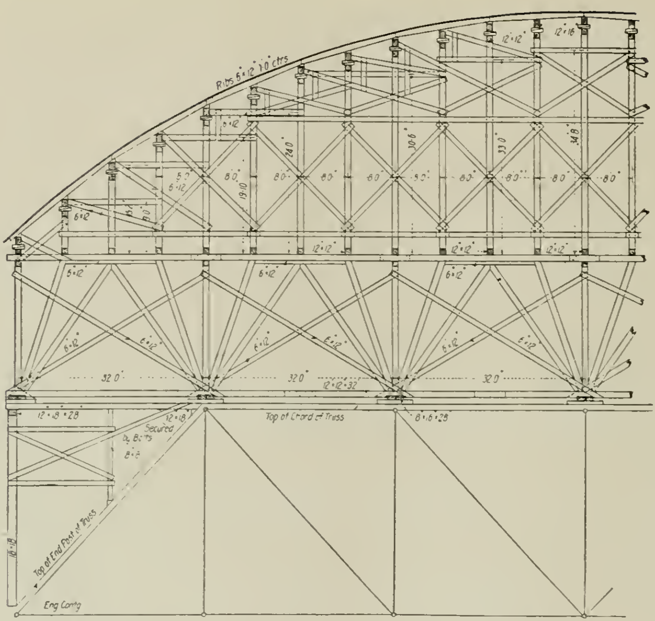


Fig. 3—Details of Timber Center for 281-Foot Concrete Arch, Spokane, Washington

for convenience of description, the upper and lower centering. The top cords of the lower centering forms the foundation for the bents of various heights, which are carried up to within a short distance of the ribs. Sets of wedges are placed on the caps of the bents and on the wedges rest the 12 x 16-inch transverse timbers which support the 6 x 12-inch rib timbers. The bents are braced with 6 x 12-inch timbers bolted to them diagonally with ¾-inch bolts.

The falsework is erected in position for concreting on arch rib and is to be adjusted by cast iron wedges beneath the steel truss. After concreting, the falsework will be moved west 36 feet on rollers for concreting the second rib. The accompanying photograph showing the steel trusses erected was taken March 20th.

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* *

A New Idea in Heating

Frank had been sent to the hardware store for a thermometer.

"Did mother say what size?" asked the clerk.

"Oh," answered Frank, "gimme the biggest one you've got. It's to warm my bedroom with."—Success.

Statue in the Plaza della Signoria, Florence, Italy
Designed by Donatello

Tentative Program for the San Francisco City Hall Competition

CITY Architect Alfred I. Coffey has prepared the following tentative program of a competition for the selection of an architect of San Francisco's new municipal building. It is subject to the final approval of the Board of Public Works:

The City and County of San Francisco, State of California, proposes to erect a new city hall to accommodate the various municipal departments, on property in the triangular block bounded by McAllister, Larkin, and City Hall avenue, and as a preliminary step—

"Section 1. The Board of Supervisors of the City and County of San Francisco has passed the following resolution:

"The Board of Public Works is hereby requested to prepare the necessary plans and specifications for the erection of a new city hall, to cost $4,500,000, and for that purpose to employ an architect, or architects, to be selected by competition. After such plans and specifications shall have been approved by the Board of Public Works, the city hall shall be erected in accordance therewith under the general supervision of the Board of Public Works.

"Section 2. The sum of $30,000, or so much thereof as may be necessary, will be appropriated in the next tax levy for the expenditures of the competition, namely: Incidental expenses, the payment of the several prizes, and a partial fee to the architect whose design is placed first and who will be named the architect of the building.

"This ordinance to take effect immediately."

The following resolution was passed by the Board of Public Works of the City and County of San Francisco, relating to the new city hall competition:

"Resolved, That the secretary of the board be directed to advertise in the official papers, inviting competitive plans from registered architects of the United States who shall be willing to compete in the preparation of plans for a city hall to be erected on site named, together with an estimate of the probable cost."

The members of the Board of Public Works at the date on which this program is issued are P. H. McCarthy, mayor, ex-officio member; Michael Casey, president; William A. Newsom and C. S. Laumeister.

The competition to be an open one to all architects of the United States.

A. I. Coffey, architect of the Board of Public Works, has been appointed to prepare a program and to act as advisor in the conduct of the competition.

The designs submitted will be judged by a jury of seven (7), composed of His Honor, the Mayor of San Francisco, the chairman of the building committee of the Board of Supervisors, one member of Board of Public Works, to be designated by said board, and the president of the A. I. A., the president San Francisco Chapter A. I. A., the president Southern California Chapter A. I. A., and the city architect of San Francisco.

The author of the design which is judged by the above jury to be first in merit will be awarded the first prize, and will be appointed by the board as architect of the building, his employment being in accordance with the schedule of charges of the American Institute of Architects, dated December 15 and 17, 1908.

To the author of the plan which is deemed to be second in merit among those submitted by the competitors the sum of $4,000 will be paid; to the third in merit thereof, $2,500, to the fourth, $1,500, and seven equal prizes of $1,000 each.

No competitor shall submit more than one design.

In this program the Board of Public Works is referred to as the board, and the architectural advisor, as the advisor; the terms "architect," "author," and "competitor," whether a single architect or a firm of architects.

All communications relating to this competition are to be addressed in writing to the Advisor, The City Architect, City Hall Competition, care of Board of Public Works of San Francisco, Cal.

The cost of the building when constructed must not exceed, in its entirety, $4,500,000, including architect's fees, approaches, plumbing, gas fitting, electric conduits and wiring, lighting fixtures, heating and ventilating apparatus, fixed counters, platforms and railings, steel book stacks in law library, and other special fixtures necessary to complete the building for occupancy and use, excepting mural decorations and movable furniture.

From the areas given below in the list of requirements, it is estimated that this building can be properly designed with a volume of not over 7,000,000 cubic feet. This will allow ample room for halls, corridors, staircases, tower or other special features, which, at an estimated cost of 60 cents per cubic foot, will leave $300,000 for approaches, statuary and other embellishments.

Any excess of the above-estimated volume will be viewed with disfavor and will operate, in proportion to the amount of such excess, to exclude a design from consideration. Also, the comparative expense of construction and ornamentation and any special features will be considered in this connection in the determination of the relative merit among designs, for the committee of award and the Board of Public Works will not incur the risk of an expenditure by the city beyond that stated above.

The cubic feet volume of the designs will be determined by measurement on the plane of the ground story within the outer face line of all outside walls, from the mean of basement floor levels to the mean of the roofs, including every part that appreciably adds to the bulk of the building.

The building shall be of a steel frame, thoroughly fireproof construction. All exterior frames, sash and doors must be of metal, and any undue use of woodwork on the interior, even for appearances, will be looked upon with disfavor. The building must conform in every respect with the local building laws for this class of construction.

It is suggested that the basement or first story of the exterior be of a light California granite, of which many excellent qualities exist in this State, and that all the exterior wall surfaces above be of a light warm-colored sandstone, or limestone.

A plat of the site with surrounding streets and governing conditions will be found in the appendix. The soil for the foundations is of a good character, and no trouble need be feared on that point. It will be notified on the plat that the projected axes of Eighth street and Fulton street coincide at a favorable point on the lot, and that this point is nearly coincident with the projection of the center line of the city blocks between Larkin and Hyde streets. While it is intended that each competitor shall have every latitude desired for the conception of his scheme, yet it is suggested that the principal front be toward Marshall square and City Hall avenue, and that any special feature such as a dome or tower be reared with its central point over the point of intersection of the projected axes of Eighth and Fulton streets. This latter requirement will be essential to make the building harmonious with the organic plan of the city as a whole.

Broadly speaking, the scheme may be considered in two ways: (1) As a group or congerie of buildings of moderate height, say five stories, arranged upon the lot as the competitor may deem best suited to the needs of each department; or (2) as a single large building or comparatively small ground area and considerable height.

The figures in the following schedule indicate the desired floor areas in square feet. These areas may be reduced where of 1,000 square feet or above, by not over 10 per cent, and where of less than 1,000 square feet, by not over 20 per cent in the case of individual rooms. Elevators, staircases, toilets, lavatories, and a good general circulation are to be provided fully throughout the plan, as required in its several functions.

Approximate requirements for various departments:

The Drawings—The following drawings will be required, all at a scale of one-sixteenth inch to one foot:

Plans of all stories (four elevations): One elevation on McAllister street; one elevation on City Hall avenue; one elevation on Larkin street; one elevation on easterly elevation.

Block section through building showing heights of stories and proportions of principal rooms.

No other drawings, and no flaps or alteratives will be allowed.

All drawings to be drawn in India ink, on Whatman paper —— —— in size, with a single broad line, or band of India ink for border.

The plans are to have the cut portions of the walls blacked in.

The elevations are to be rendered in India ink wash, and to have shadows cast at an angle of 45 degrees from the left.

The sections are to be in India ink line only, except that the cut portions are to be filled in with a light wash of India ink.

No landscape accessories, such as trees, shrubs, etc., are to be shown.

A single figure of a man 5 feet 10 inches high is to be shown on each of the elevations and sections to indicate the scale.

All plans are to be lettered in plain Roman letters, with names of rooms; also with sizes, and if desired, areas of rooms.

Each sheet is to have the following general title in plain Roman capitals: "San Francisco City Hall Competition;" also the specified title of the drawings, as "First Floor Plan, McAllister Street Elevation," "Block Section," etc.

Only one drawing to be placed on a sheet.

Each design is to be accompanied by a typewritten description not to exceed seven pages, on blank letter paper corresponding in size with this program, one side only, being written on in the first person plural, i. e., "we," "us," etc. This description is to contain a statement of the cubic contents of the building, as calculated by the author, and such information as he may find desirable in elucidating his drawings.

Each design is to be accompanied by a sealed opaque envelope unaddressed, but lettered, "San Francisco City Hall Competition," and containing a card bearing the name and address of the author.

Supplementary information, if necessary, will be issued simultaneously to all competitors, such information becoming part of the program. All inquiries must be in writing and addressed to the advisor, A. I. Coffey, city architect, Hewes building, San Francisco.

No signature, cypher, nom de plume, or other identifying name or mark is to appear on any drawings, wrapper or enclosure except on the card in sealed envelope provided for.

All such sealed packages are to be lettered "San Francisco City Hall Competition," and delivered to the advisor at the address given on or before October 15, 1911, at 12 o'clock noon. No design received after that time will be considered, or opened, till after the award, for the purpose of ascertaining the author and returning papers to him.

Any competitor who violates any of the above provisions shall incur the penalty of exclusion from the competition.

The jury will, as previously noted, be composed of seven persons, viz.: His Honor, the Mayor, the chairman of the building committee of the Board of Supervisors, one member of the Board of Public Works, the advisor and the three architects as heretofore noted.

The designs received in accordance with the above conditions will be removed from their sealed packages by the advisor, who will give to each a number by which it will be known until after the awards shall have been made.

Any and all designs which on examination do not conform with the provisions of this program will, upon the recommendation of the advisor, be excluded from the competition and returned with explanation to their authors, who shall therefore forfeit any and all claims for payment or consideration.

From the designs which are in accord with the program the jury will select the one which in its opinion is the best, and designate it as the first prize design.

The jury will then select the designs which in its judgment rank next in order of merit, whereupon the advisor will open the corresponding envelopes and disclose the names of the authors. These will then be designated as prize designs, and ratified as such by the board in its official capacity.

The author of the first prize design will be awarded as a prize payment the sum of $10,000, this payment forming a part of the total commission for full services.

The authors of the other prize designs will be awarded prize payments of $4,000, $2,500 and $1,500, respectively, and seven others $1,000 each.

The selection of the prize designs and the awards will be made not later than November 15, 1911.

All payments provided for under this program will be made within thirty days after the date of the award.

It is desired to have a public exhibition of all the competitive designs, but no design will be exhibited without the consent of its author, nor in any case until after the award.

All designs but the first prize design will be returned to their authors at the end of the exhibition, or in case of designs whose authors decline to exhibit, immediately after the award.

No use will be made of any design but that receiving first prize, nor of anything contained in any other design which is original as to this competition, without proper compensation to its author. In case of a claim being put forward, the question of its justice will be determined by the advisor, who will also, if a just claim is deemed to exist, fix the amount of compensation due, in the event of a disagreement between such author and the board.

The architect appointed shall render service and receive compensation in accordance with the schedule of the American Institute of Architects, dated December 16-17, 1908, and hereto attached.

All payments made to the appointed architect as a competitor, whether as a prize payment or as a competition fee shall be reckoned as payments on account of his full commission as architect of the building.

The service of the appointed architect shall be to revise his competitive design to meet the further requirements of the board, and on the basis of these revised preliminary drawings to prepare, on receiving instructions from the board, full and detailed working drawings and specifications for the building, to advise the board in the taking of bids and the award of contracts, and to supervise the construction, with full authority, provided for under the schedule of the American Institute of Architects.

In addition to the general supervision of construction which is to be exercised by the Architect, the City Architect together with such clerks of the work and such assistants on the works as may be necessary shall be appointed.

All drawings, specifications and their copies, as instruments of service, are and shall remain the property of the architect; but one copy of each drawing shall be provided by the architect of the board to remain permanently in the files of the board.

If for any reason the work is abandoned before working drawings are started, or if the board fail, within twelve months of the award, to give the appointed architect instructions to proceed with working drawings, there shall fall due to the appointed architect three-quarters of one per cent (one and one-quarter per cent in all) in lieu of the agreement covering his employment as architect.

In case the architect appointed is a partnership or association of two or more persons, and any one or more, less than the entire number, dies or is incapacitated during the progress of the work, the same shall be carried on and completed by the surviving member or members of such partnership or association.

In case the architect is an individual and shall die or become incapacitated before the completion of the work, or if the entire membership of a partnership or association shall for any cause cease to do business, the amount already earned shall be determined by a board of arbitration consisting of one person chosen by the Board of Public Works, and one person chosen by the architect or his, or their, personal representative or representatives, the two so chosen to select a third; and the decision of any two of them shall be final, it being expressly understood that all drawings, records and data pertaining to the building shall be delivered to the city of San Francisco for use until the completion of this building.

* * *

New Episcopal Church for Oakland

ARCHITECT BEN G. McDOUGALL has made an attractive design for a church and parish house to be erected in Oakland for St. Paul's Episcopal Society. Mr. McDougall's plan was selected in competition with several other architects. For the present only the main edifice will be built, at an estimated cost of $75,000. Later, the parish house, costing $50,000 more, will be erected.

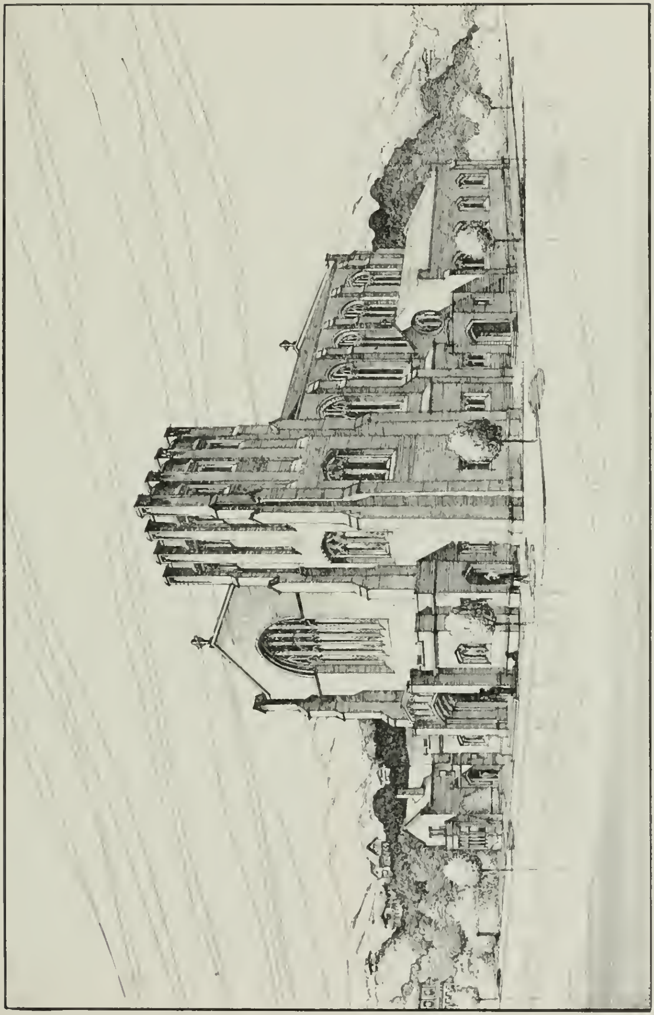
The style of architecture is Tudor Gothic. The exterior of the edifice will be finished in red brick laid in the early English bond. The trimmings will be white artificial stone with interior finish of red pressed brick and tile floor. Either a slate or tile roof will be used.

The church will seat 1,200 persons. Rev. Alexander Allen is the rector.

* * *

Carpenter (to his apprentice)—Well, Willie, have you sharpened the tools?

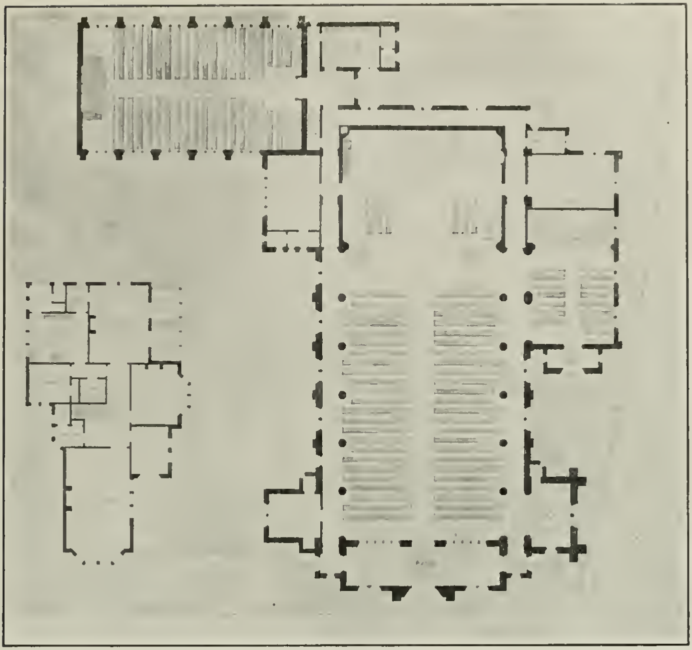
Willie—Yes—all but the 'and-saw, and I haven't quite got all the gaps out of it.—Sketch.



Perspective of St. Paul's Episcopal Church, Oakland, California

Ben G. McDougall, Architect

Interior St. Paul's Episcopal Church, Oakland, California
Ben G. McDougall, Architect



Floor Plan of St. Paul's Church and Rectory, Oakland, California
Ben G. McDougall, Architect

Systematic Planning of Cities

By FREDERICK LAW OLMSTED

CITY planning may be briefly defined as a systematic attempt to do the following three things:

First—To make the best practicable analysis and forecast of such existing and future needs of an urban community as may require its existing natural features or physical equipment to be changed or extended.

Second—To prepare or search out and gather together the most promising tentative plans for the meeting of those several needs; to ascertain the relations of one plan to another and to the interests of the community as a whole; to propose such adaptation of each plan to the others as would minimize any conflicts of purpose or duplication of expense that would be likely to result from their independent execution; and to make apparent any possibilities for increased efficiency through combination or wholesale methods or otherwise.

Third—To keep this combination of plans constantly up to date so as to represent at all times the latest and best judgment as to what physical changes are to be expected, in order that no project for an immediate improvement need be entered upon without a clear understanding of its relation to other changes that are likely to occur.

It is a popular impression that if only a comprehensive general plan can be prepared and then established as the Laws of the Medes and Persians, the job of city planning is done. But in my opinion this "once for all" idea is a most pernicious fallacy. It is associated with the too prevalent American attitude of attending to all public affairs by spasms. It looks to the formation of a special temporary commission on city plan, to the temporary drafting of the services of a few citizens of conspicuous ability and discretion; to the calling in of noted experts, and to the preparation in the course of a year, or three years, or ten years, of a comprehensive "city plan," followed by the complete transference of the activity of the said conspicuous citizens and noted experts to other fields. Doubtless the educational effect of such a city planning spasm may be very important, but if the regular officers of the city government and of the public service corporations have, for years, been carrying on the administration of the physical equipment of the city in a short-sighted, unco-operative planless way, it is futile to suppose that the educational effect of seeing somebody else do some constructive planning is going to revolutionize their methods. The best that can be hoped is that some of the features of the plan may be so commendable and receive such strong popular endorsement as to force them permanently upon the consciousness of the community as things that must be provided for. There is always a residue of substantial gain when a wave of spasmodic attention to public duties sinks back into the sea of public indifference.

A city plan legalized or in any way made compulsory upon future generations, or even future administrations, is to be avoided, because this would prevent that improvement in the plan which is almost sure to be rendered possible by the increased knowledge and wisdom of the future or because of unforeseen developments. While it must at any given time represent the best practicable forecast of future conditions, it must also be possible for it to grow and improve with the development of the city and with the growth of the science and art of city planning. If either the character of the officials who would have this matter in charge or the organization of any of its departments is such that this continuous development of the city plan is impossible or even improbable, then some change should be sought in either or both of these which will make it possible.

While I can not over-emphasize the fact that city planning must be regarded as a continuous function of some permanent administrative agency in every city, I would not disparage the services which may be rendered by the independent expert. * * * But I do think that the function of the independent expert in such matters has been somewhat misconceived and perhaps exaggerated in importance by enthusiastic laymen. Plans and reports on city planning by temporary commissions, or by experts called in for a flying visit and having but a temporary connection with the problems in hand, may be of great value for educating, for stimulating, for clearing the air, for calling attention to opportunities and indicating effective lines of action. * * * But such a report, or so-called city plan, is not the real thing.

The first essential for effectively planning physical changes in anything is a truthful knowledge of the existing physical conditions. * * * The condition of maps, surveys and records of existing physical conditions in most American cities and towns, so far as my observation has gone, is almost incredibly bad. Where the problem is as large and complex as a whole city; where, on account of the values of land and buildings, a difference of a few inches in location may involve huge sums of money, where comparatively slight differences in level may completely alter the whole plan of a sewer system or bring transportation lines into fatal conflict, where it is necessary to provide sooner or later for such an enormous complex of public utilities in close juxtaposition, the value of the right kind of map is incalculable.

New York, Baltimore, Washington, and some other American cities have awakened to the importance of modern active, comprehensive topographical maps as a basis for the intelligent and economical planning of public improvements, and have provided themselves therewith, at least as to their outer zone; but generally the official surveys consist of incomplete and casual records of streets, properties and public works, gradually accumulated through a long series of years. These records consist for the most part of independent piecemeal surveys of all degrees of accuracy and inaccuracy, made for all sorts of special purposes, and of compilations and transcripts of these piecemeal records patched together in attempts to reconcile irreconcilable data.

But it is not to be assumed because complete and accurate record maps are a necessary basis for a complete and accurate city plant that all work of planning should wait until the former is complete. In fact, if the city is a live city the topographical map is never complete, any more than the city plan is ever complete and final. The topographical map should be an up-to-date record of existing physical conditions in the city not at one period of its history alone, but always. Like the plans based thereon it is not to be regarded as a picture, but as a kit of working tools, part of it in daily use and the rest kept in good order, ready for instant use when needed.

To take a single aspect of the work, for example, these records ought to show the exact location of every underground pipe, sewer or conduit in the streets of the city, corrected up to date. As it is, in the general absence of such records, new structures are laid out more or less blindly and involve a huge amount of needless expense in the alteration of older structures encountered in the digging. This is but one illustration, but it makes clear that mapping, like planning, must be a continuous function, and that while the mapping must to some degree precede the planning, they should both advance continually toward a greater degree of accuracy and comprehensiveness.

The same scientific handling and interpretation of statistics which is now common in designing water supply, gas and electric service and the like is seldom used in planning streets, parks, schools and playgrounds or the building accommodations required by the various municipal services, and yet that it is clear that this ought to be done, and that some central authority should be provided to see that the plans which are prepared should co-ordinate and harmonize, and should periodically be revised and brought up to date.

* * *

Plastered Exteriors

Plastered exteriors for the better class of residences, and in fact for every kind of building, have become popular because there is at last an opportunity to express individuality of taste in decoration without enormously increasing the cost, as has been the record of the past. As a matter of fact, the modern development of plaster for exterior purposes introduces an economy instead of costing more. Art and personal selection in matters of taste have never been at the command of the builder until recently, and it is appreciated. Plastered exteriors will continue to grow more and more popular, and the ambitious designer who qualifies to do things that are worthy in this particular line is already on the high road to success.

The Necessity for Waterproofing*

By MYRON H. LEWIS, C. E.

THE opinion that concrete buildings are damp has taken too great a hold on the public mind; and an opinion once so rooted is difficult to eradicate. If there is one thing that has hurt the concrete industry more than anything else it is this impression in the mind of the public which, unfortunately, is only too largely justified by experience.

What does it avail us to assert that concrete can be made watertight if properly handled, when we know that perhaps fifty waterproofing concerns all over the country are engaged all the time in remedying dampness and leakage in concrete structures which, theoretically, should have been made waterproof but which, practically, have been found not so?

The expense incurred in order to attain waterproofing after the construction has been finished is a hundred times greater than what it would have been in the first place; and this is nearly always so in waterproofing; we may almost call it an axiom of the industry.

Those gentlemen who argue that waterproofing is not necessary usually base their conclusion on their own experience, using the most careful methods, with strict supervision of every detail of the proportioning, mixing and laying of the concrete; and the results obtained under such conditions are model and are the best obtainable both as to density and impermeability. But for every one such perfect job, one hundred others turn out anything but model, and to maintain that waterproofing is not necessary because one job in a hundred may turn out right, is certainly not a justifiable position for the concrete men to take.

And yet we are told that waterproofing is not necessary and even our highly technical societies have spread the belief that no direct remedy is obtained by employing waterproofing compounds. While admitting that it is possible to secure waterproof concrete by proper proportioning and handling of the material, the large number of leaky structures throughout the country makes waterproofing advisable as a matter of precaution and insurance, particularly in structures below ground water or tidewater level.

Frame structures will be just as fireproof as concrete if there be no fire; and yet while we know that concrete is fireproof, we still do not hesitate to insure against fire. Why, therefore, should we quibble, gamble with the future, and hesitate to insure our buildings against damage by water, when we know from experience that an untreated watertight structure, while theoretically possible, is as much the exception as the rule?

I wish to call special attention to the question of waterproofing sewers. This question has received hardly any consideration at all from sewer engineers, although it is one of great importance.

Dr. George M. Price, sanitary inspector for many years of the New York Tenement House Department, stated that the soil of our city was like a grave yard from the leakage of refuse through sewer lining, and at the same time he pointed out that unsanitary conditions due to leaky buildings, were found in 20 per cent of the New York tenements.

Mr. George T. Hammond, designing engineer of the sewer department of Brooklyn, New York, has collected some valuable facts on the infiltration of ground water into sewers and has said that municipalities are wasting princely sums in pumping and treating such ground water at purification and disposal plants. The following are his figures on the leakage of ground water into sewers in various cities:

*Extracts from an address delivered before the National Association of Cement Users.

New Orleans, La., 1,250 gallons per square mile.

Columbus, Ohio, 100 to 300 per cent of dry weather flow.

Kalamazoo, Mich., 20 per cent of capacity.

Norfolk, Va., 60 per cent of pumping.

Canton, Ohio, 70,000 gallons per mile.

Brockton, Mass., 2,500 gallons per mile.

East Orange, N. J., 110 per cent of dry weather flow.

They show conclusively the possibility of lower maintenance costs if the sewers were properly waterproofed.

It is also generally agreed that watertight concrete is the only solution of prevention of disintegration of concrete by sewage, sewer gases, alkali and other corrosive chemicals.

I am not going to take up any special material or method. There are many virtues to the successful methods of waterproofing on the market, and there are no cure-alls. Do not take any man's word who tells you that his material will waterproof any conditions. The whole secret of successful waterproofing lies in selecting the method and material suitable for the conditions at hand. Many of the standard materials will give good results if intelligently handled.

There are many cases where neither the "integral" method nor the "membrane" method will meet the conditions. Take, for instance, the preservation of beautiful stone monuments or decorative stone in process of decay, the disfigurement of buildings by efflorescence—which I must say is an eye-sore in many of our big cities.

These observations may be continued indefinitely and sufficient evidence can be produced to convince the most skeptical that waterproofing of structures is a precaution which should always be provided for in any concrete structure intended for habitation and where leakage is in any way objectionable.

There are so many conditions to be considered that I can not agree with the statement by the committee of this society and that of the Society for Testing Materials, that waterproofing materials have been found of doubtful value. Many cases have not been covered by the committee work, and broad statements of condemnation are misleading. Buildings which have been erected five or ten years or longer time, are often found leaky and damp. These must be made tight and waterproofing materials must be employed for the purpose; and when a broad statement is made that all such materials are of doubtful value the consumer is induced to believe that his difficulties can not be remedied, and that is certainly not so.

A great many tests have been made during the last few years on various waterproofing materials. It is of a great importance to know the results of these tests, but in addition to the results we must also get in touch with the consumer, and obtain information from the school of practical experience as well, before we can pass a final judgment as to the adequacy or inadequacy of such material.

There are many thousands of dollars invested in this industry, and I think that we should be careful in making claims that materials are of no value unless we can substantiate such claims from facts, taken from the consumer and from jobs actually executed, and not base such statements on mere laboratory tests.

We should not complain if surface materials do not last longer than four or five years. If we can get a life of five years out of any material exposed to the elements, we are doing well, and it is unreasonable to ask for any greater permanency. The unit cost per annum is so small compared with other forms of insurance and protection that we are justified in spending money for waterproofing insurance as much as we are in spending it for insurance against fire or contingencies of other kinds.

I trust that a satisfactory explanation of the marked difference will soon be found. If waterproofing materials are of doubtful value and have but a short life, what are we going to do with the structures which prove damp and leaky? How shall we remedy such conditions when we find them? I firmly believe that the committee's conclusions are not justified in a broad sense. I believe that where such reports are made, the limitations should be positively and clearly pointed out.

Much good work has been done by the waterproofing concerns and I do not think that we are justified in condemning the industry to the extent that it has been condemned, because I do not think we have enough information from the user of concrete.

I wish to say that I have endeavored to obtain from the cement user as much information on that particular point as I possibly could. I do not care to go into the names of compounds; it would look like advertising trade products, and I have no direct or indirect interest in them. I know, however, that materials of the water repellant nature have given satisfaction up for three or four years. Materials of a paraffine nature have done so for a great deal longer than that. Any one interested in such work can have a half a dozen firms take contracts guaranteed under bond to produce a watertight structure by the use of materials of this kind. If a firm is willing to give a bond with a guarantee that the work will be tight for a reasonable number of years, and if there are half a dozen or more such firms who are willing to do likewise, we can rest assured of results, particularly as they are willing to back their work with their money.

I also think the constant increase in the consumption of waterproofing materials throughout the country is a very evident indication that the cement user is finding them of some actual, potent value. It could not be possible that the consumption of all kinds of waterproofing materials would be increasing if a majority of consumers were finding them of very doubtful value.

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American Architecture

AT present there is no department of architecture in which creative talent is without motive to achieve distinction. American architecture, in so far as it is at all independent, is, indeed, of a single generation. Yet it occupies a leading position in contemporary art. Though essentially eclectic it has followed wholesome traditions, and the nature of the local problems which it has had to solve has impelled it to develop an individuality of its own. In some respects, as in the planning of tall buildings, it is quite original.

American architecture, says Professor Adshead, of Liverpool University, will ever be regarded as epoch making in the progressive stages of the architecture of the world. Its chief defect is that it has been wanting in unity of composition. For that, however, owners rather than architects are responsible. The remedy is to be sought in a more generous spirit of co-operation among property holders, and such co-operation is already manifest in our newer trade centers, as, for example, in certain stretches of Fourth and Fifth avenues. It is still more apparent in the outskirts of the town, where entire suburbs are built up by single corporations.—New York Sun.

Southern Pacific Company's Power House, Fruitvale, California
D. J. Patterson, Architect

Railroad Builds 40,000 Horsepower Station at Alameda

THE Southern Pacific's new electric power station at Fruitvale was thrown open to inspection to a large number of invited guests in May, the majority of those present being members of the San Francisco section of the American Institute of Electrical Engineers. In addition, there were present officials of the various power companies in and around the city.

The affair began with a dinner, after which the plant was inspected, and before the critical eyes of the experts the wheels went round and the entire working mechanism of one of the biggest power plants in the United States was put in motion.

The power, housed in a building constructed of steel and red sand lime brick, stands by the side of the tidal canal at the foot of Fruitvale avenue in Alameda. Inside there is machinery capable of developing 40,000 horsepower of electricity—sufficient to operate all of the electric trains that the Southern Pacific purposes running, not only out of Alameda and Oakland, but toward Point Richmond, and eventually down the bay to the peninsula cities.

Every particle of the work represented by the power-house and its installed machinery was done in the department presided over by H. A. Babcock, and everything was completed before schedule time. The building was designed by Architect D. J. Patterson; the steel frame work was under the direction of J. C. Lathrop; W. C. Miller designed the mechanical installation, and H. Y. Hall had supervision of the electric switchboard and the wiring.

Fire Escapes

THE recent fire holocaust in New York demonstrates that all of the effort of the material producers and of engineering talent of the country to secure the construction of fireproof buildings has not been in vain.

However, the matter of fire escapes as attached to incombustible buildings is an additional lesson that had to be learned, and it becomes clear that even on buildings which are themselves incombustible the fire escape remains as a necessity when the contents of the buildings are largely of an inflammable character.

The fire escape as attached to the exterior of a building is the most unsightly fixture that can be erected, and for that reason alone, perhaps, in the case of incombustible buildings, there is a tendency to do away with it. But it has been proven a necessity and it is up to the designer of buildings to find some way of supplying the fire escape without having an unsightly appearance in the result.

Unquestionably the best fire escape ever produced was invented in Louisville, Ky., a number of years ago, and installed at a number of public schools with complete success. It consists of a steel tube with a spiral inclined plane inside with doors opening at each of the floors of the building. The arrangement of the interior of the spiral is such that an unlimited amount of humanity can simply be poured into the tube with the result that the people will all drop to the bottom outside of the danger zone.

These, however, could only be installed, according to the present stage of development, in places where there is room enough to place the tube outside of the building.

The capacity of such a fire escape is practically unlimited. The writer saw a fire escape of this kind tested at a school building, where 800 children were all put through the tube in just two minutes flat. Every one of them thought it was great sport and wanted to test the tube over again.

Such a fire escape could be placed in an enclosed bay with the discharging end of the tube opening into an alleyway, or area, or some such arrangement, and provide for the entrances to the various floors by careful inspection of the building so that inflammable material would not surround the entrance to the tube. In this way the fire escape tube would always be available to the inmates of the building, and it is probable that the fire escape trouble would be practically solved.

The old-fashioned fire escapes, consisting of an iron rack in front of each story of the building with a vertical ladder extending to the ground, is a very dangerous proposition in itself. Few people are able to use the vertical ladder even when there is no danger or panic in sight. With all the excitement attendant at a fire it is certain that more than three-quarters of the occupants of the building would be unable to use the vertical fire escape. Such is the constitution of human nature and there is no way to get around it. The rack ladder fire escape is a very insecure proposition and has never proved very successful in practice. In nearly every case where they have been called upon to discharge a large number of inmates from a building the fastenings have pulled out of the wall when the ladders were overloaded, and the fire escape itself becomes almost as dangerous as the fire.

In the case of the printing office fire in Cincinnati, a number of years ago, there was more panic than fire and a number of the occupants of the building were injured by the collapse of the fire escape, all of whom would have been saved had they remained at their desks in the building.

The first cost of the rack and ladder type of fire escape is by no means the end of the transaction. It must be properly maintained, inspected and examined or it is certain to fail when called upon for service. In these days, when factories and offices are filled with women, the vertical ladder is less efficient than it would be otherwise for the long skirts, and the women invariably become entangled in the treads of the ladder, and the efficiency of this type of fire escape is very low indeed.

The recent New York incident puts it up to the designers of buildings to study the fire escape as a problem and to work out a satisfactory solution.

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Hollow Concrete Fence Posts

A series of experiments in the construction of hollow concrete fence posts, conducted by Prof. C. A. Ocock, of the department of agricultural engineering of the University of Wisconsin College of Agriculture, has proven the many advantages of that type of post over the solid post. The economy of construction and the durability of the home-made concrete fence post have been sufficiently demonstrated to the farmer, so that there is a constant demand upon the agricultural engineering department of the university for detailed information as to the construction of such posts. For three years Professor Ocock has made and used on the college farm hollow posts, which he has found fully as strong as the solid reinforced posts, much lighter to handle, and materially cheaper in construction. They are constructed with little additional labor, and with a saving of four pounds of cement to each post.

The mixture used is the ordinary 1:2:4, which includes one part cement, two parts sand, and four parts stone, none of which is larger than will pass through a ¾-inch screen. The forms used are the ordinary ones, 4 inches wide, 4 inches deep, and 7 feet long. For reinforcement a ¼-inch round steel rod is placed in each corner, the distance of its own diameter from the outside of the post. Each end of this rod is bent at right angles for about 2 inches, to anchor it firmly.

In making the hollow posts, a 2-inch core composed of four pieces of wood is necessary. A central piece of wood 1 inch square is surrounded by four flat pieces rounded on the outer side, forming the round core. When the post is finished the central square piece is withdrawn, allowing the four other pieces to be removed. When the core is used, the mold must have end gates with 2-inch holes for the removal of the core.

For attaching the fencing to the post, the longest galvanized staples should be put in at suitable distances on one side while the concrete is soft, after the points of the staples have been spread to secure them firmly in the concrete. To fasten the fence to these staples, short pieces of No. 12 or 14 wire may be used.

The hollow reinforced concrete post, although requiring a little additional labor, saves enough concrete to offset this extra work, and at the same time is lighter to handle, and practically as strong as a solid post.

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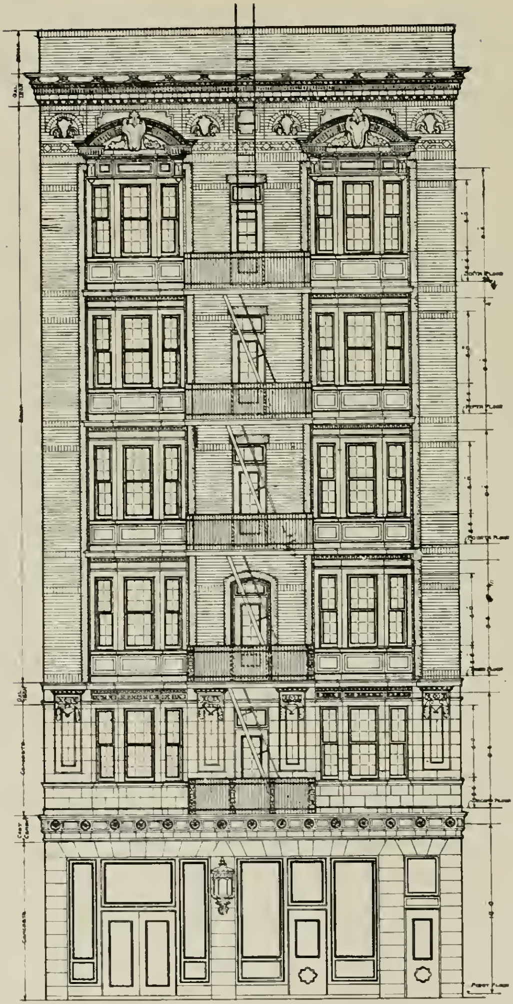
A Hero

Kicker—My great-grandfather carried that drum all through the Revolution.

Snicker—And whenever he sighted the enemy he beat it, I suppose.—Brooklyn Life.



—ELEVATION—

Front Elevation for an Apartment Hotel, San Francisco
George Streshley & Co., Architects

Fireproof Construction

Value of a Non-Inflammable Building from the Investment View-Point With Particular Reference to New York City

By ERNEST FLAGG, Architect, New York.

A PRACTICAL demonstration is now being made that it is possible to build fireproof apartments which will yield a better return on the investment than those of the ordinary inflammable type. After a great deal of experience in planning both kinds I became convinced that the economies in space which the fireproof method of construction permits of more than offset its greater cost. To test the correctness of this theory on a plot of land 100 feet square a building was erected. Although this building is not yet ready for occupancy all contracts for its completion have been let, its exact cost is known and the correctness of my estimates has been verified. If this is true it would seem that there is no longer any reason why the building of inflammable tenements should not be prohibited, for such a regulation would inflict no hardship either on landlord or tenant, but on the contrary, both would be benefited and the city would receive much additional fire protection, which it sorely needs.—[New York City.]

The enactment of the present tenement law was opposed by many who thought its drastic requirements for light and air would prove burdensome both for those who build and those who live in tenements. It was contended that the large courts and yards called for would cause a great loss of floor space and would involve either less income to the owner or increased rent for the tenant. The practical working of the law during the ten years in which it has been in force has shown that while there is a considerable loss in the number of rooms of legal size which are obtained to the lot, there is such an improvement in their quality that the loss of space is about offset by the higher rent a room which the tenant is willing to pay. People who formerly occupied four rooms, three of which were dark, are willing to pay an equal rent for three rooms all of which are light. So also two light rooms are found to be almost the equivalent of three rooms, two of which were dark.

Under the old law it was the custom to obtain fourteen rooms to the 25-foot lot on each story. The apartments generally consisted of two suites of four rooms and two suites of three rooms to the floor, one room in each suite being lighted either from the street in front or the yard in the rear. The other rooms were practically dark.

Under the new law it is no longer profitable to build houses on the single lot of 25 x 100 feet, but using the lot as a unit the average number of rooms to the floor which is obtained has fallen from fourteen under the old law to about eleven under the new law. In some cases twelve rooms to the lot to the floor have been secured, but these are few. In this new building of which I speak there is no falling off in the number of rooms as compared with the old law tenements. It has as many rooms to the lot to the floor as could be had before the new law went into effect.

Here then we have fourteen rooms of legal size to the lot to the floor for the first time since the new law was passed. Here we have the large courts and yards which the new law calls for, with no loss of space inside the building. Here we have all the benefits of light, air and privacy which the new law secured, together with as many rooms as were ever obtained under the old law. Moreover, the building is fireproof and vermin proof; each apartment has its own private toilet and is in other respects more conveniently arranged than were the old tenements.

The gain of from two or three rooms to the lot to the floor may seem a small matter to the layman, but it makes a vast difference in the earning power of the building; nor is this the only gain. The law requires that all stories shall be at least 9 feet high in the clear; also, if the building exceeds 60 feet in height, all courts and yards must be enlarged and all walls made thicker. It is, therefore, important that the ordinary tenement should not exceed this limit of 60 feet, for if it does, increased cost and a further loss of floor space occur.

With wooden floor construction of the usual kind it is not possible to obtain six stories of 9 feet each within a height of 60 feet, while with fireproof construction the floors may be made so thin that it can be done, and it has been done in the new building I speak of. This building is, therefore, several feet lower than it could have been if not fireproof, yet there is no loss in the clear story height.

Exclusive of the cost of the land, a six-story tenement house of the ordinary kind would cost to build approximately $27,500 a lot. It would contain at the utmost 68 rooms to the lot. The fireproof building I refer to will cost $32,500 a lot to build and will contain 83 rooms to the lot. This sum includes taxes and interest on the capital invested during the time of erection, architects' fees and every other necessary expense. Assuming that both buildings occupy lots costing $15,000, then each room in the house of the inflammable type will cost $625, and each room in the fireproof house will cost $572. Thus the rooms in the superior building will cost over 8 per cent less than those of the inferior one. Moreover, the annual cost for repairs for the fireproof building would be considerably less than for the other, and its life longer.

If all this is true, why should we continue to use wood in the construction of tenements? It would certainly be to the interest of all concerned to have fireproof buildings, even if their cost was somewhat greater; but when it can be shown that foot for foot the floor space they contain can be had for less than in buildings of the combustible kind, what excuse is there for the use of wood in tenement construction?

This favorable showing for fireproof tenement could be greatly improved if it were not for our absurd building law. As the law now stands it places a premium on the use of wood and a heavy and unnecessary handicap on the use of non-inflammable materials. The true interests of the city require that fireproof construction should be made easy, and dangerous construction difficult. Our law accomplishes the reverse of this. All sorts of burdensome requirements are imposed on the builder of fireproof tenements, while a highly dangerous license is allowed to the builder of inflammable ones. The user of steel and iron must protect his material at all points with a covering of brick, terra cotta or other similar substance, while the user of wood may leave his more dangerous material exposed. Even metal columns used to support floors in non-fireproof buildings may be left exposed. Thus in buildings where there is much to burn, the law provides no protection for the metal, but in fireproof buildings, where there is presumably little to burn, it imposes a protective covering.

Many of our so-called fireproof buildings contain such quantities of wood that they should really be classed as only semi-fireproof; but the law makes no distinction between such buildings and others which contain no wood at all. In both alike all structural metal must be covered. At least three-fifths of the wood used in what we generally call fireproof buildings lies in the double wooden floors and the wooden sleepers to which they are fastened. In buildings which do not have wooden floors there is no reason why the iron work should be protected, except in special cases. It stands to reason that where wooden beams are used which can burn, the brick walls which support them should be thicker than where metal beams are used which can not burn; but the law makes no such distinction.

What can be said for a wall 50 feet high and only 1 foot thick having wooden beams at each story built 4 inches into it—often on both sides—and still further weakened by chases, flues, windows and doors? Walls of this sort could hardly stand alone for a moment, and are only held upright by the inflammable beams which they support. This is bad enough, but under certain conditions the law allows walls supporting wooden beams which are only 8 inches thick for a height of 40 feet.

It goes without saying that walls of this sort can offer but a feeble resistance to the spread of fire. Is it any wonder that with such laws in force in our principal city the yearly fire loss in this country equals one-half the cost of new construction? It is perfectly safe to say that with an additional cost of 10 per cent spent on thicker walls and more solid construction in other parts our yearly fire loss might be reduced by one-half, and even then it would be far greater than is usual in other countries.

One who compares our building laws with the building laws of other cities can hardly escape the conclusion that it was drawn for the express purpose of discouraging the use of fireproof construction, so burdensome are its requirements.

Even in Brooklyn concrete construction is about 25 per cent cheaper than it is in Manhattan, because the requirements in that borough are not so rigorous as they are here; though just why stresses which are considered safe in Brooklyn should be considered unsafe by the same government in this side of the river does not appear.

I might greatly prolong this, but enough has been said, I should think, to show what great disadvantages the person who wants to build well in this city is placed.

Who benefits by all this useless waste of material? The money it costs is worse than thrown away. It serves no other purpose than to check the use of fireproof material and to increase the fire risks of this city.

If under the present adverse conditions fireproof tenements can be built, as this building in Forty-seventh street undoubtedly shows they can, to compete commercially with non-fireproof ones, I do not think I am wrong in saying that it is a matter of great importance and one which ought to be of interest to every one who has the welfare of the city at heart, for nothing is more sure than that every piece of wood which can be eliminated from our buildings is a distinct gain to the safety of the city.

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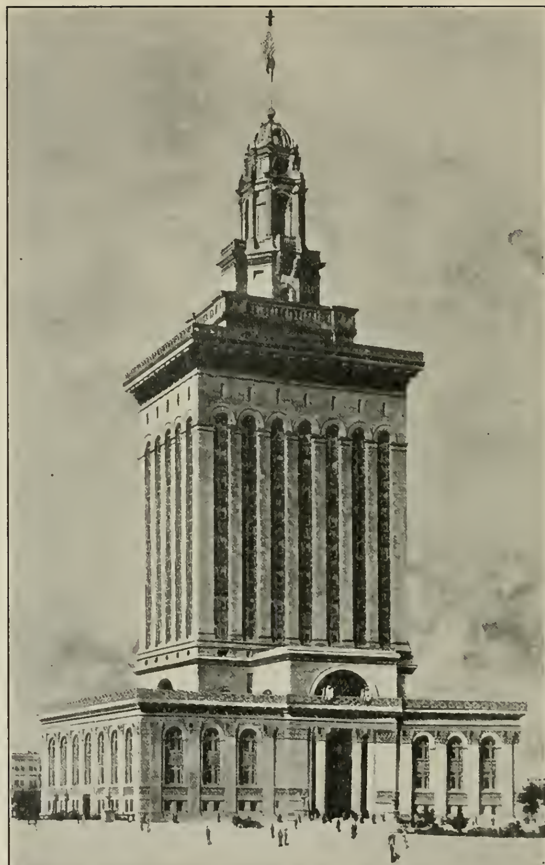
Ice Plants for Apartment Houses

MANY large apartments and hotels maintain private ice plants, or refrigerators, which amount to the same thing. A small motor circulates the brine and ammonia gas, and the temperature of the refrigerator is controlled automatically. The new refrigerator is operated by electricity. In place of ice a "cooling liquid" is circulated by a small motor-driven pump. The scheme for keeping the refrigerator cool is the same as is used to make artificial ice. With the motor-driven pump ammonia gas is compressed to the point at which the gas liquefies (for pure ammonia is gas) and the heat generated by this compression is extracted with water jackets. This liquefied gas is conducted to the cooler through a pipe and allowed to expand in a coil. Of course as the gas expands it absorbs just as much heat from its surroundings as was generated in compressing it. This lowers the temperature of the interior nearly to the freezing point. From the expansion coil the gas is conducted back to the compressor ready for another cycle.



Revised Perspective of Oakland City Hall. Two Stories Have Been Added at an Estimated Extra Cost of $300,000. Palmer & Hornbostel, Architects

The beauty of the electric refrigerator is that it works automatically and with the perfection of economy. When the temperature in the "ice box" rises above a certain point a tiny electric device starts the electric motor which circulates the cooling liquid. As soon as the temperature drops to the desired point the same device, called a thermostat, stops the motor. The automatic devices control the apparatus indefinitely and there is no waste of electric power. So simple is the new refrigerator that it requires practically no attention except an occasional oiling of the electric motor and the compressor.

The iceless ice box has been successfully used for some time in hotels, meat markets, fruit stores, creameries and in wholesale and retail houses where perishable goods are handled. Now it is to be made in sizes suitable for the home.

Competitions

By F. W. FITZPATRICK.

HAPPENING to glance over that "Competition" article of mine in your April issue it just occurred to me that perhaps an illustration or two added might emphasize the point I tried to make, that an architect is indeed silly to enter into such contests unless he has a "cinch," and then he becomes somewhat akin to a "crook" or at least a party, "an accessory before the fact," to a full-fledged fraud upon his brethren who haven't the "cinch."

You see, conditions are such that in some way or another I know the details, the wigglings of most competitions some time or another, before, during or after. I would not go into one direct for a farm. If the practicing brethren insist upon going in, in spite of what has been preached to them and what they must know of their own experience and probably in spite of my specific warning and advice to keep out, why, I can't very well hold them back by force, and if in going in they want to pay me real money to help them get up something particularly nice it certainly is hardly up to me to decline, though I feel, if I don't really know, that it is a forlorn hope. For the man with the cinch doesn't need to produce superlative results—he'll get it whatever sort of a design he may have. But all that is neither here nor there. We were considering concrete illustrations of the beauties of competition.

During the past month I have had a finger in eight, not little, insignificant affairs, but good, big, full-grown, important chaps.

No. 1, an architectural advisor affair. All designs rejected and the "advisor" employed to go ahead with the work—based upon the best features submitted by the competitors!

No. 2. No advisor. Sixteen designs submitted, three liked very much and invited to re-compete, and a foregone conclusion that one of the three, a relative of the president, will get the job, but the other two will receive moderate prizes.

No. 3. No advisor. Twenty-six designs. Award to a manifestly inferior design because its author was known to the board and had been a crony of the chairman for twenty-five years. To remonstrations it was answered that they cared more to have an "architect" they knew than they did for any pretty plans. Each competitor must have spent nearly $1,000 in the work.

No. 4. Rather close of kin to No. 3. Indeed, they are all cousins germain. Award made to one who had done a lot of private work for the board. Design much criticized, and justly. Board calmly asked what the kick was about. Hadn't the others the privilege of sending in designs? The law said they should, but the law didn't forbid the award being made to any one they wanted and they had agreed to give the job to Mr. So-and-so long ago.

No. 5, rather amusing. Eleven designs received at the appointed time. Most of the competitors there anxious for a decision. Informed that no decision could be given for two weeks. Architect No. 12—a dear friend—called in in the evening, shown all the drawings and told to get busy and have a design in before two weeks. Of course the job will go to him.

No. 6. A very important building, some really clever designs and beautiful drawings. One chap, though, sends in a very ordinary, hackneyed plan and hastily drawn but accompanied by twenty or more plates of New York skyscrapers from the architectural journals and the statement that he'd be glad to build that building according to any one of those plates! The gall of the creature, and those "designs" were gravely examined and commented upon and compared to the specially made ones, too! The affair is not settled yet, but I have the assurance of the board that it will go to Mr. X, he being the oldest and best established local architect. But what about the designs, the relative merits and so on? Oh, well, Mr. X will be instructed to incorporate in his design any especially meritorious features in those other drawings and he certainly, having had so much experience, can get up something quite satisfactory even though his first sketch may not be very fine. They have the utmost confidence in him!

No. 7. A rather ancient story. Plans received, commented upon and returned with thanks. Decided not to build this year, just wanted to see what could be done with the lot and if the work goes ahead next year the same competitors will again be given a chance, thank you!

No. 8. A school. Competition invited. No notice given as to especial and unusual intentions of award, each competitor expected to get a show at a $200,000 job at the regular commission. When it was all over the three best designs "in the estimation of the board" were kept and their authors offered $500 each for them. The board had decided to have its regular superintendent make the plans and use a combination exterior from those three designs!

And how much nearer really just, unprejudiced, un-jockeyed are the competitions managed according to the rules laid down by the A. I. A.? And even if the thing is un-jockeyed and left to professional advisers it's a lottery, a game of chance, the special whim the strongest adviser, essentially a jury trial, and who with a perfectly good case wants to leave it to the tender mercies of an impressionable jury? An instance: a big competition some time ago, three judges, big guns but not wonderful designers, agreed upon an award. Forty-two of forty-eight other architects, just as capable as the judges, entirely disagreed with the latter and thirty-six of them placed the third man first. Still, a good deal like using wood in construction though realizing it is dangerous, combustible, foolish and extravagant, the competition idea has become a habit, ingrowing, silly, almost criminal. We all realize that *collaboration* is infinitely more sensible, more honest, less costly and better in every way, but it'll take the dear profession another twenty years of hard knocks to get out of that fool habit. It's will be done!

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A Motor Boat of Reinforced Concrete

By ALBERT SCHEIBLE, in Cement Era

WHILE concrete has been variously used for the construction of pontoons, scows and similar floating structures in which a considerable thickness of the walls is not objectionable, it has heretofore been considered out of the question as a material for boats in general. Indeed, the thought of reinforced concrete as a suitable material for the walls of a light pleasure boat would seem quite incongruous. Hence the surprise created when the enterprising Dutch firm of A. Last & Sons, at Enkhuizen, Holland, demonstrated a few months ago that a fine looking and apparently durable boat can be built with a concrete shell.

The logic of the innovation is easily understood from the practicability of boats made with thin shells of iron or steel, in which the material used weighs about three and one-third times as much per cubic inch as it would if made of reinforced concrete. Therefore, a boat of the same design with concrete walls three and one-third times as thick, should give the same displacement.

Following this course of reasoning, the manager of this Dutch firm, R. Last, aimed at building a concrete substitute for a pleasure boat with a hull of wrought iron in which the iron shell was 1/8 of an inch thick. Allowing for the reinforcements, the hull averaged about .15 inch thick; hence the builder adopted three and one-third times this, or roughly a half inch, as the suitable thickness for the shell of his novel craft.

Pleasure Boat of Concrete, at Enkhuizen, Holland

In building it, the frame work was made up of steel ribs and longitudinal rods, both of about ⅛-inch diameter, having 1½-inch meshes of 1-16-inch wires interwoven with the same. For the keel, a bar of half-round steel, 1 inch wide, had a 3-16 x 1-inch flat bar riveted to its flat surface; this was interwoven with the wire mesh so as to give a stiff frame. Six inches above the keel small cross-beams 1 inch thick were built of concrete to support the floor of the boat and to stiffen it crosswise; also a pair of beams 1 3-16 inch thick for supporting the gasoline engine.

After securing the wood trim, including the seats, to the steel framework, this was coated with the concrete, which was applied from both sides. After standing for two days, this was treated to five coats of a waterproofing compound, applied at intervals of two days. Then the engine was fastened in place and the boat was left with the engine in it, to allow the concrete to harden. After three weeks of hardening it was launched and used freely for the rest of the summer season—fifteen weeks. During this time it was repeatedly subjected to collisions and was not spared in the ordinary usage of pleasure boating, but showed no leak even at the places where it collided. The engine used was rated at 3-horsepower; with it running at 700 revolutions per minute, the motor boat showed a speed of about seven miles per hour. Exclusive of the engine, the boat cost about $65, its dimensions being approximately: Length, 14½ feet; breadth, 5½ feet; depth, 20 inches.

This innovation in pleasure boat building has attracted considerable attention in Europe, and the coming season will undoubtedly see others following the same general methods in building both larger and faster motor boats.

Framework of Motor Boat Ready for the Concrete

Compensation of Contractors*

THE contractor is the one who is to produce the final result, whether good or bad. It is conceded that a contractor must have the necessary knowledge, ability and facilities, and common business honesty before a proper result can be expected. It is an old saying, "You can not get blood out of a turnip," and every contractor has his personal limitations. Granting, however, that the contractor selected has everything necessary to produce the desired result, the contract requirements will seldom, if ever, be carried out in all cases unless the contractor can earn at least the cost to him of the work. It would seem to many that every honest and capable contractor should be able to earn rightly, the cost of the work, even if he might fail to earn a profit because of delays or failure to economically manage the particular work.

The most important and primary thing for a contractor to know is what assurance the contract provides that he will get out of the work at least as much money as he may be compelled to put into it, plus a possible sum as compensation for his services and knowledge used for the work.

Leaving out of consideration any question of possible profit, contracts may be divided into two groups; first, those in which the contractor is not assured of ever receiving as much money as he may spend on the work and are hereafter referred to as "unsecured-cost" contracts; second, those contracts which assure him at least his cost even if his profit is made uncertain, they are hereafter referred to as "secured-cost" contracts.

The usual forms of contracts can be divided as follows:

Unsecured-cost Contracts—

Lump-sum;

Unit price, with schedule of quantities.

Secured-cost Contracts—

Cost, plus a percentage;

Cost, plus a percentage—where the general contractor takes estimates for sub-branches of work, and then makes lump-sum contracts, with the architect's approval;

Cost, plus a percentage, with guaranteed limit;

Cost, plus a fixed sum;

Cost, plus a fixed sum, with a bonus if cost is less than a fixed sum, and a penalty if it exceeds such sum.

The writer has coined the terms "unsecured-cost" and "secured-cost" contracts because he desires to represent a class of contracts rather than a particular and specialized form, and he has found that, owing to a wide divergence of opinion, the previous use of terms "lump-sum," "percentage," "cost-plus," etc., have been interpreted as being used in too limited a sense.

There are, undoubtedly, special conditions where some one of the various systems given above will be superior to the others, and no one system can be found that will be the best for all classes and conditions of contracting work. The writer is, however, advocating a principle which must underlie all contracts, and is not primarily championing the exclusive use of any one special contract.

As the work is purely a business proposition with a contractor, it is evident that, if the cost is not assured by a "secured-cost" contract, the contractor is very vitally interested in anything which may tend to affect the cost of the work, but, if the cost is assured, it is immaterial to a contractor what the contract may require or what changes, modifications, alterations, delays, etc., the owner or his professional adviser may demand.

It likewise follows that under the "secured-cost" contracts the accuracy of the specifications and drawings become of minor importance to a contractor,

*Extract from report of "Special Committee on Uniform Specifications" of the American Society of Engineering Contractors.

Small Building Erected to Show the Possibilities of Reinforced (Panel) Brick Work

and the owner, or his professional adviser, can modify or correct them at their pleasure without seriously affecting the rights of the contractor. Under "unsecured-cost" contracts, however, exceptional care should be given to make specifications and drawings complete, clear and accurate, because, if this is not done, how in the name of reason can a contractor be expected to make an accurate "lump-sum" estimate, or why in fairness should he be expected to calmly accept changes or corrections which may possibly, if not actually, affect his prospective profit?

It certainly should be evident that if, for any reason, the specifications and drawings can not be made complete, clear, and accurate, the work should be executed under a "secured-cost" contract, and that only in such cases where it is not only possible but where specifications and drawings have actually been made complete, clear, and accurate should any fair-minded man ask a contractor to accept an "unsecured-cost" contract.

* * *

Artistic Brick Construction

A CONSIDERABLE reduction in the cost of brick building of various types is effected by the new reinforced panel method of construction as shown by the above cut. This building is located on filled ground, where it is subjected to the heaviest vibration caused by the constant passing of trains and heavy trucks, but even under this ordeal the walls stand in perfect condition.

The primary features of this construction are single-course, vitrified brick panels set between vertical I-beam studs, of either wood or steel, the brick panels fitting into the channels of the I-beam, the studding being anchored bottom and top. Lateral reinforcement is possible at any level by the use of metal strips bedded into the horizontal mortar joints and attached to the studs.

Toncan Metal

The Logical Development of the Corrosion Theories of Cushmam and Walker

By F. M. ENGLISH

THE development of Toncan Metal was undertaken to meet the demand for a black or galvanized sheet which would be moderate in price and have the highest corrosion resisting qualities for use in roofing, siding, eaves trough, conductor pipe and for all other building purposes into which such sheets enter.

In undertaking the development of a sheet of this character, we have been guided throughout by the old time Iron Master and by adapting old time principles to modern methods as far as possible.

The problem of the old time Iron Master, in making the quality of sheet which he did, was infinitely simple as compared to the problem facing the modern iron or steel maker who undertakes to reproduce sheets having the corrosion resisting qualities of the old time goods and which also combine all the other qualities requisite in a sheet which must meet modern requirements.

Had we today the same raw materials, the same workmen, the same furnaces and exactly the same conditions, sheets could be made in all respects equal to any that have ever been made, but—it's a big "but"—could the manufacturer with such facilities begin to supply the enormous demand of today and could he reproduce sheets at a price which would permit of their use in the vast variety of ways in which sheets are now being utilized?

To meet the present day demand for sheets—to enable the mills to keep pace with the ever increasing consumption, because of the infinite variety of ways in which sheets are being employed—the slow, limited methods and processes of past days cannot be employed or reinstated.

The problem confronting the sheet manufacturer of today, is—how to make sheets having the old time corrosion-resisting qualities together with the necessary working qualities and at a price which will not curtail their use,—and the problem is no easy one. In other words, the sheet manufacturer of today must "make a dozen blades of grass grow" where one grew formerly not at the same price and of the same quality but at a lesser price and of better quality and with higher labor, inferior raw materials, and to withstand much more exacting conditions.

The conditions today to which sheets are subjected as compared to earlier times are also entirely different—the demands and requirements of the trade are far more exacting. The sheet of today to meet modern conditions must not only have the highest corrosion-resisting qualities but they must also have working qualities and be able to withstand strains and stresses, in shaping, forming and handling, never dreamed of in the old days—to say nothing of the vastly changed atmospheric conditions to which they are now subjected. The sheet of today to meet all requirements demanded of it must be better than the old time sheets, and not only better but cheaper.

In placing Toncan Metal on the market as a material in which are combined all the qualifications necessary in the present day sheet, whether galvanized or black, it is classed as a metal rather than as an iron or steel; because while it has corrosion-resisting qualities equal to the old time iron, it also combined many characteristics of the highest grade mild Open

Hearth Steel, making it the ideal material with which to meet all requirements of modern sheet metal practice, in that it will not only withstand corrosion but also the strains and stresses of shaping and forming without fracturing.

It is an undisputed fact that the corrosion-resisting qualities of the early sheets were due entirely to their uniformity or homogeneity which was made possible through the proper selection of raw materials through the principle involved in their handling and through the care and attention with which the iron was made. Plenty of time was given the raw materials while in the furnace, to eliminate any excess foreign impurities present and to properly combine those remaining, and also by handling the iron after it came from the furnace in such a manner that segregation did not take place during the reheating or working up processes.

Through modern research and investigation we know that corrosion is caused by the Carbon, Sulphur, Phosphorus and Manganese becoming segregated during the process of manufacture, this theory having been fully demonstrated both in the laboratory and under actual working conditions—the corrosive action taking place in the following manner:

When the impurities—Carbon, Sulphur, Phosphorus and Manganese become segregated in iron or steel—that is when they are not equally and evenly distributed throughout the metal, occuring in small spots or areas, an electrical current will be set up between these segregated points whenever the sheet in which they are present becomes covered with a film of moisture from the atmosphere. Due to differences in composition, some of these points of segregation become positive, others negative, which when connected by the film of moisture, set up numerous electrical batteries of greater or lesser energy according to the extent of the segregation, so that there are limitless numbers of small electrical batteries continually at work throughout the sheet. It is a well known fact that a current of electricity cannot be generated in a battery without destruction or dissolution taking place at the positive pole so that in any sheet iron or steel in which segregation has taken place and the surface of which through exposure to the atmosphere has become covered with a film of moisture there are numerous small electrical batteries at work, at the positive poles of which the iron or steel is being destroyed, resulting in the form of corrosion known as pitting, a form with which you are all only too well acquainted. The more marked or strongly defined is the segregation, the stronger will be the electrical action; consequently the more rapid will be the destruction of the metal or sheet. On the other hand, the less well-defined the segregation, the weaker or milder will be the electrical action, and consequently the life of the sheet will be longer. Again, in a well-made sheet of iron or steel in which the impurities have been properly incorporated and segregation reduced to a minimum, the electrical action will be so slight that pitting will not take place, but instead an even coating of rust will be formed over the entire surface of the sheet in such a way that the rust will itself become, to a great extent, a protective coating, greatly retarding the process of decomposition or rusting. It was for this reason that the old time iron sheets withstood so phenomenally the ravages of corrosion. It was not because they did not rust that caused them to last but the way in which they did rust, that made them so long lived.

No iron or steel has ever been made or can ever be made that will not rust in moist air; because it is the nature of all products made from iron ore to rust and in time return to the natural state from which it originally came. But, the way in which the rusting takes place can be controlled, thus making the sheet long lived, durable and the most ideal metal for roofing, siding, eaves trough, conductor pipe and similar other purposes.

It has generally been supposed that steel corrodes faster than iron, also that pitting is confined entirely to steel, but this is by no means the case. Both iron and steel pit and corrode, and badly made iron, of which we are getting a great deal today, lasts no better than badly made steel. The opposite of which is also true, namely, that properly made steel will withstand corrosion and pitting equally as well as iron, besides having far superior working qualities.

There may possibly be some question as to how electrolysis takes place in causing corrosion as regards the exact chemical reactions; but that electrolysis actually does take place, and that it is the true cause of corrosion cannot be successfully disputed. The fact that electrolysis does occur is proven conclusively by the Ferroxyl Test, exhibits of which you have all examined. The object of this test is not to show the comparative lasting qualities of two or more pieces of metal but only to prove the theory of electrolysis by practical demonstration. The explanation of the test is this: At the poles of all electrical batteries two elements are always found to be present, namely Hydrogen Ions and Hydroxyl Ions. The Hydrogen Ions cluster around and indicate the positive pole. The Hydroxyl Ions in the same manner indicate the negative pole. The Ferroxyl testing reagent is composed of certain indicators, the reactions of which when brought into contact with these two elements have been known for years. Ferroxyl is a weak acid and is of such a nature that when brought in contact with Hydroxyl Ions, it at once produces a pink color; while potassium ferricyanide when Hydrogen Ions are present, causing iron to be dissolved or corroded, produces a blue reaction. Both of these chemicals are present in the gelatine mixture in which are imbedded the samples which you have examined, the blue color indicating the positive poles where destruction or corrosion is taking place, the pink color indicating the negative poles. No piece of iron or steel has ever been found which when subjected to this test will not sooner or later develop the pink and blue reaction which you have witnessed.

The point involved then in the manufacture of iron or steel which is to resist corrosion is to so combine and work up the raw materials that these electrical currents which cause corrosion will be of the mildest form and whose action is not concentrated or fixed through excessive segregation.

Of the many subjects which are of interest to the sheet metal worker and the user of sheets thereis none of such vital importance as the subject of corrosion, and what affects the sheet manufacturer, so that the cause and cure of corrosion is of common interest to both.

If the sheet metal business is to grow, expand and assume the position in the world of business which it should, it is absolutely neecssary that the sheet metal workers strive in every way to use only such sheets as will stand up for at least a reasonable length of time and to avoid wherever possible the use of such goods as will prove disastrous to his business and his reputation. As manufacturers of sheets we have long recognized this fact, and for a considerable time have been carrying on a series of exhaustive tests and experiments to produce a material which would be reasonable in price, meet all requirements—both as regards corrosion resisting qualities and working qualities,—thus placing within reach of every worker of sheets a material with which to combat and overcome the ever increasing prejudice against sheet metal for building purposes a prejudice which has of late years been steadily increasing due to the unsatisfactory lasting qualities of a large majority of the materials which are now on the market.

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Meets Third Monday Each Month.

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Contracts Let for Menlo Country Club

Architect W. Garden Mitchell, 804 Monadnock building, San Francisco, and the Building Committee, have awarded the following contracts for the new building to be erected by the Menlo Country Club, near Redwood City, Cal.:

General, Andrew Wilkie Company, San Francisco, $27,100.

Painting, Schastey & Vollmer Co., Inc., San Francisco, $1,500.

Plumbing, Thomas W. Alton, San Mateo, $2,882.

Electric wiring, Turner Company, San Francisco, $787.

Heating, Hoffman & Menzer, San Francisco, $921.

Congress of Architects

The Ninth International Congress of Architects will be held in Rome from the second to the tenth of October next, on the occasion of the National Festival to commemorate the Proclamation of the Kingdom of Italy. The organizing committee consists of the Italian section of the permanent committee, of delegates of various academies and societies, of representatives of the press, and of architects nominated at the meeting of July 2, 1909, in conformity with the statutes of the Permanent International Committee of Architects.

Members of the congress are classified as "full members" and "associate members." "Full members" are the special delegates of governments, academies and societies; all architects and persons who follow the professions connected with architecture. Academies and associations may be entered as "full members" and be represented by a delegate. "Associate members" are the near relatives of full members and architectural students.

The subscription for full members is 25 lire (£1), and for associate members 15 lire (12s).

Members of both classes have the same rights to reduced fares on the Italian railroads, to special reductions for apartments, to special cards of admission to the galleries, museums and other institutions, and to attend the meetings of the congress and visits.

The subjects for discussion will include the following:

Subject A—Reinforced Concrete: Its employment in different countries and the opportunities for its application to artistic construction from the technical and decorative point of view.

Subject B—The Question of an International Gazette of Architectural Bibliography.

Subject C—The Exercise of the Profession by an Architect in Countries other than his own.

Subject D—Observations on Modern Architecture.

Subject E—The Execution of the Architectural Work of Governments and other Public Bodies.

Subject F—The Rights and Duties of an Architect in Regard to his Client.

Subject G—The Utility of an International Comparative Dictionary of Architectural Terms.

Extra Subject—Foreign Academies at Rome: Their history, the resulting studies and designs of the students, and the influence exercised by these schools in the countries they represent.

Plans for Many Schools

A. C. Swartz & Son, 21 Fiske block, Fresno, write that they have on hand the following important work:

Three-story and basement frame addition to St. Augustine Academy, Fresno. Cost, $12,000.

Two-story modern brick high school building, LeGrand, Cal. Cost, $22,500, including heating.

Two-story modern brick eight-room grammar school building, with basement, Reedley, Cal. Cost, $22,500, including heating.

Two-story brick addition to Reedley High School, for the science departments. Cost, $20,000.

Four-room modern rural school building for the Stratton School district, Kings county, California. Cost, $8,000.

Addition and alterations to the Singer High school. Cost, $6,000.

Modern residence for Mr. B. A. Harvey, Fresno, to cost $7,000.

Architect Hayes to Design Oakland Church

The preliminary sketches of Architect W. C. Hayes, of San Francisco, for a new edifice, have been approved by the First Presbyterian Church of Oakland, and Mr. Hayes has gone East to consult with Architects Cram, Goodhue & Ferguson, of Boston, who have been retained as consulting architects. Upon Mr. Hayes' return, working drawings will be completed and contracts let in time to commence work in August. The church will be English Gothic in design, and will be of steel and stone, with stained glass cathedral windows and slate roof. Seating capacity will be about 1,200. There will be a gallery and organ loft. Building will have a heating system.

The bids taken some time ago for the construction of a two-story addition to the Oakland Y. M. C. A. have been held in abeyance pending the election of a new secretary and canvass for additional funds. At the present time there are not sufficient funds available to carry on the new work.

Montgomery Street Skyscraper

Another tall office building is about to be erected in the financial center of San Francisco. Plans for an eleven-story building have been finished and part of the contracts have been let. The location is the northwest corner of Montgomery and Sutter streets. Reid Bros. are the architects. The building will be Class A, steel, brick and terra cotta, and will contain offices and quarters for a bank. The building will cost $200,000.

Work in State Engineer's Office

State Engineer Nat Ellery states that work is well advanced on the plans for the dairy barn, creamery building, grand stand and cow sheds for the State Fair grounds, and it is expected the structures will be finished before time for opening the fair.

In addition to the State Fair plans, the department is engaged on plans for the dining hall and stable for San Quentin State Prison. Sketches are also being finished for State Armories for the National Guard at Sacramento and San Francisco.

Plans for the new training school building, in connection with the San Jose State Normal, are also under way. An appropriation was made by the Legislature for this building.

To Improve San Francisco Waterfront

Elaborate plans for expenditure of $9,000,000 to improve the San Francisco waterfront are being made by the new board of harbor commissioners. A. B. Saph, assistant state engineer, is now in charge of harbor work.

The tentative scheme calls for the rearrangement of the docks north of the Ferry building, completion of the Ferry building under the original plans of 1894 by adding 80-foot wings to either end, construction of 1,750 feet of permanent sea wall from Harrison street north, construction of a bridge at the foot of Channel street and extension of the belt railroad by installing a surface crossing with the United Railroad tracks in Market street and connecting the parts of the State's road on both sides of Market street.

The board plans to prepare docks near the Ferry building to the northward for accommodation of the big liners which will bring passengers here through the canal when it is opened. Rearrangement of the north side docks will provide wider slips. This may require the tearing out of some of the permanent work done by previous boards.

To Copy Style of San Francisco Homes

Col. E. E. de Montluzin, a New Orleans real estate man, visited San Francisco recently for the purpose of inspecting its residences and apartment houses. He carried back with him to the Gulf city the style of architecture that has contributed largely to San Francisco's picturesqueness. The colonel was accompanied by his architect, N. D. Hite, who will assist him in making attractive modern homes for the people of New Orleans. De Montluzin expects to build a large number of houses in the Gulf city during the coming year.

Repairs and Alterations to San Francisco Federal Building

Architect Wm. A. Newman, who is acting as Government Superintendent of Buildings in San Francisco, in the absence in Europe of Mr. Roberts, reports the following work in his office:

Repairs to the Oakland postoffice building, to cost about $4,000, the work to include repairs to the driveway, waterproofing basement, changing partitions and enlarging the money order department.

For painting the Marine Hospital in San Francisco the contract has just been let to J. Llewellyn, for $900.

Bids will be opened in Stockton in a few days for alterations to the Stockton postoffice building, to include new partitions, iron grills, lock boxes, etc.

A contract has been let to the Iron and Steel Contracting Company of San Bruno for boiler repairs at the Marine Hospital.

Grant Fee, Monadnock building, San Francisco, has been awarded the contract for alterations to the Appraisers building, at Sansome and Jackson streets, San Francisco. Work is to include new partitions, painting, plastering, plumbing, new flooring, etc.

All bids for the steam piping in the Marine Hospital have been rejected, as they exceeded the appropriation.

Personal

Architects Crim & Scott have dissolved partnership, Mr. W. H. Crim, Jr., retaining the firm's old offices at 425 Kearny street, and Mr. Earl B. Scott changing his location to the Humboldt Savings Bank building. Both architects are well known, and the fact that they are already quite busy indicates that each has a clientele that will insure their continued activity in the San Francisco architectural field.

Architect F. W. Burki has recovered from a severe attack of pneumonia, and is again at his office in the Mechanics Institute building, Post street, San Francisco. Mr. Burki has a number of large structures under way—one a $70.000 reinforced concrete store and hotel building.

Architect August G. Headman, one of the architects of the Native Sons building, under construction on Mason street in San Francisco, fell from a scaffolding several weeks ago and sprained his ankle quite badly.

Architect William H. Weeks is planning quite an extended trip East this summer. It is many years since Mr. Weeks has taken a vacation. In his absence his brother, Hamilton, will look after the conduct of the office.

The firm of Webber & Smith, architects, 317 Laughlin building, Los Angeles, has been dissolved. Architect Walter Webber of the firm will continue practice individually, having located his offices in suite 718, Ferguson building.

I. Jay Knapp, architect, has moved his office from Tacoma, Wash., to 203-204 Odd Fellows building, Klamath Falls, Ore., and would be pleased to receive catalogs, circulars, etc., from Architect and Engineer advertisers.

Honor for Young Whittlesey

The prize for the best type of urn to be used in Cherryland, a suburb of San Francisco, has been awarded to Austin Whittlesey, a son of Architect Chas. F. Whittlesey, who designed the Pacific building and Westbank building. The figures for the urn and fountain are to be modeled by the Sculptor McQuarrie, who has recently been given the commission to make the monument to Father McKinnon for Golden Gate Park.

There will be a fountain and two formal urns. The urns will carry large Japanese flowering shrubs, and the flower plats at each end of the structure will conform to the decorative scheme.

The structure is about twenty-five feet over all and the urns themselves about five feet in diameter. Other features contributing to the scheme of landscape gardening in Cherryland are a number of Japanese stone lanterns like that in Golden Gate Park and two large sun dials.

New Architects

Certificates have been granted to the following persons by the State Board of Architecture of Southern California: Anton Reif, 502 West Sixth street, Los Angeles; Edward C. Taylor, 1039 West Twentieth street, Los Angeles; Henry E. Bean, 921 Central building, Los Angeles; Harlow M. Kimball, 225 Cahuenga street, Hollywood; Frank G. Krucker, 275 South Euclid avenue, Pasadena; Walter S. Keller, northwest corner Fifth and I streets, San Diego; Frank P. Allen Jr., 620 Timken building, San Diego; John S. Siebert, 212 McNeece building, San Diego; Frederick H. Eley, 30 Hervey-Finley building, Santa Ana.

Fresno Hotel and Theater

The architects for Fresno's new hotel and theater, to be erected at the corner of Tulare and L streets, for Robert L. Fargo, are Parkinson & Bergstrom, Security building, Los Angeles. Building is to be Class A, four stories, and will cost $200,000. Plans are now being drawn.

Monstrous Suspension Bridge

Allan Rush, an engineer of Los Angeles, has submitted a proposition to join Oakland and San Francisco by a suspension bridge spanning the bay at a height of 150 feet. It is proposed that the bridge shall rest upon eight piers, four in the bay, two on Goat Island, and one at either terminal. The highway would be constructed to accommodate electric cars, steam cars, a road for general traffic, and a way for pedestrians. The project has been favorably considered by San Francisco and Oakland civic associations, and telegrams have been sent to Senators Perkins and Works asking them to help in getting the necessary federal consent for carrying out tne scheme. The contemplated structure will cost $20,000,000, and the promoters claim it will pay for itself.

Engineers and Architects Association

About sixty-five members of the Engineers and Architects Association of Los Angeles, met in special meeting May 20th, to listen to an informal illustrated address on the Catskill Water Works, under construction, to supply domestic water for New York City and Brooklyn, by Mr. Alfred Douglas Flinn, department engineer of the Board of Water Supply of New York. Mr. Flinn has been in Los Angeles inspecting the Los Angeles aqueduct project.

To Practice Architecture

Geo. A. Schastey, formerly of Schastey & Vollmer, has opened an office in the Monadnock building, San Francisco, for the practice of architecture. He has recently completed plans for a $12,000 residence for John L. Kerr, to be erected on California street, south of Mason, and he has also made drawings for alterations to a three-story frame building on Fillmore street, San Francisco, for S. N. Wood.

Southern Pacific Depot in Oakland

The Southern Pacific is going ahead with the construction of a splendid new passenger and freight depot at Sixteenth street, Oakland. The plans have been finished by Architect Jarvis Hunt, of Chicago, and some of the contracts have already been let. The depot is to be Class A, and will cost in the neighborhood of $300,000.

Concrete Bridges

Bids will be received until the second Monday in July for the construction of two steel and concrete bridges in Stanislaus county, from plans by County Surveyor E. H. Annear, of Modesto.

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RESULT OF THE SUB-TREASURY COMPETITION

The recent competition for a Sub-Treasury building to be erected in San Francisco, was participated in by seventeen architects, six of whom were from San Francisco. The judges were D. H. Burnham, H. Van Buren Magonigle, Douglas H. Thomas, C. E. Richards, W. C. Noland and the Supervising Architect of the Treasury Department. This was, indeed, a splendid jury. The first award was given to J. Milton Dyer, a Cleveland architect of recognized ability. Abraham Garfield, also of Cleveland, was given second mention, and Dennison, Hirons & Dabyshire of New York ranked third in the estimation of the jury.

San Francisco architects, to use the vernacular of the street, didn't have a look-in. We have not seen the successful drawings so we can not pass judgment, but recognizing the excellence of some of the San Francisco renderings, we are bound to assume that Mr. Dyer's plan is of a very high standard, assuming also that the decision of the jury was an honest one.

The San Francisco competitors put in a lot of hard work, as their drawings, shown elsewhere in this number, unmistakably indicate. The local profession, we think, deserved better treatment.

The result of this competition again emphasizes the domination of the East over the West, and the little consideration we receive when it comes to recognition of actual merit. After all, competitions, no matter how admirably conducted, are not infallibly expressive of the survival of the fittest!

"SAVING THE OWNER MONEY"

More than usual interest was taken by architects and contractors of California in the opening of bids last month for the construction of Oakland's new million dollar city hall. Twenty-seven different items were figured and in the majority of cases the bids were remarkably close. One of the surprises, however, was the astonishing bid submitted by a San Francisco and Oakland contractor whose slogan is "I save the owner money." His bid for the concrete work was nearly $50,000 more than the lowest figure submitted (Roebling Construction Company) which was awarded the contract. This same man was $34,000 higher than the lowest bidder for masonry work, while his figure for structural steel was $12,000 in excess of the lowest bid. Such glaring differences naturally incite one to wonder how in Sam Hill such an estimator can give the owner the protection he claims.

In spite of the low bids the building is going to cost the city of Oakland $300,000 more than the original estimate. The extra expense is due to two additional stories, decided upon by the architects after the acceptance of the competitive drawings. To provide this sum the City Council will levy a special annual tax of 10 cents on $100 valuation for three consecutive years. If this extra tax had not been authorized, it would have been necessary to change the specifications, substitute cheaper materials and re-advertise for bids, delaying the work of construction and giving the city an inferior structure in many respects.

SEPARATION OF THE ENGINEER FROM THE ARCHITECT

The separation of the engineer from the architect was the topic of Luzerne W. Cowles, '97, of Boston, at the recent Congress of Technology held in the Bean City. Mr. Cowles noted how in European countries the harmonious and artistic development of civic centers during modern times has proved an enormous benefit to them. In ancient times the architect acted as his own engineer; there was little haste in completing a project; and artistic treatment requiring much time and labor was made possible. The ultimate aim of securing the best results was then possible, because time and labor were less important than they are today.

In the United States there has been, until recently, the tendency to keep the engineer and the architect apart, and the result has been very much in the way of inartistic utilitarian building. Municipalities have been grave offenders in this respect. Consequent on the increase in wealth and population of the cities of the United States, there is at the present time from public and press alike the demand for rational and civic improvement along harmonious lines.

The engineer, inartistic as he may be, comes now to the aid of the architect, who will submit to him questions where engineering judgment is desired, while on the other hand, the engineer must acknowledge that the architect has the advantage of improving the appearance of constructions especially of metal. This co-operation was the denominant note of the latter portion of Mr. Cowles' paper, who showed that while private individuals assumed the right to erect almost any kind of building they wished, the public service corporations are realizing the importance of erecting structures good not only from the engineering but the architectural standpoint.

"The training of architects in close proximity to engineers should be encouraged," said Mr. Cowles. "The architect's work embraces the designing of buildings whose form depends on engineering theory and experience. This proximity need not affect the architect's artistic tendencies, but it can not help training his mind to better work."

Back Copies Wanted

F. F. Moulton will pay 25 cents each for copies of The Architect and Engineer, Vol. I, Nos. 1 and 3, which he desires to complete his file. Mr. Moulton's address is Menlo Park, Cal.

HEATING AND LIGHTING
Plumbing and Electrical Work

The Problem of Ventilation*
By THEODORE HOUGH

THE problem of ventilation is largely an engineering one, but, as in all such problems, the highest efficiency can be secured only by knowing accurately the conditions with which the engineer has to deal and the ends he must secure. Is the theory upon which we base our practice in accord with the advance of knowledge during the past two or three decades? This is always a good question to ask, and especially with regard to matters involving costly and often inconvenient building construction.

The old idea that the purpose of ventilation is to keep the air reasonably free from carbon dioxid and supplied with its normal content of oxygen, has long since been given up. Rarely does the carbon dioxid rise to more than 50 or 100 parts in 10,000, or the oxygen fall below 19 or 20 parts in 100, and we have no reason to think that this, of itself, is responsible for the effects of poor ventilation. At the same time it is by no means proved that the quantity of oxygen available to the body or the effectiveness of the removal of carbon dioxid from the body are without influence, for it is the quantity and especially the tensions of these gases in the lungs and not the quantity in the air of the room which is the important thing. It is not impossible that there may be various reflex or psychic interferences with the normal working of the breathing mechanism which result in deficient or perhaps in the equally undesirable over-ventilation of the lungs. Fortunately, the introduction of Haldane's simple method of analysis of the alveolar air now renders this subject capable of comparatively easy investigation, and it is to be hoped that our knowledge about it may soon be materially extended.

The failure to make the composition of the atmosphere in oxygen or carbon dioxid responsible for the results of poor ventilation led to the theory that the cause of the trouble is the presence of minute traces of extremely poisonous material in the expired air, and it was furthermore assumed, with utterly inadequate proof, that these poisons come from the lungs. Hence the teaching that while the carbon dioxid of the expired air is not itself responsible for the bad effects, it may be used as a measure of the imponderable or undeterminable poisonous material. And so there have been made thousands of analyses of air for this gas in the endeavor to measure thereby the efficiency of ventilation.

Expired air unquestionably contains material not present in normal air, and these materials often have a very offensive odor. But it is not true that they are contributed chiefly by the lungs. Decaying food particles in the mouth, catarrhal exudates, uncleanliness of person, and the like are far more responsible for their presence. If this is so, it is perfectly clear that the carbon dioxid is not a measure of their amount. A room crowded with typical representatives of the great unwashed, who do not brush their teeth and have never occupied a dentist's chair, would certainly impart to any assembly room a flavor which could not be given by the same number of individuals of cleanly habits; and yet the carbon dioxid content of the two rooms would in all probability be identical.

Nor is this all. Even granting that these offensive substances are present, it is not proved that they are poisonous, or at least to what extent they are poisonous. The fundamental assumption of all such theories is that in the bad effects of poor ventilation we are dealing with some sort of intoxication, i. e., with the action of a poisonous material reabsorbed into the body with the inspired air. Good as this assumption may be to serve as a working hypothesis upon which to base accurate investigation, we may confidently challenge the production of any adequate proof that poisonous material in the inspired air is the sole or even the chief cause of trouble. In other words, even on the theory upon which it is based, this measurement of carbon dioxid is an example of "barking up the wrong tree," wasted effort which the exercise of a little common sense would have saved.

Nor is the teaching of physiology lacking in indications of other and certainly equally important sources of trouble. A crowded, badly ventilated room is almost always an overheated room with an atmosphere surcharged with moisture. The heat comes from the doxidations going on in the bodies of its occupants, and every breath of ex-

*Address of Theodore Hough of the University of Virginia.

pired air leaves these bodies not only with an increased percentage of carbon dioxid and possibly other material of organic nature, but saturated with aqueous vapor. In other words, the atmosphere of the room comes to repeat the conditions of a warm, muggy summer day. Indeed, it only requires an appeal to experience to see that there is a suspicious similarity in the effects of the two conditions upon the human organism. The importance of these atmospheric conditions is, moreover, enhanced when we remember that it is not the general air of the room, but that in immediate contact with the persons of its occupants which exerts the physiological effects in question. The writer can not but feel that if more attention had been paid to the physical condition of the air within a few inches of the body and less to the general air in the room, the practice of ventilation would today be far more efficient, simply because it would have coped intelligently with at least two of the main evils.

The treatment of the practical problem of ventilation as a portion of the applied physiology of respiration takes far too narrow a view of the subject, and indeed this is recognized in much of our practice. In technological schools, courses usually combine the treatment of the subjects of heating and ventilation. But do they not generally look upon heating and ventilation as two separate things, instead of being as they really are, two parts of the same problem? Of course, in such matters all depends upon our definition of terms and we may confine our conception of ventilation, if we will, to the supplying of "fresh air" to an inhabited room. At the same time it is no uncommon occurrence to get wrong points of view because of the previous adoption of unfortunate definition. Ventilation as it is popularly understood, and as we think it should be understood, is not simply the replacement of vitiated by pure air; it is rather the maintenance of ideal atmospheric conditions in a room, the correction of all undesirable atmospheric conditions, such as the presence of offensive and possibly poisonous constituents, too high or too low temperature or humidity, contamination from leaky gas fixtures, the updraught from damp cellars, and numerous others for which the practical engineer must be on the lookout, and which he must understand how to estimate with approximate accuracy. The practice of ventilation as an art is perhaps more a case of the applied physiology of temperature regulation and the circulation of the blood than of the physiology of respiration; it is far more a physiological than a toxicological problem; and, more than this, it requires practical knowledge of many factors of domestic and public sanitation.

The practical side of ventilation should also take account, to a far greater extent than it actually does, of the variable nature of the conditions with which it must cope. The maintenance of ideal atmospheric conditions in a climate whose mean temperature is 75 degrees is an entirely different proposition from what it is in one whose mean is 65 degrees; it is entirely different according to the relative humidity; and the problem differs, above all, with the variability in these conditions from day to day. Has there not been entirely too much rule of thumb in our practice. Every treatise on the subject gives tables of the number of cubic feet of air which should be supplied to hospital wards, to school rooms, to factories, and so on. Surely it must make all the difference in the world in what sort of climate these buildings are located. Formulae are excellent things, but only when they are judiciously applied, and a good formula for Boston may be a complete failure for Denver.

We may also point out that it is almost certainly a mistake to seek for any single convenient test of the efficiency of ventilation. It is, of course, not impossible that some test may be found which would give an approximate measure of this efficiency; but there certainly is no such test known today, nor is it likely that it will ever be discovered. The determination of carbon dioxid, as above pointed out, has been lamentably overworked. The operation of this test by a chemist sent from the office of a ventilating expert may at first impress the layman who knows nothing of its significance with a pleasurable feeling that he is getting the worth of the money spent in installing a ventilating system; but too frequently the same layman is found a year or so later expressing his opinion of "these scientific fellows" in language more picturesque than quotable, and he is usually justified in doing so. Efficiency tests should certainly include temperature and humidity, and the results of all tests should be interpreted in the light of accurate knowledge of the conditions to be dealt with. After all, the final test is the experience of the occupants of the room.

Back to Old Location

G. Rischmuller, manufacturer of the Rischmuller patent door opener and closer and the improved liquid door check and spring, has returned to his old location, occupied before the fire, at 3442 Nineteenth street, San Francisco. For the past five years Mr. Rischmuller has had his residence and factory on Thirty-seventh street, Oakland.

Insulation of Water Pipes

One of the relatively unimportant matters which nevertheless must claim the attention of the architect at some time, and which may, after all, be of greater consequence than is fully realized, is the location and insulation of water pipes in buildings. Probably it has not occurred to the average architect that in order to draw a pint of cold water from a faucet it is often necessary to allow a gallon of water to waste before the temperature of the water from the faucet approaches that in the street mains. The reason for this lies, perhaps, in the fact that the pipe covering or insulating material has not been carefully chosen or thoroughly applied. Or it may be that in addition to poor insulation the hot and cold water pipes have been run in the same chase within a few inches of each other. The natural result is that the water in both pipes tends to assume the same temperature. And not only is cold water wasted. When hot water is desired it must be allowed to waste from the faucet until the branch is emptied. In addition to this waste, fuel is consumed to provide a circulation in the hot water pipes that would be largely unnecessary if the pipes were thoroughly protected by non-conducting materials.

It is thus apparent that the saving which might be effected by greater attention in the location and insulation of water pipes would amount, even by the most conservative estimate, to a very large percentage of the water consumption for domestic purposes. Certainly, this is an item worth considering both from the standpoint of the individual and that of taxpayers in general. Perhaps it would be the part of wisdom to make correction in advance of actual demand.

Competition for State Capitol

The program of the competition for the selection of an architect for the proposed general architectural layout of a series of buildings to be erected on Capitol Place, Olympia, Washington, and to form the state capitol group, and the special program for the first unit, the Temple of Justice, are now ready for distribution.

The plans must be submitted to Secretary E. W. Ross, of the State Capitol Commission, on or before 3 p. m., July 27, 1911.

The commission has appointed Charles H. Bebb, F. A. I. A., Seattle, as its professional adviser in the preparation of the program and the general conduct of the competition.

The competition is open to all architects who are citizens of the United States and who have a good professional standing and experience in architecture, and who are capable of carrying into execution large work.

The competitive designs will be examined by the professional adviser, or by the adviser and two other architects appointed by the commissioners, as the commission may determine. The adviser, or the jury, will report to the commission, designating the ten most meritorious designs. The law creating the capitol commission prevents the adviser or jury making anything more than the above recommendations; the final awards have to be made by the commission.

The first prize of the competition will be the commission to design and supervise the construction of the Temple of Justice. The other prizes are: Second, $1,000; third, $750; fourth, $600; and fifth, $500. The awards will be announced within ten days after the selections have been made, which, according to the program, can not be later than August 20th.

The program contemplates that all packages, drawings, and other information submitted with the designs shall be entirely free from any names or marks by which their author can be known or inferred.

All packages are to be opened by the Governor and the professional adviser and contents numbered for identification, the Governor taking into custody the envelopes which are not to be opened until after the jury has made its report to the commission.

The program contains a description of the site and the building. A contour map of Capitol Place may be obtained from the State Capitol Commission for one dollar.

In making the renderings a single monotone throughout is specified, and in no case is gold to be used. The plans are to have horizontal intersections blacked in or tinted. No treatment of floor or ceiling spaces is permitted. No perspective sketches will be received.

The element of cost as shown in the designs will be considered in its equivalents in compactness of plans and mass and the comparative simplicity of construction, ornamentation and finish will be given due weight in the judgment as showing the economy of cost. Exclusive of approaches, decorations, mural paintings, electric fixtures and movable furniture, it is expected that the cost will approximate $300,000.

The programs may be had upon application to E. W. Ross, secretary, State Capitol Commission, Olympia, Washington.

Effect of Concrete on Heating Mains

Instances of the rapid deterioration of heating mains when imbedded in concrete were reported by several speakers at the recent meeting of heating engineers in New York. F. A. Waldron, for instance, stated:

The Chateau Frontenac, Quebec, has recently built an addition of reinforced concrete construction, with cinder fill between the concrete and wood floors. In this cinder fill are imbedded lines of extra heavy galvanized iron pipe. The manager of the hotel showed me two pieces of this pipe, one the size of the original and one a piece that had been in for less than two years. The exterior of the piece that had been imbedded in the cinder had been eaten away, not pitted, but actually laminated, to one-half the thickness of the original pipe. You could take a jack-knife and peel off scales of rust from ¼-inch to 1-inch in length.

The cinder concrete was made of ashes and cement and a little sand, the usual mixture. After making a few inquiries I found that the hotel had its own electric light plant, direct current. Evidently that pipe had a leak in it at some point, or had been placed in the concrete and allowed to dry. The combination of circumstances there had produced this exterior corrosion.

Mr. A. B. Franklin: I remember a case twenty-five years ago where I told a builder to be sure to keep the cement away from the pipe. "Why," he said, "I have just taken out a steel beam that has been in twenty years and it is as bright and clean as when it was put in." I said, "Oh, yes, that is one thing, but your wrought iron pipe underneath the floor of this cafe, where it is going, is no comparison whatever. Don't let that cement come in contact with this pipe." But he was an old builder and could not be told anything, so he laid the pipe in cement. In six months' time the waiters in that cafe were going around with swollen feet because the floor was so hot. We had to take up the floor and put in brass pipe, although I advised otherwise.

Mr. Waldron: I would like to correct an impression that has gone forth in regard to the laying of pipes in cement. The question that was brought up referred to the use of pipes buried in cinder concrete. Cinder concrete is naturally more or less porous and I presume there is more or less sulphur in the cinders; also its capacity for absorbing moisture is much greater than the ordinary concrete composed of sand and gravel. But, as a general principle, I do not think it would be advisable to imbed pipes subject to expansion and contraction in a solid mass, because in time it would work itself loose. I do not think there is as much trouble with pipe corrosion when buried in a straight concrete of cement and sand and broken stone as when imbedded in a cinder concrete, which is the fill usually used in a concrete building, between the main floor slabs and the wood floor. Tar concrete is much better for this purpose.

Prof. William Kent: In the steel works in Pittsburg many years ago it was a practice to extend the works on made ground and this made ground was composed chiefly of old cinder piles. There it was the universal custom, when running a pipe through that made land, to imbed it in about 1 square foot area of yellow clay, so as to protect it from corrosion due to the sulphur in the cinders. I do not think that pipe should be laid in cinder concrete unless it is thoroughly protected.

Mr. F. K. Davis: I have seen electric conduits taken out of cinder cement that were as badly corroded as any pipe shown here today. Those pipes were originally coated with an asphaltum compound, but they were simply honeycombed, and it seems to be the opinion of many that free acid in the cement, in addition to the sulphur in the cinder, was the corroding influence.

Apartments in Portland

The coming season promises to be the heaviest building period Portland has ever witnessed. There is demand for space from business houses, warehouses and wholesale houses, for apartments and for small and large homes. There are practically no vacancies in any part of the city. Even old houses rent readily. But the demand has been especially pronounced for modern up-to-date flats and apartments. Portland is behind Seattle, San Francisco and Los Angeles as to quantity and quality of apartments and flats. The demand has been so keen this winter that a number of firms have concluded to build this year.

Apartments seem to be paying propositions as far as the owners are concerned. There are dozens of tenants waiting to lease a building as soon as the owner starts to clear the ground. West Side apartments of the condensed type, with built-in furniture are especially in demand, showing that Portland is well filled with transient classes. Such buildings lease for 8 per cent and 10 per cent on the total investment, or between $7 and $9 per room, as location and conveniences warrant.

According to the Pacific Builder and Engineer, nearly one-half of Portland's new apartment houses are built of brick, and those erected on the West Side are either brick or concrete. There will be a steady demand from this time on for such buildings, but it would be well to vary the type a little, and erect a few first class buildings for the wealthy class which does not care for built-in furniture or condensed rooms.

Another class which is beginning to demand flats and apartments is the well paid mechanic. He demands cheap rent and good-sized rooms, and there are but few buildings in Portland that can meet such requirements. Rent charges have been climbing for some years, but with a fair amount of building it is likely that the rates will drop somewhat.

Ignores Architectural Code

Despite the fact that the municipal authorities refused to accept the code of procedure recommended by the American Institute of Architects, quite a number of Southern California architects submitted competitive plans for a Polytechnic school to be erected at San Diego. The city has voted $200,000 for a group of buildings and the Board of Education announced that it would "keep itself free from any outside restraint in selecting an architect."

Free Class Instruction.

The Oakland Architectural Club offers free class instruction, at their club rooms, 127 Telegraph avenue, to all who may be interested, the condition being that applicants shall be members of the club.

The classes are as follows: Free-hand drawing and sketching, from casts, life, etc., under direction of Eugene Neuhaus, of the University of California and San Francisco Art Institute; also a class in elemental architectural design, under direction of Mr. Hart Wood, of Bliss & Faville's office. The free-hand class started Wednesday evening, May 31; design class on Friday evening, June 2d.

Additional class work will be announced later. Initiation fee for membership in the club is reduced to $3, for June and July only.

For further particulars, apply to Mr. R. B. Mead, care of Mr. John Galen Howard, Atlas building, San Francisco.

New Kind of Cement

In a petition filed with the Los Angeles City Council, the Engineers and Architects Association of Southern California asks that the city building ordinance be so amended as to permit the use of any material for building purposes that shall be found equally as good or better than those named in the specifications for contemplated work.

While the petition does not state so, it is generally known that its object is to bring about the use of a cement manufactured from tufa rock. When the work of building the aqueduct was begun it was found that there were immense quantities of this tufa rock at Haiwee, which is on the line of the aqueduct, and on land owned by the city. The city erected a tufa mill at Haiwee and has been mixing the tufa with the cement. Tests conducted for years have proven conclusively that the tufa cement is better than the neat article, after it has set for thirty days. It is much cheaper than neat cement, and if its use is permitted in Los Angeles, it may have a marked effect on building operations.

Steel and Cement.

[H. E. Keough has for some time conducted a column in the Chicago Tribune under the caption: "By Hek." The following appeared in this column recently, prompted doubtless by the recent fire which destroyed the grand stand at the Polo grounds at New York, interfering with baseball there at the opening of the season.]

"'Steel and cement, steel and cement'—
These words sear the heart of a popular gent,
Who shrinks at the thought that his money be spent
In rearing a structure of steel and cement.
Steel and cement, steel and cement.
The building authorities won't be content
Until the last wooden pagoda has went
And even the bleachers are steel and cement,
Steel and cement, steel and cement.
It runs into money pellmell and helbent.
No cheaper materials they can invent
To answer the purpose of steel and cement.
But softly. See here, in the cloud there's a rent;
When they have laid out for the steel and cement
They may raise the ante some 50 per cent,
The dutiful fans will no doubt be content
To chip in and pay for the steel and cement."

Mr. Headman Explains

Editor the Architect and Engineer:

Among many other interesting items in the May issue, I notice that you credit me with being the designer of the clever garden approach of the Villa D'Esté, located at Tivoli, Italy.

I want to thank you most kindly for the honor bestowed upon me, but in justice to Mr. S. A. Gregg, the delineator of the published halftone, I must kindly ask you to make note of the correction in your next issue.

Very truly yours,

AUGUST G. HEADMAN.

(We are glad to make this correction, and in explanation would say that a proof of the illustration was given Mr. Headman that he might write the proper caption. The printer mistook Mr. Headman's O K signature as intended for the delineator's name, typing it and omitting all mention of Mr. Gregg.—Ed.)

Contracts Let for Oakland City Hall

The Oakland Board of Public Works has awarded 18 of the 27 contracts for the construction of the new city hall. The estimated cost is $1,300,000. The awarded contracts will total $1,106,499, and cover the more essential building features upon which work will be commenced at once. The other nine bids were rejected because they were too high, and will be readvertised.

The awards and rejections were made upon the recommendation of the representatives of Palmer & Hornbostel, the New York architects, who designed the building and who will supervise the construction work. The contracts:

Mason work, Gladding-McBean Company, San Francisco, $122,360; structual steel, Judson Manufacturing Company, Oakland, $234,376; granite work, McGilvary-Raymond Granite Company, Raymond, $160,000; concrete work, Roebling Construction Company, San Francisco, $104,000; granite work, Raymond Granite Company, San Francisco, $19,680; terra cotta, Gladding-McBean Company, San Francisco, $65,000; roofing and skylights, Ford & Mallott, Oakland, $13,650; metal doors, Forderer Cornice Works, San Francisco, $2,970; iron and bronze, Art Metal and Wire Works, San Francisco, $97,700; plastering and imitation stone, C. C. Morehouse, San Francisco, $40,750; marble and tile, Joseph Musto-Keenan Company, San Francisco, $104,993; rough carpentry, Oliver Duval, Oakland, $34,110; cork floors, David Kennedy, Inc., New York, $3,293; finished hardware, Pierce Hardware Company, Oakland, $13,440; vaults and vault doors, Mosler Safe Company, Ohio, $9,440; vacuum cleaning, H. W. Moffatt & Co., Oakland, $3,120; electric wiring, John G. Sutton & Co., San Francisco, $40,000; plumbing, J. Looney, San Francisco, $37,627.

The rejected bids were for damp proof paint, metal furring and painting, paving and sidewalks, cabinet work and setting glass and glazing, painting, elevators, heating and ventilating.

Although the Pierce Hardware Company was the highest of three bidders for finishing hardware the contract was awarded to this firm upon recommendation of the architects that the estimates were of a superior quality of hardware.

Excavation for the foundation of the new city hall will be completed by the contractor, Just Anderson, within a few days.

The architects say that if no difficulties arise the building will be completed within the next fifteen months.

Dahlstrom Metallic Door Company

Mr. Alva A. Griner, formerly western manager, has been transferred and placed in charge of our New York office, Mr. A. T. Hansen taking his place as manager of our Chicago office.

New offices have been opened in Cleveland, Detroit and Pittsburg. Mr. W. D. Callinan is in charge of the Cleveland office at 905 Garfield building. Mr. S. C. Malmberg is in charge of the Detroit office, at 1314 Ford building, and Mr. L. H. Gibson is manager of the Pittsburg office, at 2455 Henry W. Oliver building.

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The Falls Manufacturing Company, with factory at 317 First street, San Francisco, is manufacturing Underwriters Labeled and Endorsed Fire Door Hardware. This is the only line produced west of St. Louis and one of the five in the United States turning out Labeled Hardware.

In the manufacture of Labeled Fire Door Hardware every fixture is thoroughly inspected by the local Board of Underwriters representing the National Board, before it is permitted to leave the factory.

The label is a guarantee of quality and accuracy in production and insures the purchaser against substituting as well as the minimum rate of insurance by the local Board of Underwriters.

It is gratifying to know that we are able to procure a product of this character manufactured at home, and the company deserves the support of the architects and building trades generally.

Concrete Contractors Association

The Concrete Contractors Association of San Francisco has elected the following officers:

J. D. Bluxome, President; A. Lynch, Vice-President; I. H. Clement, Secretary; K. E. Parker (Clinton), Treasurer; Executive Committee, Richard Keatinge, C. A. Johnson (Roebling), H. L. Peterson, Chas. Carrillon and H. Dillon.

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Phone Oakland 1753 — I. A. COOKE, MANAGER

THE J. F. KELLY COMPANY

(INCORPORATED)

MANTELS, GRATES and TILES

Fire Sets, Andirons, Fenders and Portable Baskets, Floor and Wall Tiling in Original and Artistic Effects

723-731 Seventh Street, Cor. Brush St.
OAKLAND, CAL.

MEMBER OF TECHNICAL SOCIETY — ALL SURVEY NOTES SAVED

SANBORN & CORINSON

Successors to C. S. TILTON

Surveyors and Civil Engineers

Phone Douglas 366 Home Phone C 2741 — 251 KEARNY ST., Charleston Bldg., Room 406
SAN FRANCISCO

HEATING — *ELECTRICAL WORK* — *PLUMBING*
AUTOMATIC SPRINKLERS
VENTILATION — *SHEET METAL WORK*

JOHN G. SUTTON CO.

229 MINNA STREET - - SAN FRANCISCO

DEXTER BROTHERS'

ENGLISH SHINGLE STAINS

Are manufactured from pure English ground colors and wood-preserving oils.

They hold their Color. Preserve the Shingle. Do not Wash Off.

PETRIFAX CEMENT COATING

Fills the pores of cement, concrete or brick and thoroughly water-proofs the surface.

Gives a Uniform Color. Prevents Floors from Dusting. Will not Oil Spot.

THESE MATERIALS CARRIED IN STOCK IN SAN FRANCISCO

Write for Catalogs and Color Cards

SHERMAN KIMBALL

503 MARKET STREET — Kearny 1783 — SAN FRANCISCO

By the Way

Some Industrial Information Worth the While

The McMillan Bridge Floor System

J. G. McMillan, inventor of the McMillan system of bridge flooring described in the May Architect and Engineer, has received some splendid testimonials from county and city officials who have had experience with the system. Specifications will be sent to any person upon application. The regular royalty is 2½ cents per square foot.

E. E. Everett, county surveyor of Ventura county, has used the flooring successfully on some of the largest bridges in that part of the State.

The following testimonials are in response to inquiries from him regarding the success of the flooring in Santa Clara county:

San Jose, Cal., May 1, 1911.

E. E. Everett, County Surveyor, Ventura County, California.

Dear Sir—In reply to your letter dated March 30, 1911, making inquiries regarding the McMillan bridge floor, I have to state in 1899, during my term as supervisor, the Julian street bridge over the Coyote river was floored with the McMillan floor. With the exception of a small strip in the center of the floor removed for a street railroad, the floor is in as good condition today as when first built. A number of these floors were laid in Santa Clara county during my terms of office. So far as I know they have proved successful.

Respectfully yours,

FRED M. STERN.

San Jose, May 11, 1911.

To Boards of Supervisors, Road Commissioners et al.

I am free to state that the McMillan bridge floor system has proven a success in Santa Clara county.

There are three large bridges in my district floored with the McMillan floor. They have been laid more than six years, and from all appearances will last a long time.

To be a success, it only requires that the work be well done and good material used. HENRY M. AYER, Supervisor.

Standard Construction Company Moves

The Standard Construction Company, which has been passing through financial difficulties, has moved from the Hooker & Lent building, San Francisco, to 921 Monadnock building. Fred O. Farrell is the manager of this concern. Among the jobs which they have under way is a concrete building for Mrs. Eleanor Martin.

Shorter Time by Rail to Chicago

Half a business day will soon be cut from the San Francisco-Chicago time of the Southern Pacific-Union Pacific San Francisco Overland Limited, enabling that train to make the trip in 68 hours instead of 72½, as at present. "This annihilation of distance," said J. C. Stubbs, director of traffic of the Union Pacific-Southern Pacific System, today, "which will be accomplished upon Sunday, May 28th, is the initial step toward realizing to the traveler using the Union-Southern Pacific System the advantage made possible by the vast sums expended in improving our roadbed, in installing electric block signal protection, in double-tracking, betterment of power and equipment, etc. Time is money, and the clipping of four and one-half hours from our schedule is in the nature of a dividend to the traveling public which we believe all travelers, especially business men, will appreciate, since the increase in speed is made without any decrease of the comfort of traveling." The San Francisco Overland Limited under the present schedule leaves San Francisco at 10:40 a. m. and arrives in Chicago at 1 p. m., 72½ hours later. It will leave San Francisco at 10:20 a. m. under the new schedule and arrive in Chicago about 9:10 a. m., in time to connect with the east-bound morning trains. East-bound it now passes through Omaha at 11:45 p. m. and will hereafter make it at about 8 p. m. West-bound under present schedule it leaves Chicago at 7 p. m. and arrives in San Francisco at 5:28 p. m., 72½ hours later. Under the new schedule it will leave Chicago at about 8:30 p. m., arriving in San Francisco about 2:28 p. m. The train now passes through Omaha west-bound at 8:15 a. m., and under the new schedule it will make it about 9:30 a. m.

How to Select Drawing Instruments

Keuffel and Esser Company, with branch offices in all the principal cities of the United States, have issued a valuable book on "How to Select Drawing Instruments," and a copy will be mailed free to any person addressing the San Francisco house, 48 Second street. The book s profusely illustrated and contains description and price list of some of the newest instruments made by the Keuffel and Esser Company.

Redwood Shingle Reduces Insurance Rates

The Redwood Shingle Association is receiving much encouragement in its campaign for the general use of the redwood shingles in place of the pine and other more combustible roofing materials. It has found many of the architects in full sympathy with the movement, and not a few of them are now specifying "redwood" in preference to other wood. Just how the insurance people regard the redwood shingle may be understood from the following letters addressed to President Skinner:

The Redwood Shingle Association,
Eureka, Cal.

Gentlemen—We are today in receipt of your letter of the 7th instant, asking us for our opinion regarding the superior advantages that California redwood offers in comparison with other timber used in construction of homes, from the standpoint of the least liability from destruction by fire, and replying thereto, we beg to advise that from our point of view we look upon redwood as superior to any other wood in general use, it being absorbent and readily put out with little water in the event of fire. We also believe that it does not ignite as readily as other woods, and we believe

POSITION WANTED

Young man desires position upon expiration of present contract. Highest possible references and excellent reasons for desiring a change. Present position requires entire management of an office doing a yearly business of nearly one million dollars. Confidential correspondence invited. Address A. B., care of The Architect & Engineer.

that the general concensus of opinion among insurance men is that the low loss ratio on the frame buildings in San Francisco during the past twenty-five or thirty years has been largely on account of the redwood that particular phase of used on their construction.

We take pleasure in giving you the foregoing as our opinion.

Yours very truly,
H. L. A. BATES,
General Agent, Shawnee Fire Insurance Company.

The Redwood Shingle Association,
Eureka, Cal.

Gentlemen—Replying to your esteemed favor regarding the use of redwood in construction: To all who have made a study of this subject, it is perfectly patent that redwood is the best fire resistant of any of the soft woods. Being non-resistant, it will resist ignition for a much longer time than either cedar, pine or fir. No one would claim that it is an absolute resistant, but its qualities retard the progress of a fire sufficiently to enable a fire department to get at a fire frequently before any serious damage is done. We have noticed this in many cases where a fire would be checked because of this quality of the wood.

The great trouble is that the redwood is used only for shingling—and the outside at that—generally speaking, the interior of a building is a forest of pine. If buildings could be constructed entirely of the redwood that particular phase of hazard would be very much reduced.

Apart from the foregoing, is the further fact that redwood enters very largely into the artistic development of any home, much more so than any of the soft woods, and with many is quite preferable to the hard woods.

Very truly yours,
R. W. OSBORN,
Manager, Pennsylvania Insurance Company.

Ever Ready—The Hoffman Heater

Hot water adds more to the health and happiness of a family than any luxury that you can add to a modern home, so why be without it? Not the kind that you get from the "kitchen boiler" that is luke warm, but good scalding hot water from any hot water faucet in the house, from the laundry to the bathroom, day or night. According to the manufacturers, you can have this modern convenience added to your home at a very moderate cost, by installing the "Hoffman," which will save you fuel and add to the comforts of your home many times the cost of it.

There is no stale, rusty water when you use the "Hoffman," as the water heats as it passes through the copper tubing, and is always fresh and clean.

By using an automatic heater you are not annoyed with the heat during the hot summer months, as you have no storage of hot water to radiate the heat through the house.

Holbrook, Merrill & Stetson handle the "Hoffman" in California.

Golden Gate Brick Company's New Catalog

Manager C. F. Pratt has good reason to feel proud of the handsome catalog which has recently been published, describing and illustrating the different building materials handled by the Golden Gate Brick Company. The book contains nearly 100 pages, many of which contain two, three and four color engravings of buildings built of sand lime or Stockton brick, handled by the company, while other illustrations show the various colors of tile, mosaic flooring, ceramic mosaic, etc., carried in stock. The half-tone work is superb, and typographically the volume is a credit to the publishers. In connection with the publication of the catalog it is interesting to note that the Golden Gate Brick Company has just passed one of the most successful years in its history, and in spite of the present talk of dull times, the new year gives promise of an even greater volume of business than 1910.

New Manager for F. T. Crowe, Portland

Mr. J. H. Wood, who has been manager of the Portland branch of the F. T. Crowe & Company for the past seven years, has resigned and is succeeded by Mr. F. W. Farrington, who has been elected vice-president of the company, as well as manager of the Portland branch. Previous to identifying himself with the Crowe company, Mr. Farrington was the western sales manager for the United States Gypsum Company.

An Index to the Advertisements

[Index Continued on Page 124]

A Floor Surfacer that Saves Labor and Expense

John M. Reynolds, formerly manager of the Inlaid Floor Company of San Francisco, has taken the exclusive sales agency for the United States of the Stipe Floor Surfacer, said to be the most improved machine of its kind on the market. Reid Bros., the well known San Francisco architects, are using the machines wherever possible, and they state that the surfacer accomplishes far better results than the hand method, and at considerably less cost. Willis Polk & Co. write:

"Dear Sir—Referring to "Stipe Floor Surfacer," it gives us great pleasure to highly recommend its use in finishing of floors of all kinds, especially Oregon pine and oak. There can not be any doubt, from practical experience up to date in the use of this and similar floor surfacers, that same results in great saving in cost as well as great improvement in perfection of finish over hand work."

The machine is operated by electricity. It is manufactured under the supervision of the inventor, and is guaranteed.

It is strongly framed, has the working parts open and accessible—the top platform being easily removed.

It is made in two sizes. The No. 1 machine has 18-inch rollers, and is used

ADVERTISERS' INDEX — Continued from Page 121

in large halls. The No. 2 machine has 14-inch rollers, and is used in residences, hospitals, etc.

Rooms as small as 10 x 10 feet can be surfaced with the Stipe floor surfacer to advantage.

It smooths and waxes dancing floors perfectly. No other treatment of floors will be accepted by particular dancing masters.

It makes contractors more independent of labor conditions because any intelligent man can handle it.

The surfaces of floors smoothed by the Stipe floor surfacer are much more uniform in appearance than those done by hand, because the machine surfacer does not leave the tool marks of the cabinet-scrapers or hook-scrapers which are used by floor mechanics.

The objectionable features of hand floor surfacing are eliminated, and the excessive cost of good work reduced to a minimum.

Following is a partial list of work done within the past year by a Stipe floor surfacer:

Schools—Garfield, Clement, San Leandro and Visitacion.

Hospitals—U. S. General Hospital, Presidio; Livermore Sanitarium, Palo Alto Hospital.

Hotels—Palace, Somers, Pierce, and Van Sant Apartments.

Public Buildings—U. S. Barracks at Fort Baker and San Antonio; Park and Ingleside Police Stations.

Clubs—California, Family and Century; Y. M. C. A. buildings, Oakland and Berkeley.

Theaters—Empress and Columbia.

Stores and Offices—Spreckels, Hoffmans, Empress and Pragers.

Churches—St. Paul's Church, Mount St. Joseph's Orphan Asylum Chapel.

Halls—Masonic, B'nai Brith, Carpenters, Eagles, Fruitvale; Mission Turn Verein.

Mr. Reynold's San Francisco address is 1201 Devisadero street, and he will be pleased to call and explain in detail the working, cost, etc., of the machine.

A Typical Kawneer Store Front

Metal Store Fronts

THE store front, to the architect, has always been one of the troublesome points—to get one that will be attractive in design, one that will "stick out" and will be a trade puller for the tenant and one on which the cost of "up-keep" is reduced to a minimum to the owner.

Until recently there had not been offered to the architect anything new in store front construction, while in every other building line manufacturers were developing new ideas constantly. This condition was not local by any means but was country-wide. The merchant was pressing the architect for something new, something different in the store front. The cry was to get away from the old style, cumbersome wood and iron constructions, which were not only unsightly, but which cost a great deal for maintenance and which did not give the broad glass exposure so much desired by the merchant.

Appreciating these conditions from his own experience, Mr. Francis J. Plym, then a leading architect in Kansas City, conceived the idea of a metal store front, one which would be not only more attractive in design than former constructions, but which would give the all-glass effect which every merchant was after. Several experiments and models were tried—crude at first, but finally perfected and developed with the result that four years ago was started the Kawneer Manufacturing Co., the first concern to manufacture metal store fronts. Starting in a small way, this company's business grew to such proportions that a year ago they were forced to find a more central location and the factory and general offices were moved to Niles, Michigan. Recently they have opened a branch office and warehouse in San Francisco and by dealing directly with the architects and contractors, are now enabled to install a metal front at a price that compares very favorably with the ordinary wood and iron constructions.

On this page is shown a complete Kawneer store front, which was installed in Pittsburg for $225, and which could be duplicated in San Francisco for very little, if any, more. This front has a paneled metal bulkhead underneath both columns and windows, metal covered transom bar and Kawneer sash around all sides of plate and transom glass. (Note the all-glass effect to show windows by use of Kawneer corner bar.) Its owner not only secured the most attractive front possible and eliminated the cost of painting, but is given the lowest rate of plate glass insurance. This latter item is one of the strongest recommendations for Kawneer construction—the leading plate glass insurance companies, recognizing the provisions made for the expansion and contraction of glass, give the lowest rate of plate glass insurance. Kawneer metal sash provides for perfect ventilation and drainage of show windows. It is the only sash in which the ventilation can be regulated, there being a slide on the inside of the gutter so that the ventilation holes can be opened or closed at will and when closed, an absolutely dust proof window secured. Kawneer system of store fronts is not simply a glass setting, but embodies a complete all metal store front. A variety of transom bars for all purposes are manufactured, side and head jamb mouldings, sill coverings, bulkhead constructions, etc. This company will also draw special mouldings to the architect's detail if they desire it. With an architect at the head of this company, it is only natural that the design and shapes of Kawneer construction are architecturally correct, and that in this construction the architect secures lines that harmonize with the building and add to its appearance rather than detract.

In this territory, particularly in San Francisco, there has been a considerable amount of Kawneer metal sash, corner and division bars used, the local architects all regarding the construction very highly. Now that the Kawneer people have opened their own office and warehouse here, they are in a better position to take care of their constantly growing business, and at the prices that are now being made, will no doubt be able to interest the architect in their whole construction in place of just sash and bars.

A New Substitute for Plaster

After many years of experimentation a composition has recently been produced by a Canadian builder which is regarded as somewhat revolutionary in character. The invention is said to consist of a material from which partitions and all inside walls can be easily made and put up in blocks of any dimensions and which can be set firmly together by means of a liquid cement. The claim is made that the material is also proof against fire, cold and sound, while partitions made of it cost hardly more than a quarter of that of ordinary lath and plaster work. The inventor, J. L. Anderson, 58 Princess street, Winnipeg, Manitoba, states that the material can be sawn through with an ordinary saw and nails can be driven into it without causing it to crumble or split.

Fireproofing Our Navy. The Reason Is Obvious. You Can Well Apply the Same Principle to Your Building

WHEN the United States Government specified the installation of metallic doors and trim in the newest battleships Florida and Utah, two ideas were uppermost in the minds of the Naval Engineers—the safeguarding of crew and personnel and the battleships themselves.

Upon the sea, with every avenue of escape cut off, the need for this interior fireproofing with steel is no greater than in your building. The walls and floors of fireproof construction are no more protection to life and contents than the battleship's steel hull.

You can have no feeling of safety, no safety in reality, without interior protection. This is exemplified in its highest efficiency, not only in the battleships Florida and Utah, but in the world's most prominent office buildings, apartments, residences, etc., by

DAHLSTROM Metallic Doors and Trim

If the Government safeguards life and property, if far-sighted builders erect fireproof structures in *reality*—not in name—if with almost periodic regularity you read of great conflagrations exacting their tolls of life and wealth, what greater object lessons could you ask?

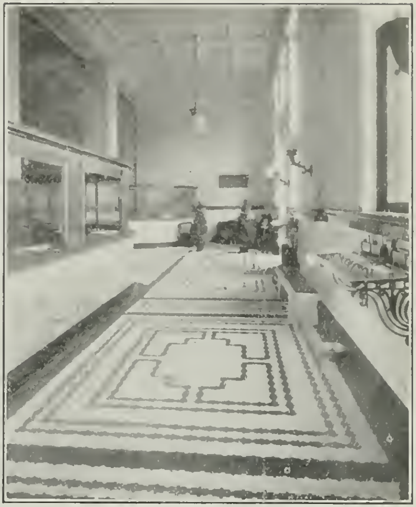
The time is not far distant when fireproofing in the true sense of the word will be compulsory. It is at least worthy of investigating *now*.

"Buildings as They Should Be" —a book, tells how the absolute elimination of the fire hazard is possible by the installation of Dahlstrom Metallic Doors, Partitions, Trim, etc. It pictures buildings which are fireproof, structures not even carrying insurance, fireproof buildings in *reality* —not in name. To the interested, a copy is free for 6 cents postage.

DAHLSTROM METALLIC DOOR COMPANY :: :: THE DAHLSTROM PRODUCTS

722 Merchants Exchange, San Francisco, Cal.

Executive Offices and Factories: 34 Blackstone Avenue, Jamestown, N. Y. Branch Offices in All Principal Cities



Interior Oakland Bank of Savings

Floors for Banks and Office Buildings

Many banks and office buildings throughout the United States have for a great many years been desirous of obtaining a floor covering that would be admirably fit for banking rooms and general office requirements. The floor most desired should be noiseless, sanitary, non-slippery and extremely durable. After a great many years of careful consideration of this subject and an almost endless amount of experimenting during the early stages, interlocking rubber tiling has been found to meet these requirements in all respects, it being more durable than marble, mosaic or any other kind of tiling now offered by manufacturers.

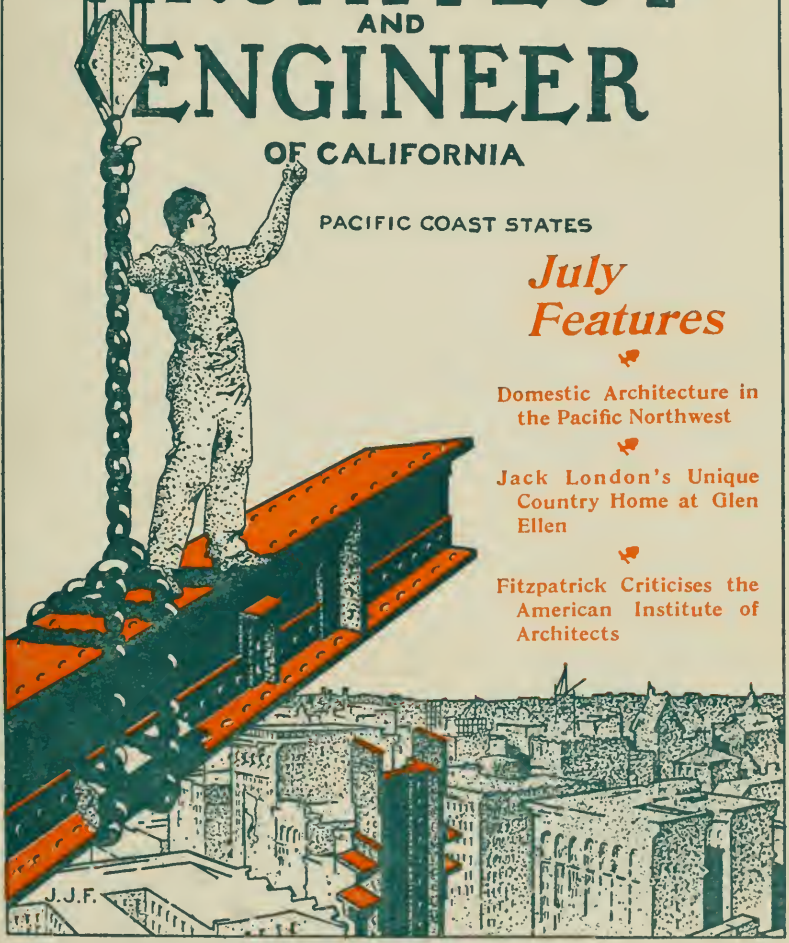
There is now in use throughout the United States several thousand feet of this tiling, and it is giving universal satisfaction. Like all other articles that gradually come into prominence, such as interlocking rubber tiling, there are many imitations of the original, and caution is therefore directed to bankers considering this proposition to see to it that the right quality is obtained. One of the latest banks to adopt its use after practical experiments with other kinds of floor tiling, such as marble and mosaic, is the Oakland Bank of Savings. The banking floors of that institution are all laid with this rubber floor covering. The oldest institution manufacturing a class of tiling that is absolutely reliable is the New York Belting & Packing Co., Ltd.

THE

ARCHITECT AND ENGINEER

OF CALIFORNIA

PACIFIC COAST STATES



July Features

Domestic Architecture in the Pacific Northwest

Jack London's Unique Country Home at Glen Ellen

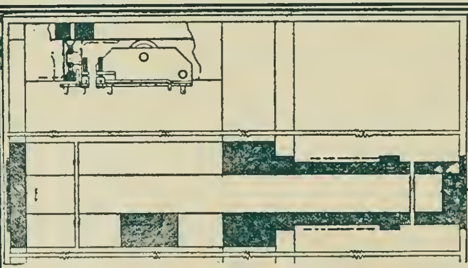
Fitzpatrick Criticises the American Institute of Architects

$1.50 a Year
25c a Copy

Published by THE ARCHITECT & ENGINEER CO.

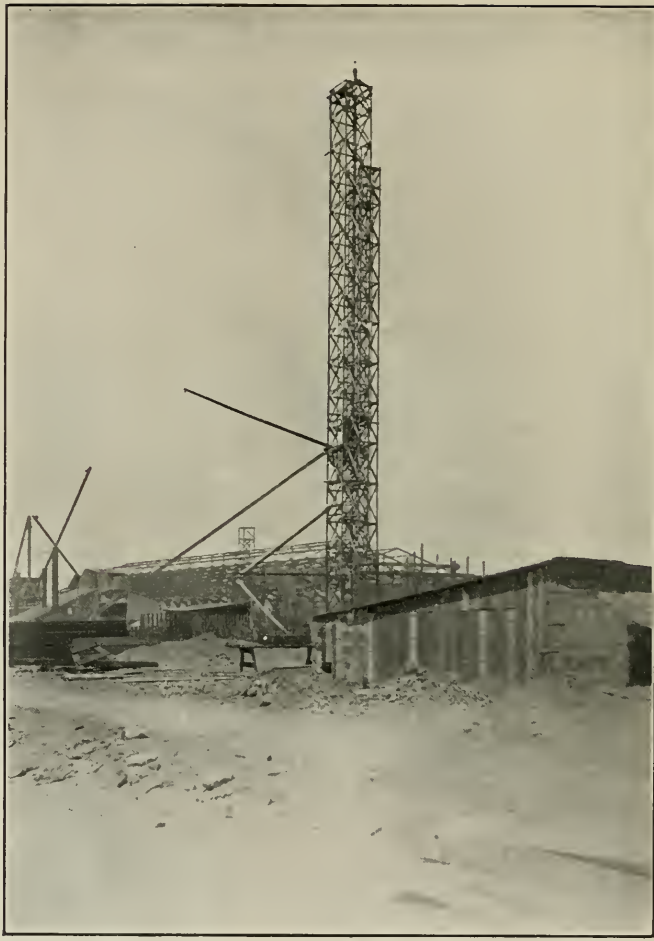
Entered at the Post Office, San Francisco, as Second Class Matter

621 Monadnock Bldg.
San Francisco
Vol. XXV. No. 3



Metal Spanish Tile

Pacific Title Company Building, Sutter and Montgomery Streets, San Francisco
Reid Bros., Architects



Government Warehouse under construction at Fort Mason, Cal. Ferrolite Company, Contractors.

Ceresit Concrete Waterproofing Stood a Test Equivalent to 1,062 Feet Water-Head

HARPER MEMORIAL LIBRARY, UNIVERSITY OF CHICAGO

Waterproofed with CERESIT. A $5000 bond in the National Surety Company was given the contractor, *guaranteeing against any dampness for three years.*

Show us any other waterproofing that stands as high in actual, absolute water-repellent qualities. Or select a test of the best waterproofing you know and we will show one better with

CERESIT TRADE MARK

On any job waterproofed with Cere it under our supervision *we will guarantee permanency and satisfactory results.*

CERESIT TRADE MARK is new to America but has been used for years in European Countries, with absolutely no equal in maintaining walls and structures water and damp-proof. In Germany, where the building regulations are the strictest in the world, Ceresit is used in practically all public buildings requiring waterproofing; 15,000,000 feet of concrete were waterproofed with Ceresit in the last two years.

The efficiency of **Ceresit** has been recognized in America.

Late in 1910 a series of tests of Ceresit were made in the laboratories of Robt. W. Hunt & Co. The final test was at **460 lbs. to the sq. in., equal to 1,062 feet water head.**

Into an 18 inch cube of concrete a 2-inch water pipe was inserted to within 6 inches of the bottom. And here is what Robt. W. Hunt & Co.'s report says:

"It is significant that at the bottom of the cube, or the end opposite the open end of the pipe, and the sides of the cube, there was no dampness at all."

Ceresit is a cream white paste, readily dissolved in water. This mixture, instead of plain water, is used to temper the cement mortar or concrete. Uniform distribution and assimilation of perfect waterproofing properties are therefore assured throughout the entire mass of concrete.

A copy of the complete report of R. W. Hunt & Co. will be sent upon request

CERESIT WATERPROOFING CO.

446 COMMERCIAL NATIONAL BANK BLDG., CHICAGO

PACIFIC COAST REPRESENTATIVES

PARROTT & COMPANY

SAN FRANCISCO LOS ANGELES PORTLAND, ORE.

JULIEN A. BECKER CO., 413 BAILEY BUILDING, SEATTLE, WASH.

ARCHITECTS' SPECIFICATION INDEX

(For Index to Advertisements, see page 121)

HOME MARKET, SAN FRANCISCO. CHAS. S. KAISER, ARCHITECT

RANSOME CONCRETE COMPANY

BUILDERS

MECHANICS' INSTITUTE BUILDING, SAN FRANCISCO
328 J STREET, SACRAMENTO

It isn't the first year alone that **NEPONSET** BUILDING PAPER protects from dampness and cold—it is every year.

In 1891 **NEPONSET** RED ROPE WATERPROOF BUILDING PAPER was placed in a house at Allston, Mass. A recent alteration showed that the

Residence of Alfred I. Dupont Wilmington, Del.
20,000 square feet of NEPONSET Red Rope used here.
Architects, Carrere & Hastings.

NEPONSET

Waterproof Building Paper

is in just as good condition as in 1891.

Have you our Sample Book?

BIRD NEPONSET PRODUCTS

Trade Mark Reg. U.S. Pat. Off.

F. W. BIRD & SON, 354 Neponset St., East Walpole, Mass.

Established 1795

New York Chicago Washington Portland, Oregon San Francisco
Hamilton, Ontario Winnipeg Montreal St. John

Our Engineering Department will be glad at any time to help you with any waterproofing problems.

ARCHITECTS' SPECIFICATION INDEX *Continued*

CHEMICAL ENGINEERS
Robert W. Hunt & Co., 418 Montgomery St., San Francisco.
Smith, Emery & Co., 651 Howard St., S. F.

COLD STORAGE INSULATION
Neponset Waterdyke Felt and Compound, manufactured by F. W. Bird & Son, East Walpole, Mass.; sold by Parrott & Co., 320 California St., S. F.

CONCRETE APPLIANCES
A. L. Young Machinery Co., 26 Fremont St., S. F.

CONCRETE CONSTRUCTION
A. Lynch & Co......185 Stevenson St., S. F.
Bluxome & Co.......Monadnock Bldg., S. F.
Esterly Construction Co.......Berkeley, Cal.
Peterson, Nelson & Co., Inc., 407 Pine St., S. F.

CONCRETE FOUNDATIONS
Peterson, Nelson & Company, Russ Bldg., S. F.

CONCRETE MIXERS
A. L. Young Machinery Company, 26 Fremont St., S. F.
Chicago Improved Cube Mixer. Pacific Coast Offices, 789 Folsom St., S. F., and F. T. Crowe & Co..........Portland and Seattle
Foote Concrete Mixers, Monadnock Bldg., S. F.
F. T. Crowe & Co., Seattle, Tacoma, Spokane and Portland

CONCRETE POURING APPARATUS
Concrete Appliances Co., Los Angeles; Parrott & Co., Coast Representatives, San Francisco, Portland, Seattle.

CONCRETE REINFORCEMENT
Clinton Fireproofing System, L. A. Norris, Monadnock Bldg., S. F.
International Fabric & Cable, represented by Western Builders' Supply Co., 680 Mission St., S. F.
Plain and Twisted Bars, sold by Baker & Hamilton, San Francisco, Los Angeles and Sacramento.
The Kahn System, Agents in San Francisco, Los Angeles, Portland and Seattle.
Twisted Bars, sold by Woods & Huddart, 356 Market St., S. F.

CONCRETE SURFACING
"Alkaccne" Liquid Concrete, Boyd & Moore, 356 Market St., S. F.
"Concreta," sold by W. P. Fuller & Co., S. F.
Concreto, Worden-Meeker Varnish Co., S. F. and Oakland

CONCRETE SURFACING—Continued
Glidden Liquid Cement, manufactured by Glidden Varnish Company, Whittier, Coburn Co., San Francisco and Los Angeles, Pacific Coast Distributors.

CONTRACTORS, GENERAL
E. D. Crowley Co....Monadnock Bldg., S. F.
Esterly Construction Co........Berkeley, Cal.
F. O. Engstrum Co., Fifth and Seaton Sts., Los Angeles
Geo. H. Stoffels & Co., 830 Pacific Bldg., S. F.
Hansen & Johnson, Inc..3 Mission St., S. F.
Henning & Burke......242 Russ Bldg., S. F.
Hoyt Bros., Monadnock Bldg., S. F., and Santa Rosa
Ransome Concrete Co., Mechanics Institute Bldg., S. F.
Rickon-Ehrhart Eng. & Const. Co., 1859 Geary St., S. F.
Walter Hough Company, 503 Market St., S. F.
W. H. Bagge & Son., Inc., 3528 Sacramento St., S. F.
Williams Bros. & Henderson, 351 Monadnock Bldg., S. F.

CONCRETE MACHINERY
Wallace Concrete Machinery Co., represented by The Lilley & Thurston Co., 82 2nd St., S. F.

CONCRETE REINFORCEMENT
Triangle Mesh Fabric, Sales Agents, The Lilley & Thurston Co............82 2nd St., S. F.

CORNER BEAD
"Prescott," sold by Boyd & Moore, 356 Market St., S. F.
Union Metal Corner Company, 206 Summer St., Boston, represented on the Pacific Coast by Waterhouse & Price.

CRUSHED ROCK
Natomas Consolidated of California, 203 Hagelstein Bldg., Sacramento, Cal.
Niles Rock, sold by California Building Material Company...........Pacific Bldg., S. F.

DAMP-PROOFING COMPOUND
Boyd & Moore..........356 Market St., S. F.
Glidden's Liquid Rubber, sold on Pacific Coast by Whittier, Coburn Company, San Francisco and Los Angeles.
H. D. Samuel Co....Monadnock Bldg., S. F.
John L. Fox............207 Monadnock Bldg.
Liquid Stone Paint Co., Inc., Laird & Sinclair and Lilley & Thurston Co., Agts., S. F.
"Pabco" Damp Proofing Compound, sold by Paraffine Paint Co......38 First St., S. F.
Parrott & Co., agents for Genasco Positive Seal Damp Proof Paint.
"Protectorine," Compound, sold by Boyd & Moore..............356 Market St., S. F.

ARCHITECTS' SPECIFICATION INDEX—*Continued*

DAMP PROOFING FOR BRICK WALLS
"Imperial" Waterproofing, sold by Baker Bros., San Francisco; Braun Chemical Co., Los Angeles; W. O. Stamps, Portland and B. W. Gaisford, Seattle, Wash.
John L. Fox....207 Monadnock Bldg., S. F.

DISAPPEARING BEDS
Holmes Disappearing Bed Company, 687 Monadnock Bldg., S. F.

DOOR HANGERS
Johns Door Hanger Manufacturing Company, 832-838 Folsom St., S. F.
Pacific Ballbearing Door Hanger Co., 959 Howard St., S. F.
Pitcher Hanger, sold by Pacific Tank Company................231 Berry St., S. F.
Reliance Hanger, sold by Sartorius Co., S. F.; D. F. Fryer & Co., Louis R. Bedell, Los Angeles, and Portland Wire & Iron Works.

DOOR OPENER
G. Rischmuller ....Builders' Ex., S. F. 3442 19th St., S. F.

DOORS—FREIGHT ELEVATOR
"Cross" Counterbalance Automatic, Boyd & Moore, Agents......356 Market St., S. F.

DOORS—WAREHOUSE
"Cross" Horizontal Folding Doors, Boyd & Moore, Agents ......356 Market St., S. F.

DUMB WAITERS
Energy Dumb Waiters, Boyd & Moore, Agents.............356 Market St., S. F.
Wells & Spencer Machine Company, 173 Beale St., S. F.

ELECTRICAL CONTRACTORS
Butte Engineering Co..683 Howard St., S. F.
Central Electric Co..185 Stevenson St., S. F.
Electric Appliance Co., 726 Mission St., S. F.
Jno. G. Sutton Co......229 Minna St., S. F.
The Turner Co.......278 Natoma St., S. F.
Pacific Fire Extinguisher Company, 507 Montgomery St., S. F.

ELEVATORS
Otis Elevator Company, Stockton and North Point, S. F.
Van Emon Elevator Co..54 Natoma St., S. F.
Wells & Spencer Machine Co., 173 Beale St., S. F.

ELEVATOR CARS
Cleveland Art Metal Co., Boyd & Moore, Agents ....356 Market St., S. F.

ELEVATOR DOORS
"Cross" Elevator Doors, Boyd & Moore, Inc., Agents............356 Market St., S. F.

ELEVATORS, SIGNALS, FLASHLIGHTS AND DIAL INDICATORS
Elevator Supply & Repair Co., 593 Market St., S. F.

ENGINEERS
F. J. Amweg.......700 Marston Bldg., S. F.
R. Hancock..............Balboa Bldg., S. F.
W. W. Breite............Clunie Bldg., S. F.

EXPRESS CALL SYSTEM
Elevator Supply & Repair Co., 593 Market St., S. F.

FIRE EXTINGUISHERS
Goodyear Rubber Company, 587-591 Market St., S. F.
Pacific Fire Extinguisher Co., 507 Montgomery St., S. F.

FIREPROOF PARTITIONS
Dodds Interlocking Block Co., 356 Market St., S. F.

FIREPROOFING
Gladding, McBean & Company, Crocker Bldg., S. F.
Roebling Construction Co., Crocker Bldg., S. F.

FIRE PROTECTION
Goodyear Rubber Company, 587-589 Market St., S. F.

FIRE PROTECTION—SPRINKLER SYSTEM
Jno. G. Sutton Co.....229 Mission St., S. F.
Pacific Fire Extinguisher Company, 507 Montgomery St., San Francisco; Branch Offices, Portland, Seattle and Spokane.

FLOOR SURFACER
John M. Reynolds, 1201 Devisadero St., S. F.

FLOOR VARNISH
Bass-Heuter and S. F. Pioneer Varnish Works, 816 Mission St., S. F.
Standard Varnish Works, Chicago, New York and S. F.
Worden-Meeker Varnish Works, S. F. and Oakland

FLOORS—COMPOSITION AND TILE
"Kompolite"...........350 Mills Bldg., S. F.

FOUNDATION CONTRACTORS
Locke Foundation Company, 1107 Crocker Bldg., S. F.

GARAGE EQUIPMENT
Bowser Gasoline Tanks and Outfit.
Bowser & Co..........612 Howard St., S. F.

ARCHITECTS' SPECIFICATION INDEX—*Continued*

GARBAGE CHUTES
Bradshaw Garbage Chute, sold by C. T. Jacobsen....................524 Pine St., S. F.

GAS GRATES AND LOGS
Backus Patent Gas Grates and Logs, Boyd & Moore, Inc., Agents, 356 Market St., S. F.

GLASS—PRISM, ART, ETC.
California Art Glass Works, 768 Mission St., S. F.
United Glass Co.........115 Turk St., S. F.

GRAVEL, SAND AND CRUSHED ROCK
Bay Development Co....153 Berry St., S. F.
California Bldg., Material Co., Pacific Bldg., S. F.
Del Monte White Sand, sold by Pacific Improvement Co........Crocker Bldg., S. F.
Grant Gravel Co.........87 Third St., S. F.
Natomas Consolidated, Peoples' Savings Bank Bldg., Sacramento

HARDWOOD FLOORING
Boyd & Moore.........356 Market St., S. F.
Dieckmann Hardwood Co., 244 California St., S. F.
Parrott & Co........320 California St., S. F.
White Bros., Cor. Fifth and Brannan Sts., S. F.

HARDWOOD LUMBER
Dieckmann Hardwood Co., Welch Bldg., S. F.
Niehaus & Co........548 Brannan St., S. F.
Parrott & Co........320 California St., S. F.
Strable Mfg. Co., First St., betw. Washington & Clay, Oakland
White Bros., Cor. Fifth and Brannan Sts., S. F.

HARD WALL PLASTER
Empire Hard Wall Plaster Co., Pacific Bldg., S. F.
Reno Hard Wall Plaster, sold by Western Building Material Co., 430 California St., S. F.
Standard Supply Company, First St. and Broadway, Oakland

HARDWOOD PANELS
Niehaus & Co........548 Brannan St., S. F.
White Bros., Cor. Fifth and Brannan Sts., S. F.

HARDWOOD VENEER PANELS AND DOORS
E. A. Howard & Co.......Howard St., S. F.

HEATERS—AUTOMATIC
Hart Heater Co., State Savings Bank Bldg., 13th and Franklin Sts., Oakland
Hoffman Heater, sold by Holbrook, Merrill & Stetson, San Francisco and Los Angeles.
Humphrey Co., 565 N. Rose St., Kalamazoo, Mich.
Pittsburg Water Heater, sold by Thos. Thieben & Co................585 Mission St., S. F.

HEATING AND VENTILATING
Gilley-Schmid Co., Inc., Thirteenth and Mission Sts., S. F.
Jno. G. Sutton Co......229 Minna St., S. F.
Machinery and Electrical Co., 351-353 N. Main St., Los Angeles
Mangrum & Otter, Inc., 507 Mission St., S. F.
Pacific Blower & Heating Co., 17th St., betw. Mission and Valencia, S. F.
Pacific Fire Extinguisher Company, 507 Montgomery St., S. F.
The Turner Co.......278 Natoma St., S. F.

HINGES
Stanley's Ball-Bearing Hinges, Stanley Co., New Britain, Conn.,

ICE MAKING MACHINES
Triumph Ice Machine Co., H. F. Lyon, Agent, 581 Monadnock Bldg., S. F.

INSPECTIONS AND TESTS
Robert W. Hunt & Co., 418 Montgomery St., S. F.
Smith, Emery & Co., Inc., 651 Howard St., S. F.

INSURANCE
David Duncan ....340 Sansome St., S. F.

ARCHITECTS' SPECIFICATION INDEX—*Continued*

INTERIOR DECORATING
A. C. Wocker.........1370 Sutter St., S. F.
L. Tozer & Son Co., 228 Grant Ave., S. F.
Schastey & Vollmer, Inc..518 Sutter St., S. F.

JOIST HANGERS
Western Builders' Supply Co.,
680 Mission St., S. F.

KITCHEN EQUIPMENT
John G. Ils & Co......827 Mission St., S. F.

LIME
Holmes Lime Company,
Mutual Savings Bank Bldg., S. F.
Standard Supply Co.,
First St. and Broadway, Oakland
Western Lime & Cement Co.,
268 Market St., S. F.

LIGHTING FIXTURES
Adams & Hollopeter....745 Mission St., S. F.
J. F. Kelly Company, 723 7th St., Oakland
The Palmer Shop......1345 Sutter St., S. F.

LOCKERS—METAL
Hart & Cooley Co., Boyd & Moore, Agents,
356 Market St., S. F.

LUMBER
Santa Fe Lumber Co.,
Seventeenth and De Haro Sts., S. F.

MACHINERY AND MACHINERY SUPPLIES
Machinery and Electrical Co.,
351 N. Main St., Los Angeles
A. L. Young Machinery Company,
26 Fremont St., S. F.

MANTELS
Mangrum & Otter......561 Mission St., S. F.
The J. F. Kelly Co..723-731 7th St., Oakland

MARBLE
Columbia Marble Co....268 Market St., S. F.

MASONRY CONTRACTORS
Farrell & Reed...........Gunst Bldg., S. F.
Ferdinand Wagner .....609 Waller St., S. F.

METAL AND STEEL LATH
Roebling Construction Co., Crocker Bldg., S. F.

METAL CEILINGS
Berger Mnfg. Co.,....1120 Mission St., S. F.
San Francisco Metal Stamping & Corrugating Co.........Treat Ave. and 19th St., S. F.

METAL DOORS AND WINDOWS
Dahlstrom Metallic Door Co., Western office, 722 Merchants Exchange Bldg., S. F.
Waterhouse & Price.......59 Third St., S. F.
Zahner's Monarch Hollow Metal Doors and Trim, Boyd & Moore, Inc., Agents,
356 Market St., S. F.

METAL FIRE PROOF PARTITIONS
Collins Steel Partition & Lathing Co.,
757 Monadnock Bldg., S. F.

METAL SHINGLES
Meurer Bros., J. A. McDonald, Pacific Coast Agent.....Third, near Townsend St., S. F.
San Francisco Metal Stamping & Corrugating Co..........Treat Ave. and 19th St., S. F.

OIL BURNING PLANTS
Fess System Co., Inc., 125-129 Hayes St., S. F.

OPERA CHAIRS
C. F. Weber & Co.....365 Market St., S. F.
Whitaker & Ray-Wiggin Co., San Francisco and Los Angeles.

ORNAMENTAL IRON AND BRONZE
Golden Gate Structural & Ornamental Iron Works............1479 Mission St., S. F.
Western Builders' Supply Co., Representing The L. Schreiber & Sons Co., Cincinnati
J. G. Braun..........Chicago and New York
Sartorius Co., Inc...16th and Utah Sts., S. F.
C. J. Hillard Company, Inc.,
211-215 Eighth St., S. F.

PAINT FOR CEMENT
Adamant Cement, Brick and Plaster Coating. Made by Parker, Preston & Co., Inc.
Bay State Brick and Cement Coating, made by Wadsworth, Howland & Co. (Inc.). [See adv. in this issue for Pacific Coast agents.]
Glidden's Liquid Cement, sold on Pacific Coast by Whittier, Coburn Company, San Francisco and Los Angeles.
Samuel Cabot Mfg. Co., Boston, Mass., agencies in San Francisco, Oakland, Los Angeles, Portland, Tacoma and Spokane.
Vitrolite Cold Water Paint, sold by Boyd & Moore..............356 Market St., S. F.
Worden-Meeker Varnish Co., S. F. & Oakland

PAINT FOR STEEL STRUCTURES
Detroit Superior Graphite Paint, manufactured by Detroit Graphite Company. C. W. Pike Company, Coast Sales Agents, 22 Battery St., S. F.
Glidden's Acid Proof Coating, sold on Pacific Coast by Whittier, Coburn Company, San Francisco and Los Angeles.
Neponset Paints, sold by F. W. Bird & Son, East Walpole, Mass., Coast Agents, Lilley & Thurston Co.,......82 Second St., S. F.

PAINTS, OILS, ETC.
Bass-Hueter Paint Company,
Mission, near Fourth St., S. F.
Glidden Varnish Co., Cleveland, Ohio, represented by Whittier-Coburn Co.,
S. F. and Los Angeles
Paraffine Paint Co.....38-40 First St., S. F.
Standard Varnish Works, represented by W. P. Fuller & Co..S. F. and Los Angeles
Worden-Meeker Varnish Co..S. F. & Oakland

PAVING BRICK
Los Angeles Pressed Brick Co.,
Frost Bldg., Los Angeles

PHOTOGRAPHY
Gabriel Moulin........153 Kearny St., S. F.
Walter C. Scott.......558 Market St., S. F.

PIPE FOR SEWERAGE
Gladding, McBean & Company,
Crocker Bldg., S. F.

PLASTERING CONTRACTORS
A. Knowles............985 Folsom St., S. F.
D. Ross Clarke.......708 Pacific Bldg., S. F.

PLUMBING
Alex Coleman ....706 Ellis St., S. F.
J. E. O'Mara...........447 Minna St., S. F.
Jno. G. Sutton Co.......229 Minna St., S. F.
The Turner Co........278 Natoma St., S. F.

ARCHITECTS' SPECIFICATION INDEX—*Continued*

PLUMBING FIXTURES
Crane Co....Second and Brannan Sts., S. F.
Geo. H. Tay Company, 617 Mission St., S. F.
Haines, Jones & Cadbury Co., 851-859 Folsom St., S. F.
J. L. Mott Iron Works, D. H. Gulick, selling agent ....135 Kearny St., S. F.
N. O. Nelson Mfg. Co., 978 Howard St., S. F. 406 E. 4th St., Los Angeles
Jno. Douglas Co.......571 Mission St., S. F.

PLUMBING SUPPLIES
California Steam & Plumbing Supply Co., Fifth and Bluxome Sts., S. F.

POTTERY
Steiger Terra Cotta and Pottery Works, Mills Bldg., S. F.

PUMPS, MACHINERY, ETC.
Simonds Machinery Co., 12 Natoma St., S. F.

RAILROADS
Southern Pacific Co........Flood Bldg., S. F.

ROLLING DOORS, SHUTTERS, PARTITIONS, ETC.
C. F. Weber & Co......365 Market St., S. F.
Lilley & Thurston........82 Second St., S. F.

ROOFING AND ROOFING MATERIALS
J-M Asbestos Roofing, sold by H. W. Johns-Manville Co., Agencies in all the principal West Coast cities.
Pluvinox Roofing, sold by Boyd & Moore, Inc.................356 Market St., S. F.

ROOFING TIN
"Scott's Extra Coated," manufactured by Follansbee Bros. Co.............Pittsburg, Pa.
Meurer Bros. Co., A. H. McDonald, Coast Representative..........628 Third St., S. F.

ROOFING AND ROOFING MATERIALS
"Ferroinclave," the Brown Hoisting Machinery Co., Coast Agent, Chas. A. Levy, Balboa Bldg., S. F.
Ford & Malott, Mariposa St., at Iowa St., S. F.
F. W. Bird & Son, East Walpole, Mass., Coast Agents, Lilley & Thurston Co., 82 Second St., S. F.
Genasco Ready Roofing, sold by Parrott & Co...............320 California St., S. F.
H. D. Samuel Company, 1054 Monadnock Bldg., S. F.
Harry Larkin.............Builders' Exch., S. F.
Mackenzie Roof Co., 425 15th St., Oakland
Meurer Bros. Co., A. H. McDonald, Coast Representative........628 Third St., S. F.
Pioneer Roll Paper Co..........Los Angeles
W. H. Wilson & Co....42 Natoma St., S. F.
Western Builders' Supply Co., 680 Mission St., S. F.

RUBBER TILING AND MATTING
Goodyear Rubber Co...587 Market St., S. F.
New York Belting & Packing Co., 129 First Street, S. F.

SAFES
Howe Scale Company, 333 Market St., S. F.

SAND
Del Monte White Sand, sold by Pacific Improvement Company, Main office, Crocker Bldg., S. F.

SASH CORD
Samson Cordage Works, Manufacturers of Solid Braided Cords and Cotton Twines, 88 Broad St., Boston, Mass.
Silver Lake A Sash Cord, represented by Sanford Plummer, 149 New Montgomery St., S. F.

SCHOOL FURNITURE AND SUPPLIES
C. F. Weber & Co....365 Market St., S. F. 210 N. Main St., Los Angeles
Whitaker & Ray-Wiggin Co., 776 Mission St., S. F.; 209 E. Seventh St., Los Angeles.

SCAGLIOLA
California Scagliola Co., F. Mayer, 68-70 Clara St., S. F.

SHEATHING AND SOUND DEADENING
Neponset Waterproof Building Papers, Neponset Florian Sound Deadening Felt, sold by F. W. Bird & Son, East Walpole, Mass., Coast Agents, Lilley & Thurston Co., 82 Second St., S. F.
Samuel Cabot Mfg. Co., Boston, Mass., agencies in San Francisco, Oakland, Los Angeles Portland, Tacoma and Spokane.

SHEET METAL WORK
Berger Mfg. Co......1120 Mission St., S. F.
Dunlevy & Gettle....79 City Hall Ave., S. F.

SHINGLE STAINS
Cabot's Creosote Stains, sold by Waterhouse & Price, San Francisco, Los Angeles and Portland.
Dexter Bros. Company, represented by Sherman Kimball, Hooker & Lent Bldg., S. F.
W-M Shingle Stain, Worden-Meeker Varnish Co...................S. F. and Oakland

SLATER'S CEMENT
Western Builders' Supply Co., Representing Clinton Metallic Paint Co., Clinton, N. Y.

STAINLESS CEMENT
Blanc Stainless Cement Co., Levensaler & Preston, Inc., San Francisco; Quartz Glass & Manufacturing Co., Los Angeles; John Brooke & Co., Inc., Seattle, Wash.

STEEL AND IRON—STRUCTURAL
Boyd & Moore..........356 Market St., S. F.
Brode Iron Works....621 Howard St., S. F.
Central Iron Works...621 Florida St., S. F.
Mortenson Construction Co., 19th and Indiana Sts., S. F.
Pacific Rolling Mills, 17th and Mississippi Sts., S. F.
Western Iron Works....125 Beale St., S. F.
Woods & Huddart.....356 Market St., S. F.

STEEL BARS FOR CONCRETE REINFORCEMENT
Baker & Hamilton, 4th and Brannan Sts., S. F.
Jno. B. Leonard........Sheldon Bldg., S. F.
Woods & Huddart......356 Market St., S. F.

STEEL MOULDINGS FOR STORE FRONTS
J. G. Braun, 537 W. 35th St., N. Y., and 322 S. Paulina St., Chicago.

ARCHITECTS' SPECIFICATION INDEX—*Continued*

STORE FRONTS
Kawneer System of Glass Setting, manufactured by Kawneer Mfg. Co., Coast agencies at San Francisco, Portland, Ore., Spokane and Seattle, Wash.
Thorne Hold-Fast Metal Store Front Construction, Boyd & Moore, Inc., Agents, 356 Market St., S. F.

SURVEYORS
Sanborn & Corinson....251 Kearny St., S. F.

TERRA COTTA CHIMNEY PIPE
Dunlevy & Gettle....79 City Hall Ave., S. F.

TILES, MOSAICS. MANTELS, ETC.
Mangrum & Otter....561 Mission St., S. F.
The J. F. Kelly Co..723-731 7th St., Oakland

TILE FOR ROOFING
Gladding, McBean & Company, Crocker Bldg., S. F.

TIN PLATES
Meurer Bros. Co., A. H. McDonald, Coast Representative........628 Third St., S. F.

VACUUM CLEANERS
J. P. Raymond........397 Sutter St., S. F.
American Rotary Valve Co., 702 Balboa Bldg., S. F.

VALVE PACKING
"Palmetto Twist," sold by H. N. Cook Belting Co............317 Howard St., S. F.

VENETIAN BLINDS, AWNINGS, ETC.
C. F. Weber & Co....365 Market St., S. F.
Ericsson Swedish Venetian Blinds, Boyd & Moore, Inc., Agents..356 Market St., S. F.

VENEERS
Dieckmann Hardwood Co., Welch Bldg., 244 California St., S. F.
White Bros., Cor. Fifth and Brannan Sts., S. F.

VENTILATORS AND SHEET IRON
Meurer Bros. Co., A. H. McDonald, Coast Representative........628 Third St., S. F.

VITRIFIED CLAY PIPE
Steiger Terra Cotta and Pottery Works, Mills Bldg., S. F.

WAINSCOTING
"Kompolite"..........350 Mills Bldg., S. F.

WALL BEDS
The Turner Wall Bed Co., Mission, near Fifth., S. F.
Marshall & Stearns Co., 1154 Phelan Bldg., S. F.

WATERPROOF FINISHES
Glidden's French Caen Stone Finish and Glidden's Waterproof Flat Finish, sold on Pacific Coast by Whittier, Coburn Company, San Francisco and Los Angeles.
"Trus-Con" Finish, sold by Western Lime & Cement Co..........268 Market St., S. F.

WATERPROOFING FOR CONCRETE, ETC.
"Ceresit," manufactured by the Ceresit Waterproofing Co., sold by Parrott & Co., San Francisco, Los Angeles and Portland, and Julien A. Becker Co., Seattle, Wash.
Glidden's Concrete Floor Dressing and Liquid Cement and Liquid Cement Enamel, sold on Pacific Coast by Whittier, Coburn Company, San Francisco and Los Angeles.
Hydrex Felt & Engineering Co., Boyd & Moore, Inc., Agents..356 Market St., S. F.
"Imperial" Waterproofing, sold by Baker Bros., San Francisco; Braun Chemical Co., Los Angeles; W. O. Stamps, Portland, and B. W. Gaisford, Seattle, Wash.
Neponset Waterdyke Felt and Compound, sold by F. W. Bird & Son, East Walpole, Mass., Coast Agents Lilley & Thurston Co., 82 Second St., S. F.
Parrott & Co........320 California St., S. F.
Samuel Cabot Mfg. Co., Boston, Mass., agencies in San Francisco, Oakland, Los Angeles, Portland, Tacoma and Spokane.
Te-Pe-Co Waterproofing, sold by H. G. Clinton, 34 Ellis St., S. F.; Bass Hueter Paint Co., Pacific Coast Distributors.
The Building Material Co., Inc., 587 Monadnock Bldg., S. F.

WATER SUPPLY
Kewanee System, Simonds Machinery Co., sole agents....12 and 14 Natoma St., S. F.

WEATHER STRIP
Monarch Metal Weather Strip, Boyd & Moore, Agents ......356 Market St., S. F.

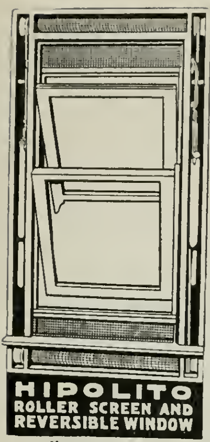
WHITE ENAMEL FINISH
"Satinette," W. P. Fuller & Co., S. F. and all principal Coast cities
Velvo-Tone, Worden-Meeker Varnish Co., S. F. and Oakland

WHITE PORTLAND CEMENT
Blanc Stainless Cement Co., Levensaler & Preston, Inc., San Francisco; Quartz Glass & Manufacturing Co., Los Angeles. John Brooke & Co., Inc., Seattle, Wash.

WINDOWS, REVERSIBLE, ETC.
Dean Reversible Window Co., 551 Brannan St., S. F.
Hipolito Screen & Sash Co., 634 Maple Ave., Los Angeles
Tabor Sash Fixture Co., Boyd & Moore. Agents..............356 Market St., S. F.

WOOD FINISH
Bridgeport Wood Finishing Co., New Milford, Conn.

WOOD STAINS
Bridgeport Wood Finishing Company, represented by Whittier, Coburn Company, San Francisco and Los Angeles.



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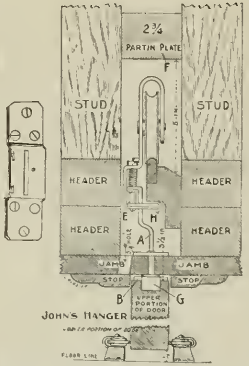

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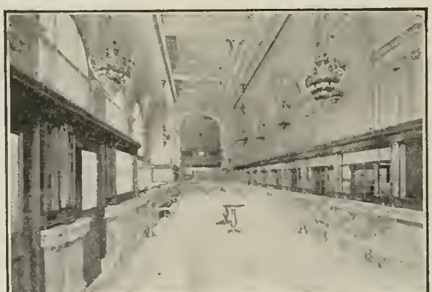

Interior of Banking Room, London Paris National Bank, San Francisco
Albert Pissis Architect

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PLASTER Work

BY

Callaghan & Manetta

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OFFICE BUILDING FOR THE STANDARD OIL COMPANY, SAN FRANCISCO
Ben G. McDougall, Architect

THE
Architect and Engineer
Of California
Pacific Coast States

VOL. XXV. JULY, 1911. No. 3.

The Architectural Exhibition as an Educational Factor*

By DAVID J. MYERS, F. A. I. A.

ARCHITECTURAL exhibitions are not only fundamentally interesting and instructive to the votaries of architecture and the allied arts, but they appeal strongly and are of great educational value to the public.

Architects may plan and design buildings on paper, but it is the public that causes them to be executed, so, naturally they are vitally interested in that art which is so closely linked to them by the necessity of building. Especially true is this in regard to domestic architecture, because there is a larger building public to draw from. Everyone wants to build a home, and is imbued with the aspiration to build it better than his neighbor.

Public taste has probably as much to do with the development of real architecture as architectural talent.

The architectural exhibition, therefore, is a great educational factor through which, not only the architect is benefited by being able to measure his work with that of his confreres, but because it develops the appreciation and taste of the public by giving it an opportunity of seeing the best record possible of the year's work.

It is to the architectural clubs of America that the credit must be given for the success of those exhibitions, as they have, to a large extent at least, been conducted under their direction.

It is owing to their initiative that they have been made an annual event, so that in most large cities they are looked forward to by the public as a matter of course.

The Architectural League of New York was probably the first society or club in this country, which undertook, in a systematic way, the conducting of an annual architectural exhibition. This society was founded in 1881 and has been, since its inception, a strong force in promoting architecture and the allied fine arts.

In 1883 the famous T Square Club of Philadelphia was organized by a few live, enthusiastic young men imbued with a desire to assist their fellows and improve the conditions (architecturally) that existed in their city. Its monthly architectural competitions, many of them along civic improvement lines, and its annual exhibitions, have been a source of inspiration and instruction, not only to the men who participated in them, but to the profession at large and to the public. Indeed it might be said that this club's efforts have been influenced in no small degree, in engender-

* Illustrations, by courtesy of "Chapters on Architecture," are of domestic work produced by Seattle and other Northwest architects, and featured at the recent exhibition of the Seattle Architectural Club.

Residence of David J. Myers, Seattle Washington
David J. Myers, Architect

Francis H. Brownell Residence, Seattle, Washington
Carl F. Gould, Architect

Residence of Lawrence B. Clarke, Seattle, Washington
Wm. K. Macomber, Architect

Residence of George Matzen, Seattle, Washington — Willatzen & Byrne, Architects ing this great movement for civic improvement which is sweeping over the country today.

So successful were these two clubs in the work they had undertaken that it was not many years before almost every eastern city of any size had organized an architectural club and was conducting architectural exhibitions.

Later a sentiment took root that there should be a closer affiliation between these various clubs which would develop a system of mutual co-operation.

In accordance with this feeling a number of these clubs and some of the chapters of the American Institute of Architects organized in the year 1899, "The Architectural League of America."

One of the benefits which was derived from this co-operation was the establishing of a circuit of architectural exhibitions. By this united effort each club is able to hold its annual exhibition in rotation, and draws from all the other clubs material for very comprehensive exhibitions; this scheme offers mutual advantages not only from an aesthetic point of view, but also from an economic one, because the expense of the undertaking is naturally greatly reduced.

The same considerations which influenced the eastern clubs to unite in the Architectural League of America have recently been apparent on the Pacific Coast.

The credit for accomplishing this unifying of the interests of the architectural clubs, and other similar organizations of the Pacific Coast, belongs to E. F. Lawrence, of Portland, Ore. Through his efforts in March, 1909, the Architectural League of the Pacific Coast was founded.

Its objects might best be stated by quoting from its constitution:

"To promote educational interest for the young men; to hold an annual exhibition in each of the main cities of the Pacific Coast, and an annual convention of the architects from cities west of Denver."

The first exhibition of the Architectural League of the Pacific Coast, held under the auspices of the Seattle Architectural Club last year, and the interesting work done by the students in the various ateliers belonging to the league, lead to the belief that it will undoubtedly prove a potent factor in the development of the architecture of the Pacific Coast.

As the cities of the coast are much smaller than the cities of the East, and the number of architects correspondingly less, it has been found practically impossible, on account of the lack of new material and the expense involved, to hold a circuit exhibition annually, so this year the Seattle Architectural Club decided to hold a smaller, more localized exhibition of domestic work. The display was most charmingly presented, and it proved of great interest to the public.

Domestic work has improved in this country in the last fifteen or twenty years in a very marked degree. When we compare the many turreted, jig-sawed and be-spindled creations that were in vogue twenty years ago and compare them with the better class house of today, we may be pardoned the vanity of feeling that we are at least improving in our tastes, though perhaps somewhat slowly.

Indeed, we in the Northwest must not smile too condescendingly at the efforts of the past. Have we not imported the domestic architecture of California into our midst? Charming as these houses are in warm, sunny Southern California, especially when handled by a Myron Hunt, or an

House for H. H. Wolfe, Seattle, Washington
Willcox & Sayward, Architects

Residence of Clayton [illegible] Wilson, Seattle Washington
Wilson & Loveless, Architects

Residence of Mrs. C. E. Farnsworth, Seattle, Washington
W. Marbury Somervell, Architect

Drawing Room in Residence of Mrs. C. E. Farnsworth, Seattle, Washington
W. Marbury Somervell, Architect

Residence of George Albers, Seattle, Washington
Gould & Champney, Architects

Residence of W. R. Kelley, Seattle, Washington
Chas. G. Badgley, Architect

Residence of Henry E. Huntington, Los Angeles
Myron Hunt and Elmer Grey, Architects

Elmer Gray, yet do they not lose something of their flavor in this more northerly climate? Is there not something of inconsistency in their greatly exaggerated, projecting Spanish roofs designed in the original for protection from the sun? Do they not rather in this climate suggest the protection of the yard from rain? We have the only original well advertised Umbrella man; why not the Umbrella house?

Climate must of necessity be one of the fundamentals to be considered in developing a type of domestic architecture. In this climate let the home-builder consider well how he is going to light his rooms in the dull days which we experience in the fall and winter.

Let him remember also that in the matter of design the simple and most durable thing is generally the best, as is also the plan which expresses his wants most directly.

Simplicity in plan, in design, in material and in detail should be the watchword if we desire to develop an attractive and satisfying type of domestic architecture.

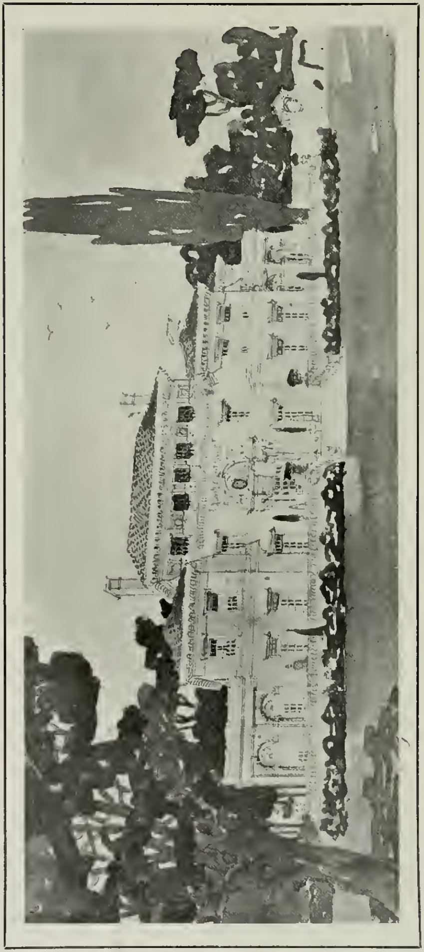
* * *

The Origin of Portland Cement

"What's this?" asked the city editor, glaring at the reporter. "Here you have in your story 'The wall was built of Portland cement.' After this, cut out the word 'Portland.' We don't want to advertise any particular brand of cement."

"I thought it meant Portland, Me., where it's made."

"It is none of your business to think anything. You are wrong, besides. It means Portland, Ore., and the West must pay for all its advertising in this sheet, or I'll know the reason why."



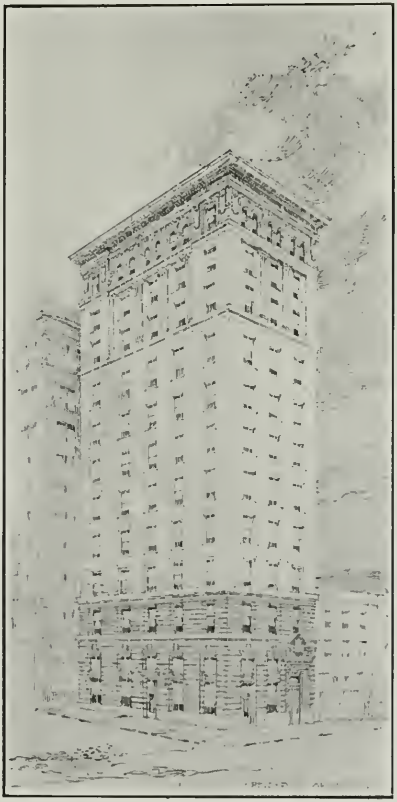
Residence of W. M. Ladd, Portland, Oregon
Ellis F. Lawrence, Architect

Residence of W. W. Chapin
Blackwell & Baker, Architects

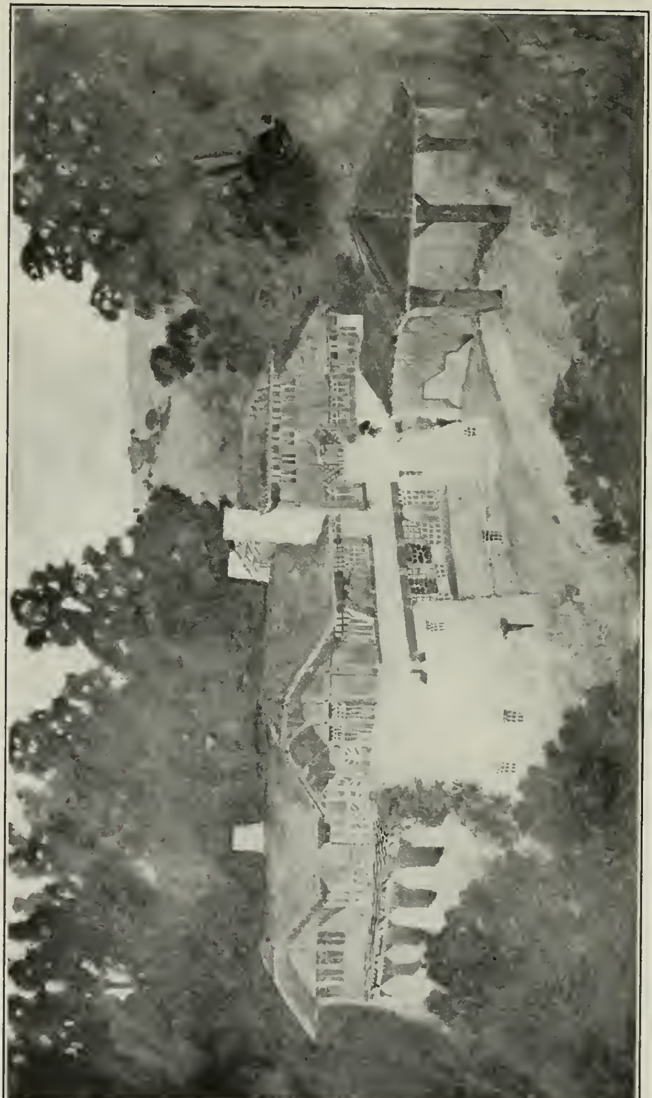
Dining Room, Residence of W. W. Chapin
Blackwell & Baker, Architects

Residence of F. G. Frink,
Ellsworth Story, Architect

Entrance to Residence of F. H. Brownell,
Carl F. Gould, Architect



Pacific Title Company Building, Sutter and Montgomery Streets, San Francisco
Reid Bros., Architects



Jack London's New Country Home at Glen Ellen, California

Albert Farr, Architect

Jack London's Unique Country Home

JACK LONDON, the well known author, short story writer and Socialist, is building a charming home on his country estate at Glen Ellen, Sonoma county, California. When London is not grinding out fiction for the Saturday Evening Post, or some other periodical, at the rate of 10 cents a word, he is directing the pouring of concrete or the placing of beams and rafters in his new residence. We wanted him to write something about his house, for in many respects it will be a unique building, embodying ideas which the author himself has thought out, as well as hobbies which he has for a long time been eager to promulgate and enjoy. Answering the invitation, London replied just as we expected he would—a courteous note begging us to excuse him for the delay in answering and—well, read it yourself:

"In reply to yours of recent date, please forgive my delay. I was away on a long cruise on the Bay. I have since seen Mr. Albert Farr (Mr. London's architect) and have told him what I shall now tell you: I have no objection whatever to your using Mr. Farr's sketches, plans, etc., of the house I am building. Of course there are no photographs, because the foundation is not yet built. Also, I am so far behind with contracts in my legitimate literary work, and I know so little about the house as planned by Mr. Farr, that I am unable to write a line of description of it for you. You might get together with Mr. Farr on the subject.

"Sincerely yours,

"JACK LONDON."

The author owns about 1,200 acres at Glen Ellen and the site chosen for his house is a picturesque one, overlooking a vast country of fertile fields and shrubbery. Mr. Farr calls the style of architecture American rustic. In so far as possible the material used in the construction of the house is gathered from the surrounding country. The natural cobblestones, great quantities of which are to be found on the estate, are to be used from the concrete basement to the second story, also for the chimneys, while rough tree trunks will form the architectural lines of the second story and are to be used also for the porte cochere, pergolas, porches, etc. The house will be in the shape of a U with an open court, 45 by 58 feet, the center of which will have a concrete tank, 15 by 40 feet, filled with running water and stocked with black bass and other fish. On all sides of the tank will be a five-foot garden. Balconies made of tree trunks will be built clear around the court.

The main portion of the house will be 86 feet, with two 82-foot wings. All rafters are to be hewn out of rough redwood logs and will be kept in the natural finish. A charming effect is obtained by interlacing the redwood tree trunks in the gables and balconies with fruit tree twigs. The roof is to be of Spanish tile.

The interior is to be carried out along the same lines as the exterior, the rustic effect predominating. London's study or workroom will be on the second floor. It will be a spacious affair, 19 by 40 feet, with the library occupying the same amount of space, and reached by a spiral staircase, just beneath it. These two rooms are quite apart from the rest of the house, and the author is thus assured quiet and seclusion while absorbed in his literary work. A feature of the house is the great living-room, 18 by 45

Glimpse of Court in Jack London's Country Home at Glen Ellen

Corner of the Living Room, Jack London's Country Home at Glen Ellen

feet, and extending to a height of two stories, with balconies running entirely around the second floor. An immense stone fireplace will add to the cheerfulness of the room.

The house will contain a hot water heating system, a private electric light plant, a refrigerating plant and laundry, with steam dryer and rotary wringer, a milk and storeroom, root and wine cellar, and a vacuum cleaning plant. London has already named the place "Wulfruh," which is the German for "Home of the Wolf," or "Wolf's Den." It is understood the house will cost something like $50,000.

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Baby Marjorie, who is a suburbanite, went shopping with her mother for the first time. She had never been in an elevator before. In telling her thrilling adventures to her father she said, "We went into a little house and the upstairs came down."

Cathedral and Architects

THE change in architects made by the trustees of the cathedral of St. John the Divine, in New York, reveals an interesting condition of architectural affairs. The original plans for the great church were chosen as the result of competition, the successful architects being Heins & La Farge. The senior member of the firm, C. Grant La Farge, has continued as the supervising architect of the cathedral, since the death of Mr. Heins, until about a month ago, when the trustees resolved to dispense with his services and to employ as "consulting architect" Ralph Adams Cram, one of the foremost designers of churches in America, and an acknowledged authority on the Gothic style in particular.

The substitution of Mr. Cram for Mr. La Farge is accepted as signifying a more or less radical divergence from the original design of the vast structure, which will need probably fifty years for completion. Mr. La Farge stood for the Romanesque; Mr. Cram stands for the Gothic. When the La Farge plans were first adopted, the Romanesque type won the favor of the judges, but some time has elapsed since then, the personnel of the board in control of the building of the cathedral has changed, the influence in favor of Gothic has revived, and so it may be said that the Gothic school of ecclesiastical architecture has captured the edifice.

The cathedral on Morningside heights is but partially built, the nave being scarcely begun. What has been already done represents the La Farge era. But while the structure has been developed on the general lines laid out by the original design, the invasion of the Gothic was to be observed years ago. The windows were to be rounded at the top, but Mr. La Farge was obliged to put in windows pointed, although not sharply pointed. There is not a true Romanesque window to be seen in the part of the church now finished. While pointed windows do not make a Gothic church, by any means, they spoil the Romanesque effect of a Romanesque church.

Mr. Cram accurately states the architectural history of the edifice in saying: "The original designs submitted by Mr. Heins and Mr. La Farge were of the Romanesque type, popular at that time through the influence of H. H. Richardson. Since then the work has been recast in detail, with the idea of overlaying the Romanesque frame with Gothic detail and ornament. This course in principle meets with my entire approval. I have stood for the English Gothic modified and adapted to contemporary conditions as the only fitting style for expressing the idea of the Episcopal church." As for the future Mr. Cram says: "So far as I am concerned, the development of the work will be a continuation and intensification of the same principle, and whatever changes or development may be desirable in the future will be in line with the Gothic tendency. Not only in matter of detail will this hold, but in mass, composition and construction." In view of Mr. La Farge's fate, however, it would seem by no means irrevocably determined that Mr. Cram's ideas will prevail in the finishing of the cathedral. Within a decade or two, ecclesiastical styles may change again and the Cram influence, with its emphasis on Gothic, may be in turn overthrown.

The Springfield Republican, in an editorial on the subject, says: "It is a mistake to assume, however, that the church authorities desire absolute unity of design in the construction of the cathedral. The chairman of the fabric committee, Rev. Dr. William M. Grosvenor, is quoted as saying that

St. Francis Hospital, San Francisca
Alfred I. Coffey, Architect

all great cathedrals which have taken many years to build 'require continual changes in their plans to meet new conditions. Sometimes such changes are made even in the fundamental plans of the cathedral. In the case of the great modern cathedral at Liverpool, for instance, the trustees have altered one of the main features. They will do away with the two large central towers and put one in their place.' And Mr. Cram himself makes it easy for Mr. La Farge, and at the same time prepares the way for his own successor, by reminding one 'that no great public building can achieve the greatest success if it represents the personal ideas of one man. The least interesting churches of the past are the work of one man entirely, whereas those most interesting are found where the architectural influence has changed from century to century, almost from year to year.' If the aim is to have in the cathedral of St. John the Divine a building that will interest students of architecture 500 or 1,000 years hence, on account of the various and often conflicting architectural influences to be discerned in it, the builders are on the right track. To insure the most interesting results, however, the Gothic influence should be suppressed after another decade of actual construction and Mr. Cram made to follow Mr. La Farge.

"Lovers of the cathedral architecture of Europe will be consoled by the reflection that it is virtually impossible to ruin the ensemble effect of a great, massive structure such as the Episcopal diocese of New York is now erecting. Many of the most impressive of those huge churches abroad audaciously violate the artistic unities, and more than one mediæval hodgepodge of architectural styles is today the delight of an unending procession of visitors. St. John's is on the high road to architectural success."

Architecture as a Profession

By OCTAVIUS MORGAN, Los Angeles, Cal.

EVERY man can not be an architect, every man can not be a good draftsman. Unless one is adapted for it by inclination and natural ability in this line he should not attempt it, though sometimes the plodder beats the man of genius. Industry is the great secret of success, constant study, constant work.

Architecture should be taken up with due consideration that it is one of the learned professions, and from this only he who takes this view can hope to succeed. Five or ten years of a young man's life must be devoted to fitting himself for it, and ever after he must be a worker. Glittering generalities will not make a man a permanent success in this profession—a profession that offers as large prizes as any there are, but these only come to men of ability, industry and integrity.

As a country becomes more wealthy the opportunities of the architect increase. Periods and communities in which architecture has been most flourishing have been those periods and those communities where great accumulations of wealth have occurred. History tells us this. In the wealthiest and most flourishing periods of Egypt, of Greece, of Rome and of the great commercial republics, in Italy; in the middle ages, Venice, Verona, Genoa, Milan; and in our later days in France, in Germany, in England; and last but greatest of all, in this United States; when the accumulations of wealth have become dominant, then and there the opportunities for the architect have occurred.

Architecture is the best evidence of the wealth and intellectual position of the community. This noble profession which makes man a creator, with the support and financial backing of the men and communities of wealth which give to the creator the pleasure of looking on his handiwork though owned by those who pay for it, makes it unique, and is the greatest inducement for men to follow and submit to the hard work and study which make it a success.

In the past in this United States, architecture has not been a good field for a man to practice in, but the great growth of wealth in this country in the last twenty years, and the great growth of wealth in the immediate future, make it the greatest field for the practice of architecture in the world. It has given some of the best examples of architecture, both monumental and commercial, and today, without fear, I can say that the United States leads the world, for it has brought in play the business ability and common sense, together with the artistic feeling that have made the commercial structures and domestic buildings the best in the world. There is a fact that is known to all who have traveled in our own country and abroad.

With this knowledge before us, what better future is there for a young man who does not consider financial success the only object in life? Few architects become rich. The joy and love of the work must be the great motive for taking it up.

There are many differences of opinion as to the best road for fitting one for this profession. The ability of a man governs in this and in everything else. It is now generally accepted that to reach the higher walks a man should have a good education, and architectural training in design and technical matters in some good college, and then several years work in the office of some good architectural firm, not necessarily in the offices which are doing the largest work, as this has a tendency to specialize man rather than rounding him out. In the large offices, they have the planner, the designer, the specification man, the engineer and so on through the several technical subdivisions. In the smaller offices if they are doing good work the opportunity to round out is better.

A distinction must be made between the draftsman and the architect. All architects have been draftsmen, but all draftsmen do not become architects. If one simply remains a draftsman it offers as good returns as any of the ordinary walks of life. Should one advance, fit himself and practice as an architect, his success lies largely with opportunity, the ability and industry to seize opportunities when they offer themselves.

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Brick Residence and Office for San Francisco Physician

ARCHITECT Herman Barth has designed an attractive residence and office for Dr. Martin Krotoszyner, and the building is now under construction on the southeast corner of Sutter and Hyde streets, San Francisco. The three stories have reinforced concrete walls, with a steel frame and wooden joists, and will be earthquake proof. The exterior of the building presents a refined and modern treatment of the Italian renaissance. The material employed for the exterior is soft-toned buff tapestry brick, having a rough texture, and terra cotta trimmings to blend with the brickwork. The first story is entirely devoted to the doctor's office, treatment rooms, operating room, laboratories, waiting rooms, etc. The second and third stories and attic are arranged for the home of the family. In the arrangement of the building the most modern and up-to-date appointments have been provided. The cost of the building will be in the neighborhood of $30.000.

Residence and Office of Dr. Martin Krotoszyner, San Francisco
Herman Barth, Architect

American Architecture*

By FRANK M. ANDREWS.

"THE story of departure from early standards, and the subsequent period of artistic squalor and ignorance, which I may refer to as our architectural Dark Ages, was one, however, not of wilful ignorance nor purposeful neglect, but of the condition of a people isolated by a great ocean, and by the greater intellectual ocean of abandonment of European traditions and ties; with the great task of solving an experiment in government on a huge scale; with a vast wilderness to subdue and render serviceable to man; with the problem of assimilation of an influx of foreign population. Therefore, in our country, in this condition to which I have likened it, we find the colonial type of domestic architecture principally interpreted, not by architects nor under an artistic impulse, but by the builders of the period, whose personal vagaries and idiosyncrasies more and more overwhelm the meager examples of this authoritative style. Passing over the time of the Civil War, the reconstruction days, and the panic of 1873, we find architecture at its lowest ebb concurrently with the renewal of the energetic development of railroads and of other fundamental industries, a consequent rapid increase in accumulated wealth, and of the power of the individual, as well as of communities, to assert their importance by a material display. The thin skirmish line of architects—which stretched across this artistic wilderness from the century of Bulfinch, Hogan, L'Enfant, and others, to the century of Hunt, Root, Richardson, and their contemporaries, men who bravely maintained their loyalty to artistic purity, and devoted pursuit of art under all discouragement—has now broadened into an army of architects and artists, the product of schools of art and architecture both at home and abroad. These men are inspired by exceptional opportunity and an appreciative public. In their numbers and the power of their collective influence upon the civilization and development of their country, they exceed that of any similar group of men of a single generation to be found in any recorded period of the world's art development. Undoubtedly the greatest, if not the primary, stimulus of the present artistic development of the United States is to be found in the Columbian Exposition of 1893 in Chicago. For the first time on American soil there was to be produced in orderly triumph the majestic splendor of ancient Rome, of Italy, of the dreams of France, and these architects, recruited from the field of conventional daily routine, thus found in their grasp the opportunity to display to a great people the possibilities and meaning of the art of architecture. Today it is a thing of the past, ephemeral in its material existence, but everlasting in its message and impression upon the nation. With difficulty can you, to whom the traditions of your own land and the storied riches of Europe are familiar things, realize the revelation contained in this work of art, and its stimulus to our people. Its direct influence is manifest in every important city of our land, by local agitation for civic beauty, by established and projected control and direction of the art expression of individual enterprises, by the popular demand for the beautifying of streets, the monumental groupings of public buildings, and the constantly increasing intelligence of popular architectural criticism.

"In the buildings erected during the past twenty-five years we have run the gamut of practically all known architectural thought—have experi-

* A paper read before the Royal Society of Arts, London, England, May 24, 1911.

mented with about everything this side of the Indian wigwam. This has been done, not because of any lack of inventiveness on our part, nor of imagination, nor, again, does it suggest any feeling of satisfaction with such a state of affairs. We realize that we are dealing with something much more important than passing fads in millinery, automobile, or dress, and that eventually this indiscriminate borrowing of other people's architectural garments must be succeeded by a costume more fittingly our own. Considering, however, the prevailing circumstances surrounding our profession throughout this period, it becomes immediately apparent that my previous observation is reasonable concerning the causative action of our practical 'actualities.' Due to all of these conditions, the successful architect found himself burdened with an extraordinary and varied assortment of buildings difficult to deal with at one and the same time, with the demon of American rush methods relentlessly pursuing him—regarded by all of our highly organized and efficient building trades as a sort of human rubber stamp that worked automatically—what otherwise could he do but throw up his hands in despair, with one backward look of envy toward the old monks, who constructed a few feet of cathedral in a generation, turn archaeologist, and plaster his steel skeleton with a tidy arrangement of architectural dope, calculated to soothe the owner, the public, and the contractor, making everybody perfectly happy, but the poor architect, left alone with his sadly disfigured ideals. It is my personal belief that this has had much to do with the exploitation of certain historical styles by several of our notable architects; to the extent that their names have become synonymous with those styles, as, for example, Richardson with the French Romanesque. Richardson, with his masterly knowledge of the style, was quite justified in his adherence to the Romanesque. It was not too violent a departure from the prevailing mode, was easily managed by the building trades, and suitable to the then existing range of available building material. How clearly he perceived this is proven not only by his own work and that of his immediate successors who were trained under him, but also by the complete collapse of the movement he established when it fell into the hands of the horde of imitators who neither saw nor appreciated the importance of this fact, and who, in attempting novelties of treatment without proper means at hand, helped it to an early death. Our next important architectural revelation fared more fortunately by proving itself much more adaptable to our wants, and, dealing with an almost infinite variety of refined flexible forms easily applied, became the reigning fashion for an extended period, and is today reasserting itself in a salutary and refreshing way. This revelation came through the work of White and of MacKim, who did not at first display a full mastery of the style, but temporized with a curiously interesting architecture of brick and reserved application of Italian detail. They soon became the leading exponents of the Italian renaissance, and, since their output of residential, commercial, and other classes of work was enormous, its educational influence with us must be counted of prime importance, and by their own good taste, fine sense of proportion, and full appreciation of the refinements of the style, they elevated our standards to a plane that will not be abandoned. In their extensive use of the Georgian period they reminded us of our own best tradition, showed us the value of simplicity, control of expression, and respect for architectural law and order. Office expediency is to me apparent in much of their work, particularly in their bold confiscation of entire architectural compositions, as, for example, in the tower of Madison Square

Garden. With us the first important exponent of the modern French school of thought and design was Richard Hunt, and his work was of such volume, his clientele so important, as to place him as one of the factors that shaped our tendencies. His earlier work adhered closely to the contemporaneous French renaissance; but later his frequent and facile application of the style of Francis I. to noteworthy structures, produced a widespread interest in the style. His high place is accorded him, not only because of the importance and quality of his work, but also for his sturdy maintenance of the best traditions of the French school, which now have become so important to us. These men were great artists whose inspiration, given to the young men of their day, now become the active men of this day, and to the whole trend of architectural thought in the official, governmental and private life of our country can not be overestimated. It is important that I refer to the aims, influence, and results of the system of architectural education prevailing in our colleges at home and of the foreign schools, notably that of France—Des Beaux Arts. Our courses are largely influenced by the Beaux Arts system of instruction, and the theory of architectural training as formulated by it. Better than any other, it seems to us to concern itself with the broad principles of architecture, of the laws of composition, mass and proportion, the proper use of ornament, and emphasizes the comprehensive grasp of problems of a nature comparable to our own. Furthermore, it has evolved a technical method of expressing these things so intelligently that it is peculiarly suitable to the student, first grounding him in principles, and then developing in him the power to individualize his interpretation of them.

"I believe that the English influence and traditions will be always more in evidence in our expression of domestic architecture, because our habits of living are modeled upon the English customs, with particular reference to country life. Our public buildings, and our disposition of the larger civic architectural problem, will undoubtedly exhibit more decidedly than ever the French influence and system. In the field of commercial buildings we have presented to us our own peculiar characteristic American problem, and out of it we are developing our one positive contribution to architectural form. Unlike the Gothic architecture, with its organic union of construction and design, it partakes of one characteristic Gothic quality—namely, the emphasis of the vertical and subordination of the horizontal lines in composition. But, again, it requires a superficial envelope, a simulacra enclosing and concealing the real structural elements beneath, and in this respect becomes analogous to the arcuated construction of the Romans, with its outward application of Greek forms and orders. That we should have indulged in architectural flounderings and fantasies with such a problem as this to deal with is not to be wondered at, when all things are taken into consideration. Our most unruly problem, the tall building, is, from my way of thinking, the result of the logical working of the law of supply and demand. It is neither fantastic, avoidable, nor useless, will not yield to adverse legislation, because public necessity formulates a public opinion that will not legislate. It is amusing to read in the publications of fifteen years ago the diatribes against it, and prophecies of its early extinction which were provoked by the modest fifteen and twenty-story structures of that time. The architect of the then tallest building in New York announced in print his belief that the end of tall buildings was in sight. Structures of twenty-five, thirty, forty, and even more than fifty stories have been the answer. It furnishes a typical example of practical necessity and mode of existence creating a movement which ends in something distinctively characteristic of a people, and in this instance steel construction and the tall building is affecting us as did the round arch and vault of the Romans.

"The business centers of such cities as New York and Chicago, as created to meet the conditions of 1860 to 1870, were soon outgrown, and the necessity for larger and better buildings became apparent. The established business centers could not be, or at least were not, moved, property values and the existing inter-relations in those centers being of too great moment at the time. This generally prevalent condition produced different immediate results in different sections of the country, which long since have converged into an established common practice.

"In Chicago, we find that the direct causes that led to the first example of true skeleton construction were (a) the necessity for increased height; (b) which the character of the supporting soil rendered impossible on account of the weight of the then prevailing type of massive masonry walls and interior columns, and which could not be overcome unless (c) a system of construction be devised stronger and of less weight than other types, which was accomplished by the device designated by us as the 'Skeleton steel construction.' Had this been the only merit possessed by this type, it might have remained a localism of Chicago, or at least it would not have become the highly organized, complex, and widely adopted construction that it is today, practically amounting to our accepted type for commercial purposes. The system, as developed, is a simple one in principle, consisting of supporting columns of steel or cast iron, braced in all directions and riveted or bolted to the horizontal girders and beams, which not only support the floor construction, but, more important still, also carry, story by story, the outer walls of the structure, which thus cease to have constructive value, becoming a thin screen of material that serves to enclose the building and to protect the steel fabric from exposure. The outer walls being but screens, the masonry supporting nothing, their piers were, in consequence, easily reducible to a minimum surface width, and the area of glass could thus be largely increased, thereby giving a maximum lighting to the interior, a device rendered necessary by the generally increased height of our buildings fronting upon streets that could not be increased in width. The effect of this condition is manifest in the earlier treatment of the architectural design of these structures, and has become typical of them in the work of the present day. The walls, being non-supporting, could be reduced to a minimum thickness, thus providing an important addition to the interior area of each floor, and materially increasing the earning power of the building; an imperative necessity because of the rapid rise in ground value in central business districts. None of this development would have been possible, however, if it had not been for the American type of elevator, which was promptly developed in response to this new demand, and has kept pace with it ever since by evolving new principles of construction and operation necessary to cope with the constantly increasing height of buildings and the enormous increase in service both as to speed and volume of traffic. These foregoing advantages, meeting our conditions and requirements, led to the general widespread adoption of this system, resulting in the development of remarkable contracting and building skill and organization, of which we have every right to be proud, and which has produced amazing results as to speed of construction, quality of work, and economy. With our high ground values and the necessarily great earning power of these structures, the saving of time in their erection became a matter of momentous importance, and this necessity led to the creation of the skill and organization referred to. This type has come to stay because of its attributes of structural endurance, safety, economy in first cost and of upkeep, and its general suitability to our modern conditions.

"While it has belonged to the domain of the architect, becoming the accepted type for our huge hotels, apartment houses, and commercial structures, and under his direction is fast becoming a thing of grace and beauty from a beginning of sprawling ugliness, nevertheless it must be said in all fairness that these structures could not have been devised without the skill and genius of our mechanical and structural engineering professions, the builders and the skilled mechanics, whose trades have become specialized and developed by this demand, all united in effective co-operation with the architect. The question is frequently propounded: 'Are these structures beautiful, or can they be made so, and thus enter the realm of artistic thought?' Briefly stated, our fundamental principle in design seems to have become established by treating the tall structure as a column with its base, shaft, and capital. In all of the best and most pleasing examples of the later work, this element appears, and we find the lower stories grouped in a single architectural composition supporting a long vertical and shaft-like series of stories grouped into a simple treatment that carries the eye upward without interruption to the crowning feature of the entire design, which again is a series of stories combined into the capital, as it were, of the mass. The pleasing variety of thought in the handling of this scheme of treatment is one of the best features, and, generally speaking, is now characterized by a sober, refined self-control and a truly architectural spirit.

"In the classic feeling of the Italian renaissance the municipal building of New York is unquestionably one of the best solutions of the problem on these lines that we have, while in the West Street building, and in the Woolworth building, both in New York, we have equally good examples of the application of Gothic feeling and detail. Considering the extraordinary height and unusual mass, the design of the Woolworth building is, in my judgment, an architectural achievement of the highest order. I have referred to these buildings not only because of their architectural merit, but also for the reason that they represent the two broad schools of design which seem most suitable to the problem presented by the tall building, and are, I believe, typically representative of our lines of future development. In pointing out the consummation of this century and a half of architectural growth in my country, I would have you enter the harbor of the city of New York on a trans-Atlantic liner, and from that point of view for the first time observe the buildings of the lower end of Manhattan Island, with their towering and amazing sky-line and mountain-like mass of architectural grouping, picturesquely artistic and truthfully expressive of the spirit of our lives and activities. I believe that it will grip the imagination of any observer, whether he sees it for the first or the hundredth time, and that he will experience from it that flow of thought and impression which is produced only in the presence of some great and inspiring thing. To me it illustrates the quality and the character of our people, their aspirations, and their peculiar genius in terms of architecture, as do our mountains and valleys, our lakes and rivers, the physical character of our land. Prosperity, wealth, and power we are surely possessed of, and we are as surely acquiring from the artistic wisdom and traditions of Europe that which is useful and good for us to have, and are applying it intelligently to our needs. As a people we are learning to respect and revere Art, and to value its uplifting influence, and with these fundamentals to build upon, and with the artistic forces that are ever active among us, the future of American architecture will be worthy of high regard."

Declares There is No "American Style" of Architecture*

By ARCHIBALD G. RIGG

THE term "American style" is in itself a misnomer. The word "American," as applied to a distinctive style of a distinctive people, can not be used. The American nation as a composite and amalgamated whole as yet is not a reality. It is true that we have developed some characteristics which might be termed national, but until there is a more complete fusion of the diverse traits which characterize us we can not use the word "American" in an absolute sense.

England has an architecture—the historic growth of an established nation. So it may be said of France, Italy and other countries. It is true that America, though infantile in history, has a little of everything architecturally—some good, some indifferent, and mostly bad.

Among the first examples of architecture in America are specimens of French architecture found in Louisiana and Florida. In Florida we find examples of Spanish architecture. But so characteristic are these styles of the people who planned them that they can hardly be defined as American architecture.

Farther north, in New York, Maryland and the Carolinas, the Dutch and the Swedes built replicas of their national architecture, modified somewhat by the exigencies of climate and life in this country. Accordingly these specimens took on the aspect of a new country.

Aside from these few examples of architecture in the colonial period, the main development has been along English lines, particularly up to the last quarter of the nineteenth century.

This English Georgian, which had its beginning in the renaissance, brought our architects in touch with the classical principles and style which they developed into the colonial, or American renaissance. The world at large was looking to America for an original and unique development in architecture, forgetting that the Americans did not comprise a separate and distinct nation, but rather a collection of Europeans with European traits.

Taking the fundamental features of the renaissance, coming as they did to us through the clearing-house of English Georgian, we so infested them with a local feeling through modifying them to the needs of the time, place and materials, that they became essentially American, and the probabilities are that if we had followed up this type instead of rambling into other architectural styles we would today have had a typical American style. In fact, our domestic colonial stands unique in its adaptation of renaissance motives to the medium of wood which proved itself suitable to the development of the classical details, gaining thereby a universal warmth and personality.

The best examples of colonial houses are found today in Annapolis, while the city hall of New York, and Independence hall of Philadelphia,

* Extracts of paper read before the Spokane (Wash.) Architectural Club.

in more durable material, remain to us as monuments of that period. While we were still working in colonial, the discoveries of Stuart and Renett among the architectural remains of Athens, had a very great influence in changing the types of building in this as well as in other countries from the renaissance to its real prototype, the Greek. Toward the end of the eighteenth century the country became dotted with Greek adaptations which became the official style at least, and remained so until about 1860.

The treasury, patent office and other public buildings were built in one or the other of its orders. A notable example of this style is seen in the University of Virginia. For that kind of building the Greek orders lent themselves admirably, but when our designers tried to apply these motives to domestic architecture they were found unsuitable, causing the style to perish, except where used for public buildings, which helped familiarize the public with a harmonious assemblage of architectural forms.

The latest and most impressive work of the Greek revival was the addition of the wings to the capitol at Washington, without dispute the most impressive building in this country. In trying to imitate these monuments in the smaller towns, with cheaper materials, all refinement and significance were lost. It was on these conditions the gothic revival depended.

This period commenced with the erection of Trinity church in New York, completed in 1846. This edifice probably was the first church of any size built in this country by a schooled architect. Following the completion of Trinity there was created an immediate demand for this style of work for churches.

At about this time the discoveries by Ruskin of examples of mediæval building in the north of Italy awakened interest among the younger architects of England. About 1860 this Victorian gothic made its appearance in this country. When properly and conservatively handled by the trained architect the results were excellent, but novices dabbling with the intricacies of this style soon discouraged builders, and architects returned to the dignified and simple colonial building.

The time was now ripe for the importation of the next British fad, Queen Anne, including the Jacoban and Georgian styles. In Queen Anne architecture was suggested historic home atmosphere, though it was much disguised with American nonsense. Still, it appealed to the better educated people without their knowing of the infractions. They thought Queen Anne architecture merely another clever fashion. But as practiced now this style is used by the speculative builder only, the better classes knowing that the secret of successful architecture does not lie in inventions. This bizarre jumble led to a reaction toward the colonial, which, however, was interrupted by H. H. Richardson with his original adaptations of Romanesque. His first success was Trinity church, Boston, completed in 1877.

This style commended itself to the younger architects through the lack of elaboration. On the other hand, the drawback of this style for modern purposes was its vagueness. Richardson made no effort to correct this, exaggerating it beyond reason. However, those who did not copy his extravagance, but sought the sources of his designs, produced some very creditable work. This style promised to become a real living style, but this promise was shattered. The Romanesque revival did not long survive the revivalist.

From what we have noted of the different styles in America from the earliest times, it is plain they have been adaptations of foreign styles. Into what chaos in America have they led us? The result of the best adaptation is the gradual formation of a national style of architecture. Style is never evolved by architectural invention, for invention belongs to science.

Of the many things entering into the different architectural styles, the influence of individuals has counted least. One generation of builders has taken up the work where its predecessor stopped. The fashions of architecture perish; style endures.

Of course, we have today one development in building absolutely peculiar to America, but whether it can be called real architecture, or whether we wish it labeled "The American Style," is open to argument. I refer to the commercial buildings best exemplified in the skyscrapers. Are they a necessity? Can buildings of twenty or more stories be legitimately placed on a street laid out for three or four-story blocks? Is there no limit but that of self-interest to which we may look?

To the European cities that years ago limited the height of secular structures our skyscrapers are architectural monstrosities.

* * *

Rough Texture Brick

MORE and more people are coming to believe that the beauty of a house should lie in the structural features and the material from which it is made, says the Construction Record. Some of the most beautiful brick buildings owe their decorative interest solely to the varying arrangement of the bricks; the proportion of headers to the stretchers, and with the wonderful colors which can be secured with skillful burning, the possibilities of beauty in brickwork are only beginning to be realized.

One of the most beautiful things in the evolution of artistic brick work in this country is the rough texture brick. A wall built of this kind of brick shows the soft shades and delicate tones of a fine old Persian rug. It has no glaring high tints, no pronounced colors, no extreme contrasts. Starting from Indian reds the colors run through coppers, olive greens and purple browns to deep blue. With another clay is produced a light brownish gray, running into cream and coffee shades, deep russets and tobacco brown, giving in the mass the effect of old ivory. Still another clay gives a series of rich old buffs, ranging from a soft, delicate chamois color to a deep golden brown.

One of the distinguishing features of this product is the almost infinite number of its intermediate shades and the absence of violent, glaring contrasts so offensive to refined taste.

Dull finishes and rough textures are sought for beauty in sheltered interiors. It is only a step to apply this artistic principle to exterior effects, and that is what all the makers of brick have done. It has a peculiar rough texture which detracts from its reflecting power and prevents the high lights which mar the conventional brick wall.

A rough brick gives the weathered effect which makes it not only artistic, but logical as a material for exterior construction. By the selection of the proper shades of brick and the proper mortar joints, a new wall can be made to take on the appearance of great age, if the builder so desires, or by the use of other shades, properly blended, can be made to sparkle with life.

The brick is burned to the hardness of iron and is practically non-porous. It is not a colored brick, in the ordinary sense of the word, for it

Highland Park Club House
Irving K. Pond of Pond & Pond, Architects

is produced without the aid of artificial coloring matter. Its wonderful and peculiar shadings are due to the skillful selection and blending of natural clays and the expert application of intense fire. It is thus alone that nature's great range of color tones can be reproduced in brick.

This beautifully colored material gives character to a building, the broad mortar joints and varying shades reminding one of the famous castles and cathedrals of the old world. There are now fashions in brick as well as in clothes. The conventional uniformity of color and shape and narrow mortar joint has been abandoned and today a brick facade is a work of art, and the various styles of brick and bricklaying offer themselves to unending variety of architectural treatment.

To the home builder, of course, the question of cost is an important consideration, and the idea prevails that on this ground the man of average means is debarred from the enjoyment of the beautiful effects of artistic brick construction. But as a matter of fact, the difference in first cost between frame or concrete and good brick construction is not so great as might be imagined.

The first cost, however, is not so important as it might seem, for while brick is particularly indestructible and requires little or nothing in the way of repairs, the yearly depreciation in the case of a frame structure soon eats up the few dollars that may be saved in the original cost. And that is why today there is a renaissance in brick construction as well as in the art of making brick that will be a creditable addition to the artistic architecture of the country.

With the Contractors

General Contractors Association

(INCORPORATED)

402 KEARNY STREET

SAN FRANCISCO, CAL.

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Committee on New Headquarters

J. J. Pratt, P. J. Lynch, F. H. Masow, C. W. Gompertz, Edw. Ginley, A. H. Bergstrom, John Biller

Stockholders Meetings: Second and Fourth Thursdays of each month.
Board of Directors meets on the Second Monday of each month.

The General Contractors Association

By WM. E. HAGUE, Secretary

THE present organization known as the General Contractors Association is the result of amalgamation between the members of the Associated General Building Contractors and the members of the former Builders Association. This amalgamation took place in February of this year, and the consolidated body incorporated under the name of "General Contractors Association," with a capital stock of $125,000, divided into 250 shares of the par value of $500 each. The present meeting quarters are at 402 Kearny street, where the former Builders Association had its headquarters. The stockholders of the association are the general contractors, and each stockholder holds one share of stock, on which he pays the sum of $50, in addition to an admission fee of $50. The members of the association consist of specialty contractors and material men.

There are at this time about 150 stockholders in the association and 300 members, and the present meeting quarters at 402 Kearny street are proving entirely too small to accommodate the large number who congregate there every day. On this account it is proposed to establish new headquarters in the near future. A Committee on New Headquarters was appointed some six weeks ago, and has gone very carefully over the ground and considered a large number of locations which have been submitted. The committee is now practically decided on one of two locations, and in the next issue of the Architect and Engineer there will probably appear a picture of the future home of the association. It is proposed to have a large auditorium for the general meeting quarters, with offices in the building for contractors and material men. The building will probably be of class "B" construction, and will be a contractors' exchange superior to any exchange which the contractors of this city have heretofore been housed in. The present meeting quarters at 402 Kearny street consist of a large vacant store which has been utilized and fitted up for the purpose of meeting quarters, as the Builders Association in moving down town after the fire could not find any more suitable location at the time.

The association is aiming to regulate the business and promote the welfare of its stockholders and members along legitimate lines, which will commend itself to architects and owners alike. Present conditions in the building business demand that vigorous steps be taken to rectify the evils which have existed during the past few years and taken away the legitimate profits which a contractor is entitled to. San Francisco, we hope and believe, is now facing a period of prosperity such as has never been held out to her before, and the contractors may reasonably hope to make a legitimate profit on their work, provided the proper steps are taken to regulate the business at this time.

The General Contractors Association was a strong factor in getting the new lien law passed by the Senate at its last session, and the fact that this law inures to the benefit of the specialty contractors and material men, perhaps to a greater extent than to the general contractor, is a practical illustration that this association aims to protect not only the interests of its stockholders but also those of its members and the building industry in general. If the editor can find space in the next issue of this magazine the writer hopes to be able to present through its columns a few of the salient features and advantages of this new lien law, and to illustrate and prove that the law will work a benefit not only to the contractors but to the architect and owner alike. The General Contractors Association exercises great discretion in admitting applicants to membership as stockholders, and the investigating committee, before reporting favorably upon an applicant, obtains all data possible through various credit sources regarding the standing of the applicant in the building business, feeling that at this time too great caution can not be exercised in admitting stockholders to an association which proposes to establish itself in the eyes of the architects and owners as being composed only of responsible men, who will fulfill their contracts and complete their work in a workmanlike and satisfactory manner.

The Transmogrification of an Old House

By W. GARDEN MITCHELL, Architect.

An Old San Francisco Dwelling Before the Architect was Consulted. Note the "For Rent" Sign

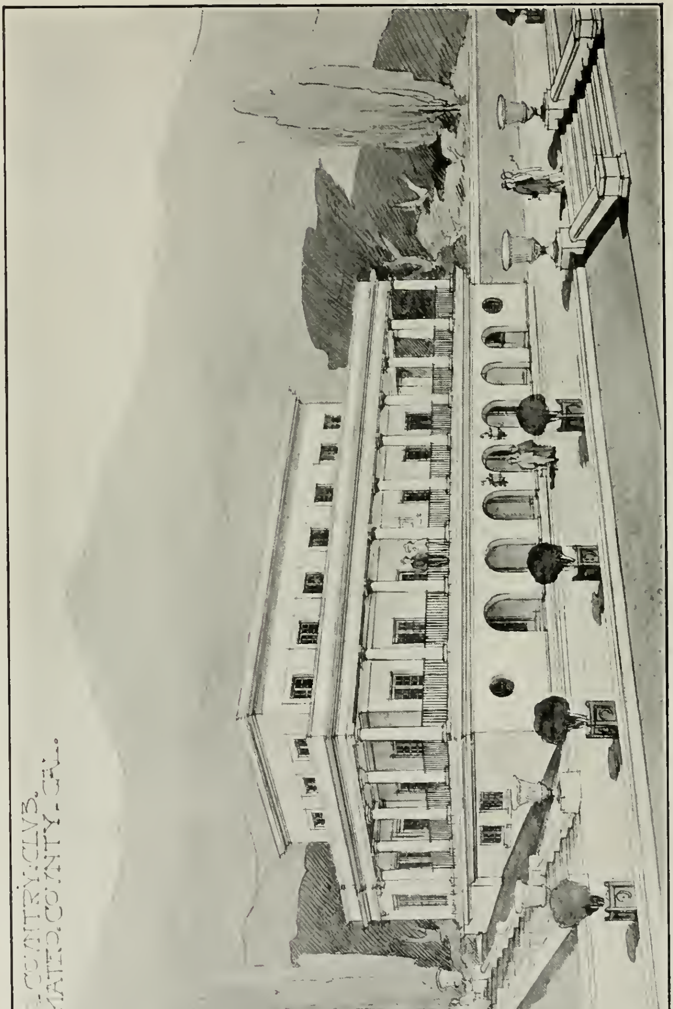
TO the enthusiastic architect nearly every problem that is submitted to him contains sufficient interest to raise the solution thereof above the level of mere drudgery, and the alteration and transformation of old buildings, while in many cases at the start appearing as a hopeless and thankless task will in the process, develop into one of considerable interest and even satisfaction to the designer.

The building herewith illustrated, shows a type of architecture of the ultra florid order transformed into a simple and inoffensive exterior. The same fundamental lines have been retained, except that the entrance instead of being at the front is moved to the side of the building, creating out of the back parlor a spacious entrance and stair hall and doing away with the narrow hall and stairs of two decades past. One of the interesting points to note is that in order to do this, about 14 loads of superfluous, so-called ornament and decoration had to be removed which in the first instance must have cost the owner from $1,000 to $1,500 to no good purpose. The doing away with the front entrance and adding the space to the front parlor converts an ordinary and rather too narrow room into a reception room of ample size and fronting the main street where it is most desirable.

The placing of the entrance and stair hall towards the center of the house also eliminates the long and uninteresting passageways that formerly connected the various reception rooms.

The exterior walls of the building are plastered in white Portland cement sand finish and the wood work is painted cream-white to match.

Speaking in a general way the house has been transformed from one that practically no one would think of renting, into one that almost as soon as finished found a desirable tenant.

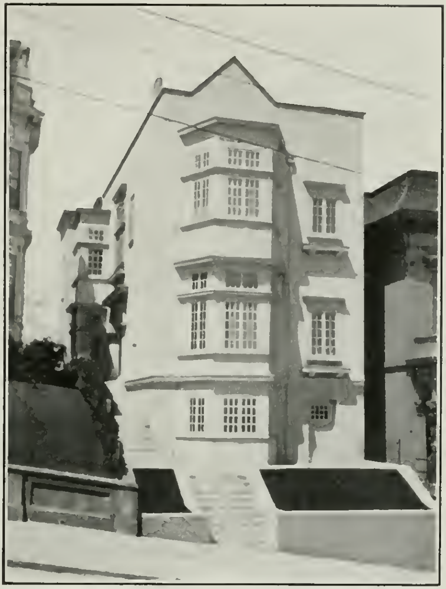


Menlo Country Club Building, San Mateo County, California. W. Gorden Mitchell, Architect

The Menlo Country Club's New Home

(See full page illustration on opposite page)

THE Menlo Country Club's new home, situated on the foot hills westerly from Menlo Park, occupies a site from the balconies of which may be viewed the whole lower end of the Santa Clara Valley. It is scarcely necessary to add that it looks out upon as pure a prospect as may enter into the heart of man to desire.



The Same House Showing Pleasing Alterations
W. Garden Mitchell, Architect

The plan of the building is a simple one, avoiding all ostentation; an ample carriage porch protects the arrival, and on each side of the entrance hall are provided retiring rooms for both ladies and men in which to arrange a slight toilet, more extensive accommodations being provided in the basement, the men using the main stair and the ladies a private stair either from the garden, the porch or social hall at pleasure.

The main floor contains a dining room with kitchen and service arranged so that meals can be served either indoors or upon the covered porch. The total length of the porch is about 140 feet by 16 feet wide and from this the view alluded to can be obtained. It has been faced southeast so as to give the most desirable aspect. In addition to the dining room there is a social hall; both rooms about 18 by 34; and connected by a large lounging hall onto which abut the office, wine and telephone rooms. Ample French windows connect all rooms with the main porch. In the basement are locker rooms, toilet and lavatories, furnace and store rooms, and on the second floor, 6 bed rooms, each with private bath rooms attached, besides housekeepers' quarters. The main stair continues to the roof, which being flat can be used as a roof garden.

The main body of the building is concrete reinforced, both walls and floors will be practically fire proof. The porches are of wood or wood and plaster on metal lath. The whole exterior, which is a simple, classic design, will be white cement and white or cream wood work. The same simple classic lines will be maintained in the interior, all ornament being avoided. The dining room will be paneled for about 9 feet in height and the balance of the walls and ceilings of the main floor will be plastered and tinted, for the present in shades of cream and white. The cost of the building will be about $35,000.

The Use of Asphaltum

By HARRY LARKIN.*

THIS paper relates to the various uses of a substance which has been at the service of mankind from the earliest history, in fact, before the date of authentic record. We find evidence of its use for cementing the bricks in building the great temples of the Sun-god and the Moon-god and in other stupendous structures that in ages long ago stood where Babylon with its architectural grandeur housed the rulers of a world, recorded in the most ancient of histories.

The Assyrians used asphaltum for waterproofing the immense irrigation canals built four thousand years ago, and their sources of supply, the fountains of Is, on a tributary of the Euphrates, still yield forth.

The Bible tells us that our forefather, Noah, used this material for rendering the Ark watertight, and that Moses' cradle in the bullrushes was bound together with "pitch."

With such a venerable history as this, it is a strange fact that an intelligent use of asphaltum today is an exception both in architecture and engineering. In most cases the advent on a job of a kettle accompanied by barrels of asphaltum, buckets, mops, felt, gravel, etc., is looked upon with contempt—a disagreeable detail that it is hoped will soon disappear. The nature of the work prevents the mechanics looking like the "elite," but, nevertheless, it takes years of practice and experience to develop a thoroughly competent workman in the handling of asphaltum in any of its branches. To the passerby, the humble workman with sooty face and dirty clothing who tends the kettle is a common laborer. The truth of the matter is, however, that an incompetent kettleman may render the work performed very short-lived, whether it be roofing, paving or waterproofing, by overheating the asphaltum. Here lies the keynote of all asphaltum work. Nothing will kill the binding properties of asphaltum so quickly as overheating. In laying a felt and gravel roof, the top coating will be short-lived, the gravel will not be properly imbedded and the roof will soon need recoating. In a paving job, if either the asphaltum or grit be overheated, the pavement will have no consistency, and it will soon crack and go to pieces. In waterproofing work, the surface will be black and the contractor will probably get his money before any evidence of his imperfect work is discovered. On a roof, the greatest care and judgment must be used in laying felt to see that it is properly stretched, laid smoothly and that no wrinkles appear. The spreading of gravel is an art that few can learn; it takes judgment, quick action and a steady hand to get the gravel into the asphaltum before it chills and still leave the finished surface even. In the usual specification not enough stress is laid on the quality of the asphaltum used or on the workmanship. A certain number of plies of a specified weight of felt are called for, to be laid in compliance with the local building ordinances. This may comply with the law, but it does not guarantee a good roof. The same specification will probably call very particularly for a certain brand of cement in the item of the concrete, which is to be used in certain quantities, together with clean crushed rock and gravel. No roof should have less than 100 pounds of asphaltum to the square if a reasonably good job is expected. The asphaltum is the life of the roof, particularly in the top coating. The gravel should be applied liberally, so that the

* Residence, San Francisco. Member of the Technical Society of the Pacific Coast. Paper read before the society.

asphaltum is completely buried and protected from the sun. If there be a little loose gravel on the roof, do not fear it; it will mean so many years more service, for that is what it is put there for—to protect the asphaltum and felt underneath from oxidizing.

Then, again, asphaltum has been cursed by enthusiasts with ideas; well-meaning men who have done a little laboratory work have produced a sample and gone forth to organize a corporation to spring on the unsuspecting public a production thoroughly impractical in actual use. I have in mind such a corporation that was formed here some eighteen years ago for treating wood piles after a particular manner to prevent their being eaten by teredo and limnoria. These men sent out about a shipload of Val de Travers and Neufchatel asphalts (as good asphalts as have ever been on the market), but when it came to actual usage and wear their ideas proved a failure and the asphaltum lay for years in a warehouse on Battery street. An honored ex-president of this society, George Percy, was one of the few who recognized the superiority of this particular material, and I remember it well that he was ever faithful in specifying its use, to see to it that it was used in preference to all other kinds. In after years this asphaltum was reshipped to the Atlantic Coast, the stockholders of the corporation having paid the bill for their experience.

In later years a certain contractor of San Francisco thought he could lay street pavements of redwood blocks dipped and coated with asphaltum. You probably remember his work on several of the wharves along the city front, and on Market street in front of the Phelan building. Wood block pavements had been laid in San Francisco twenty years before and were subjected to the hardest kind of wear in the steel warehouse of Dunham, Carrigan & Hayden Co., and the Haslett Warehouse at the time the contractor referred to put down his pavement on Market street; this gentleman's knowledge of asphaltum was limited, and as a result all of his pavements were a failure.

The old Boston Mastic roofs, laid by Mr. Perine some forty years ago, were good serviceable roofs, but their success brought cheap imitations and the city was flooded with roofers who put down a ply of burlap, coated it with coal tar and gravel, collected their bill and flew. The result was that the mention of felt and gravel roofing to a prospective builder for twenty years after that was like a red rag to a bull. At the present time asphalt, felt and gravel roofing is almost universally used in this city, but I fear that some of the work done hurriedly after the recent disaster may have a tendency to shake some owners' faith in human honesty.

On the Pacific Coast at present all of the asphaltum in use is derived from the refining of natural mineral oils, the deposits of natural rock asphalt having been exhausted. The process followed in its production is to place the natural oil in a still and take from it the volatile parts, such as benzine, distillate, lubricating oils, etc., the heavier carbons remaining, constituting the commercial asphaltum of today. The nature of the asphaltum obtained depends upon the density of the original oil, the care taken in not overheating the still and the length of time required in treating the oil. The hardness of the asphaltum depends upon the length of time it remains in the still—the longer it is treated the harder it gets. I consider that the only proper test of asphaltum is in the kettle, as the asphaltum taken from a high gravity oil may be treated in the still so as to come up to a specified number of points penetration according to the tests of our Board of Public Works and still be unfit for use either for making mastic, grouting basalt blocks or any purpose other than making paint or coating building papers.

Great improvement has been made in the production of asphaltum in this manner during the past ten years; in fact today there are oil asphaltums in the market that very nearly approach the fine cementing qualities of the old rock asphalt. These are derived from low-gravity oils by refinery, where care is taken to produce a superior article. All asphaltums are black, but they are not all good. I am not from Missouri, but I must be shown more than a sample in a little tin can to convince me that the asphaltum I buy is suited to my purpose. There may be some means of telling the binding qualities of asphaltum in the laboratory, but experience teaches me that the most satisfactory means is to use a few barrels on the work and an experienced eye will know whether the material will do the work expected of it.

Asphaltum is a cement in a waxy form. It is nothing else. Its natural tendency is to contract, so that due allowance must be made where it is used either for roofing, paving, insulation or waterproofing. In roofing or waterproofing the object of using saturated felt is merely as a medium to hold the asphaltum together, to allow for expansions, contractions and settlings. In paving the asphaltum is simply a binder for the grit that takes the wear. The tendency to shrink will show itself in a pavement unless it is rolled out and worked by constant use. No better illustration can be shown than the asphalt mastic pavement originally laid in the quadrangle at the Stanford University by the old firm of Coil, Barton & Cowles, predecessors of the Alcatraz Asphalt Company. The pavement was laid as well and of as good material as money could buy, but a student's crossing of the "quad" occasionally was all the use it was put to. The pavement cracked and its surface looked like a map in a geographical atlas in a few years; it was eventually taken up entirely. It the "quad" had been open for driving, the pavement, in its greater part, would probably be good today, but lack of use wore it out. Like Portland cement, asphaltum in its pure state is of little use; it must be used in conjunction with felt, grit, gravel and a little common sense, to fill requirements, and it will, when properly and intelligently mixed, fill them well.

In building construction asphaltum is largely used in laying roofs. The methods followed are to lay from four to eight thicknesses of saturated felt over the roof surface, each ply being cemented to the preceding layer with a heavy coating of asphaltum. All felt is turned up at the firewalls and curbs at least 4 inches at the highest points of the roof, and not less than 12 inches high as the outlets are approached, in order to avoid overflows should the outlets become clogged. All such flashings should be reinforced with an additional layer of felt (preferably flax felt) mopped solidly, running parallel to the wall, and counter-flashed with galvanized iron, or copper wedged, and cemented in place. The entire surface should then be floated with a heavy, flowing coat of asphaltum, in which, while hot, clean, dry, uniformly screened gravel should be imbedded sufficient in quantity to cover the surface thoroughly.

The character of the roof depends upon the style of the building. If a wooden sheathing is used as a foundation, I would advise that the first layer, next to the roof boards, be of unsaturated felt, serving as a dry sheet. There are two reasons for this: First, it is important in the life of the roof that it be free from the building so as to allow for shrinkages of lumber, settling, vibration, etc.; and second, an unsaturated dry sheet will prevent any excess of asphaltum dripping through the cracks, which dripping, however small the quantity, causes great annoyance in a loft building. In the case of concrete or tile construction, I would advise the use of saturated felt entirely, but I would lay the first sheet without mopping to the concrete or tile surface.

Some architects specify a metal standing flashing on felt roofs, but experience has taught me that this is a great mistake. In putting in such flashing it is necessary to nail through the metal and felt in order to hold it in place. Expansion and contraction soon loosen the nails, and if the flashing be in a position so that the water may flow on it, an opening will be found in the course of time to cause a leak. I never, under any circumstances, put a nail through a felt roof if it can be avoided, and if compelled to do so I make sure that it is well covered with felt. A reinforcement of flax felt, mopped on solidly, is more satisfactory in every way.

When an unusually fine job is wanted, a second coating of asphaltum and gravel is often put over the roof as heretofore specified; or, as in the case of light-well roofs, an improved appearance and a clean surface may be had by putting a cement top finish over the gravel roof; or tile may be set in concrete over it. But in any event, lay the roof first, complete with flashings and counter-flashings, and then finish the surface to suit your taste.

Asphalt mastic has been used as a top finish over felt roofs, but this has not been altogether satisfactory on account of the tendency to contract, the mastic cracking in time and permitting the water to lodge directly on the felt where this is laid without first graveling it. Actinolite has given good service as a substitute for mastic where a smooth surface is wanted. Its cost and weight are much less than either tile, cement or asphalt mastic, and this material has the advantage of being adaptable to steeply pitched surfaces as well as flat ones. It is the only material other than tile that gives a thoroughly satisfactory smooth finish to a felt roof. This desire for a smooth surface is solely a matter of appearance, for accumulations of dust and dirt, that do so much harm to a metal roof, have a tendency to preserve an asphalt roof by protecting it from the sun's rays and oxidization. The life of any roof is in its top finish. If the roof be a plain felt and gravel roof, a liberal amount of asphaltum and gravel on top is of more importance than the number of plies of felt, or the quantity of asphaltum put between the sheets.

What is known as a felt-and-gravel roof should never be used on a surface of greater pitch than one-sixth, or 4 inches to the foot. Where it is necessary to use an asphalt roof on a greater pitch, the gutters may be put in with plies of felt and asphaltum and the steeply pitched surface covered with some of the many ready roofings on the market. There is little choice between the different brands, for they all are laid with joints cemented and nailed to the sheathing. This nailing is what makes them so unsatisfactory; expansion and contraction of the body material in the course of a short time open holes alongside the nails and permit water to enter.

Asphaltum may be used to great advantage in other parts of a building. A recent fire on Market street, opposite Sansome street, brings to mind a fad of mine that appears to be in every way reasonable. At the time of the fire (which occurred in the upper story) newspaper reports stated that H. S. Crocker & Co. had a stock of $25,000 of very perishable goods on the ground floor, the loss being $23,000. Now, if in the construction of the building a waterproof course of two-ply felt and asphaltum had been put in the upper floors, the greater part of the damage to the stock below would have been prevented. Such waterproof course would have cost 3 cents per square foot, and besides making the floor watertight, it would have been the finest deadener of sound and barrier against rats that could have been put in.

In certain localities precautions must be taken to keep water out of basements. In these cases the treatment depends upon the character of the building and foundation. In heavy structures it is best to wait until the building is nearly completed, and when it has settled to its final resting place then pump out the basement and over a thin foundation layer of concrete mop solidly three plies of good saturated felt, running the felt up the walls and piers a little higher than the natural level of the water, and cover this felt with from 8 to 12 inches of good cement and top finish to serve as a floor. This cement must be built up around the piers and along the walls to support the waterproof course in place. On brick or concrete foundation walls a continuous course of asphaltum, applied to the outer side of the wall, will prevent entrance of ordinary dampness, but in cases where a great amount of water is present, I would recommend mopping on two plies of felt and filling in the earth at once as a support. The use of felt and asphaltum in waterproofing work is very general throughout the East, and some of the structures so treated are very extensive, such as the subways recently completed in New York. In letting contracts for such work, and in fact all asphaltum work, the integrity of the contractor is of greater importance than the cost, for it is seldom that a waterproofing job is so situated that it can be reached after the work is completed, and if there be a single defect, the full amount paid is loss.

The civil engineer often has use for asphaltum in lining reservoirs and flumes, and in waterproofing retaining walls and cisterns. The same simple rules of handling as already mentioned will apply. We all learn from noting failures, and I can not help but mention here two particular instances of poor judgment or ignorance of the material that have come to my mind. When the water-works were built at Portland, Ore., some fifteen years ago, the three higher reservoirs were lined with concrete, and this lining was in turn coated with straight asphaltum. The coating was done during the winter season by unskilled workmen and, as a consequence, was in patches and nowhere continuous. As the work was not satisfactory to Colonel Smith, the engineer, the entire surfaces were gone over with paving irons, and, in the course of time, the asphaltum was ironed together, but the life was burned out of it and an immense expense was incurred without accomplishing anything. If skilled workmen had been employed, the first application would have cost less and the job would have been acceptable.

The other case was a reservoir of the Contra Costa Water Company, on the outskirts of Berkeley. The reservoir leaked and a specification was prepared calling for the surface to be coated with asphaltum in which burlap was imbedded. This burlap was in turn given a heavy coating of asphaltum, probably two coats. Where the mistake was made was in the burlap. Asphaltum will not penerate anything while in its natural state. No force can be applied that will make it enter the pores of burlap, canvas, concrete, brick, stone or wood. As soon as it chills it sets, and in the case of the burlap, a simple surface coating was made through which the fibers of the burlap extended, to rot and draw moisture into the body material, to cause it to decay in turn. If a material like flax felt had been used, having for its foundation practically the same stock as burlap, but which is saturated with a preserving substance that harmonizes with asphaltum, the result would have been a satisfactory job instead of the failure, without question.

All of the roofing felts on the market are made of wool or flax, saturated with a preserving material that will harmonize with the asphaltum. The felts simply constitute a medium for holding the asphaltum in place, as before stated. The saturated wool roofing felts are compact, and although they absorb little of the asphaltum used in laying them, they hold it in repeated layers to constitute the body material of the roof or other structure to which they are applied. The flax felt is porous and of strong texture and absorbs the asphaltum, holding it within its fibers. An unsaturated burlap or canvas can not be made to hold the asphaltum unless it be first run through a bath of flux, liquid asphalt or tar.

Herein lies a field for an energetic manufacturer; to produce a mixture of asphaltum and some material of the same specific gravity of the character of mica or asbestos, or something indestructible through decay, but which has a fiber to it that will hold the asphaltum together, or, in other words, that the asphaltum will hold together. Such a compound would be invaluable for coating reservoirs, pipe conduit, insulation, etc., if it be of a consistency easily handled. A refinery in Bakersfield is placing on the market a combination which it calls mastic, consisting of oil, asphaltum and lime from the beet sugar refineries. The lime tends to toughen the asphaltum in the same manner as sand, but it lacks the fiber to bind it together. The firm has the idea, but as yet it has only succeeded in adulterating the asphaltum without any material gain.

Asphaltum has been used in various characters of paving with varied success. The bituminous rock which has been so generally used in California is a natural mixture of sand and asphaltum found in large deposits along the coast. For sidewalks or streets having moderate wear it makes a very satisfactory and cheap surface covering. Wherein it is weak is in the loam and vegetable matter in the mixture, and in the sand itself not being sharp; besides, the method of disintegration with steam leaves the finished pavement porous so that when the cold and damp weather comes on it cuts out into ruts. The character of "poultice pavement" more recently used in San Francisco has been a mechanical mixture of crushed rock for a binder, with a similar mixture of asphaltum and sand for the wearing surface. Provided the sand be clean and sharp, these pavements will give far better service than bituminous rock. Both the asphalt mastic and bituminous rock pavements cost little to keep in repair and have the advantage of being the most sanitary covering that can be placed on a public street. For streets having heavy traffic or even a slight grade, there is nothing better for wearing surface than basalt rocks grouted with clean warm gravel and asphaltum. It was a great blessing to San Francisco that Third street, from the freight depots to the business centers, was so paved at the time of our recent disaster, for it gave us a passable thoroughfare over which to truck our supplies for building and stocking up the mercantile community again. After thousands of tons of all kinds of material have been hauled over it, the street is in good condition today, barring a few minor faults caused by excavations necessary for connecting new buildings.

I doubt whether the city has spent a cent on this thoroughfare from Townsend street to Mission street since this pavement was laid some five years ago.

Pavements consisting of wooden blocks laid on vertical grain, dipped and grouted with asphaltum and warm gravel, make an excellent wearing surface for driveways inside of buildings. They are comparatively noiseless and furnish a good foothold for horses. In warehouses nothing will give better satisfaction. I consider fir blocks, cut at least 4 inches long, out of stuff not over 4 by 8, will make the best pavement when the blocks are laid to break joints and are well grouted with gravel and asphaltum. In case of very heavy teaming, blocks 6 inches deep would be better, but I would not recommend larger sizes than 4 by 8, as before mentioned. Creosoting the blocks does more harm than good. If the blocks are well dipped and grouted, they will never fail through decay. In this climate a wooden block pavement will never give satisfactory service out of doors. It is for this reason that I confine my recommendation of it to the use in warehouses and driveways under cover.

The foundation is all important whatever the character of the pavement. Concrete has no superior. Our practice of ripping up a pavement for sewer, water and gas connections, and for laying conduits, has been the cause of numerous faults in our streets, but if the repairs were conscientiously made, the patching would never be evident whatever be the character of pavement. This is one peculiarity of asphaltum—it will heal over an injury in a roof or pavement, when the patch is properly applied, at a small cost, and in the end will be better than new. It has always been a source of pride and satisfaction to the asphaltum man to know that when the good metal, slate or tile roofs leak, or the concrete or brick walls sweat, he will be sought in the end to apply his asphaltum in some form or another to remedy the defect. The use of a few dollars' worth of asphaltum in building the foundation walls and basement floors in localities like the Western Addition, north of Washington street, or over the entire area of Berkeley, would save our clients endless expense after the residence is occupied. The two localities are peculiarly subject to underground dampness, and there is hardly a residence in either locality that is not troubled in winter. This is a hard matter to correct after the building is up, but an inexpensive one to prevent in first construction. Tile roofs please the artistic eye and appeal to our loyalty to peculiarly Californian mission architecture; but a course of felt and asphaltum is advisable under the tile, to keep the rain out in rainy weather when the advantages of the roof are most needed. Our changing from an iron to a steel age has rendered metal roofs of short service; the steel oxidizes so rapidly that it is only a question of a short time when the owner will send for the asphalt man to put a covering over his head that will let him rest securely and keep him dry.

The statements I have made favoring the use of asphaltum are with the presumption that intelligence be used in its application. Asphaltum is most excellent for some uses, but like wood, steel, stone or brick, it has its field and can not be successfully used without judgment.

* * *

Profitable Publicity

Elbert Hubbard says: "Advertising is the education of the public as to who you are, where you are, and what you have to offer. Not to advertise is to be nominated for membership in the Down-and-Out Club."

Architects and Publicity

THE successsful business or professional man does not inform the world of everything he is doing or proposes to do, but there is such a thing as carrying secretiveness too far by withholding information of interest and value to the general public, or certain well-defined interests. If one is seeking a contract or striving to make a business arrangement of any kind he would be foolish to announce the fact to possible competitors, since by so doing he might fail in his undertaking. But, having accomplished his end, no good reason can be urged why he should withhold information touching the transaction that might well prove of substantial advantage to others, and that without injuring him to the smallest possible extent.

Architects do not differ in any essential way from other professional men, in which category they are properly placed. As a rule they are actually serving the real interests of their clients, striving in every way to elevate the standard of their profession. Actuated by such motives, the great body of American architects not only treat their clients with frank honesty, but do all in their power to advance their interests, at least those connected with the transaction in hand. With rare exceptions, architects are not builders, contractors or material men, and can have no honest interest in preventing their patrons from securing those advantages that may well come, usually do come, from giving out details of an impending building operation.

As a rule, architects fully realize this, and act accordingly, cheerfully giving out information to representatives of newspapers and magazines, which may prove of general interest or be of value to those connected in any way with the building trades, upon whose activity and success their own business largely depends.

It must be said, however, that as there are exceptions to all rules, so there are to this one. Here and there an architect is found who is as secretive, almost, as an oyster. He may be forced to admit that he has important work in hand, but decline to name his principal or give any information touching the transaction. Is this clam-like position taken in the interest of his client? Scarcely, since he would be likely to profit through publicity calculated to bring him a wide range of proposals from contractors and others anxious to do business, thus enabling him, through the architect, generally, to secure competent service, the best of material and the lowest procurable prices.

This class of architects, which, fortunately, is not large, would do well to consider what conclusions are drawn from their secretiveness in this matter. It may well be inferred, often is inferred, that the architect expects to reap a personal benefit, through maintaining a monopoly of such information. Men and firms have been known to pay commissions for securing contracts, and it is suspected that more than one architect has profited in this way, to the manifest disadvantage of his client. This secretive habit is not commendable to the individual architect who has contracted it and does not tend to elevate the standard of the profession or enhance the estimation in which it is held by the public.

A wise and well-informed man, wishing to secure the services of a competent and in all respects trustworthy architect, will avoid those who practice the policy of concealment, since it manifestly does not make to their advantage and may well increase their construction bill and even lead to unsatisfactory results.—American Contractor.

Loggia del Bigallo, Florence

Sketch for California Building, London, England
Charles E. Hodges, Architect

Landscape Architecture*

A Definition and Brief Resumé of Its Past and Present

By STEPHEN CHILD, Landscape Architect and Consulting Engineer, Boston, Mass., and Santa Barbara, California

THERE is at the present time much apparent misunderstanding of the terms "landscape architecture" and "landscape gardening." It is not unusual to hear it stated that "this calling a man a 'landscape architect' instead of a 'landscape gardener,' is merely a fad, filling one's mind with images of quarries, stonecutters, creaking derricks, tapping trowels and the like, instead of with pictures of free-hand dealings with sunshine and shadow, trees, flowering shrubs and leaping fountains." One well-known writer has even gone so far as to state that "the men most deeply engaged in the art have not decided what to call it," and that it is suspicioned "that the present fashion among the professional brethren of calling themselves landscape architects is promoted by two accidental causes: First, the feeling that architecture sounds bigger than gardening and can demand a better fee, and second, the fact that the architectural style of landscape work is the present vogue among wealthy clients."

I am going to ask you to look at this a little more carefully with me and see what is true in this discussion. In the first place, the term is not a "recent fad." Frederick Law Olmsted, the elder, called himself a landscape architect away back in 1856, when he first entered upon the work of developing Central Park in New York City, and the fact that he did so, and continued to so designate himself during the whole of his career, has had much to do with the general adoption of the term. But the fact that one man, even an eminent one, adopted this title is perhaps not entirely sufficient, although those of us who are familiar with Mr. Olmsted's work and with his wonderful genius and mastery of the subject in all of its details may well feel assured that he did not adopt the title without most careful thought. Unfortunately he did not in his writings, so far as I am aware, really explain his reasons. He was so immersed in the great battle then going on, for public parks for large cities, in showing their value and necessity and in laying down the principles and executing the work of these great undertakings, that he apparently had little time to explain fully why he assumed the title. We may, however, be perfectly assured that he had reasons, and most excellent ones, and a little study of these may be interesting and profitable.

In the process of the development of mankind there has been noticeable a constantly increasing tendency toward differentiation and specialization, each step in the process being a slow one, and, as a rule, taken at first by some man or group of men trained in some other line. In this way we have come about many new forms or fields of work, each adapted more or less from others of a previous and perhaps lesser civilization. Each new profession, or branch from an older one, demanded and received a new cognomen. This process of differentiation has developed more or less clearly defined groups of men, as, for example, the professions of the ministry, medicine, law, civil engineering, architecture and so on.

Fifty years ago, when Mr. Olmsted began his landscape work, there was beginning to be a demand in this country for men to do a certain line of work that was intrinsically quite different from that previously carried on

* Presented before the Congress of Technology at the fiftieth anniversary of the granting of the charter of the Massachusetts Institute of Technology.

Villa Lante, Italy

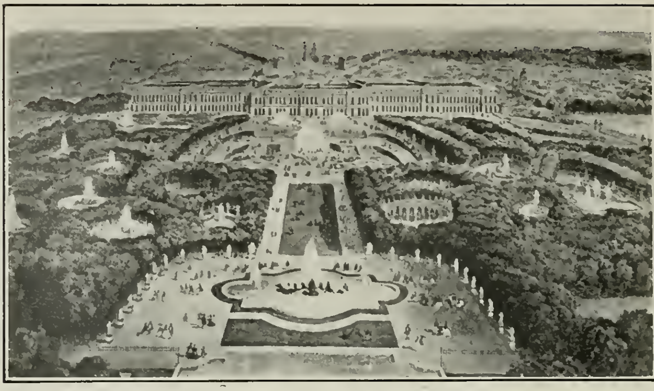
Villa Lante, Italy

by either the architect, the engineer or the gardener, and yet work that embodied some of the principles heretofore utilized by all of these men. Here was this great tract of land, now known as Central Park, to be developed and made beautiful, for the purpose of providing the crowded millions of the great city of the future with the opportunity "for a form of recreation to be obtained only through the influence of pleasing natural scenery upon the sensibilities of those quietly contemplating it." This was a new problem for this country, and indeed for any country, for none of the great parks in Europe now utilized for this purpose were originally created for anything of this sort. They are chiefly the result of developing land that had originally been set aside as hunting forests by the great nobles or rulers of Europe.

I think it will be generally conceded that New York was fortunate in its selection of the master mind to work out this problem, and that Central Park has been most successfully designed and executed. Mr. Olmsted saw clearly the greatness of the task and the differentiation of this form of design from that of the architect or engineer, and certainly from the work of the gardener. He chose to call himself a landscape architect. Let us, therefore, look into the meaning of these words and see whether they are not well selected and worthy of our respect and of general adoption.

That most delightful and interesting writer, Philip Gilbert Hamerton, says of landscape: "We use the word in two distinct senses—a general and a particular. In the general sense the word 'landscape' without the article, means the visible material world—all that can be seen on the surface of the earth by a man who is himself upon the surface; and in the special sense 'a landscape' means a piece of the earth's surface that can be seen at once, and it is always understood that this piece will have a certain artistic unity or suggestion of unity in itself"; and further he adds, "although the word refers to the natural land, it does not exclude any human works that are upon the land." The word is derived from two good Anglo-Saxon parts, "land" and the suffix "scape," corresponding to "skip" or "ship," as in the word "friendship," meaning "the state or condition of being." Landscape then means "the state or condition of being land." When we come to add the word architecture, however, the connotation conveys to many people a wrong impression, but it should not, for in its early and primitive meaning the word architect meant simply and solely "chief workman" or "master artisan." It is well, I believe, for us to recall this earlier meaning of the word at the present time.

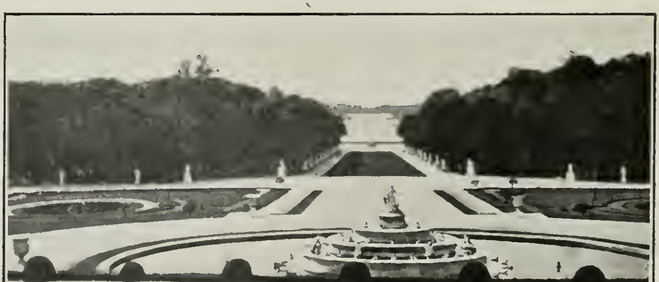
It is quite largely the architect himself who is responsible for any wrong impression that may have developed in the use of the term landscape architect; as many have assumed that, because the word architect is used at all, the term landscape architect means simply an architect who meddles a bit with the landscape immediately surrounding his buildings. Many architects have done this, with regrettable results both to the client and to the profession of landscape architecture. I think it is but fair to suggest that if the architect solves the problems of his buildings successfully, he may well leave to the landscape architect the matter of designing the surroundings for them, realizing that his own architectural problems are many and difficult, and that the trained landscape architect can, by co-operating with him, greatly improve the net result; for, as we all know, the effect of many a successful building has been seriously impaired by lack of a proper setting.



Versailles, Paris, France

What Mr. Olmsted meant when he termed himself a landscape architect was that he was aiming to be a master artisan in matters pertaining to land and to human works thereon, having regard both to the beauty of its appearance and to its use. In a very real sense such work covers agriculture, forestry, gardening, engineering and the elements of architecture.

There is another important point, and one that has not been particularly mentioned in discussions of the term landscape architect, one to which I have already alluded, namely, that the English landscape designers mentioned were engaged almost exclusively in the preparation of plans for country estates. These were, of course, not always large, and often were walled in or engirt (girt in), and, therefore, perhaps in a sense gardens. Mr. Olmsted, in 1856, had before him not such a problem, but that of designing a great public park for a large city. This work was not gardening in any sense of the word; it was something quite different. It was a work of design, a work that could be undertaken and successfully carried out only by a "master artisan in matters pertaining to land." Here



Versailles, Paris, France
Note the Predominance of Gravel Paths in the Design

were to be developed, and we know how well it has been done, broad, peaceful landscape effects, giving the tired city dweller opportunity for restful contemplation and relief from city sights and sounds. These were to be designed and executed where none had existed before, and in such a way that there should be no obstructive evidence of a man's elaborate control, and no marring of the pleasing, restful effect by such garden elements as beds of geraniums or rare and striking shrubs clipped into formal shapes; in other words, no gardening, as we now understand that term. This was what he termed landscape architecture. The French landscape designers had already adopted this term, their phrase, architects paysagiste, meaning simply landscape architect.

Many of Mr. Olmsted's great works are familiar to us all. They include Central Park, New York; Prospect Park, Brooklyn; the almost unrivaled park system of Boston; the great work designed by him at the World's Fair at Chicago, and almost innumerable country estates.

As we go forward with the years we may follow the development in the landscape design of France and England, both countries feeling to a more or less degree the influence of the Italian renaissance, France even more than England. In the latter country more evidence of mediæval influence and motives are to be noted. In the Italian villa and its grounds we have a single and very highly developed unit of rather limited size larger than the mediaeval unit to be sure, but still domestic in its scale. In France, while this Italian influence is noted at first, it soon spread to a much more vast conception. The motives of the great French landscape designers were the wealth and power of their nobility and their desire to express these two things in the surroundings of their palaces and chateaux by the extent of their finished grounds. They deviated from the mediaeval and Italian designs by adding unit after unit.

English landscape design was, as a rule more human, more influenced by mediaeval motives, and there was less emphasis placed upon the strictest axial and formal motives, and distinctly less symmetry than in either the French or Italian work. There was a good deal of unity withal and a very distinctive difference is shown as regards the planting. In the French formal work the gravel paths are the basis of the design and the parterres, fountain basins, pools and other details are laid out, or set out as it were, in the midst of the gravel walks which are always very much in evidence. In the best English work the effects secured were quite the opposite. There is always the background of turf and foliage masses upon which the paths are laid out as a much more incidental feature.

With this very brief and altogether inadequate resume of the more salient principles of earlier landscape design before us, let us now turn for a few moments to the result of all this as expressed in the landscape architecture of the present day, especially in America. Our problems here are many and varied and far removed in the character of the surroundings, climate and other conditions from almost all of those we have mentioned. The trained landscape architect in America uses his study of these earlier problems if he has the right spirit as a guide to correct principles solely. These earlier European landscape designers did this in their own case and were constantly and indefatigably searching for right principles of design applicable to the particular problem in hand. The best of them never slavishly copied others, and we should not. We should use these right principles to secure distinctive American types of work. Let us now briefly consider some of the many classes or types of problems in landscape design met with in the practice of this profession in America today, and note how we are helped in their solution by this study of the past.

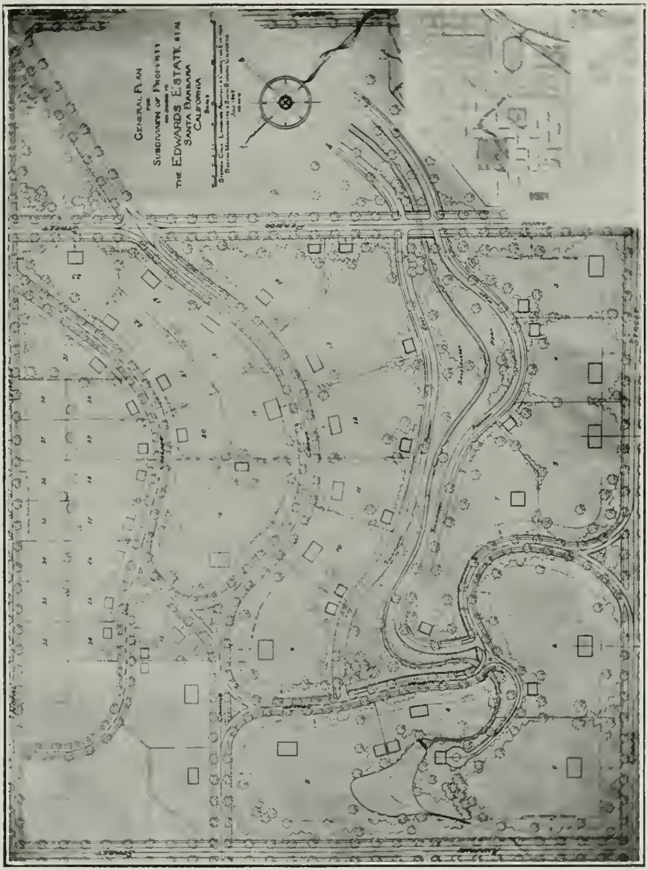
In the first place what may be termed domestic landscape architecture, the designing of suburban and country estates and grounds. How varied these are, located on the rugged coasts of Maine, the tropic sands of Florida, amid the mountains and on the level prairies and amidst the semi-tropic conditions of the Pacific slope. How make rules for such varieties of conditions? Manifestly no rule of thumb will answer. Right basic principles are of the utmost importance however, and these are suggested by our earlier studies. From Egypt, Greece and Rome, from Italy, France and England do we draw our inspiration, but none of their works do we copy, only the principles there determined.

In these domestic problems there are always two main groups of factors of importance: First, the local ones, that is to say, the conditions of topography, existing vegetation, climate, soil, proximity and direction of outside factors affecting the accessibility of the site, and second, the personal factor. Who is the home for? How many are to live in it? Is it to be an all-the-year-around one, or to be used only in the summer or winter? What funds are available for the adjustment of the land and improvement of the landscape? All these and many other things are to be ascertained as a basis from which to proceed. A careful consideration of these two points, the local and the personal, will prevent any sameness of treatment even in similar localities.

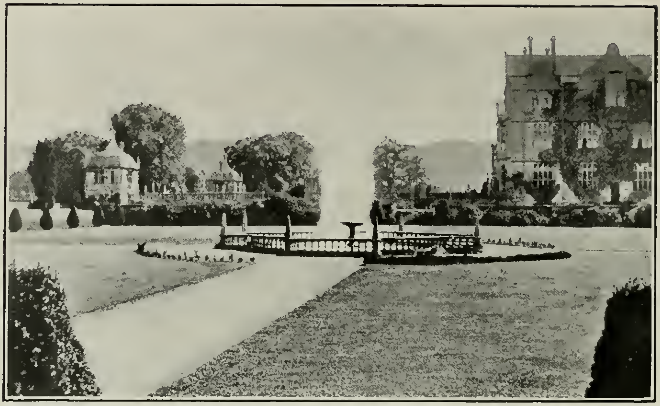
As we particularly noted in the case of the design of the Italian villa and grounds, fitness, accessibility as to supplies of material, water and so on, are considered. Provision is made for means of approach both for guests and service. Views or outlook from the site and the aspect of the finished scheme from without are all studied, and the proportioning of the three vital elements of the design, the entrance, the service and the living or pleasure portions of the grounds are carefully determined, usually the greater area being devoted to the latter. Local topographical and climatic conditions affect all these points, as do also the client's personal desires.

From the work of these earlier designers we get inspiration helping us to determine the general character of the special treatment. Shall it be formal or informal? And here is where there should be the heartiest co-operation between the client, the architect of the buildings, and the landscape architect, for manifestly the type of house selected should suit the site as well as fit it, and the best design is that which most comprehensively meets all these conditions. While some sites much more emphatically demand rigid formality than others, almost every house, no matter how informal its general character, is composed of rigid straight lines and definite angles. There is therefore almost always a rightness in some formality immediately about such a structure. This formality may not go so far as to involve exact symmetry or balance and the gradual cession of any sort of formality, the merging of this sort of design into the free and informal natural surroundings is of the utmost importance in securing that unity and harmony without which no design is successful.

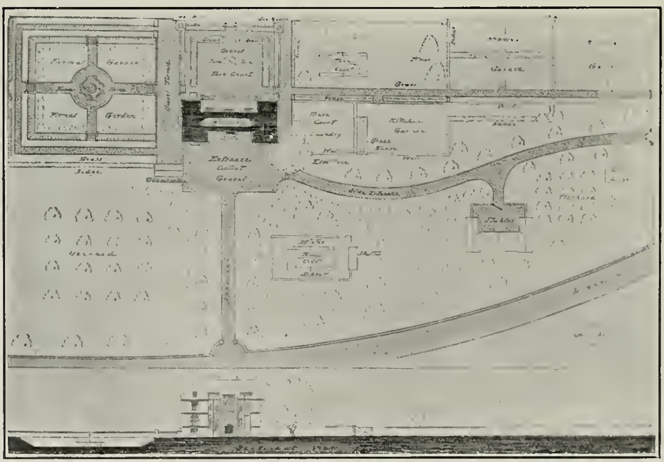
Another great class of problems are those coming under the general head of public reservations including greater and lesser parks, city squares, playgrounds and the like, the mere mention of which indicate the variety of conditions to be met. Here, as in the domestic problem, however, we



General Plan for Subdivision of Property, Edwards Estate, Santa Barbara, California — *Stephen Child, Landscape Architect*



Montacute House, England



Montacute House, England
Note the Predominance of Green Sward and Foliage

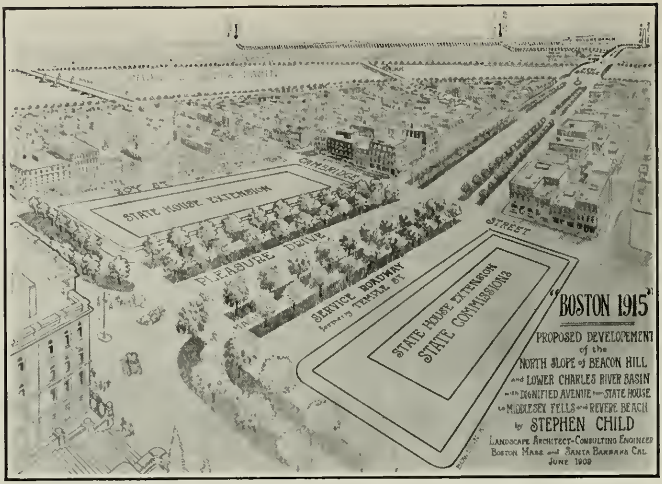
have again two main factors, namely, the local and the personal. In these problems, however, as we are now dealing with persons in the mass, the latter element becomes more stable and we strive to determine the wants of the average personality rather than those of the special or distinctive one. The Romans, as were earlier noted, showed us many vital principles in such designs and not the least in their study for the distribution of these areas throughout the city.

Definiteness of purpose is always to be maintained; that of a great country park for a large city being to afford perfect relief and rest to the tired citizen by offering to him and preserving for him the contrast of broad restful rural scenery unmarred by any of the sights and sounds of city life. This involves many considerations as to the choice of the tract of land, its bounds, its present scenic effect, its accessibility, and the design of roads and paths through it so that the public may enjoy, but not destroy, its beauties. Notable examples of the very best of this sort of design in this country are Central Park in New York, Prospect Park in Brooklyn, and Franklin Park in Boston, all the work of the elder Olmsted, and subjects of the most careful study by all his followers. Space allows mention only of such important problems coming under this general head as public gardens, city squares and playgrounds, all requiring distinctive treatment.

The distribution of city parks, squares and playgrounds brings with it the problem of connecting parkways involving much careful thought as to location and details of grades and so on. Perhaps the banks of a hitherto neglected sluggish stream until now an unsightly dumping ground, can be transformed by careful design into beautiful parkways. Never has this been better done than in the case of the "Riverway," a part of Boston's parkway system leading from the city proper to Franklin Park. Beautiful and natural as this all appears now, there is hardly a line or bit of vegetation, except the older trees, that has not been placed by the hand of man where we now see it. Fifteen or twenty years ago this part of the town was one of the ugliest sights imaginable. A brackish stream struggled along through the tangled masses of sedges and swamp land. Now all is beauty of the most restful park, but every particle of it is the result of design. This is not landscape gardening, but landscape architecture, the work of a "master artisan in matters pertaining to land."

Real estate allotments and new residential town sites offer vital and interesting fields of endeavor for the landscape architect. Here we may get much that is helpful in the way of suggestion from the present day work in these lines being done in England and Germany. But these so-called English garden cities and the German suburban townsite developments can again be copied only in the principles involved. These are fitness, convenience, definiteness, study and skill in adapting needs to conditions, forethought to meet future demands of traffic, and so on.

All this leads up to, and in fact in many respects is part and parcel of the great subject of city planning in general, a most complicated one, and in the case of great growing cities, never-ending, for it is most certainly true that no comprehensive plan can be made at any given time which will solve for all time the problems of the great cities' growth. These are constantly changing and must be as constantly modified. Any right study of this great question, while it may solve some particularly important immediate need, as, for example, that of the right placing and design of a



Proposed Development of Beacon Hill Section, Boston, Mass.

civic center and the grouping of public buildings thereabout and may make provision for other peculiar needs, must be relatively tentative and must by constant effort and study of proposed schemes be kept up to date. Certain right principles, however, can be laid down; further extension, for example, of the vicious grid-iron system of streets may be stopped. Efficient control of suburban growth may be placed in intelligent hands and not allowed to go on at the merest whim of property owners.

In many of these matters the trained landscape architect can be of greatest service in an advisory capacity. Modern city planners are realizing more and more that the first essentials are practicability, fitness and convenience, and that the beauty sought must be as a resultant of all these not adjunct, not something to be embroidered on, but an intrinsic part of them. Mr. Olmsted has well expressed this in a recent address. "The kind of beauty most to be sought in the planning of cities is that which results from seizing instinctively with a keen and sensitive appreciation the limitless opportunities which present themselves in the course of the most rigorous practical solution of any problem." This is true landscape architecture applied to city planning, and it must not be forgotten that it must all be supported by the strong, high-minded public opinion of any community in order to result in any marked degree to the city's good.

As an instance of the feeling for the necessity of something of this sort and of the growing sentiment that the utterly haphazard and thoughtless methods, or lack of methods, of the past, must be abandoned and something better substituted, it is to be noted that in this country alone fully seventy cities are engaged in more or less elaborate studies with this purpose in mind. In Europe great city planning efforts are going forward; staid old London is having its very vitals renovated; Berlin is in the midst of similar upheavals, and Paris, which we have been brought up to believe was nearly perfect in this respect, is getting ready to spend untold millions for further improvements of this sort.

Cement Siding Houses

THE popular notion that cement siding residences are "too expensive" is only a fallacy due to the general lack of knowledge regarding this style of construction, says the Western Architect. Not taking into consideration the advantages obtained or the saving in repair bills later on, the first cost in itself is a mere trifle more than for ordinary lapped siding finish. The approximate cost of cement siding construction on metal lath is as follows, per 100 square yards:

100 yards No. 24 gauge metal lath, galvanized	$22.00
675 feet of ¾-inch furring	2.65
Labor applying furring, four hours at 55 cents	2.20
Labor applying lath	5.00
Labor and material, plastering, three coats	55.00
Total	$86.85

Or an approximate price of 87 cents per square yard. This will vary somewhat, of course, in different localities, but from the above you can readily figure out your own cost where necessary.

An interesting comparison recently made by the Cincinnati Brick Building Association from actual estimates made on an eight-room house costing approximately $7,000, with various exterior finishes, demonstrates that stucco over metal lath costs but 2.9 per cent more than lapped siding; shingles cost 1.6 per cent more; brick veneer, 6.9 per cent more; 10-inch hollow brick walls, 9.1 per cent more, and 12-inch solid brick walls, 13 per cent more. These figures apply, of course, to the finished house; for the cost of exterior finish alone, cement siding is about one-sixth more than wood and only a little over twice as much for brick. This means probably an additional cost of $100 for cement siding above the cost of wood, and many times even less, depending on the size of the house.

There are several vital points which should receive careful attention to insure the success of cement siding work.

First—The framing should be exceptionally rigid and the sheathing should be applied diagonally to afford ample bracing.

Second—Metal furring strips should always be used, as wood strips will absorb moisture from the mortar, causing it to dry out in streaks and crack accordingly.

Third—The stiffest lath and heaviest gauge obtainable should be used. If steel lath is used, it should be galvanized, or if ingot iron lath is used, painting is sufficient.

Fourth—The total thickness of the mortar coat should be at least ¾-inch, and preferably 1 inch, or even more.

Fifth—The finish coat, unless some special plaster especially prepared for exterior work is used, should be a rich cement mix containing no lime. Gypsum plasters should never be used on exterior work, as they will disintegrate rapidly under action of the weather.

Sixth—The finished wall should be kept damp, by spraying with a hose, for at least a week, or preferably should be protected from the sun by burlap, kept wet. This allows the cement to set slowly and much more uniformly, and is very important in securing good results.

The advantages of cement siding construction are many—too many, in fact, to mention here, but the excellent examples of its successful use in every city in the country are the real proofs of its architectural value.

Some Sharp Criticisms of the American Institute of Architects

By F. W. FITZPATRICK.

WHILST touching upon competitions generally, as we have in the past two numbers, let's glance at still another aspect of the matter. Only the other day I noted in some newspaper or other that a government official had grumbled because the architects all charged the same percentage and a higher rate than formerly; he characterized them as being members of a "trust." Now, to get right down to business, are they not a fullfledged "trust" and in the broadest sense of the term? And is it not only a question of time when some one will take legal steps to dissolve it? It strikes me as if some one would have just as good grounds to proceed against the American Institute as there were to buck up against the Standard Oil people and the Tobacco people. I'd like, just for fun, to have some erudite brother or, better still, a lawyer, give us an opinion upon the real status of the Institute. Far be it from me to suggest that that great body could do any wrong, or that it has exceeded its authority, or that it is not just the most proper thing out, but in these days of exactness and sharp definitions would it not be well to have the profession know just precisely where it really is At?

* * * *

The Institute is no longer a fraternal organization or club, it has broadened out into more or less of a "trust" and also indulges in some of the notions and arbitrary rulings of a trade-union. To be somebody you have to belong; to be out of it is to be, in the lingo of the union, a "scab." The Institute establishes rates of remuneration below which no member may charge. That, in itself, is a certain "restraint of trade," cutting off competition. It punishes any member who is caught charging less; it bars the outsiders, "the minor companies" or "independents" from getting employment because it will not allow its members to enter a competition that is not carried on according to its rules; it arrogates to itself the right to do all the public work and dictates how the public work shall be given out; the Government, Federal, State and Municipal, lends itself to the furtherance of the Institute's ends, for it consults that body as to whom it shall invite to compete to execute its work. The invited architects are always members of the Institute, the judges are likewise members and it is even averred, intimated, suspected or suggested—by the jealous ones, of course—that the big work is handed out to a select few among the nabobs of the Institute and in some sort of arithmetical rotation!

If any one were so inclined he could formulate a list of complaints as long as your arm, almost as formidable as the indictments of the big Oil and other trusts, and a lively prosecutor would make the perhaps most innocent and commendable actions of the Institute officers appear as most heinous crimes, cardinal offenses against the public weal! Seriously, would it not be a pious idea for the Institute itself to have established just what is its legal status, what it can and what it can not do, what authority it really has over its members and why the payment of certain dues and election to its numbers make a man a better architect, more responsible and in every way better fitted to carry on public and private work than if he refrained from joining? I love the Institute but it amuses me to hear men give the fact of their belonging to it as a reason why they should receive preference from a perfectly innocent owner who, oftener than not, thinks that it means assured ability, responsibility and infinite architectural skill. And it more than amuses me to note the lofty manner, the superior air assumed by the tricky member, the fellow who is guilty of all the architectural sins in the book and who couldn't design a first-rate chicken-coop to save his neck, when he meets the lowly practitioner who is not of the Institute. That "holier than thou" assumption and "what are you going to do about it" swagger indulged in by some members are the very things that really stirred up the row the other "trusts" got into, and I'd hate to see the Institute gotten after with a sharp stick by some skilled trust-buster who might take offense at this attitude. Better far to have it find out its right status of its own initiative than to be hauled up short as some of our mighty friends of the dollar mark have been.

* * *

How Skyscrapers Are to Really "Shoot Up"

NOT content with putting up forty-story steel structures in six months' time, an inventor has appeared who actually proposes to shoot walls into place with a rapid-fire gun. It is claimed the new invention will accomplish as much in a single day as the united effort of twenty-four men could create under old methods. The ancient cement mixer is to give place to the cement gun.

No procession of men wheeling heavily-laden barrows will clog progress where the cement gun is utilized. Instead, liquid cement is actually shot into place by means of compressed air.

Thomas A. Edison's prediction that cement was the means by which building construction would be revolutionized seems in a fair way to be realized. He planned building by filling giant moulds. The inventor of the cement gun seems to have fairly outdone Edison himself.

First, there is a long tube of sufficient textile strength to withstand the pressure of both compressed air and water. This is the gun barrel. There is a valve just forward of the breech of the gun and another near the muzzle. Compressed air is admitted through the first, and water through the second.

At about the point of the vent in the ordinary breech-loading cannon a tube-like connection is established with a hopper, a wide-angled V-shaped affair.

Dry cement and sand are thrown into this hopper by two men, and here, aside from valve manipulation and directing the cement stream, the human element feature of cement gun operation ends.

The hopper vibrates constantly, mixing its contents thoroughly before it drops down through the tube connection. Once in the gun barrel, the mixture is shot forward by the compressed air fed through the valve.

At the muzzle a stream of water is encountered that does not check velocity, but mixes with the sand and cement, the whole driving out the gun end with sufficient force to carry it to the desired point.

The incorporation of the Cement Appliances Company was the first inkling the public had of such an invention. It is understood the new company is controlled by powerful building interests operating in the large cities of the United States.

The Architect and Home Industry

By SYLVAIN SCHNAITTACHER, Secretary of San Francisco Chapter, A. I. A.

THE architect, in designing a building, is called upon to express the purpose for which it is intended and to properly utilize the materials placed at his command, in accord with that purpose; lacking this, no design for a building can be considered an architectural success.

The selection of the quality of materials employed is governed by the use to which the building is to be put and the limit of cost imposed by the owner.

The architect, for his part, requires that the materials furnished shall conform to the quality specified, and naturally avails himself of the materials which have proven satisfactory for the purposes intended.

It is the rule that the owner holds the architect responsible for his judgment in the proper selection of these materials. Unfortunately for our infant industries, the architect, for his own protection, is very loath to specify articles which have not been on the market sufficiently long to have proven their value or durability.

It is also a fact that materials offered as local products are sometimes undeveloped; that is to say, stone from quarries which have not been opened, products from plants which are not of a size to produce a sufficient quantity, and the manufacturer lacking the financial backing to give a suitable guarantee.

It can not be expected that an architect should risk, perhaps his reputation or his client, by specifying these articles, however willing he may be to aid a local industry; although I believe a large majority of the profession here are in sympathy with the home industry movement and are in the habit of specifying local materials when they are satisfied that they are suitable.

The manufacturer of building materials can have the assistance of the architectural profession when he manufactures an honest product and one that he can furnish in suitable quantities. In return, all the architect will ask is that the manufacturer maintain the standard of his material, so that when he specifies it he will be assured the best of the quality called for.

Local products, such as brick, terra cotta, fabricated steel, cement, lime, mill work of every description, paints, oils, varnishes, sheet metal work, building papers and roofing materials have been used here to almost the total exclusion of outside products, which to my mind would certainly indicate the support and co-operation of the architectural profession.

New industries can, by the force of their own merit, create a market for their product, but the process is of necessity a slow one; but once a demand is created, there is little doubt of the ultimate success of the product.

Natural products, such as stone and marble, have suffered undoubtedly at times from a preference for the imported material. This has often been due to the ignorance of the existence of the home product, but more often for the causes before mentioned. Another reason is that stone and marble bear the same relation to building that silks and other fine fabrics bear to our clothing. They are, so to say, articles of luxury, and their selection depends more on the taste and requirements of the designer than on their cost or availability.

There are undoubtedly some few architects whose residence here has not been of sufficient length to have made them thoroughly familiar with

Door to the Baptistry, Pisa

our home products, and who specify eastern materials by reason of their previous satisfactory experience with them. There is no cause to doubt, however, that when these men learn of the equal merit of a local product that they will avail themselves of the opportunity of specifying that product.

The architects have been asked by the Home Industry League to favor the selection of western building material, price and quality being equal to the eastern production; but to bring this about I believe that the greatest assistance the producer can render his own cause and the very best he can do to secure the architect's co-operation, is not only to make the product equal to the eastern, but to create an unquestioned demand by making it superior.

Scientific Management

With Apologies, by "MIKE"

THE workmen were taking their noon rest, each to his liking, and among the crowd of machinists, molders and patternmakers, one or two might be seen reading papers or pamphlets. One old molder, of evident Hibernian ancestry, pored over a book, much to the amusement of some of the younger journeymen, who tried to attract his attention by "flipping" bits of orange peel in his direction.

This old molder, Mike Grady by name, was the senior tradesman of the shop, having filled all sorts of jobs with the evident approval of the "powers that be," and was generally regarded as the "daddy" of the shop, often taken in council with the "Old Man, himself."

The unusual sight of Mike actually reading a book provoked much speculation among the curious as to its contents, and finally one of the men ventured the question, "What's that yer readin', Mike?" No answer. "I say, Mike, wot's up?"

Mike finally roused himself and volunteered the following interesting explanation: "Well, fellers, if ye want to hear about this, I'll tell yez, but kape it dark, 'cause th' old mon give me this book to read and asked me to tell him what I thought about it.

"I've just about finished it, and it's called 'The Principles of Scientific Management,' and it's writ by a feller by the name of Taylor, and be what he says I'll bet he never wurrocked at a day's job in all his loife.

"This feller says that ye byes are all soldiering, and don't use yer head, and don't know how to wiggle yer fingers or move yer hands, and make too many motions, and ivery one of ye is stoopid excipt the office force.

"There is a funny story in this book that wud make a cupola man laugh, about a Dootchman by the name of Schmitt. Well, in spite of this Schmitt feller being a Dootchman he had the office bunked into thinkin' that loading twelve and one-half tons of pig iron onto a car was a day's wourk at $1.15. Now of coorse ye all know that Pat of ours, the cupola helper, and how mooch he does ivery day—cleans the drop in the mornin', breaks up some scrap, then takes up tin or twilve tons on an elevator to the platform, to say nothin' of the coke and chargin' the cupola, and he ain't kilt, neither.

"But thin, byes, of coorse our boss, th' 'Old Mon,' can't be so easy as Schmitt's boss was. Schmitt's boss was tickled to death with twilve and a half tons pig iron loaded for a day—just think of it, byes—four days to load one car!

"Well, wan day along comes a dude wearing a biled shirt who had th' 'boss' say so to try and get Schmitt to do more work. Did the dude say, 'Here, ye ould Omadahonn, wiggle yer feet and put forty tons on that car or get yer time!' He did not; he sez, sez he, 'Schmitt, are ye a high-priced mon?'

"Now, ye know Schmitt didn't catch on at first, so he said 'naw,' but after some palaver he caught that they would fall for $1.85 per if he wourked it right, so he sez, 'Yah, I vas a high-priced mon, yer bet.' So they sez, 'Schmitt, if ye want to be a high-priced mon ye must put forty-sivin tons on that car.' Ye know, byes, Schmitt was no dom fool, if he was a Dootchman.

"Well, Schmitt done it, and the dude twiddled his watch chain and went hot fut to the ould mon after writin' a rapoort that covered tin sheets.

"Did the ould mon wonder how Schmitt did it so aizy? He did not. Did he order a lectruc liftin' magnet that could load the whole forty-sivin tons in one hour? He did not. Did he blame himself for havin' so much iron piled in a tin-acre field widout tracks to it? He did not.

"He patted th' dude on the head and towld him to go out in the shop and hunt up some more fellers who were not onto their jobs, and make high-priced men out of them, and the dude did just thot, and the ould mon thot he was a wunder.

"Byes, can ye imagine an ould mon being such an easy stiff? The first thing he wud do wud be to fire a few foremen. Scientific management, nawthin'; I call it ridiculus management.

"Our ould mon had a kind of twinkle in his eye whin he give me this book, and I guess he is on, all right, all right."

"What is this here scientific management, Mike, and what's it all about, any way?" asked one of the men.

"Well, I'll tell yez. Ez near ez I can make out, this scientific management is th' words to that song their singin' now, 'Every Little Movement Has a Meanin' All Its Own,' and it works somethin' like this: A job comes into the office in spite of th' follow-up letters; the office foorce looks it over, an' by th' time th' customer is howlin' for delivery the office has it all writ out on paper showin' the shop how to make it.

"First, the patternmaker gets a paper a fut long tellin' him to use a ¾" chisel, and the glue must be 217½ degrees to make a good job. When the job is done the boss patternmaker knocks off an hour to write up th' rapoort.

"Then the molder gits the pattern and another paaper. This paaper says the flask must be 27½" x 48¾" x 8" for the job; but as the nearest size is 27" x 48" x 8" it won't do, so the flaskmaker makes up a new flask or two, and by this ingenius method another day is lost. When the flask comes in the molder makes up his mold after carefully following instructions on the paper, and in spite of a dude watchin' him all the time. The next mornin' the boss says: 'Mike, yer work's bum; it didn't run.' 'Of coorse it didn't,' sez I; 'the paaper didn't say for to gate it. The dude rushes off to change the instructions, and another day's lost.

"When the paaper is changed and the job struggles into the machine shop the machinist is given another paaper which has a job number on it, aisy to raymember, and reading '74891-A-11-Q-ROT-7.' After this is committed to memory we are ready to begin. The paaper says how many times the machine shud turn, what the analysis of the tool steel is, and how long the job shud take. Now, right here is where the real principle comes in.

"There is a dude at every tool wid a stop-watch in his hand, and he tells the machinist how to do it: 'Grab hold of the casting—click, lift up; click, put in tool; click, start machine; click, finish cut; click, awl doon.' Raysult, 18.47 minutes. The dude writes it all down, and the machinist starts another wan, and if it takes 18.49 minutes he gets a call-down.

"The foreman's job is no snap, either. A bye runs up and says: 'No. 7 tool is busted; Reddy just caught his fingers in the gears of No. 137; the toolroom is afire, and the ould mon wants you on the phone.' The foreman says: 'Aw, run along and play; don't you see I'm making out rapoorts and that I can't be bothered with such trifles.'

"Yes, byes, the more you think on it this scientific management is great. It uses up paaper, kapes dudes out of Sunda School, and the foreman hasn't time to bother the men wid directions."

"Mike, do you think the old man will want to try the scheme here?" one of the men asked.

"Well, I dunnano. He might, and then again he mightn't; but there's wan sure thing, if he does, some of yez will have to learn to read. There goes the whistle."

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Features of the New Mechanics' Lien Law of California

THE new mechanics' lien law of California has now been in operation nearly one month, but the time is yet too short to judge how satisfactory the measure is going to be. The law is of vital interest alike to architects, property owners, contractors, builders, mechanics and laborers of all classes.

The law is an amendment of the original, but it varies from it in such important particulars that it is practically a new measure. It enlarges the responsibility of the property owner who improves his holdings. Those who have studied the law have advised an adherence to the requirements of the old statute as far as possible, as well as the new. This precaution has been urged as a measure of protection and because the question has been raised as to the constitutionality of the amended portion of the law.

The new law, in practical effect, requires the owner of property about to improve or repair to file and record all contracts, large or small, and to make sure that a bond is filed by the contractor amounting to 50 per cent of the contract for the benefit of the material dealers and laborers.

While the old law limited the liability of the owner to lien claimants to the amount of the contract price, the new law provides that the owner shall be liable to all persons and laborers of every class performing services for the reasonable value of the work performed or articles furnished. This includes all those persons employed or supplies ordered at the instigation of the contractor, sub-contractor, architect or any other person in charge of any part of the work.

The owner is protected, however, by filing his contract and insisting upon a bond from his contractor.

Under ordinary circumstances the amount that may be recovered by lien claimants is limited to the amount due from the owner to the contractor, but discretion in this particular henceforth rests with the court.

A lien for improvements may also extend to that part of the land occupied by the building against which the lien is originally filed. In case the improvements are made by a lessee it is essential for the owner to protect himself by posting a notice on the premises that he will not be responsible for the work. He must also file a copy of the notice with the county recorder.

Within ten days after the completion of a contract and within forty days after the cessation of labor the owner may, under the new law, file a notice setting forth the date of the completion of the contract and the termination of labor upon it.

If the contract price is $1,000 or more and provision is made for installment payments, at least 25 per cent of the contract, it is stated, must not be payable to the contractor until thirty-five days after the completion of the contract and after the owner's notice of completion has been filed.

Where an architect is employed payments can be made upon his certificate and these certificates must state that no notice of work done or materials furnished has been received. In case such notices of work done or materials furnished have been received an amount sufficient to cover them may be withheld from the contractor to answer any lien that may be filed.

The owner is entitled to deduct from any amount due or to become due to the contractor the amount of a judgment under a lien including costs, and in case the amount is in excess of the sum due the contractor the owner shall be entitled to recover it from the contractor or his sureties.

Actions to enforce liens must be begun within ninety days after they have been filed, but claimants reserve their right to bring civil actions. Any false or fraudulent notice of work done or materials furnished operates as a forfeiture of the lien.

The following synopsis of the changes made to the existing law and the provisions of the new law is furnished by Judge W. M. Northrup of Los Angeles:

Under the new law no restrictions are placed upon the time or amounts of payments under a contract. The former 25 per cent reservation until thirty-five days after completion is no longer required and the limitation of the owner's liability to the amount of the contract is not assured as formerly unless—

1. There shall be a contract duly executed and filed in recorder's office with plans and specifications, before work is commenced.

2. And with it shall be filed a bond of the contractor, with good and sufficient sureties in an amount not less than 50 per cent of the contract price.

3. His bond must be good and conditioned not only for the performance of the contract, but also for the payment of all claims for labor and materials furnished in the work.

4. If any modification of contract, that should be filed with recorder.

5. Filing is necessary to give notice of labor and materials required for the work and if filed no claim would be allowed for labor or materials not provided for by such contract or modification. If not so filed, labor and materials are not limited to specifications and lien would hold for any such furnished.

Every person having charge of the construction of the work is agent of the owner.

Every sub-contractor may give owner notice that he has agreed to furnish certain labor and materials for the work and owner shall then withhold from money due or to become due to contractor amounts to cover the claims so noticed. In this manner a sub-contractor or employee or materialman can assure himself of payment for his work or materials.

Original contractors have sixty days after completion to file liens and every other person must file his lien, within thirty days after that time.

An action may be brought and enforced by attachment by any claimant and this may be done without affecting a lien for the same claim already or thereafter filed.

The law on the whole will establish the building business on a safe and sound basis, deterring unscrupulous owners and contractors from collusion in making contracts for prices that will not build the structure, and will assure the honest owner of a square deal, the honest contractor of protection and the materialman and sub-contractor of certain payment either by owner, contractor, by foreclosure of lien or by suit on contractor's bond.

Fig. 1. Showing Ingot Iron Culverts, one 36 inch and the other 46 inch Beneath Railroad Ties

American Ingot Iron Culverts

(From the Railway Age Gazette)

ON the electric railway being built from Kansas City, Mo., to St. Louis, one of the most serious problems confronting the engineers in charge was the culvert proposition. A series of exhaustive tests were made on all forms of culvert construction, and the results obtained from these tests justified the engineers in recommending the use of American ingot iron corrugated culverts for the entire work.

The cuts herewith show one of the severe service tests made on this form of culvert construction. Fig. 1 shows a 36-in. pipe and a 48-in. pipe lying side by side and placed directly under the ties. This, of course, is a more severe condition than the culverts would encounter in actual service but it proved conclusively the strength of this form of culvert construction. Fig. 2 shows a 90-ton engine placed directly over these culverts. The deflection was less than ¼in. This test convinced the engineers of the strength of these culverts.

By carefully analyzing the plates used in the construction of these corrugated culverts, it was found they were made from iron which is almost chemically pure, the analysis being as follows: Sulphur, .019 per cent.; phosphorus, .005 per cent.; carbon, .015 per cent.; manganese, trace.; silicon, trace. Material of that composition will last a lifetime.

In consideration of the excellent results obtained in both the strength and chemical tests the St. Louis-Kansas City Electric Railroad has decided to use American ingot iron culverts for all its culverts, ranging from 12 in. to 48 in., inclusive. The actual order placed amounted to over 30,000 ft. of culvert pipe. The engineers in charge highly recommended American ingot iron culverts because they are strong, durable and easy to install, and, last, but by no means least, they reduce the cost of construction.

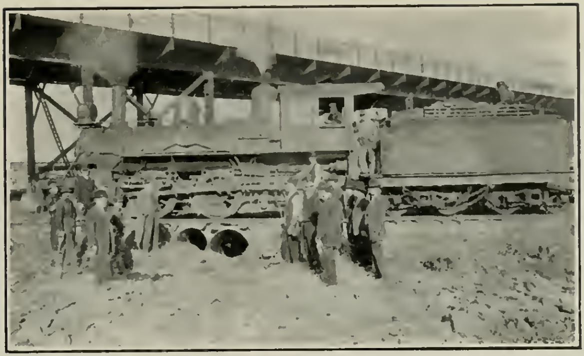

Fig. 2. Chicago Great Western Railroad Uses Ingot Iron Culverts Along its Roadbed

"Popping" Lime

From the San Francisco Contractors Review

It is remarkable that some of the lime in this market, which is being sold as a first-class product, and the equal of anything else offered, should "pop," and thereby prove its inferiority. Such lime should certainly command an inferior price, as it is without doubt an inferior article.

This faulty lime has been the cause of much annoyance and, in some cases, a loss to general contractors, and, in numerous instances, has proven a very considerable loss to plastering contractors; yet nothing has been done in the matter. The fact that a certain lime has been "popping" all over town, thereby proving that it is not the fault of any one contractor, but is the fault of the lime itself, should be freely advertised, and the members notified of the fact. For instance, if the members of the Contracing Plasterers' Association refused to buy lime that had proven its inferiority in this way, it would not be long before the manufacturers of the product would be glad to make good the losses of the contractors. A case in point was taken up at our stockholders' meeting of the 22nd of June last. In this instance the contracting plasterer refused to make good his work, and our member, having paid him in full for the work he had performed, was obliged to rectify same at his own expense. If the members will be careful to pick out a responsible plastering contractor they will, however, not be called upon to make good, another of our members having reported at the same meeting that his plastering contractor had rectified his work where the lime had "popped" at an expense of one thousand dollars.

* * *

New Apartment House Feature

A new apartment house, planned for the city of Chicago, will have as one of its novel features a special entrance for automobiles leading to private garages in the rear. An ornamental shelter at the back of the building will enable tenants to enter or leave their machines from the interior of the building. Here is an idea worthy the attention of the architect, one quite as adaptable in its way to the pretentious private home as to the apartment house.

Among the Architects

American Institute of Architects

(ORGANIZED 1857)

Next Convention in Woshington

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Oswald Spier — C. E. Richardson

Oakland Architects' Society

Meets Third Monday Each Month.

President......................Louis S. Stone
Secretary-Treasurer ....William J. Wright

Fresno Church

Architect Henry F. Starbuck has completed plans and will soon be ready for bids for the construction of the proposed new church building to be erected at the corner of Nielson avenue and San Pablo street for the First Congregational Church of Fresno. It will be 60 x 90 feet, with concrete foundation and basement, brick exterior to the first story window sills, and shingles above. The main auditorium will be 45 x 50 feet, and will have a seating capacity of 300 persons. Adjoining this will be the Sunday school lecture hall with an additional seating capacity of 150.

San Francisco Architectural Club Lecture Course

A splendid program of lectures on subjects of special value to members has been arranged by the San Francisco Architectural Club. The lectures are given by eminent men in the profession and the building trades. The list includes:

Mr. George W. Kelham, Architect—"The Draughtsman and the Practicing Architect."

Mr. Frank Shea, Architect—"Ecclesiastical Architecture."

Mr. Frederick Meyer, Architect—"Contracts and Specifications."

Mr. Walter Hobart, Architect—"Hospital Planning."

Mr. Loring P. Rixford, Architect—"Civic Art."

Mr. Edward F. Foulkes, Architect—"Architecture from San Francisco to Naples." Illustrated with the original Rotch Traveling Scholarship drawings and with views by an opaque balopticon.

Mr. Alfred Henry Jacobs, Architect—"Architecture, Naples to London." Illustrated with an extensive collection of European post cards by an opaque balopticon.

Mr. J. Emmet Hayden, Supervisor—"A Trip Through Europe." With special reference to municipal improvements. Illustrated with stereopticon views.

Mr. R. S. Chew, Civil Engineer—"Architectural Engineering."

Mr. Oswald Speir, of Gladding, McBean & Co.—"Polychrome Terra Cotta." Illustrated with original data and samples.

Mr. H. F. James—"Paints, Varnishing and Painting." Illustrated by various examples.

Mr. Harry Hopps—"Leaded Art Glass." Illustrated with specimens and examples.

Mr. John G. Sutton, Heating Engineer—"Heating and Ventilating Installations."

Mr. R. E. Noble, Testing Engineer—"The Inspection and Testing of Building Materials." Illustrated by practical examples.

Mr. Sittman, Electrician—"Electrical Installations for Buildings."

Mr. John Lettich, Plumber—"The Practical Side of Plumbing."

Mr. William E. Leland, Heating and Ventilating Engineer—"The Calculations for Heating and Ventilating Plants."

Mr. Simons, of Sloane & Co.—"Interior Decoration." Illustrated with various fabrics and colors.

Mr. W. W. Breite, C. E.—"The Structural Work of Theatres."

Recommends Modification in Thickness of Brick Walls

The commission appointed some time ago to investigate the merits of the Los Angeles building ordinance provision in regard to the requirements of thickness in brick walls, has made its report to the legislative committee of the city council.

The report of the commission in full is as follows:

Your commission, appointed some time ago to make an investigation of the city building ordinance, with a view to determining whether or not the requirements of the said ordinance were excessive in its provisions concerning the thickness of brick walls, beg to report as follows:

That, after a careful study of the present needs of the city in this regard, and a perusal of many ordinances of other cities, and in addition to this several public hearings at which the building public were invited to be present, your committee has concluded to recommend the following changes to the building ordinance in regard to the requirements for brick walls:

1st. That Section 114 of said ordinance, which allows a reduction of certain brick walls of fifty feet or less in length, be amended to read, "of eighty feet or less in length."

In explanation of this we wish to point out to you that while the mere changing of the length of such walls from fifty to eighty feet does not seem to be of much moment, the effect is very far-reaching, and will afford a reduction of four inches in the thickness of the walls of at least seventy-five per cent of the buildings to be erected in the future.

2d. We recommend that Section 115 of same ordinance be changed to permit the construction of division walls in one-story buildings to be twelve inches thick, instead of sixteen inches, as now required.

3d. We also recommend that the same section be amended to allow a reduction in thickness of four inches in party walls which are erected outside the fire limits.

In closing this report we wish to say that many other changes in the thickness of masonry walls were urged by interested parties, but as an offset to this, we encountered equally strenuous opposition to any reductions at all.

Trusting your Honorable Body may deem it wise to make the changes recommended, we are,

Yours very respectfully,
OCTAVIUS MORGAN,
C. J. KUBACH,
J. F. HALL,
J. J. BACKUS,
HOWARD ROBERTSON.

Vancouver City Hall

Architects Wright, Rushforth & Cahill, of San Francisco, have been commissioned by the city authorities of Vancouver, Washington, to prepare plans and specifications for the new City Hall which is to be erected in that city at a cost of approximately $50,000. The new structure will cover an area of 100 feet and will be fire-proof in its construction. The exterior will be of brick and terra cotta and the interior will be handsomely finished and arranged for offices of the various city officials.

Odd Fellows Hall

Architect F. D. Wolfe of San Jose, has prepared plans for an Odd Fellows hall to be erected at Maxwell, Colusa county, at a cost of $15,000. The building will be two stories and basement, made entirely of reinforced concrete.

Southern California Chapter A. I. A.

The Southern California Chapter of the American Institute of Architects held its regular monthly meeting June 13th, at Hoffman Cafe, President Frank D. Hudson, presiding. There were about 25 present, including four guests, F. B. Lewis, R. H. Ballard and C. S. Walton, each of the Southern California Edison Company, and Assistant District Attorney Houghton. Several important questions came up for consideration, among them a creation of a board of appeals to hear appeals from the rulings of the building inspector; a committee of three was appointed to take up this question with the proper city officials and urge the creation of such a board.

The Chapter received a communication from Prof. Claude Faithful of the Los Angeles Polytechnic high school asking for the endorsement and recognition on the part of the Chapter of the testing department of the high school, testing apparatus having recently been installed.

Talks on "Illumination and Color Values," bv Mr. Lewis; "Electrical Conditions of General Interest," by Mr. Ballard; "Electric Requirements of the Modern Residence," by Mr. Walton; and on the Board of Appeals question by Mr. Houghton consumed a large part of the evening.

Swimming Pool for College Women

The problem of arranging dressing room accommodations for women at the new swimming pool in Strawberry canyon, built primarily for men, has been eliminated by the plans recently approved by the university regents for a women's plunge. The proposed pool, to be used exclusively by college co-eds, is to be constructed as an addition to Hearst hall and will be located on a lot south of the women's building, on College avenue.

This improvement will provide women, as well as men, swimming facilities which will be adequate for many years to come and supplement largely the physical and hygiene department equipment.

The concrete pool, which will be about 60 x 25 feet in dimensions, will be enclosed by shingle covered walls and skylights, and will open from the Hearst hall bath and dressing rooms. It has been designed by Charles G. Hyde, professor of sanitary engineering at the university, and plans will be drawn for the bathhouse building by Architect Bernard Maybeck, who designed Hearst hall.

Grass Valley Elks to Build

Architect William Mooser has been employed to prepare plans for an Elks building for Grass Valley Lodge. The building will be of stone and brick.

San Diego Building

Architect W. J. Saunders, of Los Angeles, has completed plans for a two-story and basement apartment house to be erected at Coronado for Louis J. Wilde of San Diego, at a cost of about $50,000. It will be built on a triangular lot, 125 x 88 x 136 feet, at Orange and Loma avenues. There will be a banking room, three storerooms and four three-room apartments on the ground floor, and five three-room and two two-room apartments on the second floor. The building will have reinforced concrete frame and floors and hollow tile filler walls and partitions. The exterior will be plastered and ornamented with mosaic and tile inlays.

Fresno Building

Architect E. Matheson, of Fresno, has drawn preliminary plans for an eight-story class A fireproof building to be erected for Frank H. Short at the corner of Merced and J streets. It will cover a ground area of 75 x 100 feet, and will be built throughout of reinforced concrete. The exterior will be faced with pressed brick, and there will be cement floors, metal sash and doors, tile hallways with marble wainscoting, four electric elevators, heating and ventilating plant, and vacuum cleaner. The cost will be about $250,000.

Architect Deane Plans Portland Building

Architect Lionel Deane, of San Francisco, is preparing plans for a building to be erected in Portland, Ore. for H. W. Fries and Mrs. E. Cramer. It is to be a five-story and basement fire-proof structure, designed for stores, offices and hotel purposes. The building will be 110 by 100 feet and will be modern in every particular.

Coates Brings Suit

William D. Coates, formerlv State Architect, has filed in the Township Justice Court, a suit for $240 against C. C. Cuff of Cuff & Diggs, a local firm of architects. In the pleadings Coates says that the amount stated has been due him and H. B. Traver from Cuff for the last two years and that Traver has assigned his claim to him.

Advocate City Architect

The Tacoma Tribune has been advocating a city architect for Tacoma. The argument is that the city has a city engineer, a city chemist, a city physician and many other city employees, hence why not an architect. The paper further cites the amount of city building now under way.

License for Utah Architects

The last legislature in Utah passed a law providing for the licensing of architects. The Utah State Board of Architecture held its first meeting on May 24th. The law provides that all practicing architects shall have procured licenses on or before the 20th of June. W. E. Ware is president and W. H. Lepper secretary and treasurer of the board.

Personal

F. J. De Longchamps, architect of the new Reno County Court House, the Y. M. C. A. Building at Reno and the Lyon County Court House, has opened an office in the Monadnock building, San Francisco, and will direct his country work in the future from that central point.

Architect Sidney B. Newsome has closed his Oakland office and leaves shortly for an extended trip abroad. He expects to be absent fully five months.

Architect Walter Reed, of Meyer & Reed of Oakland, recently underwent a critical operation for appendicitis. He is now entirely well.

The A Auto Company

Serious charges have been preferred against the promoters of the A Auto Company of Sacramento by one of the stockholders. He claims the promoters have no intention of erecting buildings and that the enterprise is merely a stock-raising proposition. Architect Charles M. Fry of San Francisco some time ago announced himself as the architect for the factory which the company had promised to build.

Notice to Architects

The Board of Education of San Diego has set August 21st as the date for considering detailed plans for the proposed group of polytechnic high school buildings, and the final selection of the successful architect will be made immediately thereafter. The buildings are to be of granite construction, and are to be erected on the present high school grounds. Requirements for bidders are on file in the office of the board in the B street school building at the corner of Sixth and B streets, San Diego. E. E. Capps is president of the board.

Brick Warehouse

Architect John B. Nicholson, 912 Wright & Callender building, Los Angeles, has prepared plans for the erection of a two-story brick warehouse, 63 x 134 feet, to be built at West Jefferson street and Wesley avenue for S. J. Barnett, 3408 Wesley avenue. It will have concrete foundation, brick walls, pressed brick front, corrugated iron roof, wrought iron roof trusses, steel rolling doors, cement first floors, and either concrete or wood second floor.

Sacramento Builders Organize

To insure the future for several years ahead against labor troubles by forming agreements with labor organizations and to prevent penniless or unscrupulous builders from defrauding contractors and workmen are the leading objects outlined in the by-laws of the Affiliated Contractors' Association recently organized in Sacramento.

The master electricians, master painters, paint dealers, master cement workers, and master plasterers at present compose the organization. It is expected that the hardware men, plumbers and others will join.

The organizations of employers in each of the above-named pursuits are entitled to have two representatives in the Affiliated Contractors' Association.

Because of the great activity in building in Sacramento at the present time, many contractors have been attracted from other cities, and among them have come not a few who entered the business simply to touch a large cash payment and then skip out of town, leaving the sub-contractors in the lurch. The men in the different sub-contracting lines have suffered heavily of recent days by reason of birds of passage who land in the city, obtain a contract at a low figure, let bids to sub-contractors, get the work under way and then depart with great suddenness after the first or second payment is made.

Under the rules of this organization contractors agree not to undertake work for outside builders until they see the color of their money, either by payment in advance or by satisfactory assurance that full settlement will be made.

Another practice which the body is organized to bring to an end is that of peddling bids. Under this system builders and general contractors, upon opening sealed bids, very often do not accept the lowest bids, but go about trying to get sub-contractors to scale down the figure.

Los Angeles Skyscraper

Architects Morgan, Walls & Morgan, of Los Angeles, have completed plans for an eleven-story and basement steel frame office building to be erected for I. N. Van Nuys at Seventh and Spring streets in that city. The building will be 170 x 155 feet, with a central light court 50 x 35 feet. The street facades will have Corinthian columns extending to the third floor.

The First National Bank will occupy all the ground floor except space for a lobby and one storeroom, 38 feet wide on Seventh street, and the greater part of the basement. There will be 390 offices with lavatory in each, on the upper floors.

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THE DREAM OF A SUB-CONTRACTOR

The general trend of affairs in the building business in California hark back to the days of Bret Harte's Heathen Chinee: "For ways that are dark and tricks that are vain, the Heathen Chinee is peculiar." But there is a glimmer of light, and where there is light there is hope! The light referred to is the Revised Lien Law, now in effect.

In years gone by, transactions were carried on in the building business as a matter of honor. Written or verbal bids were given to general contractors, used by them and honored in case they got the job. Subcontractors and material men got progressive payments as the work proceeded. Altogether an Arcadian condition.

Our lien laws encouraged the advent of new blood, some of doubtful purity, and not being accustomed to our simple wooly western ways, introduced tricks that were vain, much to our discomfort.

We have observed the practical workings of this new lien law, in force in Honolulu, Oregon and Washington. Practically all large jobs in these localities are carried along on a percentage basis, under an architect and superintendent, with direct contracts on all minor work. The result is that what few general contractors there are have a commercial standing that is recognized, and every item of material or labor that goes into a building legitimately is paid for. It is reasonable to presume the same conditions will prevail in California as soon as the law is given an opportunity to regulate itself and some of the architects and builders realize what they are up against. There will be few contracts let to irresponsible builders, for owners will look well to the responsibility of the contractor. There will be an end to such transactions as the Eisner job on Powell street and the Wilson building on Stockton street. Architects will not attempt to let a contract for $10,000 when the bids run $15,000 or more. Building business will be conducted on legitimate lines and owners will get just what they pay for! At least we hope so.

THE EAST EXPECTS A MARINE DISPLAY

That the people in the East expect us to present something out of the ordinary (a marine or water-front display, among other things) as a World's fair attraction, is apparent by the following editorial in Rock Products, published in Chicago:

San Francisco gained a great victory in securing the credentials from the government necessary for the holding of a world's fair in 1915. It has been welcomed by practically the whole country as the best selection which could have been made. No site as yet has been selected, but San Francisco has made a good start. The decision has been made to call in the National Fine Arts Commission and to depend in some measure on its advice. Selecting a site for the exposition of 1915, the management will have to consider many different arguments; and its final decision will depend upon the comparative importance which is attached to these different arguments. San Francisco, more than any other city in the United States, enjoys certain natural advantages which provide the opportunity for an exposition unique in the annals of such enterprises. No other city which has been selected as the site of a great international exposition has been situated on a spacious and beautiful bay, and has, consequently, had the opportunity of creating an essentially marine exposition. Imposing and beautiful structures will be erected to adorn the grounds. It is intended that many of these structures shall be of a permanent character. They will be practically of fireproof construction, in which concrete, steel and brick will largely enter. When these buildings have been completed it is estimated that the cement industry of this country will furnish proportionately a larger share of material than has ever been used before in erecting buildings in any exposition held in the past.

It is confidently expected that the many and new interesting features introduced in the Panama-Pacific Exposition will draw large crowds, not only from every part of the United States, but also vast numbers from Asia, Europe, the Asiatic countries and Australia.

ORNAMENTS FOR A BRIDGE

There has been an interesting discussion in progress during the last few months in Los Angeles, concerning the architectural features of an important new bridge. This bridge is of concrete, and is the largest and most elaborate structure of its kind yet attempted in Los Angeles, if not in California. The people naturally became very much interested in it, and a suggestion was made that it would be fine to have some granite lions placed at the two ends. Second thought asked the question, "Why lions?" And it was proposed, by the Native Daughters of the Golden West among others, that the animals should be not lions, but grizzly bears. The Native Daughters reminded the citizens that the history of California is closely identified with the bear and not at all with the lion. A resolution was presented to the city council asking for bears, and the council referred it to the Municipal Art Commission. And now the Municipal Art Commission has brought out a report stating that there must not be lions or bears or kittens or any other animal; that there must not be any ornament which is made of granite, since a concrete bridge with granite ornaments would violate the laws of art.

But why not mould the lions or bears out of concrete? The genuine stone is not at all necessary. If the Art Commission fears it would not blend properly with the concrete let them use concrete altogether.

Wants Back Numbers

J. C. Cebrian, of 1801 Octavia street, will pay 25 cents per copy for the following back numbers of The Architect and Engineer: February, March and April, all 1909.

Cuff & Diggs to Design Courthouse

Architects Cuff & Diggs, of Sacramento, have been selected by the supervisors of Yolo county to prepare the plans for a $200,000 courthouse to be erected at Woodland. The vote stood three for the Sacramento firm and two for McDougall Bros. of San Francisco.

HEATING AND LIGHTING

Plumbing and Electrical Work

Semi-Concealed Systems of Church Lighting

By ROBERT B. ELY and C. A. ZIEGLER, in Illuminating Engineer

THE prime object in church lighting is for ntilitarian purposes, and must be so designed and installed as not to be offensive to the congregation.

The churches that are now under construction and those of recent construction are receiving the careful consideration of the illumination scheme that is essential to meet the restricted requirements of the evangelical and ritualistic bodies.

Co-operation between the architect and the illuminating engineer will solve the problem, and this co-operation is becoming more evident every day.

In Fig. 1 is shown the interior of the Summit Presbyterian church, at Germantown, Philadelphia, Pa., illuminated at night. The church was designed by the architectnral firm of Duhring, Okie & Ziegler, of Philadelphia, Pa. The architectural scheme is an attempt to secure a true ecclesiastical spirit in a building of moderate cost depending on the proper proportion of the masses for effect rather than on the use of costly and elaborate detail.

The building committee for whom this church was erected desired a building that would follow the traditional church plan, producing an eccelesiastical effect not to be obtained in the auditorium plan, which is now much in vogue for Protestant churches. The nave has a seating capacity of 500, and is divided from the aisles by a series of arches and piers built of dressed local stone. Above the arches are clearstory windows pro-

Fig. 1. Summit Presbyterian Church, Germantown, by Semi-indirect Illumination

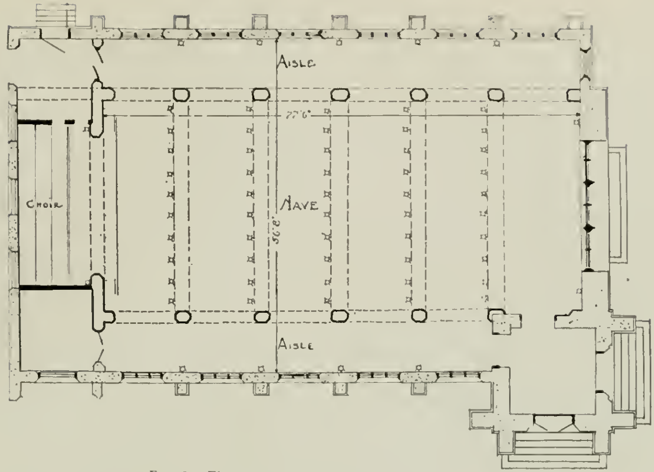


Fig. 2. Floor Plan, Showing Arrangement of Units

viding excellent light and ventilation. Fresh air is brought into the building through the indirect registers shown in the center aisle, and large ventilating registers opening into an air chamber back of the chancel arch keeps the air constantly changing. The choir is directly in back of the pulpit, with the organ to one side. As is usually the case, with a clearstory church, the acoustic properties are perfect.

The general illumination of the auditorium and nave is effected by the installation of fifty 40-watt Mazda lamps, equipped with Holophane prismatic reflectors, installed on the chancel side of each truss, located at a height of 30 inches above the floor, and spaced as shown on the floor in Fig. 2. Each lamp is on an angle of 20 degrees from the vertical. The wires run in conduit on the face of the truss, and each outlet is terminated with a condulet and short nipple bent to the proper angle.

The rear of the auditorium is illuminated by six 40-watt Mazda lamps, equipped with sand-blasted shades of artistic design, there being two three-light brackets located on the rear wall.

The choir is illuminated by six 60-watt Mazda lamps in an upright position equipped with conical metal reflectors. The lamps are on short brackets close to the wall of the chancel arch.

Each aisle is illuminated by fifteen 25-watt Mazda lamps on five three-light brackets equipped with sand-blasted shades.

The lights in the aisles are the only lights within the line of vision, and the lamp, or source of light, is completely hidden from view and the illumination is toned down by a very heavily sand-blasted shade.

By this semi-concealed direct lighting system a sunbeam effect is obtained, which gives a desirable shadow in one general direction.

Use of Cold Air in Ventilating Systems

That it is not only possible, but preferable and economical, to admit fresh air into a room without warming, is a proposition recently advanced by a St. Paul (Minn.) engineer. The latter goes on to say: To admit such cold air for ventilating purposes it is necessary to locate the inlets 8 feet or more from the floor and have them of such size and number that only a comparatively small quantity of air will be admitted at each inlet, this quantity being dependent upon the height, not only of the inlet, but of the ceiling.

To illustrate: If inlets be located on or near a 10-foot ceiling, they should each be limited to about 4,000 cubic feet of air per hour, while, if the height be increased to 16 feet the air capacity of each inlet may safely be doubled. Where ceilings are abnormally high, the air may be carried up 20 to 25 feet and inlets provided with a capacity of 20,000 cubic feet per hour, with no danger of drafts.

"Now, let us consider carefully," continues the writer, "the result of admitting air into a room without warming. It is a matter of common knowledge that the temperature at the ceiling is always higher than at the floor. Admitting cool air well up from the breathing line, it immediately assumes a downward course, due to gravity, and, as it descends, is thoroughly warmed by the ascending movement of heated air from radiators, stoves or hot-air registers. The law of diffusion causes both the cool and warm air to spread, while on their downward and upward courses, respectively, with the result that, instead of forming an objectionable down draft, as might be expected, the air assumes a comfortable temperature by the time it reaches the breathing line.

"This method produces a quality of ventilation that is extremely refreshing and can only be appreciated by those who have enjoyed its benefits. The laws of diffusion and gravity are co-operated with, rather than ignored, and the air is not expected to form in currents and travel about the room, according to the desires of the designer.

"This mixing of cool and warm air gives a circulation that is impossible when the air is admitted warm. Not only does this method afford better ventilation, but it offers a number of economic advantages. In the original cost there is a great saving in omitting master coils, and in the maintenance, another saving is effected by eliminating entirely the loss of heat while the air is in transmission from the coils to the inlets and also by using the heat at the upper part of the room for warming the incoming air.

"The proper location of the foul air outlets has been discussed extensively. The writer believes the matter can be settled for all practical purposes by saying that in a room where there is no circulation of air the impurities will settle to the floor, about 85 per cent being found in the lower half of the room, and the remaining 15 per cent in the upper half. However, it does not follow that to remove these impurities it is necessary to locate the outlets near the floor. If the air be put in circulation the impurities will be found at the ceiling as well as at the floor. In fact, they will be pretty generally distributed in all parts of the room, and it will matter but very little where the outlets are located. Where the air is admitted into the room cold the outlets may be located at the ceiling without fear of wasting much heat, and in cases where smoke, light gases, odors or excessive heat are to be removed, the ceiling is the only logical location for the outlets. It is sometimes advisable to have outlets both at the ceiling and the floor, and to have them adjustable, so that either mav be used, or both, as occasion demands.

"The fact should be emphasized that ventilation is a process of dilution. Fresh air does not come in and displace foul air, but mixes with it, and it is this mixture which is drawn out. It is not necessary to provide as many outlets as inlets, as a considerable quantity of air may pass out through one opening without causing a perceptible draft.

"Where cold air is furnished for ventilating purposes, the location of the blowers should be in the attic or in a penthouse on the roof. This location offers several advantages. In the first place, the operation of the plant will be in harmony with nature's laws, as the colder air will flow downward and the warmer air upward. By this method the expense of air stacks may be saved, as the blowers will be within a few feet of the outside air. Space is used which is of no value for any other purpose, and a further saving can generally be effected by carrying the main supply lines through the attic rather than in the basement."

To Open San Francisco Office

Architect B. Marcus Priteca of Seattle will open offices in San Francisco in the near future. He is associated with Messrs. Miller and Colmesnil in designing the new Pantages theatre to be erected on Market street by the A. E. Long Construction Company. In addition to the theatre a seven-story class A office building will be put up. Priteca's offices will be in the Westbank building.

Dr. Kugeler's Jackson Street (San Francisco) Residence

Ross & Burgren, Architects *M. F. Gale & Son, Brick Contractors*

Energy Created by California Climate

Vice-President McCormick, of the Southern Pacific Company, is always encouraging and helpful. He gives us words of cheer concerning the inspiring quality of the California climate and the energy that it generates. He gets down to actual figures and percentages, and it is almost as if he were calculating the horsepower generated by the invigorating climate of California. Here is the climatic sum in arithmetic that he offers:

Ten or twenty acres of California soil will produce as much as can be gotten from 160 acres in eastern sections. The soil is better here and the climatic conditions are such as to give the Californian 55 per cent additional energy—in the east 45 per cent of one's energy is used up in fighting the elements, both in summer and winter.

It is the calculation of human energy reduced to an exact science as affected by climatic conditions, but without pretending to be critical about figures it is perfectly true that Mr. McCormick's summing up of conditions has a safe basis of fact, notwithstanding that the late Robert G. Ingersoll thought otherwise. Mr. Ingersoll, hastily generalizing without knowledge of the facts and conditions, used to say that the genial climate of California would in a moderately brief time create a race resembling the Mexicans, and that in two generations or so the Californians would be seen of a Sunday morning on their way to a cockfight with a rooster under each arm. It was an amusing prophecy which the facts have already set at rest forever. Mr. McCormick is nearer to the truth. There is no doubt that the climate of California breeds energy.—San Francisco Call.

To Improve Existing Furnace Conditions

In connection with its investigations bearing upon the improvement of furnace conditions and on efficiency in the use of fuel, the Bureau of Mines has just issued a bulletin describing the apparatus and methods in use by the bureau for the sampling and analysis of furnace gases. The authors, J. C. W. Frazer and E. J. Hoffman, say in their foreword:

"The furnace conditions prevailing both in small plants and in large industrial establishments in this country are frequently far from satisfactory. If such conditions are to be improved, they must be more thoroughly understood, and means must be found to insure complete combustion of the fuel, and yet to permit operation with such an excess of air as will result in the greatest efficiency.

"In this work the services of the chemist are indispensable. A very important problem is the determination of the small percentage of unburned combustible matter that escapes from the furnace in the flue gases. Under ordinary circumstances so little as 0.1 per cent of unburned combustible matter in a furnace gas is equivalent to about 1 per cent of the fuel used; and for the determination of such small percentage of gas more accurate and refined methods are required than have ordinarily been available before."

This bulletin, which is No. 12, may be obtained by those interested by writing to the Director of the Bureau of Mines, Washington, D. C.

Collecting Architects' Fees

A case of more than passing interest to architects because it involves the question of their ability to recover at law for professional services rendered has just been brought to conclusion in Special Department No. 1 of the Superior Court, Los Angeles. The case is styled A. E. Bruce vs. W. L. Porterfield, and was brought to collect $4,675.50 on an account which had been assigned to the plaintiff by Architect H. M. Patterson.

The architect was employed by Mr. Porterfield to prepare plans for an eight-story reinforced concrete hotel and apartment building which the defendant contemplated erecting on the ocean front at Long Beach. Several different sets of plans were made for the proposed building, the work being on the boards in the architect's office at various periods for more than two years. After finally obtaining a set of plans that met with his full approval and securing estimates on the cost of the proposed building Mr. Porterfield failed in his efforts to finance the project.

Repeated promises to remunerate the architect were not fulfilled and Mr. Patterson assigned his claim for collection. This claim was based on the schedule of fees adopted by the American Institute of Architects and which governs the charges made by all members of that organization. The estimated cost of the proposed building was placed at $350,000. The defense set up was that the plans were not completed and that they were of no value to the defendant. The hearing occupied four days, and witnesses were called by both sides to give expert testimony.

Mr. Patterson contended that his claim was not for the completed plans, but simply for the work done; that the plans were sufficient to enable the defendant to secure estimates on which a contract could be made; furthermore, that no complaint was made by the defendant that the plans were not all he desired, and there was no word of disapproval from him until notice of suit was given. The trial resulted in a judgment being rendered in favor of the plaintiff for $3,075.50 and certain expenses, the costs of the case being thereby thrown upon the defendant.

While it is to be deplored that suits at law are ever necessary to enforce the collection of fees for the services of an architect, such suits, when based on good grounds, can not but result in benefit to the profession at large. The architect is just as much entitled to pay for services performed as the lawyer, doctor, dentist, or other professional man. The architect must live and he must pay the salaries of his draughtsmen, office rent and expenses.

An impression has spread among laymen in Los Angeles and in southern California that the services of an architect can be engaged without obligating the client, particularly if the building for which plans and specifications are made is not erected. How such an impression can be entertained by any one of reasonable intelligence is not clear, but it is a condition and not a theory, and it should be combated vigorously.

Complaint is frequently made that the architects are compelled to charge to profit and loss large sums representing fees for services performed and in many cases representing an actual outlay of money by them. There is no good reason why such a state of affairs should exist. The public should understand that it has no more right to expect service from an architect without remuneration than it has to engage a lawyer or a doctor without pay.

The architect spends years in acquiring a knowledge of his business and it is because he possesses that knowledge that he is consulted by prospective builders. Is it reasonable to expect him to give others the benefit of that knowledge and experience without adequate compensation?

The layman is prone to regard the sketches or preliminary plans, made by an architect as of small importance compared with the preparation of the working plans. As a matter of fact the task of an architect is more than half done when his sketches are finished and approved. They represent in many cases days and weeks of hard study; they are the solution of problems often difficult and perplexing. When the sketches are approved what remains in the preparation of plans is work for the draughtsman. The architect is entitled to pay for sketches of buildings just as much as for the working plans, and when his services are regularly engaged there is no court which will deny him compensation for his work.

If the practice of architecture as a profession is to be maintained on the high plane to which it is entitled the architects must maintain their professional rights even if it is necessary to invoke the aid of the courts.—Southwest Contractor.

Important School Competitions

Oakland and Sacramento have authorized the expenditure of several hundred thousand dollars for new school buildings. Competitions will be conducted in both cities for plans.

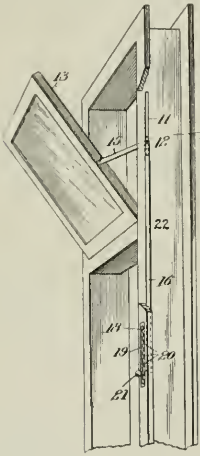
Recent Patents Relating to Building Construction

Material for this department is compiled expressly for the Architect and Engineer by Watson & Boyden, patent and trade-mark lawyers and solicitors, 918 F street, Washington, D. C., and to them all inquiries in regard to patents, trademarks, copyrights, etc., and litigation affecting the same should be addressed.

A complete printed copy of the specification and drawing of any United States patent in print will be sent, postpaid, to any address for ten cents.

Ray Thomas Savage, of San Francisco, Cal.—Transom-Lifter.
993,719. Patented May 30, 1911.

In this transom lifter the operating mechanism is entirely enclosed within

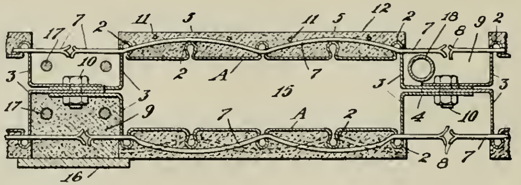


993,719

the door casing. It consists of a rod 16 connected to a block 12, sliding in a slot 11 and connected wih the transom by means of a link 15.

Karl Johan Thorsby, of Oakland, California, assignor to California Corrugated Culvert Company, of Oakland, California, a Corporation of California.—Head-Gate.
994,347. Patented June 6, 1911.

The construction of this improved head gate will be obvious from the illustration. The cut shows a corrugated sheet metal pipe adapted to be connected to the head gate section by means of a flange 5 which grips the edges of the pipe between itself and the corresponding flange 3.

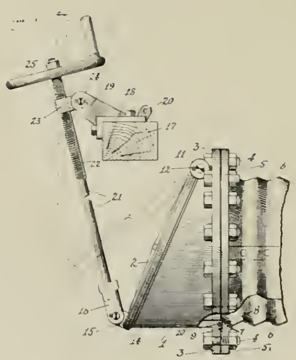


905,069

Henry L. Lewen, of San Francisco, California.—Reinforced Concrete Construction.

995,069. Patented June 13, 1911.

The object of this invention is to provide a reinforcing element and reinforced concrete slab, which is especially applicable for use in the construction of hollow walls and partitions in buildings which are liable to be subjected to shock, as in earthquakes and tremblings of the ground; which can be made up at the factory and shipped complete to be erected into the building, doing away with the use of all wood, either for molds or other purposes.



994,347

The illustration shows a cross section of a wall formed of two such slabs. It will be seen that each slab comprises a sheet metal backing A which is corrugated to form beads through the alternate ones of which beads pass reinforcing wires or rods, such rods resting upon the other beads.

By the Way

Some Industrial Information Worth the While

Special Paradux Canvas Top Roofing

W. P. Fuller & Co., who for a number of years have had the Pacific Coast agency for Rex Flintkote roofing and the other roofing specialties manufactured by J. A. & W. Bird & Co., of Boston, Mass., now have in stock at their ten branches an improved canvas top roofing, which is manufactured under the trade name of "Special Paradux Canvas Top Roofing."

They have in the past few years been furnishing Paradux Canvas Roofing, which has met with great favor among the architects and engineers.

The new Special Paradux Canvas Top Roofing is different from the line they have been carrying, inasmuch as it is 60 inches wide, instead of 36 inches, and it is composed of a heavier piece of cotton duck backed up on the under side with a thick coating of waterproof compound, which serves as a perfect waterproofer as well as a cushion that saves the wear upon the canvas.

Because of the extra wide sheets this comes in, it necessitates very few seams on the ordinary veranda or porch roof.

The cost of treating this canvas after it is put in place is less than the cost of oiling and painting an ordinary canvas roof, and the material costs little or no more than heavy duck.

This material can, when ordered especially, be furnished in widths up to 120 inches, which will cover the ordinary 10-foot veranda roof without a seam.

This roofing is meeting with great favor the country over among the architects and engineers and bids fair to be a popular roof covering for many purposes and will to a large degree, displace the old style canvas roofing.

W. P. Fuller & Co. have met with unusual success in their roofing departments in all of their branches, which is undoubtedly due to the fact that they carry one of the highest grade lines of roofing and waterproofing materials manufactured.

Kawneer San Francisco Office a Success

Kawneer Manufacturing Company, manufacturers of Kawneer System of Store Fronts, advise us that since they have opened their own office and warehouse in San Francisco, they have succeeded in getting a number of Coast architects interested in their construction to the extent of specifying it in several buildings that are now coming up. This company, appreciating the large volume of building which will be done here from now on, have located permanently in San Francisco and are pushing very hard their entire metal front. Being the originators and largest manufacturers of metal store front construction, they are in a position to install their material at a price considerably less than building trades have been able to obtain their construction for in the past.

The local office is located at 654 Monadnock building, in charge of Mr. W. P. Fairbairn, where they will be glad to give such information to architects as their broad experience in store front construction affords them.

Greatest Output in Fire Brick

The United States Geological Survey reports the production of fire-bricking material for 1909 as more than 50 per cent greater than the output for the preceding year and even higher than that of the record year of 1907. The output for 1909 was 55,150,000 pieces of firebricking, the equivalent of 838,167,000 nine-inch fire bricks. The total value of these bricks was $16,620,695, an increase of $5,924,479 over the value for 1908.

No Department Store After All

The Bankers' Investment building on Market street, San Francisco, is to be erected just as originally planned by the architect, Frederick H Meyer. Construction was temporarily delayed while negotiations were on for leasing the entire building and an additional story to a big department store house. The deal fell through, however, and the building will be arranged for stores and offices as at first planned.

New Device for Elevators

The Elevator Supply and Repair Company, whose signaling systems have contributed so much toward the efficient handling of elevator traffic in the modern office building, have recently added a very interesting device to their list of elevator accessories. It is known as the Elevator Travel Recorder, by means of which it is now possible to reduce all costs of elevator operation to a unit basis of "per mile of travel." The instrument records the exact travel and number of complete trips of the car, and with this information very complete data on the cost of operation can be formulated.

Addition to Nile Club, Oakland

Architect C. W. Dickey, of San Francisco, has let a contract for alterations and an addition to the Nile Club building, in Oakland, to E. T. Leiter, of Oakland, whose bid was $7,800. Improvements are to include a jinks hall arranged in the Egyptian style, kitchen, toilets, etc.

Medusa

The Sandusky Portland Cement Company has sent out the following interesting announcement:

"We are pleased to announce to our customers that we have commenced the manufacture of Waterproofed cement at all our mills.

"The Waterproofed cement consists of Medusa waterproofing ground with our gray cement, thus dispensing with the trouble and expense of the user mixing it dry with the cement, and at the same time getting a more uniform mixture.

"The price will be based on the market value of cement at time of sale, plus the cost of Waterproofing, and a small allowance for the extra cost of grinding. This new product can be shipped in large or small quantities from any of our mills in cars containing our gray cement.

"Medusa Waterproofing cement will dispense with any further question concerning the practical use of cement blocks, exterior cement plastering and cement roofs.

"It will be found especially adapted for use in storage tanks, cellar walls, cisterns, reservoirs, swimming pools, concrete conduits, sewer pipe, elevator pits, dams and a multitude of other uses in which resistance to percolation of water is required.

"SANDUSKY PORTLAND CEMENT COMPANY."

Scagliola for Bank Interiors

Scagliola is ranking high among the finishing and decorating materials being used in the handsome new banking interiors, office buildings, libraries, hotels, etc., that are being created so numerously all over the coast, and its use is frequent in the more costly banking palaces of the larger cities, as well as in the smaller interior centers. The name means "imitation marble." It is made of a very fine cement, and when skillfully made and placed it not only presents a perfect imitation of the high-priced colored and variegated marbles, imparting pleasing artistic effects, but it has merits making it in some respects better than the marble it imitates. It does not oxidize, and grows harder with time. It takes a higher polish than marble and does not absorb grease, oils, etc. Its cost is about one-fourth that of decorative marble.

The art of imitating colored marbles was known to the ancient Romans, but later was lost for centuries. The art was revived, and in recent years great improvements have been made in it. In durability it is equal to the life of any modern structure, and the long experience with it of architects and builders has made its use more and more common in fine bank interiors and in public and office buildings. It is particularly adapted for interior columns.

The California Scagliola Co. of 70 Clara Street, San Francisco, has had large success with this material and will supply full information, with references to many buildings in which it has been used.

"CERESIT" INVADES AMERICA

German Waterproofing Compound in Paste Form, placed on United States Market

By S. J. SAMELOW

ENGINEERS, contractors and builders generally are very much interested in the waterproofing paste for concrete construction sold under the name of "Ceresit." It is a German product, or rather a product of German origin, which was introduced into this country about two years ago. In that brief space of time it seems to have attracted the attention of the most serious on the question of waterproofing.

There are several compounds on the market that bring about desired results. The Ceresit Waterproofing Company claims features for its waterproofing that have been sought for years. Whatever there may be to these claims, this much may be stated impartially, that "Ceresit" at least widens the scope of waterproofing to the extent of another excellent formula for the American builder. Simple tests will no doubt determine the comparative efficiency of this compound. Builders who have used it recommend it highly.

"Ceresit" is not a powder, but a paste. It is of a creamy consistency like butter. It is cream white in color. Its specific gravity is about the same as that of water. Mixers measure it by weight or volume. It is easily soluble in water. Where intermolecular waterproofing of the entire mass is desired, the solution of "Ceresit" and water is used in the concrete instead of plain water. It is similarly used for mortar coatings. Whether used for cement mortar or for waterproofing of concrete, the solution containing this compound distributes itself uniformly through the material. This is a virtue that builders consider highly valuable. For it is always desirable to make the resistance to water uniform throughout as the effectiveness of a water-proofed surface may be measured by the weakest part of it.

"Ceresit" comes from Germany. It was invented by Dr. Paul Meeke, a chemist, who has been experimenting with waterproofing compounds for more than twenty years. It has been used in Germany on government and public work as well as in structures of big commercial projects and reports on these indicate that the product is worth all the manufacturers claim for it.

Among the important European structures waterproofed by "Ceresit" are a tunnel in Bremen, Germany; the castle of the Emperor of Germany built at Posen in 1908. One of the severest practical tests on the compound was made in a water pavilion exhibited at the World's Exposition in Brussels, in 1910. This pavilion was built in a lagoon. Its base was five feet below the water level.

An Index to the Advertisements

The walls were of concrete four and a half inches thick. The waterproofing was accomplished by a cement mortar coating three quarters of an inch thick, which was applied to the outside of the concrete walls. Over this structure, a giant fountain poured a continuous stream of water at the rate of 15,000 gallons an hour. Yet despite of this powerful stream washing the walls the visitors' reception room inside of the pavilion remained free from all moisture or dampness.

Even Egypt, the seat of much hidden knowledge on concrete, is using "Ceresit." The Ceresit Waterproofing Company is displaying a photograph in its offices of a church that was waterproofed with "Ceresit" in the lands of the pyramids.

The American corporation is composed of the following officers: T. F. Koch, Houston, Texas, president; P. H. Hansen, Chicago, general manager and secretary; Dr. Paul Mecke, vice-president and chemist.

"Ceresit" is used both as a waterproofing compound for concrete as well as for cement mortar. One of the effects sought in concrete construction is a toning up of the finished product. A darkened effect in concrete is undesirable. Architects prefer the brighter or lighter shades in the concrete, which gives it a more cheerful appearance and a closer approach to the best grades of stone "Ceresit," engineers declare, has the virtue of slightly bleaching the natural shade of concrete, which results in most pleasing effects. Another commendable feature of "Ceresit" is that it is free from

offensive odors. It is as odorless as water.

A great advantage of the use of "Ceresit" is that it can be distributed uniformly throughout the concrete or cement mortar. There is no danger, therefore, of having an excess of the compound in one portion of the building and a deficiency in another. The most unskilled laborer can achieve the greatest uniformity desired.

The manufacturers guarantee that the compound is sufficiently elastic to expand or contract under varying conditions of temperature. This prevents disastrous results where frost acts on the structure. They also guarantee that "Ceresit" does not reduce the strength of the cement but rather increases it. The compound is recommended for any material, brick, stone, concrete or tile.

The first job in the United States where "Ceresit" was used was the Harper Memorial library at the University of Chicago, of which Shepley, Rutan and Coolidge are the architects. In order to secure this contract the manufacturers gave a surety bond for $5,000 to guarantee the basements of this building free from dampness for a period of three years. Many big structures have been waterproofed by the company since then. Among these are swimming pools for Y. M. C. A. buildings at Wilson avenue, Hyde Park, Chicago, and Gary, Ind.; also one for Doubleday Page Company, at Garden City, L. I., N. Y.; basements of the Harold McCormick residence at Lake Forest, Ill.; the Tuberculosis Hospital at Oak Forest, Ill; the library building at the University of Toronto, Ontario; the Blackhawk National Bank Building, Waterloo, Ia.; the Philadelphia Safe Deposit Company building; the Dominion Bank Building, Winnipeg, Manitoba, the City Hall of Ottawa, Ontario; the Hermitage Hotel of Nashville, Tenn., and the concrete reservoir for the Navy Station at Key West, Fla., which holds 1,300,000 gallons of water.

The company has branch offices in all important cities of the country. Parrott & Company are the Pacific Coast distributors of "Ceresit."

Book on New Lien Law

L. A. Larson has published a handbook of the "California Lien Law and Tenement House Act," which is a credit to the editor of the Daily Pacific Builder. The book is prefaced by an article on the history and purpose of the law written by Alex G. Eells, a San Francisco attorney. The book contains 272 pages and retails for fifty cents per copy.

Temporary Municipal Building, San Francisco, Being Wired by Central Electric Company

Central Electric Company Expands

While other firms have been curtailing and cutting down expenses, the Central Electric Company of San Francisco has been expanding and increasing its cost of operation; but the added pay roll has brought with it a great volume of new business, and just now there is no busier concern in San Francisco. Having added plumbing and heating departments to its electrical business, the company has changed its name to the Central Electric, Plumbing and Heating Company. L. R. Boynton, whose combined enterprise and thorough knowledge of the business have made the firm what it is today, retains the active management, and is assisted by a corps of trained experts in their respective lines. The department of heating is in charge of George B. Gilman, while the department of plumbing is directed by R. G. Kimball. Both are Los Angeles men and have enjoyed unusual success in their work. The general estimating in the electrical department is done by J. M. Carlson. A branch office is now maintained in Los Angeles, in charge of R. L. Booth.

The main office and operating department are at 185 Stevenson street. A postal card or a telephone call from architects, owners or general contractors will receive prompt acknowledgment, no job being too small or too large to figure.

Some of the work now in hand includes many of the large school houses under construction in San Francisco, electric work, plumbing and heating in twenty new buildings at the Presidio, electrical work in the new store houses at Fort Mason, Children's Hospital and

Nurses' Training school, Rialto building, and the temporary city hall, a cut of which accompanies this article, and many other buildings.

At Los Angeles the company is doing the electrical work in the new Polytechnic high school, the City Market, Perry building, Monrovia school, two fire stations and a large apartment house. The Los Angeles office is at 411 Exchange building.

Patent Scaffolding

The patent scaffolding which was used in laying the terra cotta exterior of the Hearst building, at Third and Market streets, San Francisco, is also being used on the Olympic club building and the hotel at Kearny and Sutter streets, designed by Architect L. B. Dutton. Contractors who have had experience with the scaffolding say it is a splendid proposition, reducing the liability of danger to workmen to a minimum and making it possible to accomplish work in one-half the time required by the old method.

The scaffolding is also being used on the Realty Syndicate building in Oakland, the Bon Marche building in Seattle, and the Hogue building in the same city. At Portland 120 of these scaffolds are being used on the Lincoln high school, while in Los Angeles they are employed on the Chester building and the Los Angeles Athletic club building. Parrott & Co. are the exclusive agents for the scaffolding on the Pacific Coast.

Gravity System Contracts

Parrott & Co., who are the Coast distributors of the G. Y. system of concrete pouring, have recently closed a contract with the Mt. Hood Railway and Power Company to use the system in building the great Spillway dam on the Big Sandy road near Portland. The dam and power house of the Washington Water Power Company, at Spokane, is also being constructed by the gravity system.

Demand for Trus-Con Products

The Western Lime and Cement Company of San Francisco is handling the famous Trus-Con waterproof paints, pastes and compounds. There is quite a demand for these products, particularly in connection with reinforced concrete construction. Architects who have used the paint say it not only holds its color and prevents cracking, but is perfectly waterproof.

In the comparatively short time that Trus-Con has been handled by the Western Lime and Cement Company the product has been used in San Francisco on the Merchants Exchange building, the Spreckels building, at California and Davis streets, the Adler sanitarium and the Rialto building, now being reconstructed at New Montgomery and Mission streets. The big concrete tank in

B'nai Brith Hall, San Francisco, California
Lansburgh & Joseph, Architects

Two Views of the San Francisco Salesrooms of the Jno. Douglas Company, Showing Line of Plumbing Fixtures Carried in Stock for Coast Trade

the Lurline baths, which is only three inches thick, has been made absolutely water-tight by a surface treatment of the Trus-Con paste and the same material is used on the new Casa del Rey hotel in Santa Cruz.

The Western Lime and Cement Company has recently moved from the Hansford building to larger and more centrally located offices in the Postal Telegraph building at the junction of Market, Sansome and Pine Sts., San Francisco.

Douglas Plumbing Fixtures

The illustrations shown on the foregoing page are of the show-room of the San Francisco branch of the John Douglas Company, one of the largest manufacturers of high grade plumbing fixtures in the country, their main office, brass and woodwork factory being located at Cincinnati, Ohio, and their earthenware factory at Trenton, N. J. Of particular interest is the fact that this firm was one of the first of the many eastern manufacturers to establish a branch in San Francisco, opening their office here about twenty years ago and placing in charge the late Edward Douglas, brother of the president of the corporation, whom many will remember, as being one of the most popular business men in the city at that time. The local office, show room, and warehouse of the John Douglas Company are located at 571 Mission street, where a large and complete line of high grade plumbing fixtures can be found. Garland Mitchell, recently of Washington, D. C., is the local manager, and will be pleased to show and explain his goods to any architect, or other person who may be interested.

Returns From World's Tour

Architect A. M. Edelman of Edelman & Barnett, Los Angeles architects, is back from a two-year world's tour. One of the things which impressed Mr. Edelman most in his extensive travels was the fact that nearly every small city he visited in Germany and France possessed attractive railroad stations. He thinks there is vast room for improvement along this line in America. Edelman says reinforced concrete construction is becoming quite general now in the Orient. In Spain a government building is being erected of this material.

While in London Edelman met the secretary of the Association of British Architects and was a guest at a dinner given by the president of the organization. The secretary furnished the Los Angeles architect with a list of all the reinforced concrete buildings of importance then being erected in England along modern lines, and he made a point of observing their construction methods which differ in no material respect to the methods used in southern California.

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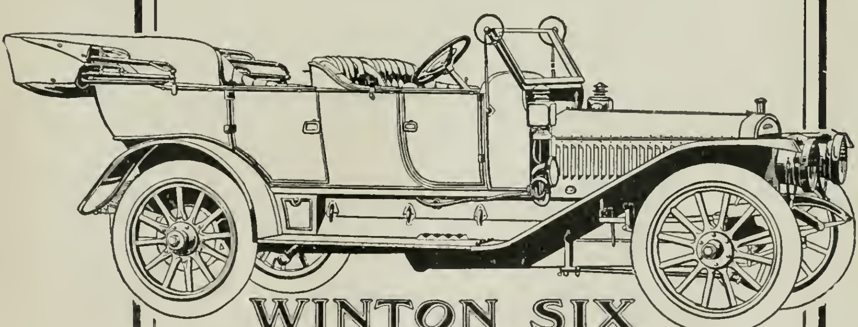

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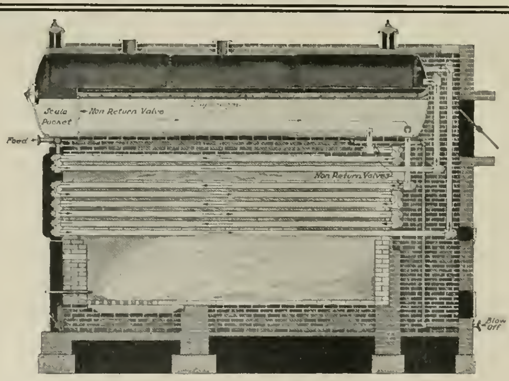

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