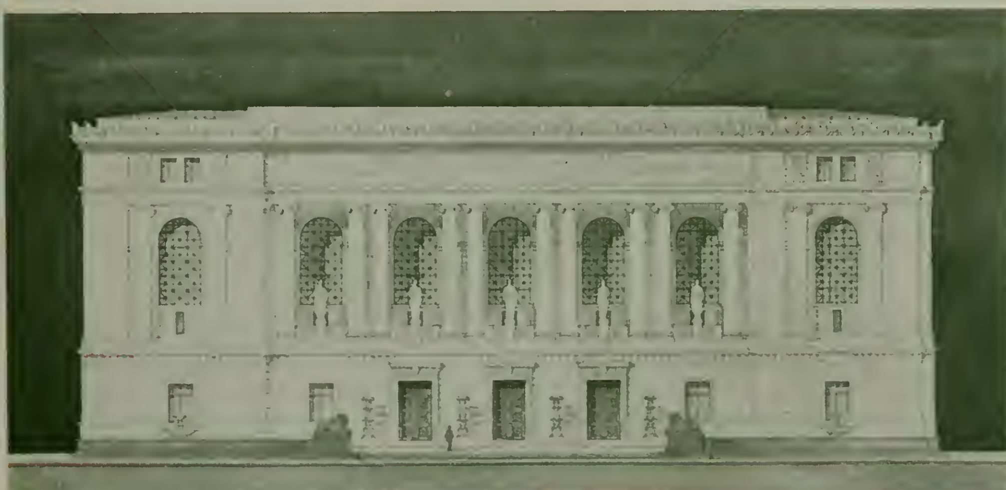
THE ARCHITECT & ENGINEER OF CALIFORNIA



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MAY, 1914

LUXEBERRY WHITE ENAMEL

The whitest of white enamels

For stairs, bathrooms, bedrooms, hallways and furniture where a deep, rich, snowy white finish is desired, nothing is so thoroughly satisfactory as **Luxeberry White Enamel.**

It produces either a brilliant enameled surface, resembling that of the finest porcelain, or an artistic, soft, dull effect. Both finishes are exceptionally beautiful and last for years without discoloring, checking or cracking. **Luxeberry White Enamel** is a white enamel that stays white.

Send for a finished sample and literature.

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Makers of Liquid Granite

DETROIT SAN FRANCISCO WALKERVILLE, ONT.

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wins new friends every day. The Pitcher Hanger is in a class by itself for Hotels, Apartment Houses and Residences.

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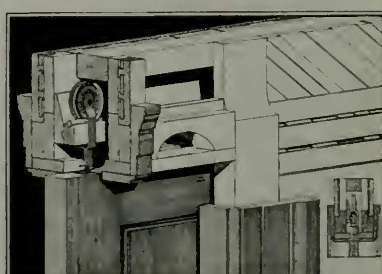
FIFTH AND BRANNAN STS.
SAN FRANCISCO, - CAL.

T. C. HLADIK, Architect



ARCHITECTS' SPECIFICATION INDEX

(For Index to Advertisements, see next page)

AIR CLEANERS
- Giant Suction Cleaner Co., 731 Folsom St., San Francisco; Bacon Block, Oakland.
- "Tuec" air cleaners, manufactured by United Electric Co., 110 Jessie St., San Francisco.

ARCHITECTURAL SCULPTORS, MODELING, ETC.
- O. S. Sarsi, 123 Oak St., San Francisco.
- Florentine Art Studio, 932 Vallejo St., San Francisco.
- G. Rognier & Co., 233 R. R. Ave., San Mateo.
- The Schoenfeld Marble Co., 265 Shipley St., San Francisco.
- Western Sculptors, 533-535 Turk St., San Francisco.

ARCHITECTURAL TERRA COTTA
- Gladding, McBean & Company, Crocker Bldg., San Francisco.
- Steiger Terra Cotta and Pottery Works, Mills Bldg., San Francisco.
- Independent Sewer Pipe & Terra Cotta Co., 235 S. Los Angeles St., Los Angeles.

ART GLASS
- Sylvain Le Deit, 124 Lenzen Ave., San Jose.

AUTOMATIC SPRINKLERS
- Scott Company, 243 Minna St., San Francisco
- Pacific Fire Extinguisher Co., 507 Montgomery St., San Francisco.

BANK FIXTURES AND INTERIORS
- A. J. Forbes & Son, 1530 Filbert St., San Francisco.
- Fink & Schindler, 218 13th St., San Francisco.
- C. F. Weber & Co., 365 Market St., San Francisco.
- T. H. Meek Co., 1157 Mission St., San Francisco.
- M. G. West Co., 353 Market St., San Francisco.
- Home Mfg. Co., 543 Brannan St., San Francisco.
- Weary & Alford Co., 1033 Van Nuys Bldg., Los Angeles.

BEDS—INDOOR-OUTDOOR
- California Fresh Air Bed Co., 166 Geary St., San Francisco.

BELTING, PACKING, ETC.
- H. N. Cook Belting Co., 317-319 Howard St., San Francisco.

BELLS—TOWER, ETC.
- McShane Bell Foundry Co., 461 Market St., San Francisco.

BLACKBOARDS
- C. F. Weber & Co., 365 Market St., San Francisco.

BONDS FOR CONTRACTORS
- Fidelity & Deposit Company of Maryland, Insurance Exchange Bldg., San Francisco.
- Globe Indemnity Co., Insurance Exchange Bldg., San Francisco.
- Levensaler-Speir Corporation, Monadnock Bldg., San Francisco.

BONDS FOR CONTRACTORS—Continued.
- Massachusetts Bonding & Insurance Company, First National Bank Bldg., San Francisco.
- Pacific Coast Casualty Co., 416 Montgomery St., San Francisco.

BRICK—PRESSED, PAVING, ETC.
- California Paving Brick Co., Phelan Bldg., San Francisco.
- Diamond Brick Co., Balboa Bldg., San Francisco.
- Gladding, McBean & Company, Crocker Bldg., San Francisco.
- Los Angeles Pressed Brick Co., Frost Bldg., Los Angeles.
- Livermore Fire Brick Co., Livermore, Cal.
- Pratt Building Material Co., Hearst Bldg., San Francisco.
- Steiger Terra Cotta & Pottery Works, Mills Bldg., San Francisco.
- United Materials Co., Balboa Bldg., San Francisco.

BRICK AND CEMENT COATING
- American Paint & Dry Color Co., 414 Ninth St., San Francisco.
- Wadsworth, Howland & Co., Inc. (See Adv. for Pacific Coast Agents.)
- Trus-Con Par-Seal, made by Trussed Concrete Steel Co. (See Adv. for Pacific Coast Agents.)
- Glidden Products, sold by Whittier-Coburn Co., Howard and Beale Sts., San Francisco, and Tibbetts-Oldfield Co., 908 Swain St., Los Angeles.

BRICK STAINS
- Samuel Cabot Mfg. Co., Boston, Mass., agencies in San Francisco, Oakland, Los Angeles, Portland, Tacoma and Spokane.

BRONZE AND BRASS WORK
- Louis De Rome, 150 Main St., San Francisco.

BUILDERS' HARDWARE
- Russell & Erwin Mfg. Co., Commercial Bldg., San Francisco.
- Vonnegut Hardware Co., Indianapolis. (See Adv. for Coast agencies.)
- Western Brass Mfg. Co., 217 Tehama St., S. F.

BUILDING MATERIAL, SUPPLIES, ETC.
- Pacific Building Materials Co., San Francisco.
- Burt E. Edwards, 1025 Phelan Bldg., San Francisco.
- C. Jorgensen & Co., 356 Market St., S. F.
- Western Builders' Supply Co., 155 New Montgomery St., San Francisco.
- C. Roman, 173 Jessie St., San Francisco.
- C. F. Pratt Building Material Co., Hearst Bldg., San Francisco.

CAEN STONE
- A. Knowles, 985 Folsom St., San Francisco.

CEMENT
- Atlas Portland Cement Co., represented by United Materials Co., Balboa Bldg., San Francisco.
- Mt. Diablo, sold by Henry Cowell Lime & Cement Co., 9 Main St., San Francisco.
- "Golden Gate," manufactured by Pacific Portlan Cement Co., Pacific Bldg., San Francisco.

An Index to the Advertisements

ARCHITECTS' SPECIFICATION INDEX—*Continued*

CEMENT EXTERIOR WATERPROOF COATING

- Jones-Duncanson Co., successors to American Paint & Dry Color Co., 414 Ninth St., San Francisco.
- Bay State Brick and Cement Coating, made by Wadsworth, Howland & Co. (See distributing Agents on page 32.)
- Biturine Co., of America, 24 California St., San Francisco.
- Hercules Waterproofing, manufactured by Hercules Waterproofing Cement Co., Buffalo, N. Y. Distributors: Pacific Building Materials Co., 523 Market St., San Francisco.
- Liquid Stone Paint Co., Hearst Building, San Francisco.
- Concrete Cement Coating, manufactured by the Muralo Company. (See full-page advertisement, color insert.)
- Imperial Waterproofing, manufactured by Imperial Co., 183 Stevenson St., San Francisco.
- Trus-Con Par-Seal, made by Trussed Concrete Steel Co. (See Adv. for Coast agencies.)
- Glidden's Liquid Cement and Liquid Cement Enamel, sold on Pacific Coast by Whittier, Coburn Company, San Francisco and Los Angeles.

CEMENT EXTERIOR FINISH

- Jones-Duncanson Co., successors to American Paint & Dry Color Co., 414 Ninth St., San Francisco.
- Bay State Brick and Cement Coating, made by Wadsworth, Howland & Co. (See list of Distributing Agents on page 31.)
- Cencrewaltum Paint, manufactured by Goheen Company, Canton, O. Coast branches, San Francisco, Portland and Seattle.
- Glidden''s Liquid Cement and Liquid Cement Enamel, sold on Pacific Coast by Whittier Coburn Co., San Francisco and Los Angeles.
- Liquid Stone Paint Co., Hearst Bldg., San Francisco.
- Medusa White Portland Cement, California Agents, the Building Material Co., Inc., 587 Monadnock Bldg., San Francisco.
- Concrete Cement Coating, manufactured by the Muralo Company. (See afull-page adverment, color insert.)
- Samuel Cabot Mfg. Co., Boston, Mass., agencies in San Francisco, Oakland, Los Angeles, Portland, Tacoma and Spokane.

CEMENT FLOOR COATING

- Bay State Brick and Cement Coating, made by Wadsworth, Howland & Co. (See list of Distributing Agents on page 31.)
- Glidden's Concrete Floor Dressing, sold on Pacific Coast by Whittier, Coburn Company, San Francisco, and Tibbetts-Oldfield Co., Los Angeles.
- Heath & Milligan Mfg. Co., 7-15 Fremont St., San Francisco.
- Moller & Schumann Co., Hilo Varnishes, 1022 Mission St., San Francisco.
- E. A. Bullis & Co., agents for Federal Steel Cement Hardener, 512 Merchants National Bank Building, San Francisco.

CEMENT TESTS—CHEMICAL ENGINEERS

- Robert W. Hunt & Co., 251 Kearny St., San Francisco.

CHURCH INTERIORS

- Fink & Schindler, 218 13th St., San Francisco.

COAL CHUTES

- Majestic Furnace Co., Sherman Kimball & Co., Inc., 1st and Howard Sts., San Francisco.

COLD STORAGE PLANTS

- Vulcan Iron Works, San Francisco.

CLOCKS—TOWER AND STREET

- Standard Electric Time Co., 461 Market St., San Francisco.

COMPOSITION FLOORING

- Fiberstone & Roofing Co., 971 Howard St., San Francisco.
- Lithoid Products Co., Merchants Exchange Bldg., San Francisco.

CONCRETE CONSTRUCTION

- American Concrete Co., Humboldt Bank Bldg., San Francisco.
- Bluxome & Co., Monadnock Bldg., San Francisco.
- Clinton Fireproofing Co., Mutual Bank Bldg., San Francisco.
- "Mushroom" System of Concrete Flat Slab Construction, Industrial Engineering Co., Clunie Bldg., San Francisco.
- McGibben & Taylor, 2125 Shattuck Ave., Berkeley.
- Otto, W. H., 269 Park Ave., San Jose.
- Barrett & Hilp, Sharon Bldg., San Francisco.
- Foster, Vogt Co., Sharon Bldg., San Francisco.
- P. A. Palmer, Monadnock Bldg., San Francisco.
- Petersen, H. L., 62 Post St., San Francisco.
- A. Lynch, 185 Stevenson St., San Francisco.
- Ransome Concrete Co., Oakland and Sacramento.
- F. J. R. Rickon, 1859 Geary St., San Francisco.

CONCRETE HARDENER

- E. A. Bullis & Co., agents for Federal Steel Cement Hardener, 512 Merchants National Bank Building, San Francisco.

CONCRETE MIXERS

- Austin Improved Cube Mixer. Pacific Coast Offices, 338 Brannan St., San Francisco; the Beebe Company, Portland and Seattle, and P. B. Engh, Los Angeles.
- Foote Mixers sold by Edw. R. Bacon, 40 Natoma St., San Francisco.
- Smith mixers sold by Parrott & Co., San Francisco, Los Angeles and Portland.
- Koehring Mixer, sold by Harron, Rickard & McCone, San Francisco.

CONCRETE PILES

- Harron, Rickard & McCone, San Francisco and Los Angeles.

CONCRETE POURING APPARATUS

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

CONCRETE REINFORCEMENT

- United States Steel Products Co., San Francisco, Los Angeles, Portland and Seattle.
- Clinton Welded Reinforcing System, L. A. Norris, Monadnock Bldg., San Francisco.
- "Kahn System," see advertisement on page 158, this issue.

ARCHITECTS' SPECIFICATION INDEX—*Continued*

CONCRETE REINFORCEMENT—Continued

International Fabric & Cable, represented by Western Builders' Supply Co., 155 New Montgomery St., San Francisco.

Triangle Mesh Fabric. Sales Agents, Pacific Building Materials Co., 523 Market St., San Francisco.

Twisted Bars, sold by Woods & Huddart, 444 Market St., San Francisco.

CONCRETE SURFACING

"Biturine," sold by Biturine Co. of America, 24 California St., San Francisco.

"Concreta" sold by W. P. Fuller & Co., San Francisco.

Wadsworth, Howland & Co.'s Bay State Brick and Cement Coating, sold by R. N. Nason & Co., San Francisco and Los Angeles.

Liquid Stone Paint Co., Hearst Bldg., San Francisco.

Glidden Liquid Cement, manufactured by Glidden Varnish Co., Whittier, Coburn Co., San Francisco and Los Angeles, Pacific Coast Distributors.

Moller & Schumann, 1023 Mission St., San Francisco.

CONTRACTORS, GENERAL

American Concrete Co., Humboldt Bank Bldg., San Francisco.

Foster, Vogt Co., Sharon Bldg., San Francisco.

M. Fisher, California-Pacific Bldg., San Francisco.

Geo. W. Boxton, Hearst Bldg., San Francisco.

Herman T. Ludwig, 24 California St., San Francisco.

Howard S. Williams, Hearst Bldg., San Francisco.

Graham & Jensen, Maskey Bldg., San Francisco.

Monson Bros., 1907 Bryant St., San Francisco.

Ransome Concrete Co., 1218 Broadway, Oakland.

F. J. Rickon, C. E., 1859 Geary St., San Francisco.

Williams Bros. & Henderson, Holbrook Bldg., San Francisco.

Burt T. Owsley, 311 Sharon Bldg., San Francisco.

L. A. Rose, Monadnock Bldg., San Francisco.

Patrick-Nelson Company, 2011 Shattuck Ave., Berkeley, Cal.

Sound Construction Co., Hearst Building, San Francisco.

Barrett & Hilp, Sharon Bldg., San Francisco.

CORK TILING

David J. E. Kennedy, Inc., Sharon Bldg., San Francisco.

CORNER BAR

Dolbear Curb Bar, manufactured by American Steel Bar Co., 1034 Merchants Exchange Bldg., San Francisco.

CORNER BAR—Continued.

Wainwright Steel Corner Bar, made by Steel Protected Concrete Co., Philadelphia, Pa.

CORNER BEAD

Union Metal Corner Co., 144 Pearl St., Boston, represented on the Pacific Coast by Pacific Building Materials Co., 523 Market St., San Francisco.

CRUSHED ROCK

Grant Gravel Co., Williams Bldg., San Francisco.

Niles Rock, sold by California Building Material Company, Pacific Bldg., San Francisco.

Niles Sand, Gravel & Rock Co., Mutual Bank Bldg., San Francisco.

DAMP-PROOFING COMPOUND

Biturine Co. of America, 24 California St., San Francisco.

Concrewaltum Paint, made by Goheen Mfg. Co., Canton, O., sold by Sherman, Kimball & Co., Inc., San Francisco; A. J. Capron, Portland, and S. W. R. Dalby, Seattle, Wash.

Glidden's Liquid Rubber, sold on Pacific Coast by Whittier, Coburn Company, San Francisco and Los Angeles.

Hercules Waterproofing, manufactured by Hercules Cement Co., Buffalo, N. Y. Distributors: Pacific Building Materials Co., 523 Market St., San Francisco.

Imperial Co., 183 Stevenson St., San Francisco.

Lithoid Product Co., Merchants Exchange Bldg., San Francisco.

Trus-Con Damp Proofing. (See advertisement of Trussed Concrete Steel Company for Coast agencies.)

"Pabco" Damp Proofing Compound, sold by Paraffine Paint Co., 34 First St., San Francisco.

Liquid Stone Paint Co., Hearst Bldg., San Francisco.

Wadsworth, Howland & Co., Inc., 84 Washington St., Boston. (See Adv. for Coast agencies.)

E. A. Bullis & Co., 512 Merchants National Bank Building, San Francisco.

DOOR HANGERS

Pitcher Hanger, sold by National Lumber Co., Fifth and Bryant Sts., San Francisco.

Reliance Hanger, sold by Sartorius Co., San Francisco; D. F. Fryer & Co., Louis R. Bedell, Los Angeles, and Portland Wire & Iron Works.

DOORS AND SHUTTERS

Kinnear Steel Rolling Doors and Shutters, Pacific Building Materials Co., 523 Market St., San Francisco.

ARCHITECTS' SPECIFICATION INDEX—*Continued*

DUMB WAITERS
Spencer Elevator Company, 173 Beale St., San Francisco.
Excelsior Dumb Waiters, manufactured by R. M. Rodgers Co., Brooklyn; M. E. Hammond, 217 Humboldt Bank Bldg., San Francisco.
Burdett-Rowntree Mfg. Co., Underwood Bldg., San Francisco.

ELECTRICAL CONTRACTORS
Butte Engineering Co., 683 Howard St., San Francisco.
Central Electric Co., 185 Stevenson St., San Francisco.
Scott Co., Inc., 243 Minna St., San Francisco.
Pacific Fire Extinguisher Co., 507 Montgomery St., San Francisco.

ELECTRIC PLATE WARMER
The Prometheus Electric Plate Warmer for residences, clubs, hotels, etc. Sold by M. E. Hammond, Humboldt Bank Bldg., San Francisco.

ELEVATORS
Otis Elevator Company, Stockton and North Point, San Francisco.
Spencer Elevator Company, 126 Beale St., San Francisco.
San Francisco Elevator Co., 860 Folsom St., San Francisco.
Pacific Gurney Elevator Co., 186 Fifth St., San Francisco.
Van Emon Elevator Co., Natoma St., San Francisco.

ELEVATORS, SIGNALS, FLASHLIGHTS AND DIAL INDICATORS
Elevator Supply & Repair Co., Underwood Bldg., San Francisco

ENGINEERS
F. J. Amweg, 700 Marston Bldg., San Francisco.
W. W. Breite, Clunie Bldg., San Francisco.
L. M. Hansmann, Sharon Bldg., San Francisco.
Chas. T. Phillips, Pacific Bldg., San Francisco.
Hunter & Hudson, Rialto Bldg., San Francisco.

EXIT DEVICES
Von Duprin Self-Releasing Fire Exit Devices, manufactured by Vonnegut Hardware Co. (See Adv. for Coast Distributors.)

EXPRESS CALL SYSTEM
Elevator Supply & Repair Co., Underwood Bldg., San Francisco.

FIRE EXIT DEVICES
Von Duprin Self-Releasing Fire Exit Devices, Vonnegut Hardware Co. (See Adv. for Coast Agencies.)

FIRE ESCAPES
Pacific Structural Iron Works, Structural Iron and Steel, Fire Escapes, etc. Phone Market 1374; Home J. 3435. 370-84 Tenth St., San Francisco.
Western Iron Works, 141 Beale St., San Francisco.

FIRE EXTINGUISHERS
Scott Company, 243 Minna St., San Francisco.
Pacific Fire Extinguisher Co., 507 Montgomery St., San Francisco.
Levensaler-Spier Corporation, 259 Monadnock Bldg., San Francisco.

FIRE BRICK
Livermore Fire Brick Co., Livermore, Cal.

FIREPLACE DAMPER
Head, Throat and Damper for open fireplaces, Colonial Fireplace Co., Chicago. (See advertisement for Coast agencies.)

FIREPROOFING AND PARTITIONS
Cal. Safety Fireproofing Co., 687 Market St., San Francisco.
Gladding, McBean & Co., Crocker Bldg., San Francisco.
Los Angeles Pressed Brick Co., Frost Bldg., Los Angeles.
The Jackson Fireproof Partition Co., Levensaler-Spier Corporation, Distributors, Monadnock Bldg., San Francisco.

FIREPROOF PAINT
Liquid Stone Paint Co., Hearst Bldg., San Francisco.
Glidden Products, sold by Whittier-Coburn Co., San Francisco, and Tibbetts-Oldfield Co., Los Angeles.

FIXTURES—BANK, OFFICE, STORE, ETC.
A. J. Forbes & Son, 1530 Filbert St., San Francisco.
Fink & Schindler, 218 13th St., San Francisco.
C. F. Weber & Co., 365 Market St., San Francisco and 210 N. Main St., Los Angeles, Cal.
T. H. Meek Co., 1157 Mission St., San Francisco.

FLOOR VARNISH
Bass-Hueter and San Francisco Pioneer Varnish Works, 816 Mission St., San Francisco.
R. N. Nason & Co., 151 Potrero Ave., San Francisco.
Standard Varnish Works, Chicago, New York and San Francisco.
Moller & Schumann Co., 1022 Mission St., San Francisco.
Glidden Products, sold by Whittier-Coburn Co., San Francisco, and Tibbetts-Oldfield Co., Los Angeles.

FLOORS—CORK
Nonpareil Cork Tiling, David E. Kennedy, Inc., N. Y. Distributor for the Pacific Coast: G. H. Freear, Sharon Bldg., San Francisco.

FLOORING—MAGNESITE
Fibrestone & Roofing Co., 971 Howard St., San Francisco.

GARAGE EQUIPMENT
Bowser Gasoline Tanks and Outfit, Bowser & Co., 612 Howard St., San Francisco.
Compressed Air & General Machinery Co., 39 Stevenson St., San Francisco.

GARBAGE CHUTES
Bill & Jacobsen, Rialto Bldg., San Francisco.

GLASS
W. P. Fuller & Company, all principal Coast cities.
Whittier-Coburn Co., Howard & Beale Sts., San Francisco.

GRANITE
California Granite Co., 776 Monadnock Bldg., San Francisco.

GRAVEL, SAND AND CRUSHED ROCK
Bay Development Co., 153 Berry St., San Francisco
California Building Material Co., Pacific Bldg., San Francisco.
Del Monte White Sand, sold by Pacific Improvement Co., Crocker Bldg., San Francisco.

ARCHITECTS' SPECIFICATION INDEX—*Continued*

GRAVEL, SAND, CRUSHED ROCK—Continued.
- Pratt Building Material Co., Hearst Bldg., San Francisco.
- Grant Gravel Co., 87 Third St., San Francisco.
- Niles Sand, Rock & Gravel Co., 971 Howard St., San Francisco.

HARDWALL PLASTER
- Henry Cowell Lime & Cement Co., San Francisco.
- American Keen Cement Co., Levensaler-Spier Corporation, representatives, Monadnock Bldg., San Francisco.

HARDWARE
- Russwin Hardware, Joost Bros., San Francisco.
- Western Brass Mfg. Co., 217 Tehama St., S. F.

HARDWOOD FLOORING
- Parrott & Co., 320 California St., San Francisco
- White Bros., Cor. Fifth and Brannan Sts., San Francisco.
- Hardwood Interior Co., 554 Bryant St., San Francisco.

HARDWOOD LUMBER
- Dieckmann Hardwood Co., Beach and Taylor Sts., San Francisco.
- Parrott & Co., 320 California St., San Francisco.
- White Bros., Cor. Fifth and Brannan Sts., San Francisco.

HEATERS—AUTOMATIC
- Pittsburg Water Heater Co., 237 Powell St., San Francisco.
- Hoffman Heaters, factory branch, San Francisco.

HEATING EQUIPMENT—VACUUM, ETC.
- Edward Stephenson, 618 Monadnock Bldg., San Francisco.

HEATING AND VENTILATING
- Atlas Heating & Ventilating Co., Fourth and Freelon Sts., San Francisco.
- J. M. Boscus, 975 Howard St., San Francisco.
- Fess System Co., 220 Natoma St., San Francisco.
- Mangrum & Otter, Inc., 507 Mission St., San Francisco.
- Scott Company, 243 Minna St., San Francisco.
- Wittman, Lyman & Co., 341 Minna St., San Francisco.
- Pacific Fire Extinguisher Co., 507 Montgomery St., San Francisco.
- Petersen-James Co., 710 Larkin St., San Francisco.
- F. P. Walsh, 244 Kearny St., San Francisco.

HOLLOW BLOCKS
- Denison Hollow Interlocking Blocks, Monadnock Bldg., San Francisco, and Chamber of Commerce Bldg., Portland.

INGOT IRON
- American Rolling Mill Co., Middleton, Ohio.
- California Corrugated Culvert Co.,, 5th and Parker Sts., West Berkeley.

INSPECTIONS AND TESTS
- Robert W. Hunt & Co., 251 Kearny St., San Francisco.

JOIST HANGERS
- Western Builders' Supply Co., 155 New Montgomery St., San Francisco.

LIME
- Holmes Lime Co., Postal Telegraph Bldg., San Francisco.
- Henry Cowell Lime & Cement Co., 9 Main St., San Francisco.

LIGHT, HEAT AND POWER
- Pacific Gas & Elec. Co., 445 Sutter St., San Francisco.

LUMBER
- Dudfield Lumber Co., Palo Alto, Cal.
- Sunset Lumber Co., Oakland, Cal.
- Santa Fe Lumber Co., Seventeenth and De Haro Sts., San Francisco.

MAIL CHUTES
- Cutler Mail Chute Co., Rochester, N. Y. (See Adv. on page 38 for Coast representatives.)

MANTELS
- Mangrum & Otter, 561 Mission St., San Francisco.

MANTELS—Continued.
- Watson Mantel & Tile Co., Sheldon Bldg., San Francisco.

MARBLE
- Columbia Marble Co., 268 Market St., San Francisco.
- Joseph Musto Sons-Keenan Co., 535 North Point St., San Francisco.

METAL AND STEEL LATH
- Atlantic Fireproofing Co., Pacific Bldg., San Francisco.
- Jackson Fireproof Partition Co., Levensaler-Spier Corporation, distributors, Monadnock Bldg., San Francisco.
- L. A. Norris & Co., Monadnock Bldg., San Francisco.
- Pratt Building Material Co., Hearst Bldg., San Francisco.

METAL CEILINGS
- Berger Mfg. Co., 1120 Mission St., San Francisco.
- San Francisco Metal Stamping & Corrugating Co., 2269 Folsom St., San Francisco.

METAL DOORS AND WINDOWS
- U. S. Metal Products Co., 525 Market St.
- Dahlstrom Metallic Door Co., Western office, with M. G. West Co., 353 Market St., San Francisco.

METAL FURNITURE
- M. G. West Co., 353 Market St., San Francisco.
- Chas. M. Finch, 311 Board of Trade Bldg., San Francisco.

METAL SHINGLES
- Meurer Bros., 630 Third St., San Francisco.
- San Francisco Metal Stamping & Corrugating Co., 2269 Folsom St., San Francisco.

OIL BURNERS
- American Heat & Power Co., Seventh and Cedar Sts., Oakland.
- Fess System Co., 220 Natoma St., San Francisco.
- T. P. Jarvis Crude Oil Burner Co., 275 Connecticut St., San Francisco.
- Compressed Air & General Machinery Co., 39 Stevenson St., San Francisco.
- S. T. Johnson Co. (see adv. below).

ARCHITECTS' SPECIFICATION INDEX—*Continued*

ORNAMENTAL IRON AND BRONZE
- California Artistic Metal & Wire Co., 349 Seventh St., San Francisco.
- J. G. Braun, Chicago and New York.
- Ralston Iron Works, 20th and Indiana Sts., San Francisco.
- Monarch Iron Works, 1165 Howard St., San Francisco.
- C. J. Hillard Company, Inc., 19th and Minnesota Sts., Sain Francisco.
- Shreiber & Sons Co., represented by Western Builders Supply Co., San Francisco.
- West Coast Wire & Iron Works, 861-863 Howard St., San Francisco.
- Vulcan Iron Works, San Francisco.

PAINTING AND DECORATING
- D. Zelinsky, 564 Eddy St., San Francisco.
- Horace W. Tyrell, 1707 38th Ave., Oakland.
- Robert Swan, 1133 E. 12th St., Oakland.

PAINT FOR BRIDGES
- Briggs Bituminous Corporation Co., J. & R. Wilson, agents 117 Steuart St., San Francisco.

PAINT FOR STEEL STRUCTURES
- "Biturine," sold by Biturine Co. of America, 24 California St., San Francisco.
- Briggs Bituminous Corporation Co., J. & BR. Wilson, agents, 117 Steuart St., San Francisco.
- Carbonizing Coating, made by Goheen Mfg. Co., Canton, Ohio. (See Adv. for Coast distributors.)
- Joseph Dixon Crucible Co., Coast branch, 155 Second St., San Francisco.
- Trus-Con Bar-Ox, Trussed Concrete Steel Co. (See Adv. for Coast agencies.)
- Glidden's Acid Proof Coating, sold on Pacific Coast by Whittier, Coburn Company, San Francisco and Los Angeles.
- "Bitumastic" sold by Hill, Hubbell & Co., Fife Bldg., San Francisco.

PAINT FOR CEMENT
- American Paint & Dry Color Co., 414 Ninth St., San Francisco.
- Bay State Brick and Cement Coating, made by Wadsworth, Howland & Co. (Inc.). (See Adv. in this issue for Pacific Coast agents.)
- "Biturine," sold by Buturine Co. of America, 24 California St.. San Francisco.
- Trus-Con Stone Tex., Trussed Concrete Steel Co. (See Adv. for Coast agencies.)
- Liquid Stone Paint Co., Hearst Bldg., San Francisco, Los Angeles and San Diego.
- Glidden's Liquid Cement, sold on Pacific Coast by Whittier, Coburn Company, San Francisco and Los Angeles.
- Concreto Cement Coating, manufactured by the Muralo company. (See color insert for Coast distributors.)
- Moller & Schumann Co., Hilo Varnishes, 1022 Mission St., San Francisco.
- Samuel Cabot Mfg. Co., Boston, Mass., agencies in San Francisco, Oakland, Los Angeles, Portland, Tacoma and Spokane.

PAINTS, OILS, ETC.
- American Paint & Dry Color Co., 414 Ninth St., San Francisco.
- Concreto Cement Coating, manufactured by the Muralo company. (See color insert for Coast distributors.)
- Bass-Heuter Paint Co., Mission, near Fourth St., San Francisco.

PAINTS, OILS, ETC.—Continued.
- Whittier-Coburn Co., Howard and Beale Sts., San Francisco.
- "Biturine," sold by Biturine Co. of America, 24 California St., San Francisco.
- Heath & Milligan Mfg. Co., 9-15 Fremont St., San Francisco.
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ARCHITECTS' SPECIFICATION INDEX—*Continued*

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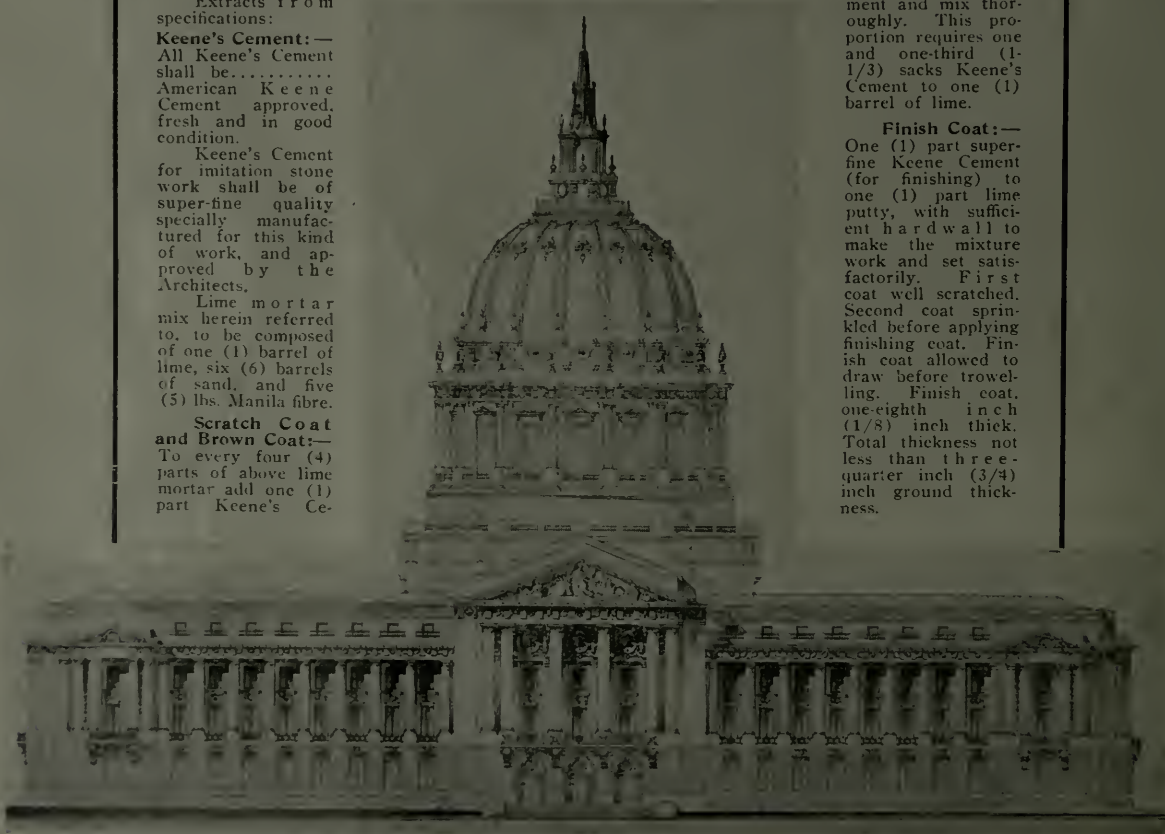

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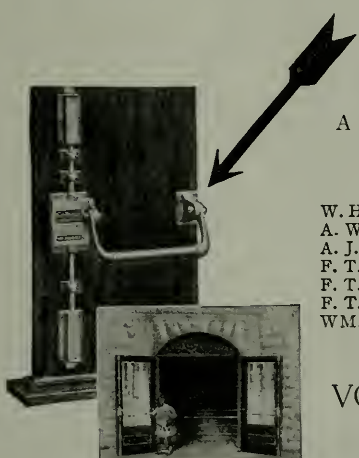

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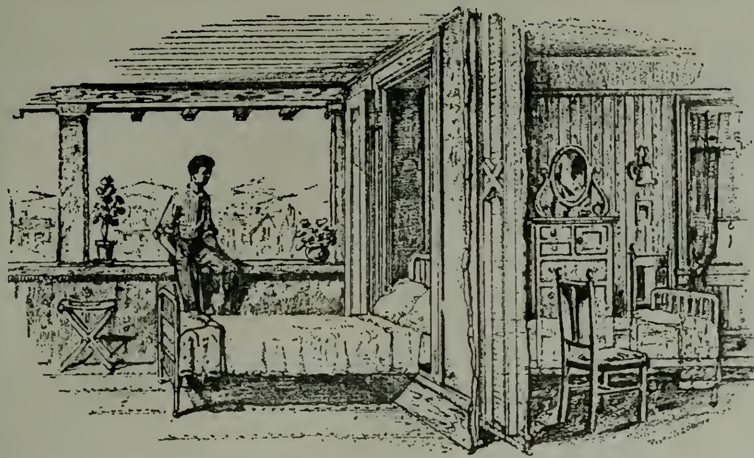

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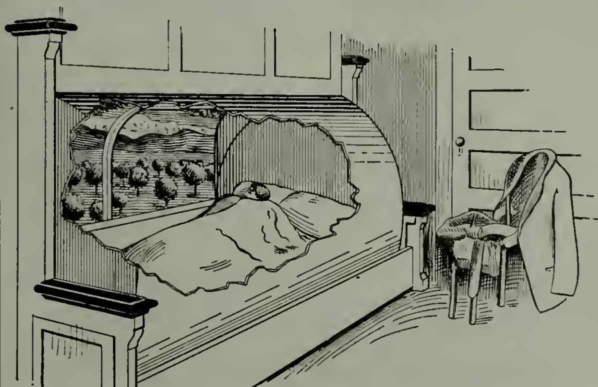

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Contents for May

[Index to Advertisements Page 8]

FIRST CHOICE SAN FRANCISCO PUBLIC LIBRARY COMPETITION
GEO. W. KELHAM, ARCHITECT

Frontispiece
The Architect and Engineer of California
For May, 1914.

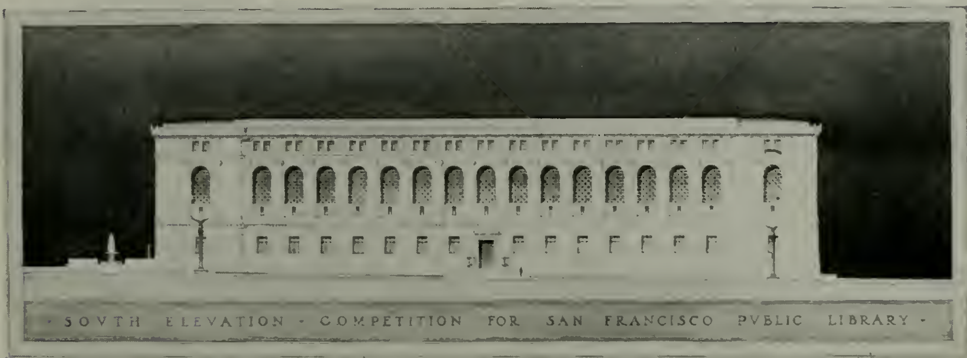
THE

Architect and Engineer

Of California

Pacific Coast States

Vol. XXXVII. MAY, 1914. No. 1.



SOUTH ELEVATION *Geo. W. Kelham, Architect*

The San Francisco Public Library Competition

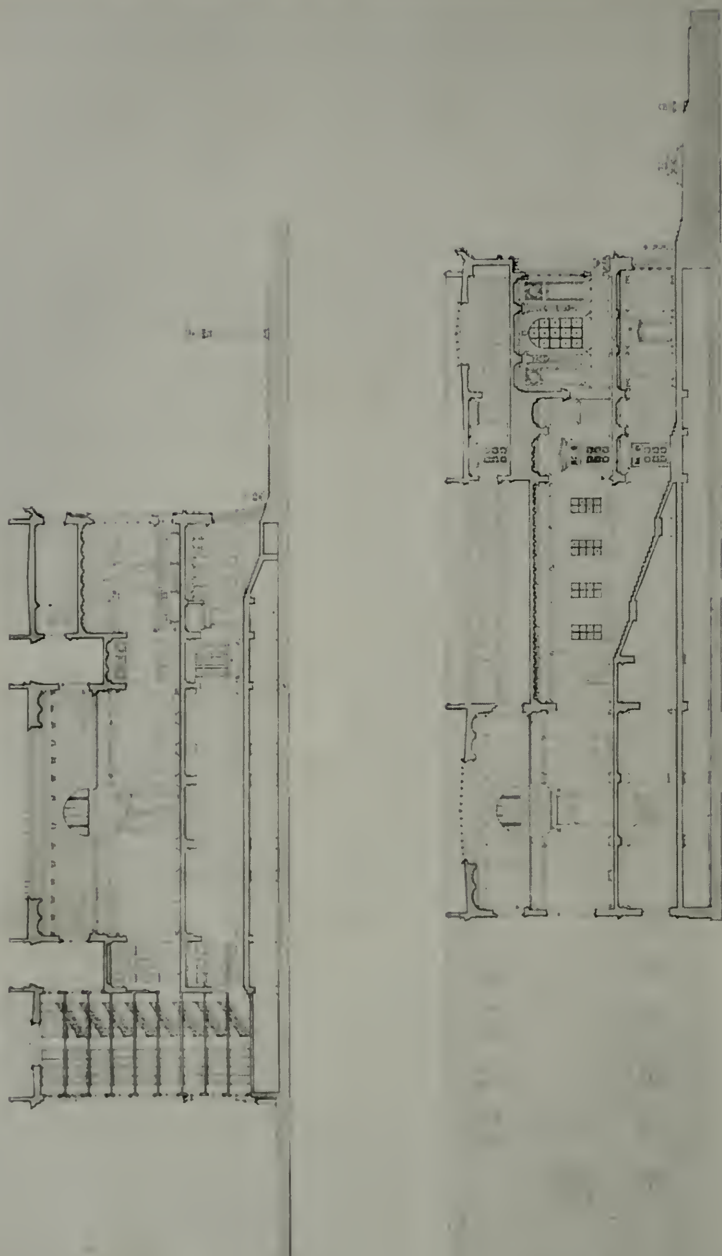
By B. J. S. CAHILL, A. I. A.

FROM the standpoint of the majority of the competitors, the San Francisco Public Library competition, just concluded, was an unqualified success. Although five out of six had to lose, one may venture that even these were unanimous in approval of the verdict rendered. No more severe test is possible. The credit of this lies with the committee which handled the competition and with the competitors themselves, who developed on the whole a high standard of work and who stood by the verdict with gameness and even generosity. I know that those who ran closest to the winner admit with fine frankness that they were fairly beaten.

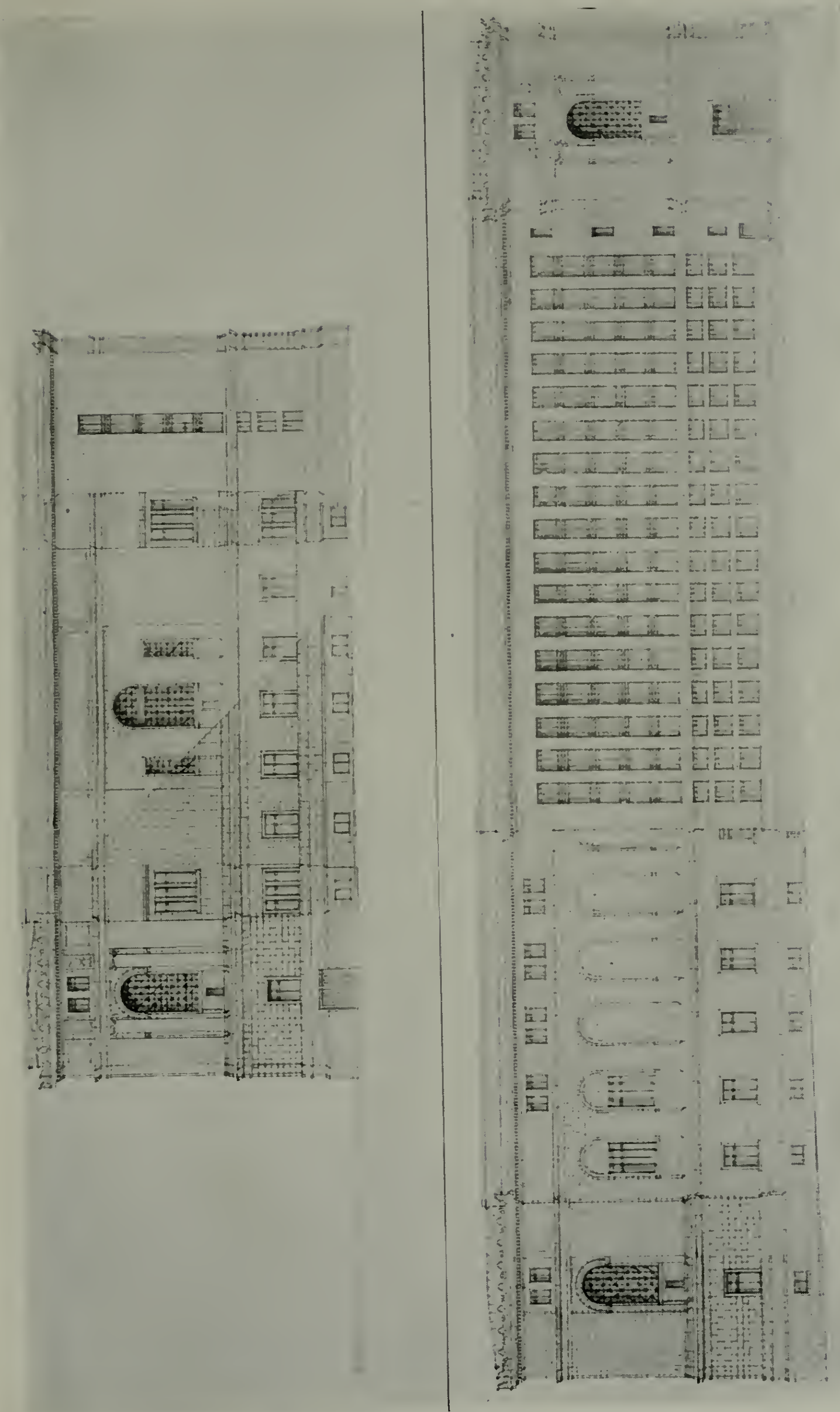
From the standpoint of the profession at large the competition lacked catholicity. There seems to be no particular reason why a certain six firms of architects should be chosen and paid to compete and others, equally competent, not chosen. This objection rather gains in validity when it is realized that the library is a public enterprise and that the Library Trustees, as such, represent the whole community. Are we to suppose that exactly the same six would have been selected by another board of trustees? A public building calls for a public competition. It rests with the American Institute of Architects to devise some means of conducting a competition that will be free for all, that will attract the competent and select the best, that will preclude over-elaboration of unworthy projects, or over compensation of mere ideas unallied with experience or adequate organization.

However, from the viewpoint of the general public, who will enjoy the sight and use of the library for many years to come, the selection of the design here shown as number one is wholly satisfactory. If all the architects of the Coast had competed it is doubtful whether anything better could have been chosen, and so from this broad standpoint the end thoroughly justifies the means.

Photos by Walter Scott, San Francisco.



SECTIONS SAN FRANCISCO PUBLIC LIBRARY
GEO. W. KELHAM, ARCHITECT



EAST ELEVATION (TOP)
NORTH ELEVATION (BELOW)
GEO. W. KELHAM, ARCHITECT

Two very interesting features of the competition deserve special comment. The framers of the program were wholly excluded from the jury, and the majority of the jury were architects of high repute, brought from afar, and therefore unfamiliar with the handiwork of any of the competitors.

Regarding the first of these, I have known cases where draftsmen employed by the professional adviser have been afterward eagerly sought out for employ by competitors, of course for very obvious reasons. When the adviser is also one of the jury it is a psychological impossibility for him not to reach out sympathetically to a solution with which he is already familiar. His mind has traveled the same road, and instinctively returns to it in accordance with well-established laws. Moreover, it is well known that men become slaves of their own ideas. If a professional adviser has hit upon a sound parti, well and good, but if a much better one can be found, it stands a poor chance of making any appeal to a mind already saturated with a preconceived idea. Hence the value of what Lord Roseberry calls "the open mind," and the perils of what French psychologists call *idées fixes*.

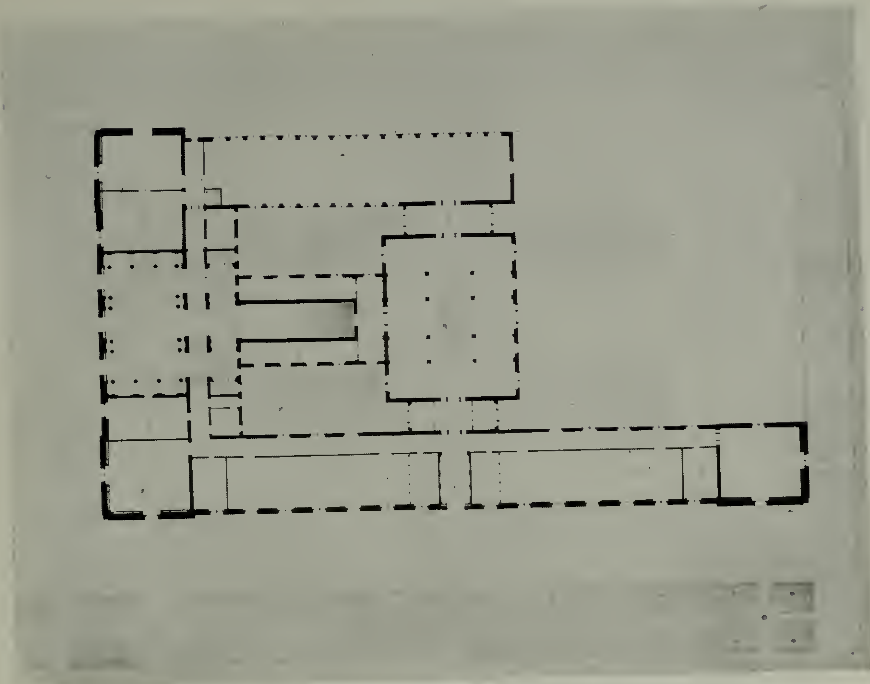
The second feature of the competition, the employment of judges unfamiliar with the competitions, is also sound in principle. One's designing is as unmistakable as one's handwriting, and if a juryman can identify even one out of a dozen competitors, an absolutely impartial verdict cannot be rendered. The eyes of justice must be firmly bandaged. She must not even peek through a pinhole.

The jury was surely an ideal one. Two out of three were architects. One has attained highest honors in the theory of architecture; the other has reached the pinnacle of fame in practice. The third juryman, representing the Library Trustees, had the wisdom to resolve and the fine tact to tell us that he would leave the work of selection wholly in the hands of his colleagues.

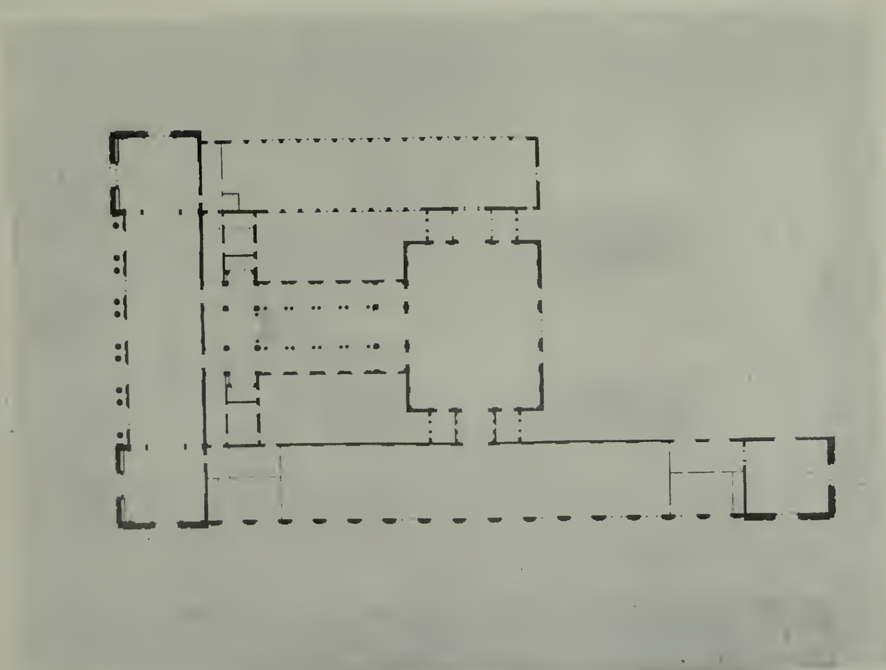
Mr. Paul Philippe Cret is a graduate of the Ecole des Beaux Arts of Lyons, his native town, and of Paris, an *architecte diplomé* of the French government, and now professor of design in the University of Pennsylvania. He has won numerous medals and prizes and was the architect of the Pan-American Union at Washington and the Valley Forge Memorial Arch.

Mr. Cass Gilbert received his training at the Boston "Tech." Among the many buildings he has designed may be mentioned the new capitol, St. Paul, Minn.; Essex County court house, Newark, N. J.; the Agricultural building at the Omaha Exposition; the Brazer building, Boston; the Broadway-Chambers building, New York; the New York custom house; the Art building and Festival Hall of the St. Louis Exposition; the Central Public Library of St. Louis; the Detroit Public Library; the plans of the University of Minnesota and the University of Texas; the completion of the Arkansas capitol, Little Rock, etc.

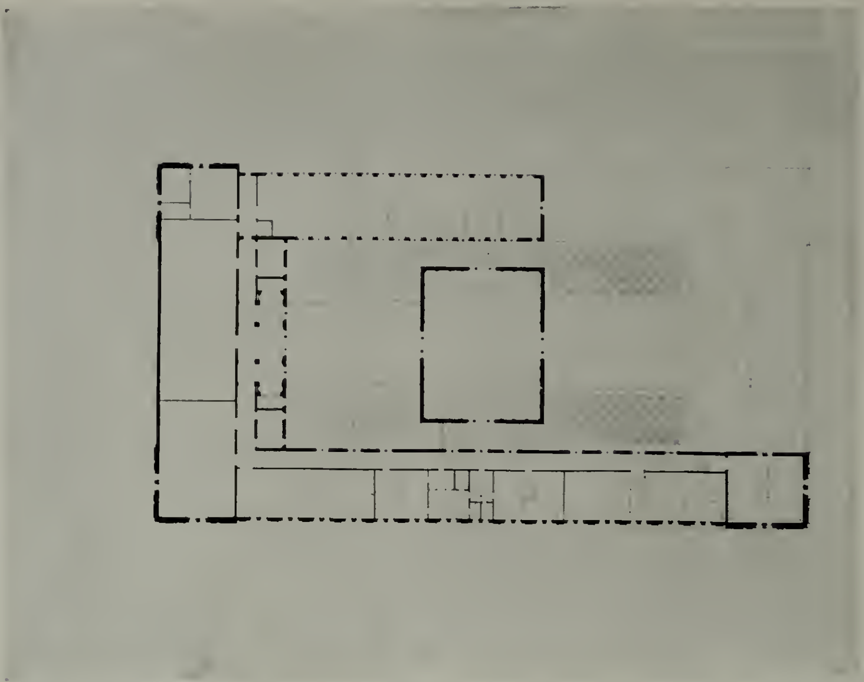
This is a wonderful list for a man in the prime of life, and I have not yet mentioned two buildings that in importance and magnitude far transcend all the rest put together. The West Street building in New York City is an extraordinary architectural triumph along lines that at the time were entirely new, although perfectly logical, and in my own opinion (expressed in print fourteen years ago, before either of these buildings were thought of) absolutely inevitable sooner or later. I allude, of course, to the use of Gothic forms and motives wherewith to clothe the soaring steel work of a modern skyscraper. With the West Street building as a standing vindication of a theory that school men with their college conceit fresh upon them always frowned at, Mr. Gilbert proceeded to the realization in Gothic lines of the most stupendous structure for human occupation ever placed upon this planet—the Woolworth building, New York.



FIRST FLOOR PLAN SAN FRANCISCO PUBLIC LIBRARY
Geo. W. Kelham, Architect



SECOND FLOOR PLAN SAN FRANCISCO PUBLIC LIBRARY
Geo. W. Kelham, Architect

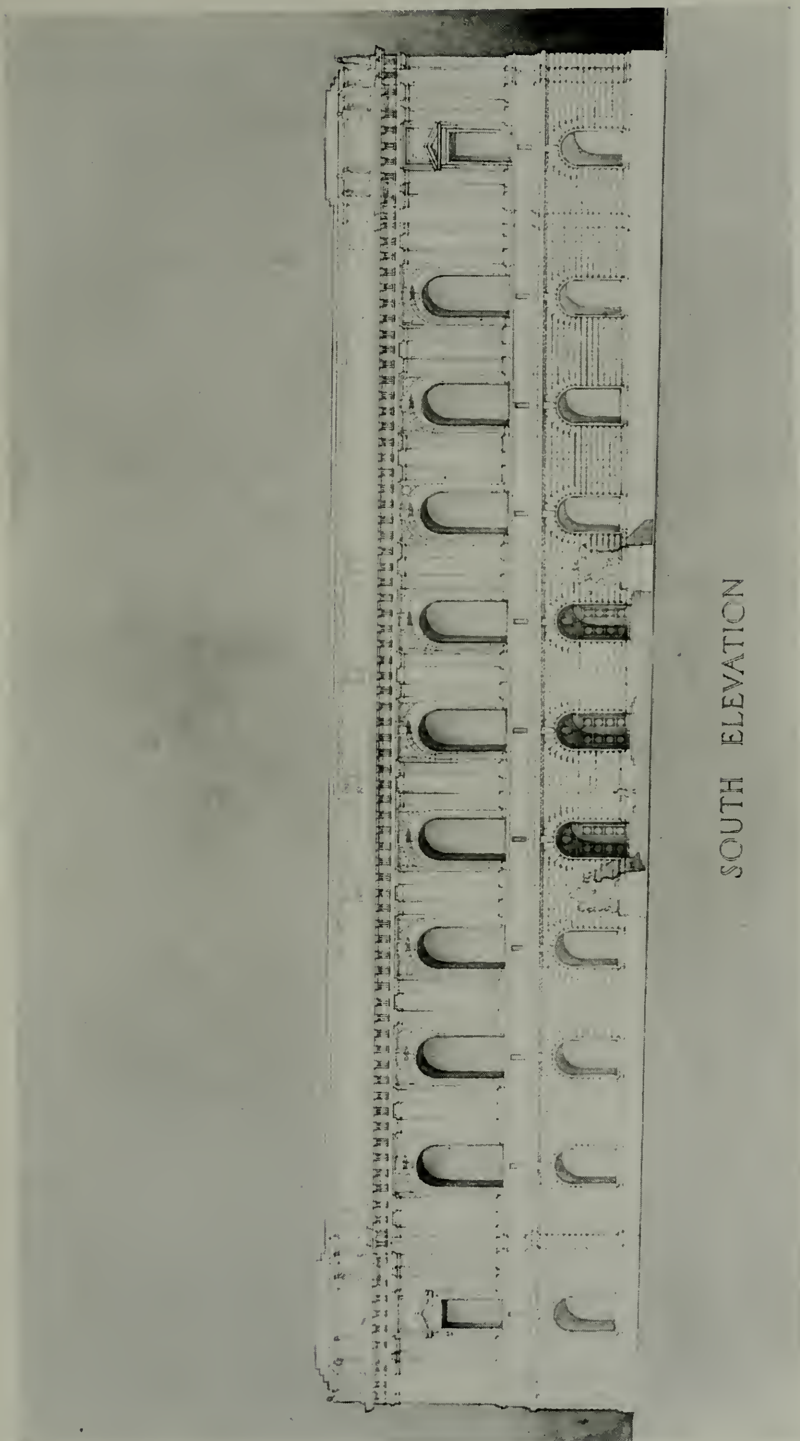


THIRD FLOOR PLAN SAN FRANCISCO PUBLIC LIBRARY
Geo. W. Kelham, Architect

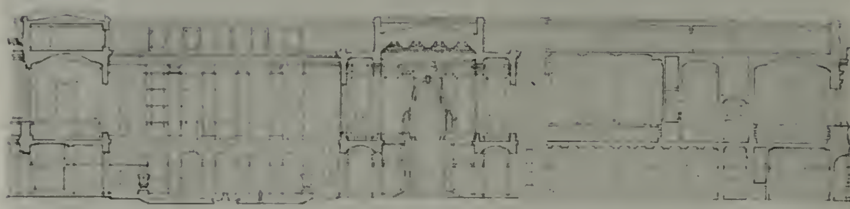
With such a record of achievement, it sounds rather tame to add that Mr. Gilbert has been honored by Presidents Roosevelt and Taft, placed upon important art commissions, and that he has been loaded with honors and recognition both at home and abroad, not the least of these being the presidency of the American Institute of Architects.

Mr. James D. Phelan, twice mayor of San Francisco, and the best mayor we ever had, is too well known to need introduction. He has long been a Library Trustee, and in matters of civic betterment and patronage of art and architecture stands foremost among our citizens. Mr. Phelan inaugurated the Adornment Society, which financed the Burnham plan and did fine work familiarizing the people with the idea of a Civic Center, so that when the reality was finally presented to them "the way had been made straight" and achievement was easy.

And this brings us to the Civic Center and the Library. Undoubtedly this building, whose actual present needs are rather too small for the block, should at least be made to show completed fronts at the long avenue of approach to the plaza, as well as at the end of the plaza itself, leaving the opposite sides incomplete for the present. The completion of the Civic Center from its interior is of prime importance. More than this, for it soon becomes evident that one must choose between an incomplete long facade and a complete building, or an incomplete building, but a complete facade. Four of the competitors took the latter view; two took the former. The minority, by so doing, unfortunately put themselves *hors de combat* at the outset. From the librarian's point of view concentration is an advantage, and Mr. Edgar Mathews' lay-out with the stack room equidistant from the reading room and the reference room and right behind the delivery was a solution leaving nothing to be desired. The exterior design of this plan showed refinement of a rare type and was rendered with delicacy and



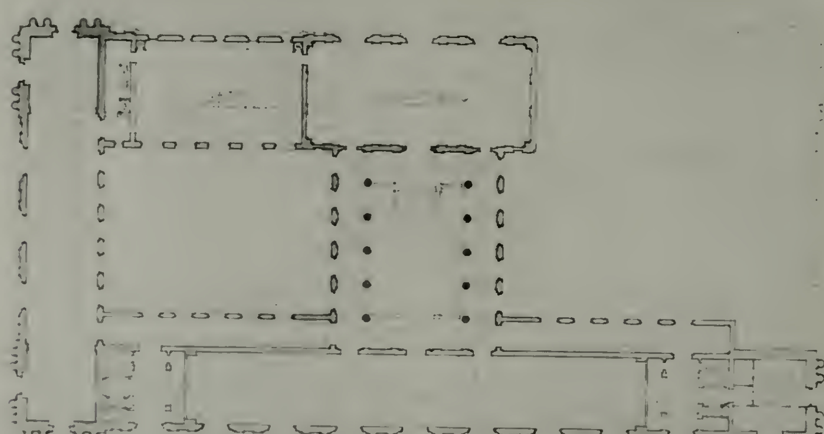
ELEVATION SAN FRANCISCO PUBLIC LIBRARY
WARD & BLOHME, ARCHITECTS



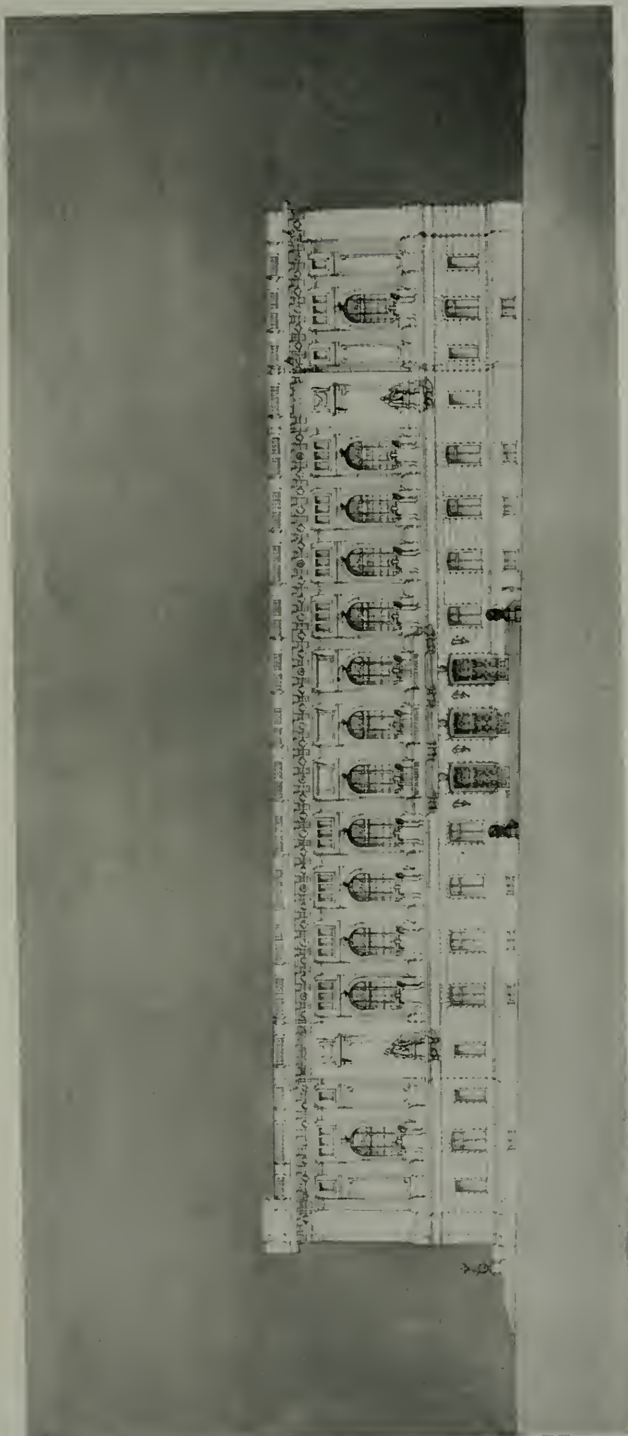
SECTION SAN FRANCISCO PUBLIC LIBRARY
Ward & Blohme, Architects

charm and little touches of distinction that lifted it above the plane of excellence that is obvious and accepted.

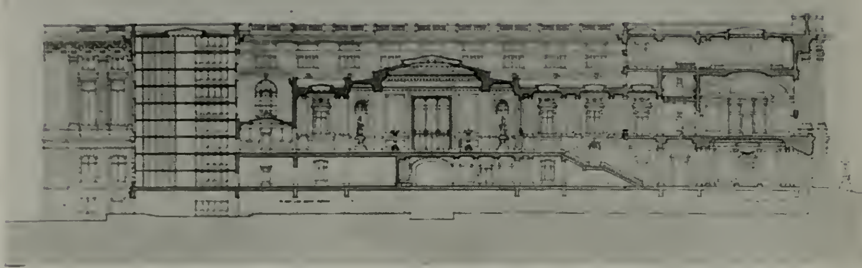
Of the four schemes with the long facade completed, that of Mr. G. Albert Lansburgh showed much ingenuity in the economy of cubage by putting his delivery room at a lower level than the reading rooms. From the librarian's viewpoint, however, this defect is fatal. The continuous transportation of books in armloads and on trucks from one room to another cannot be conveniently done up and down flights of steps. So while this plan had many meritorious points of design, it lost out on what its designer probably thought at the time was its winning feature. Such is the force of a "fixed idea" before alluded to when once it obtains root. We have all of us suffered its tyranny at some time or another.



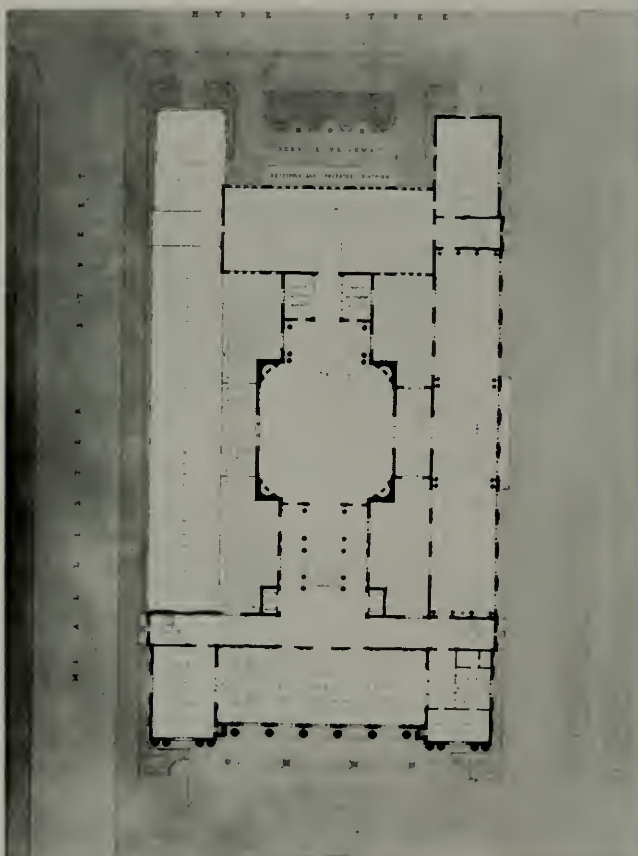
SECOND FLOOR PLAN
Ward & Blohme Architects



SOUTH ELEVATION SAN FRANCISCO PUBLIC LIBRARY
GEORGE ALBERT LANSBURGH, ARCHITECT

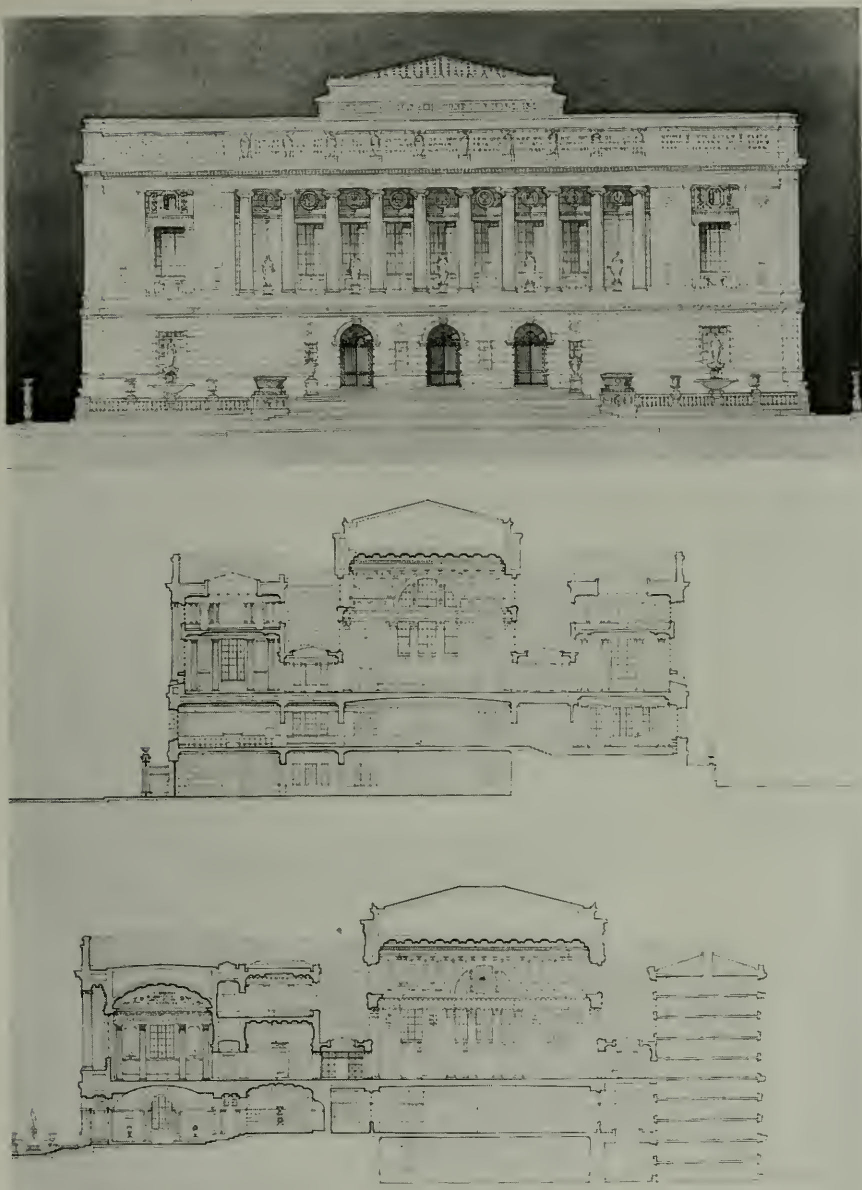


SECTION SAN FRANCISCO PUBLIC LIBRARY
G. A. Lansburgh, Architect



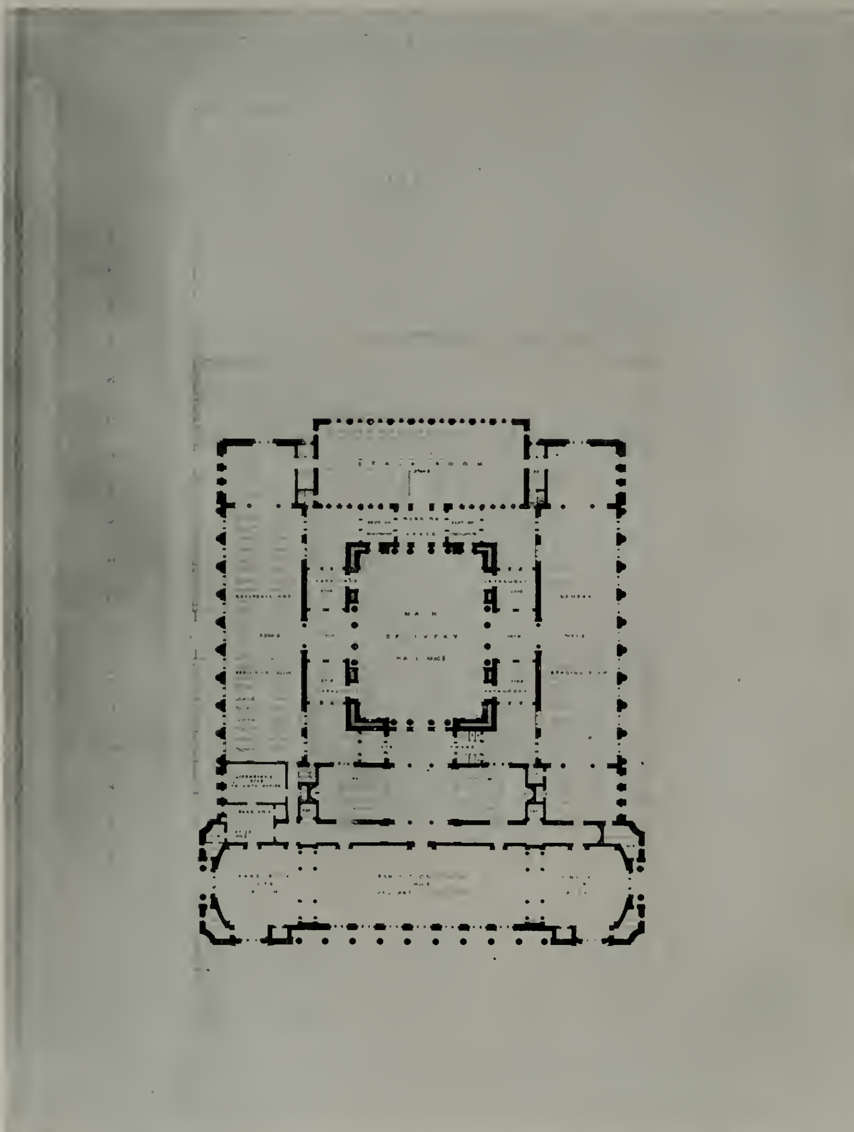
SECOND FLOOR PLAN
G. A. Lansburgh, Architect

Of the remaining plans that of Ward & Blohme was unique in that the main entrance was conceived from the long facade and on the minor axis. In consequence of a rather short "going" the book-seeking public must climb forty steps without a single stop. With good calves and sound aorta this should not prove much of a hardship to a hill community such as ours, and of course these stairs can be changed. But the object of a competition is



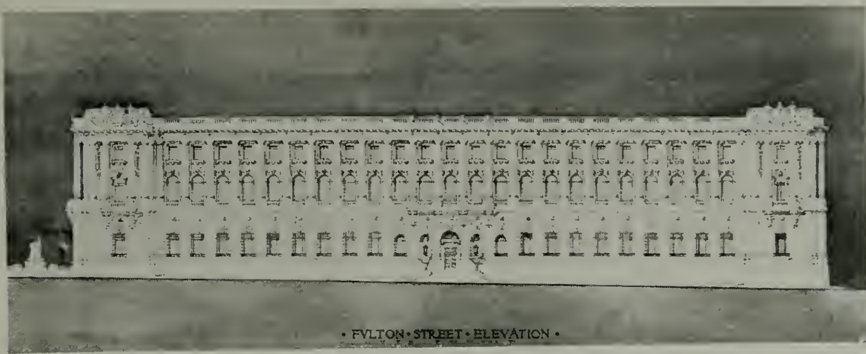
WEST ELEVATION AND SECTIONS
Edgar A. Mathews, Architect

to find a working scheme in a given time which does not have to be changed. This plan showed a decidedly interesting exterior of unquestioned dignity and strength. But the wide spacing of the bays, yielding more wall than window, is surely a defect in a building devoted mainly to the purpose of reading. The entire plan showed an unusual, and, I am sure, quite unnecessary amount of wall, not only in length, but in thickness. Indeed the plans seemed to be drawn to the scale of one-eighth rather than one-sixteenth.

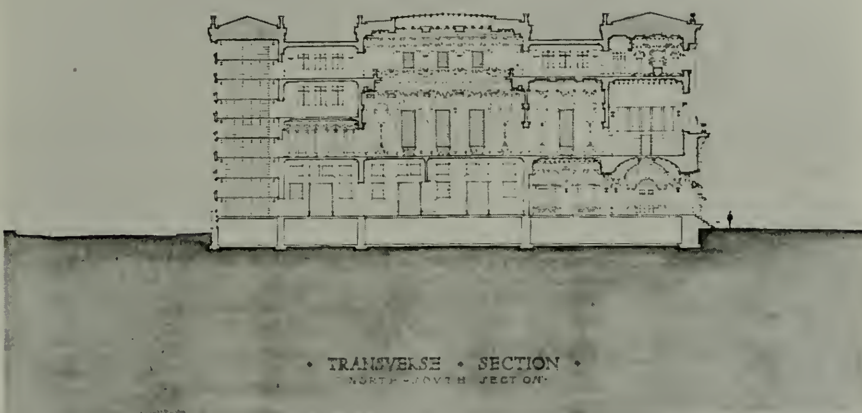


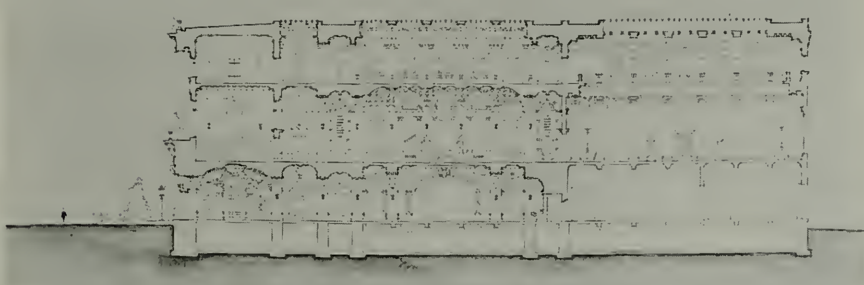
SECOND FLOOR PLAN SAN FRANCISCO PUBLIC LIBRARY
Edgar A. Mathews, Architect

The two remaining schemes were based on an almost identical parti. The plan submitted by Reid Bros. came very close to that submitted by Mr. Geo. W. Kelham, the winner. It contained, however, an extra feature in the form of an art exhibit in the middle of the building, right opposite the entry. This idea was also submitted by Mr. Mathews, with the difference that the latter's was featured on the second floor with abundance of light, whereas in this plan the exhibition room calls for artificial lighting. It also rather spoils the circulation of the first floor and has led the designer to insert a redundant corridor at the rear of the wing allotted to the newspaper room and children's department. Then again the Reid Bros. plan shows the stairs on the side and the return over the center, whereas the Kelham plan more wisely places the stairs in the open and returns on

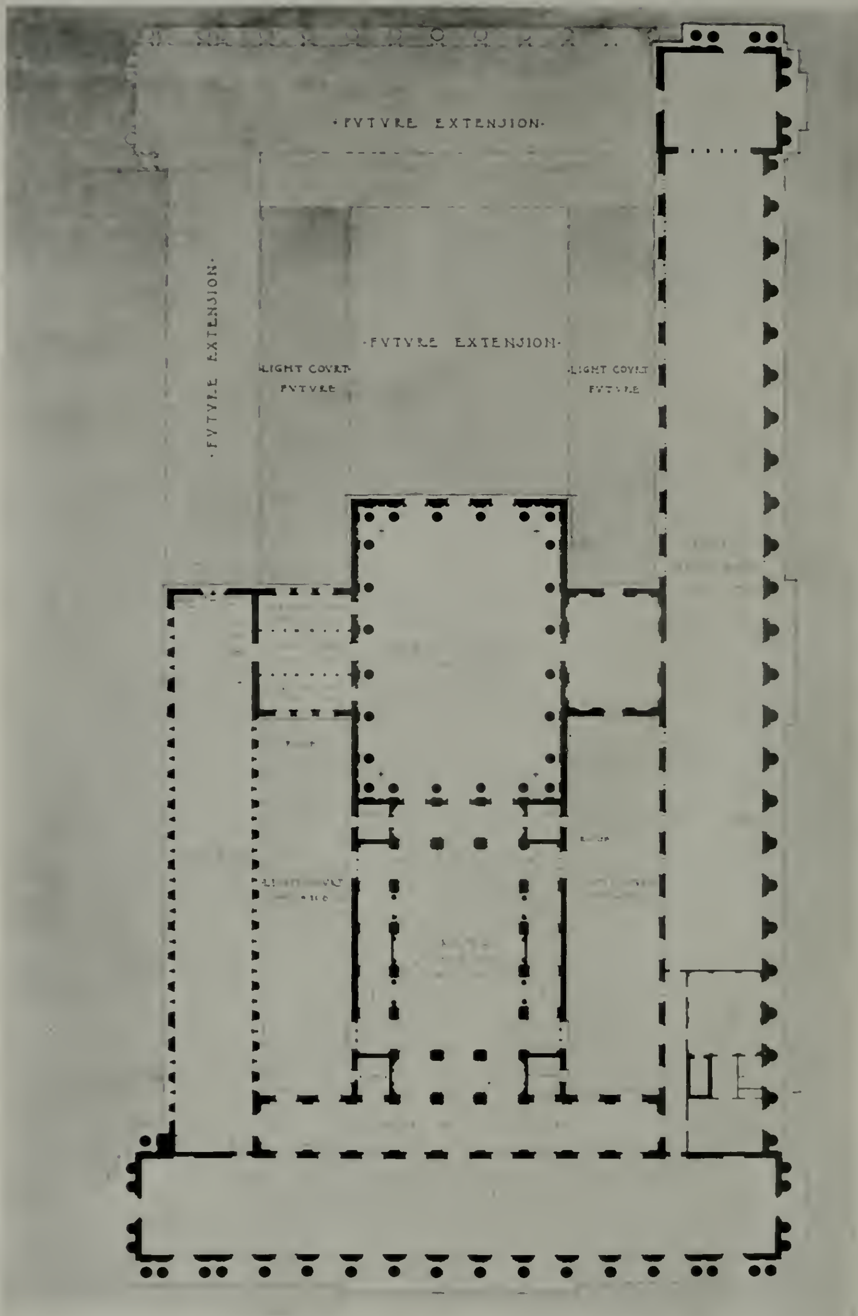


FULTON STREET ELEVATION
Reid Bros., Architects





SECTIONS SAN FRANCISCO LIBRARY COMPETITION
Reid Bros., Architects



SECOND FLOOR PLAN
REID BROS., ARCHITECTS

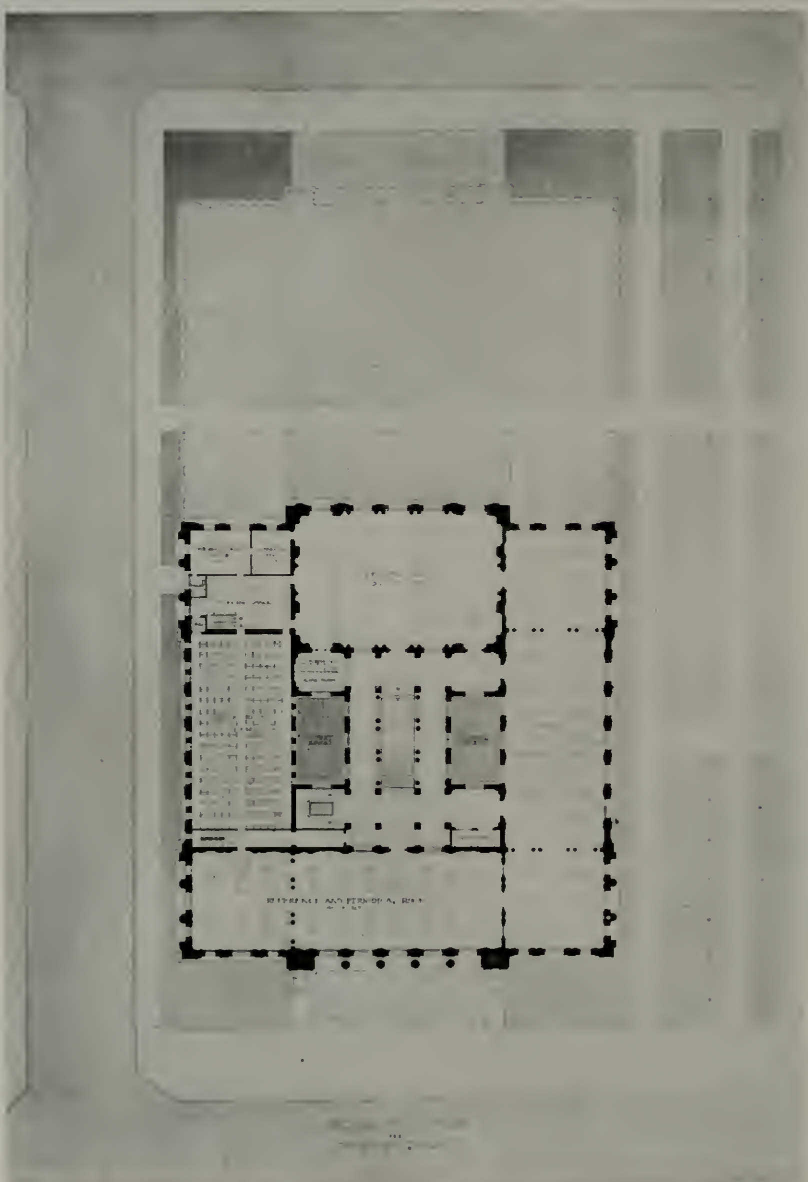
WEST ELEVATION, SAN FRANCISCO PUBLIC LIBRARY
Albert Pissis, Architect

flanking arcades. In spite of many excellences and some interior rooms splendidly designed and stunningly rendered there are obvious weaknesses in this plan, not in detail, but in mass. The workmanship of the different parts was not surpassed by any of the drawings submitted, but the parts were not well integrated. The first floor plan was marred by a redundant hallway; the second floor did not "read" harmoniously; the stair, hall and the delivery room competed with one another, the two rectangles creating a sort of discord in the pochet that the sensitive eye felt instantly. Then the long rooms in front and at the side cried aloud for some cross lines to mitigate their monotony. The elevations accentuated this defect. A facade already long was made tiresomely longer by a too close columniation which does not even desist at the end pavilions, but goes right on and only stops because it has to. It is clear that the author of this design did not take time to stand off from his work for half an hour and calmly size it up. It would surely be a good practice for every one in control of a competition to take an afternoon off just when he has everything settled, go for a long walk, take a swim or play golf—and then come back to his office, light a good cigar, and size up his plans in a calm, judicial and dispassionate way.

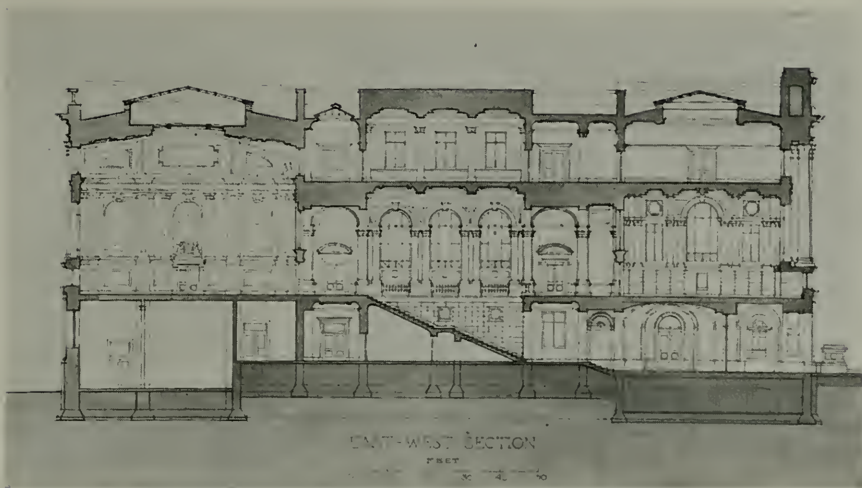
If his judgment is normal and the plan does not look right, he ought to be able to say to himself "this won't do; it will never win"—and start over again.

It takes some pluck to do this—to shake oneself loose from that terrible tyrant—the fixed idea.

In fact, this is precisely what Mr. Kelham, the winner in this competition, did. Within ten days of the finish, he calmly surveyed what he had done, rejected most of it, and began all over again. The result is evidenced in the design. The parti is right, there are no weak spots, good proportion ties all the parts together, the bays on the long facade are neither nine in number as in one plan, nor twenty-three as in another, but just fifteen, a happy medium.



SECOND FLOOR PLAN SAN FRANCISCO PUBLIC LIBRARY
ALBERT PISSIS, ARCHITECT



SECTION SAN FRANCISCO PUBLIC LIBRARY
Albert Pissis, Architect

The result is a clean-cut plan, perfectly balanced and admirably arranged, of course capable of minor improvements, but without any obvious defects such as we have seen in all the others. The fronts are marvels of fine draftsmanship, both in felicity of design and elegance of rendering.

Executed in white granite, San Francisco will at last have a library building which, seen from the trees and water of the great plaza, and superbly placed with the City Hall, the Auditorium, a State building, and an Art Museum, will rival in its setting any other group of civic palaces to be found in the world.

* * *

May Meeting of Los Angeles Chapter, A. I. A.

A FEATURE of the May meeting of Los Angeles Chapter, A. I. A., held on Tuesday evening, May 12th, was an address on "The Fire Hazard of Electricity" by Professor Montgomery of the University of Southern California. The speaker gave a brief history of the discovery and use of electricity and outlined the rapid development made in the last few years in its application to practical purposes and the fire hazard of its improper use for light and power purposes. Of all fires, the causes of which are known, possibly eight per cent can be attributed to electricity, and seventy-five per cent of these could be prevented by the use of good material and proper installation. The lecture was illustrated with stereopticon views showing examples of proper and improper methods of electrical installation.

Following the address a number of important questions were considered and discussed, among them the desirability of adopting the Quantity Survey system in figuring contracts and Messrs. Octavius Morgan, Jr., S. B. Marston and T. Franklin Power were appointed a committee to act in conjunction with the Institute committee on this subject.

An effort is to be made to get more of the Chapter members to become members of the national body of the American Institute of Architects, and a committee consisting of Messrs. A. M. Edelman, J. C. Hillman and H. M. Patterson was appointed to encourage the non-institute members along this line.

To insure the selection of Los Angeles as the convention city for the annual meeting of the Institute in 1915 the secretary was instructed to send a night lettergram to Mr. Octavius Morgan, one of the members of the Board of Directors of the Institute, who is now on his way back from Europe, to use his efforts to secure favorable consideration for this question at the directors' meeting to be held in Washington.

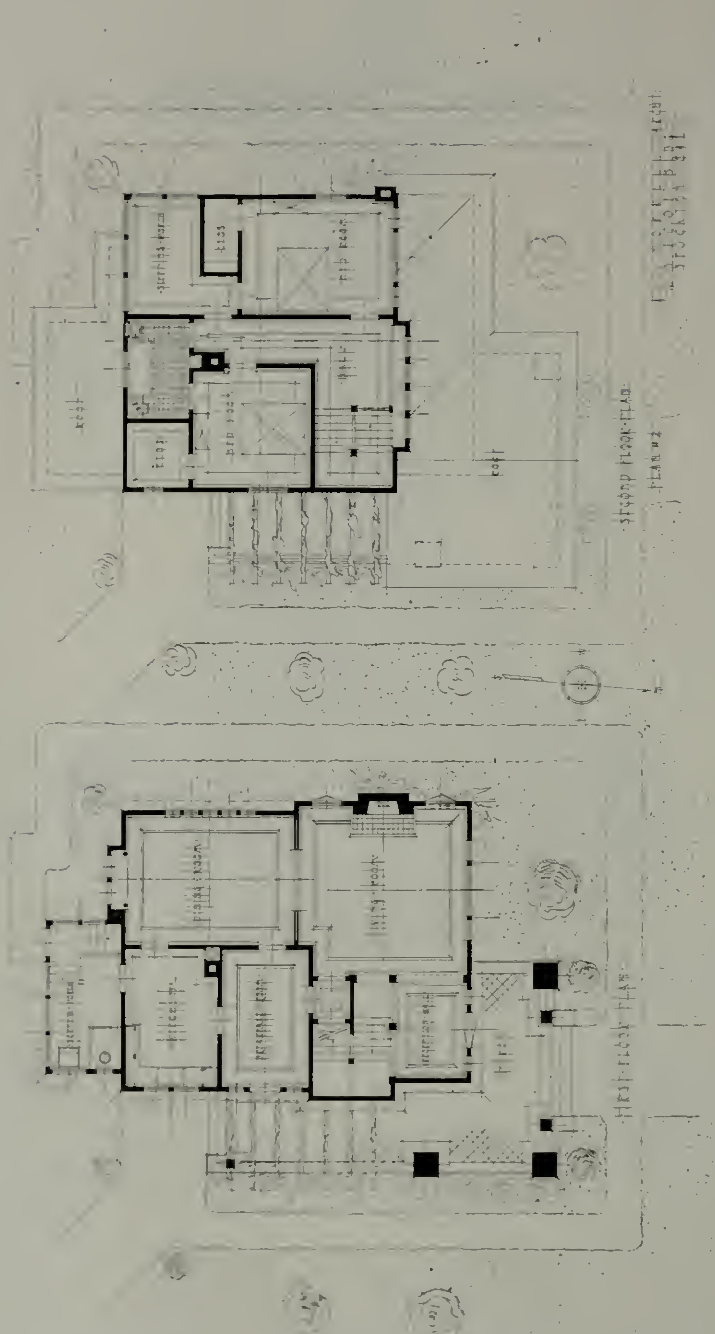
Mr. John P. Krempel, chairman of the entertainment committee, announced that Mr. A. M. Edelman would deliver an illustrated lecture on Egypt at the next meeting, which will be held in June. This will be the last meeting before the summer vacation.

DESIGN FOR A BANK AND OFFICE BUILDING.
RALPH P. MORRELL, ARCHITECT

CEMENT SUN-DIAL
Executed by the Western Sculptors, San Francisco

Creditable Work of a Stockton Architect

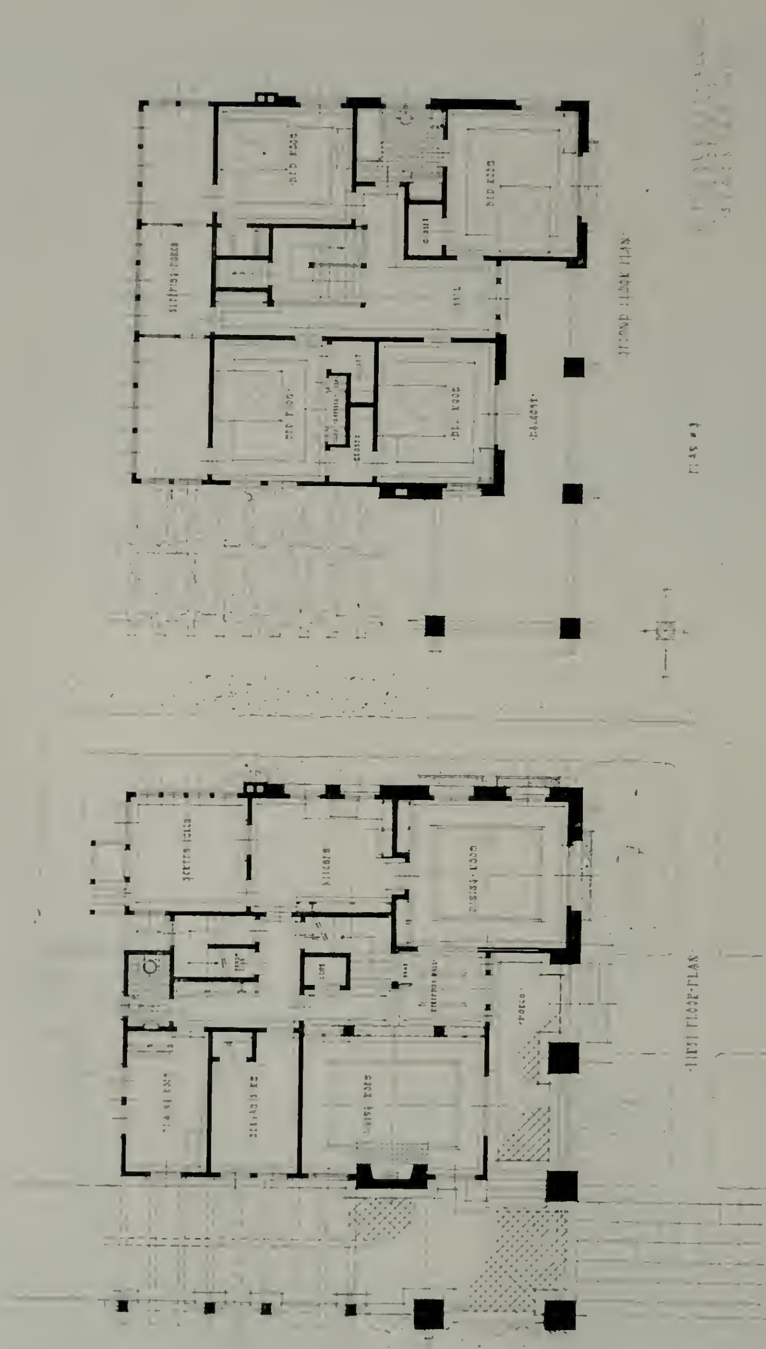
SOME of the recent work of Architect Ralph P. Morrell, of Stockton, is shown in this issue. Mr. Morrell has departed somewhat from the custom of most architects and has rendered his perspectives in pen and ink instead of water colors. His residence and garage sketches are dignified and show an artistic temperament that doubtless has contributed very materially to his success. The pictures are selected at random from a generous list of buildings covering varied classes and types of construction, from the modest home to the pretentious office building. Mr. Morrell has also designed a number of school houses, one of which—an open-air structure—is shown herein, and because of its unique character, has been reproduced in newspapers and magazines throughout the country. Mr. Morrell was recently granted a certificate by the California State Board of Architecture.



FIRST AND SECOND FLOOR PLANS FOR STOCKTON RESIDENCE
RALPH P. MORRELL, Architect

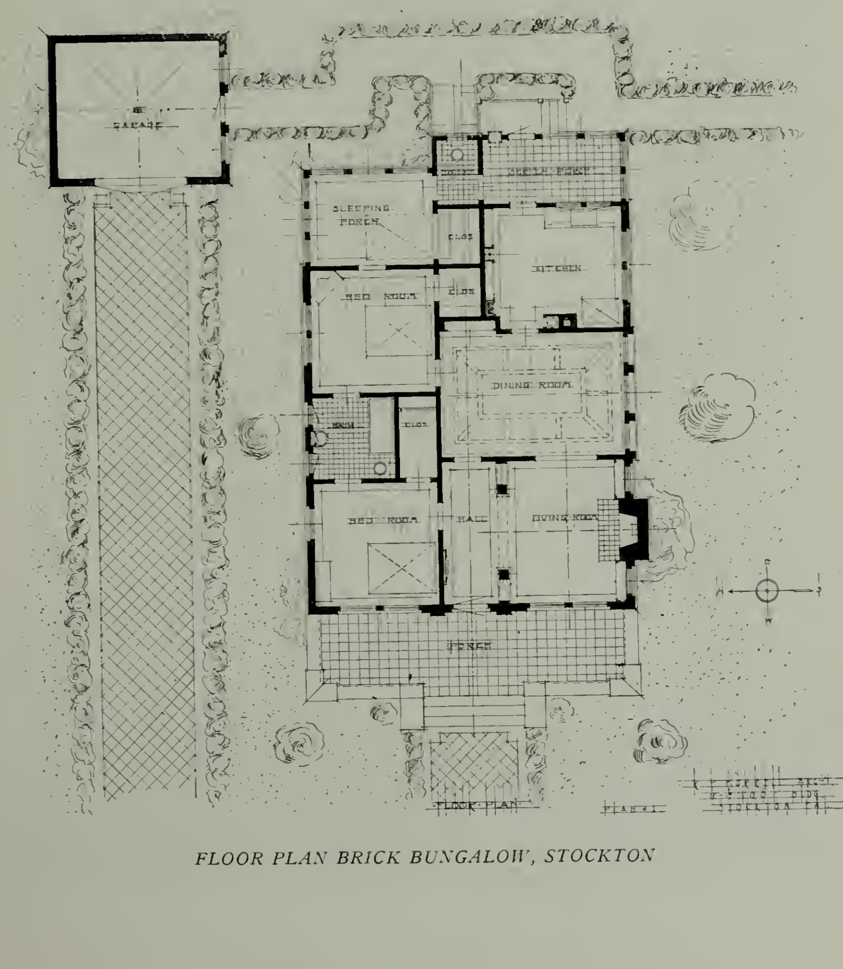
ELEVATION FOR STOCKTON RESIDENCE
Ralph P. Morrell, Architect

AN ATTRACTIVE STOCKTON HOME
Ralph P. Morrell, Architect



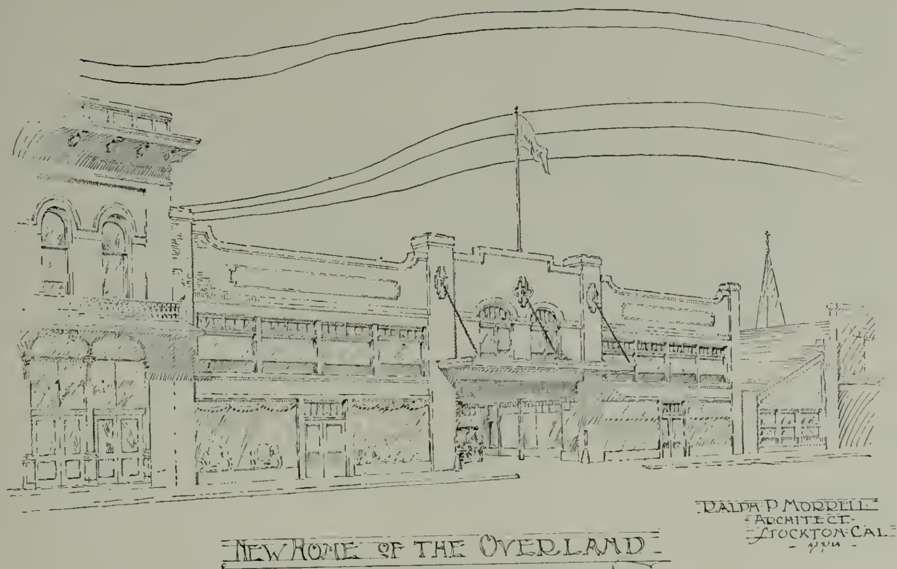
FLOOR PLANS FOR AN ATTRACTIVE STOCKTON HOME
RALPH P. MORRELL, ARCHITECT

BRICK BUNGALOW, STOCKTON
Ralph P. Morrell, Architect



FLOOR PLAN BRICK BUNGALOW, STOCKTON

SKETCH FOR CLUB HOUSE FOR THE STOCKTON BOAT CLUB
RALPH P. MORRELL, ARCHITECT



Ralph P. Morrell, Architect

THE LINDEN GARAGE, MALLETT & TUCKER, PROPS., STOCKTON, CAL.
Ralph P. Morrell, Architect

Humoring the Architect

AN ARCHITECT or an engineer who is handling a large job has to settle many questions regarding details which are not made explicit in the specifications. It is in his power to make things run smoothly and with a minimum of expense, if he so wills it. He may, on the other hand, by lack of good judgment, so impede the smooth completion of the work as to cause serious loss to the contractor who has taken the job on a lump sum basis, or corresponding loss to the building owner where the contract is upon the cost-plus-percentage or cost-plus-fixed-profit basis.

In the course of a paper read before the Boston Society of Civil Engineers, Mr. Leonard C. Wason remarked: "In one case where a number of local firms bid on a large building for an architect who was known always to rule in favor of his client irrespective of the merits of the case, the successful bidder, after figuring full measure on all quantities, added this item: 'Humor architect.' This item was ten per cent of the contract. It is safe to presume that other bidders placed this contingency at a higher figure." True, the architect in this instance was a Bostonian. It is, however, not unreasonable to infer that the same thing has happened elsewhere. Contractors are quick to discern any little personal or professional weaknesses in members of the architectural fraternity with whom they do business. The personal equation enters more extensively, in fact, into the relation between architect and builder than either of the parties to those relations would care, perhaps, to admit. Idiosyncrasies, whether of temperament or practice, are so grasped that the average wide-awake builder knows to the shadow of a certainty just what to expect from the men with whom he is doing business in any given contingency. And, as in other walks of life,—the consumer pays. The client who is humored by his architect pays for his humoring. In the case quoted, we have Mr. Wason's word that the humoring added just ten per cent to the cost of the building.

The Strength of Brickwork

IT IS ONLY natural that when a brick manufacturer has had the crushing strength of his bricks tested, he should be pleased to show to all likely customers a certificate to indicate the superiority of his bricks in this respect. It is equally right that architects engaged in the design of buildings intended to carry heavy loads, such as factories and some public buildings, should lay considerable stress on the necessity for the bricks showing a certain resistance to crushing. But of what real value are these tests? asks The Brickbuilder.

Most machine-made bricks will have a crushing strength of 2,800 pounds per square inch, and if reasonable care has been taken in their manufacture, a much higher strength is not uncommon. Engineering bricks may easily double this figure, and in some works the average crushing strength of the bricks is no less than 4,000 pounds per square inch.

When the bricks are built up into masonry, however, the structure will not safely stand a load of more than 100 pounds per square inch, and only with the best building bricks is a load of 210 pounds per square inch considered safe. This is due to the fact that the mortar used in laying the bricks is, in itself, far weaker than the bricks, and it only gains strength as it hardens. Yet various investigations of ancient buildings show that lime mortar seldom, if ever hardens completely in the interior of the joints, so that the weakness of brickwork is not due to the bricks, but to the imperfectly hardened mortar.

This drawback can be overcome by using cement and sand in place of lime and sand for the mortar, and, provided that the joints are kept thin, and the correct proportions of cement are used, this cement mortar will not prove more expensive than ordinary mortar. On the other hand, the strength of the brickwork will be increased many times, and a crushing strength of 3,800 pounds per square inch—corresponding to a safe load of 380 pounds per square inch—is not difficult to attain.

The use of cement mortar, therefore, provides the manufacturer of bricks with a means of showing how enormously strong structures may be made at prices to compete with the rivalry of concrete. If the matter is worked out carefully, it will be found that bricks at 27s. per thousand can be reinforced and laid in cement mortar at a cost which is well below that of concrete, provided that the building is one which will really give both materials a fair chance. Moreover, the brick building will have an admittedly better appearance than the concrete structure, and the chances of failure by electrolysis and other adventitious causes are much less. Hitherto most brick manufacturers have been content to accept the statements of other people that concrete is stronger than brickwork. As regards bricks laid in imperfectly hardening lime mortar this is undoubtedly the case, but there is no reason why bricks should be laid in an inferior mortar now that so superior a one as a mixture of sand and cement is available at similar prices.

One fact must be observed in the use of cement: It is very liable to form scum or whitewash unless the mortar is properly made, and this would disfigure the building, though even then it would not be worse in appearance than many of the concrete buildings now in existence. This scum may, however, be avoided by mixing some dust made by crushing soft, red bricks with the mortar, as this brick-dust combines with the lime set free from the cement, and not only increases the strength of the mortar, but also prevents any whitewash being formed. This method was known to the ancient Romans and Greeks, and was used by them in many of their most important buildings. They probably obtained it from the East, as broken tiles are still used in Asia Minor at the present time as a means of strengthening mortar.

There is much to be done in the way of reinforced brickwork. The pity of it is that many brickmakers are content to see trade going into the hands of the concrete makers, whereas if they only took the pains to enlighten their local builders and architects as to the advantages of reinforced brickwork over concrete in most localities, there would soon be an increased demand for bricks. The present dull season is a good time for thinking over this matter, and for getting together the necessary information on the subject.

* * *

Why Brick Houses Are Cheaper

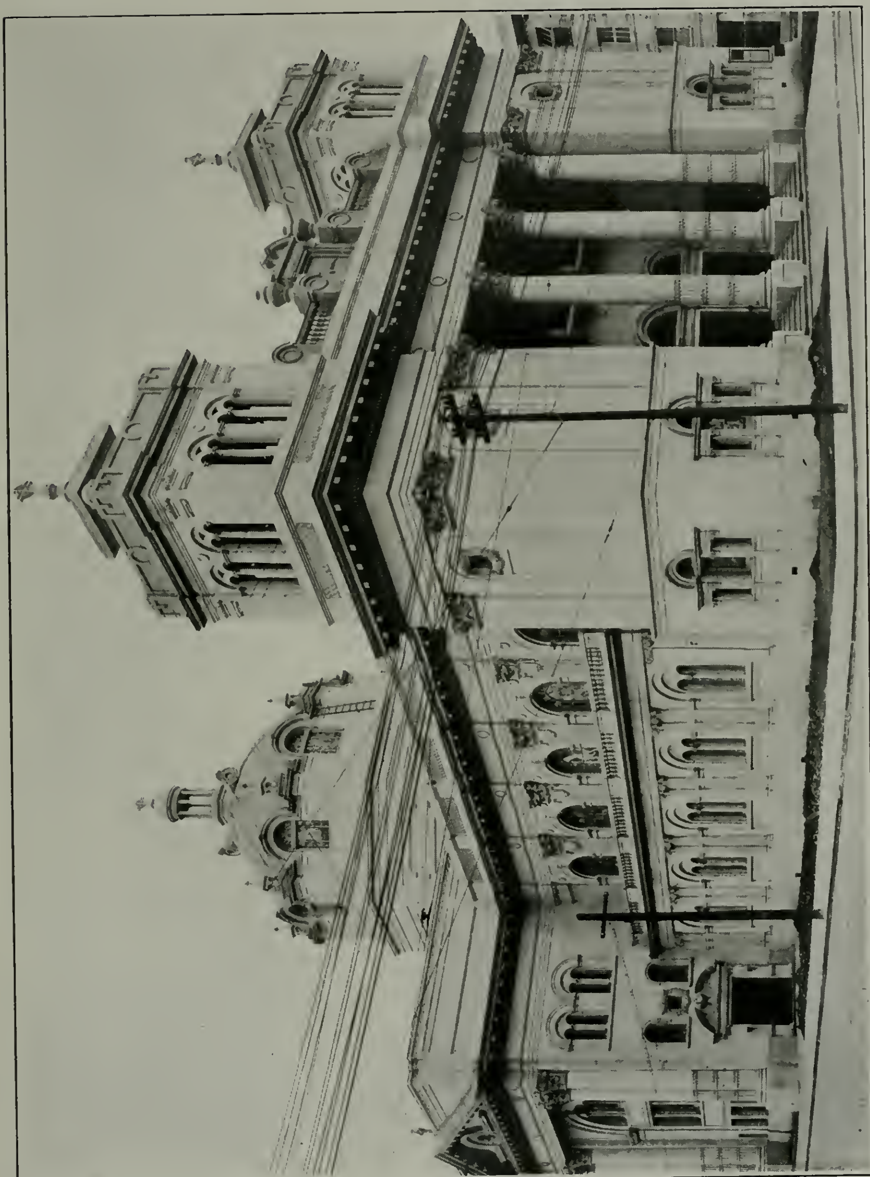
AN INDIANAPOLIS architect, who was recently asked by a prospective home builder why so large a number of small houses were being constructed with brick exteriors, instead of frame, as in the past, and questioning the economy of brick construction, made the following statement, reported by Brick and Clay Record:

"There is a belief in the minds of a great many people that brick construction costs from 40 to 50 per cent more than frame construction. Experience and investigation, however, have shown this belief to be a fallacy. The large number of brick residences that have been built during the last year have done much to establish the fact that brick is really the best material for the economical builder to use.

"An investigation of the costs of building materials with the aid of an architect will prove both interesting and instructive, especially when the brick construction is compared to the cost of frame construction. In frame construction, labor is employed in seven different instances, namely: (1) The studding, which forms the frame of the building; (2) the sheathing; (3) the building paper; (4) the weather boarding; (5) the lathing; (6) the plastering, and (7) the painting, which requires three coats to get good results. In brick construction, but two processes are necessary: (1) The brick work, and (2) the plastering.

"Carefully compiled statistics show that the actual cost of brick walls over frame varies from 15 to 40 per cent, depending largely on the price of the face brick selected. As the walls of any building cost only about 10 per cent of the total, brick construction would add only from 2 to 4 per cent to the total first cost of the building. As it is necessary to repaint a frame dwelling every few years, it will readily be seen that brick construction, besides being the best, is the cheapest. A building constructed of brick is much easier heated than a frame one, and the saving in fuel is an item to be considered. Also, it must not be forgotten that with the faces and shades of brick now being manufactured it is possible to build a handsomer building of brick than from any other material."

The day is fast waning when architects will tell clients that it is impossible to build in brick unless an expenditure of a large amount is contemplated; experience has proven a costly teacher, but the lesson is well taught and the knowledge widely spread.



FIRST METHODIST CHURCH, OAKLAND, EXTERIOR FACED WITH SACRAMENTO SANDSTONE BRICK. NORMAN F. MARSH, ARCHITECT

The Design of Steel and Reinforced Concrete Pillars

FOLLOWING is a summary of a paper read before the London Concrete Institute at the fortieth ordinary general meeting on April 16, 1914, by Mr. Oscar Faber, B. Sc., Assoc. M. Inst. C. E., entitled "The Design of Steel and Reinforced Concrete Pillars, with Special Reference to Secondary and Accidental Stress."

Mr. Faber divided his paper into two sections. He first dealt with jointed construction, such as structural steel, and secondly with monolithic construction, such as reinforced concrete. He first dealt with the case of a girder resting on the end of a steel stanchion and stated that in several drawing offices he knew as a fact that the construction in such a case would be treated as centrally loaded. He proceeded to argue that such was not the case, because when a load was applied to the beam it would deflect and the end originally horizontal would assume a certain slope and therefore one of two things would happen, namely: (a) The end of the girder would lift, in which case the whole load would be carried on one flange, so causing eccentric loading, or, (b) The column must be constrained to adapt itself to the slope of the girder, in which case a bending moment would be introduced into the stanchion by such constraint.

In this way he showed that increases in strains of 140 and 480 per cent. respectively were obtainable.

Mr. Faber took secondly for consideration the case of a girder resting on an angle bracket. He argued that if an ordinary bracket were used the action would not be very far from the face of the leg of the angle, since the horizontal leg of the angle would not be strong enough to resist the bending moment which would be produced in it. It followed therefore that although the horizontal leg of the angle served a useful purpose in connecting the girder to the stanchion, it must not be thought capable of supporting it. In effect the construction became dangerous if the clearing between the face of the stanchion and the edge of the girder exceeded the thickness of the angle.

The author of the paper supposed there were few engineers present who would assert that this limiting clearance was never exceeded in practice, and an engineer had to carefully consider whether it was desirable to employ this type of bracket except for quite small reactions. He next considered a stiffened bracket.

Confining attention to cases where the workmanship was good, he assumed that the stiffening angles had been machined or forged to fit the angle bracket perfectly and that the bracket was initially horizontal. It followed that when the girder deflected there was a tendency for it to rest on the outer edge of the bracket, and for very small loads there was no doubt that this actually happened. As the load increased the outer edge of the stiffeners yielded appreciably, and a greater area supported the load, the reaction gradually approaching the face of the column. The author's practice was to make the web of the stiffeners sufficient in area to carry the reaction under a uniform stress of 7½ tons /in^2.

In calculating the resistance he ignored a large area of steel in the flange of the stiffeners, and in the vertical leg of the angle bracket because,

(a) The clearance between the face of the stanchion and the end of the girder might be sufficient to prevent bearing on this steel;

(b) Even if it was not, this material could not be stressed appreciably until the stiffener webs are greatly overstressed.

In any case the difference in cost between good and bad brackets was an extremely small percentage of the cost of the steelwork, and a smaller one of the cost of the building, and he declined to endanger the "ship" for what in this case might be fairly described as a "ha'porth of tar."

It has long been recognized in good practice that the machining of the ends of stanchions was of the first importance. Yet there were at least two constructional works in London which, with a view to economy, omitted this item of workmanship, and were erecting considerable tonnages of stanchions with the ends left so that the upper tier had contact with the lower tier over the width of one plate only, the remainder of the section having varying clearances often amounting to ⅛ in. The stress was still gaily calculated as uniformly distributed, and it had been explained to the author that "steel is a ductile material which would yield and flow" and perform other convenient antics, "until the stress was uniformly distributed." The effect of loading such a stanchion was to cause the plates to slide past one another, and to partly shear through the rivets. Even where stanchions are machined a careful engineer must satisfy himself that they were machined truly square. Architects should bear in mind also that apart from the danger involved in these practices, the yielding of stanchions and brackets before they obtain their bearing involved unknown and unintended stresses on the stonework, and to the author's knowledge many a beautiful and costly facade and interior decorative work had been badly cracked by bad steelwork details and workmanship.

From the consideration of Case I, it would appear to follow that it was desirable to make these joints somewhat flexible, and occasionally this was so. If buildings were braced with diagonal braces he should say without question that stiffness of connections should be avoided.

Unfortunately, such bracing had obvious objections, and the whole stiffness of practical buildings against wind lied in the stiffness between beams and stanchions..

There was, therefore, no alternative, but to make the joints stiff and to make the necessary allowance for these secondary stresses in the design of stanchions.

This might be onerous, both in requiring extra labor and an increase in material, but a conscientious engineer would grudge neither the one nor the other.

Mr. Faber then dealt with the design on cleats. A common method of calculating the safe reaction of a cleat was to take it as the sum of the resistances of the rivets, the effect being to neglect the very appreciable stresses due to bending.

Dealing with the bracing of pillars, Mr. Faber said that it was well known that pillars failed by buckling and that their stress was to be determined with reference to their 1/g. This phenomenon was fairly well understood and there are sufficient experimental data available to make the design of pillars, with reference to what he might call primary buckling a comparatively simple matter. The phenomenon to which he referred was that of secondary buckling, in which the pillars instead of buckling as a whole, fails by the individual buckling of its component members. On this subject there appeared to be practically no experimental data and practically no formulae or rules for the guidance of a designer. The importance of this problem might be gathered from the fact that bad design in the matter of bracing in pillars was certainly responsible for the two greatest failures in recent years—the Quebec bridge of 1907 and the gas holder in Hamburg.

Mr. Faber then proceeded to the second portion of his paper treating of monolithic construction and the eccentricity of beam reactions on pillars therein. Whereas in steel construction the eccentricity was very definite and easily calculated with most common types of brackets, with reinforced concrete the eccentricity could only be calculated from considerations of elastic flexure, and the problem was a much more difficult one.

There was, however, no longer any excuse for claiming ambiguity, since the problem had been analyzed very completely in "Reinforced Concrete Design" and numerical examples fully worked out.

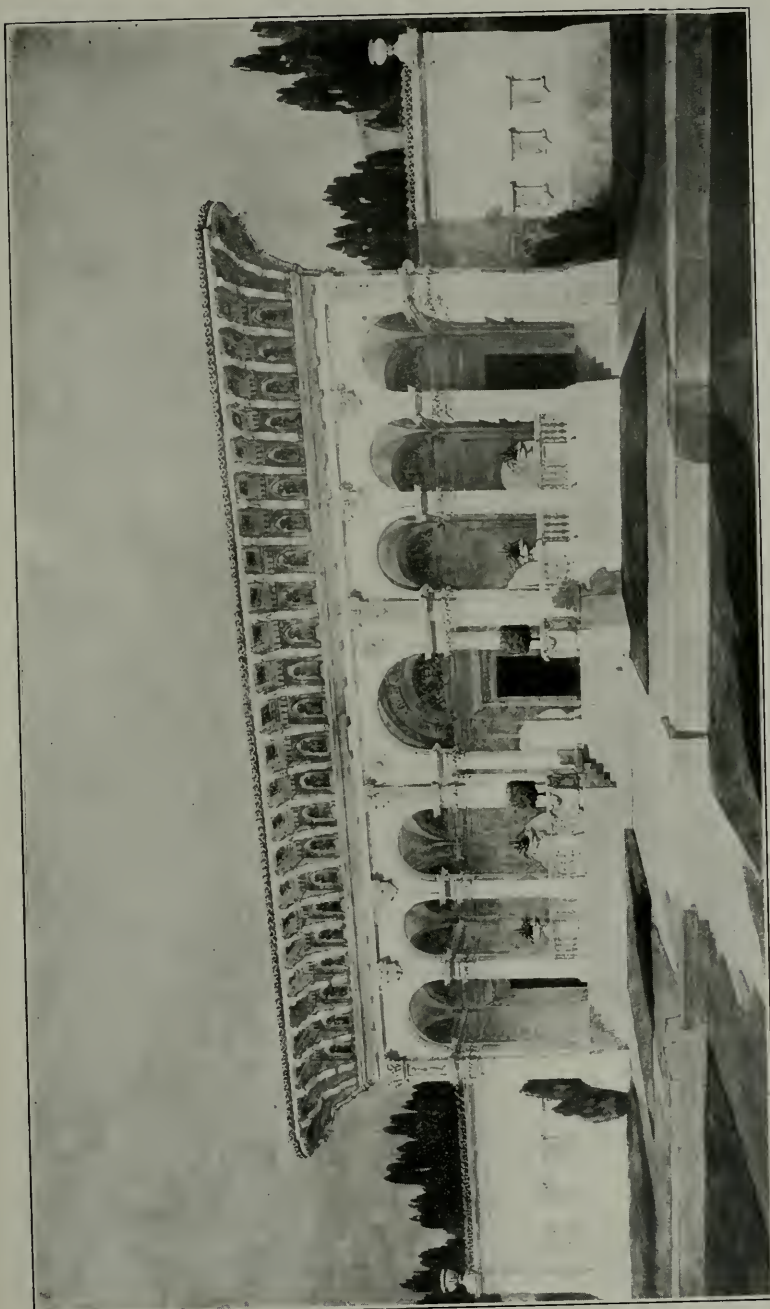
The author took as an example the case of the outside column of the building, working it out in detail, showing very great increases in stress over the values as ordinarily calculated. If thoughts of eccentricity were banished either from ignorance or under stress of competition, the actual maximum stress would have been 1,300 lb. / in.^{2}.

It is interesting to note that the outside pillar in good design did not suffer much reduction in size up through the last three tiers. This was in accordance with the best practice in steel-frame buildings.

In conclusion Mr. Faber said that without suggesting for a moment that the engineering staffs of several constructional firms were not fully as efficient as many consulting engineers, he did feel that the system of competitive designs and lump prices penalized good designing by such firms, and secured the work to those responsible for the most risky design. The only correct system, in his opinion, was for the architect to entrust the design to an engineer who had his confidence and to invite tenders on the design which he prepared. The architect and building owner were then likely to obtain a sound construction, and if they used their discretion in the choice of the engineer the work would not cost more than the minimum consistent with safetly.

The best constructional firms would be protected by being protected from competition with weak design and bad workmanship, and he might state that in considering tenders, he considered that an engineer should give preference to those firms whose detailing and workmanship he knew he could rely upon. He urged this in the interest of the building owner, knowing as he did the importance of good details and good workmanship.

The only man to suffer was the man who would take great risks and do shoddier work in order to secure a contract, and he could not say that he had much sympathy with him.



LOGGIA TO COLUMBARIUM, CYPRESS LAWN CEMETERY, SAN FRANCISCO.
B. J. S. CAHILL, ARCHITECT

The Much Abused, Little Appreciated and Under-Estimated Contractor

By HENRY A. HOYT

THERE are few commercial enterprises that entail as much red tape or restrictions of a legal character as the building industry. Erecting a building, under contract, is simply a mercantile transaction; the owner buys a house for a certain sum of money, the cost being determined by a set of drawings and a more or less complete set of specifications. Buying a suit of clothes or an automobile is a very similar transaction, yet how vastly different after all! Your tailor requires a deposit before the cloth is cut, the auto agent usually takes a little of your coin from you before the order is wired East. What a joke it would be if a building contractor required a deposit from the owner before he would cut the lumber or "pour" the concrete.

Under the very strict legal requirements of the building industry as practiced in California, the poor contractor must furnish a bond for fifty per cent of the presumed (?) value of your house, and then leave another twenty-five per cent with the owner thirty-five days after the kind owner has said, through his architect, that he liked and approved of the size and color and fit of the new residence made for him. Seventy-five cents of every dollar is the amount of actual protection the owner legally receives from his builder. Then another important phase enters into the transaction; the owner employs an architect. This person is the expert, the referee, the umpire—and his powers are usually supreme and above the "recall and referendum."

When all three of the parties to our building operation are fair and honest, and the plans and specifications complete and fully adequate, then there is no reason why all should not be brought to a pleasing consummation, with a happy owner, a proud architect and a satisfied builder. However, when any one or two of the three parties involved are unreasonable or unfair, (we will not say dishonest), then many are the complications, troubles and often legal entanglements that surround the simple act of "selling" a house from builder to owner.

The writer has no real remedy to offer to the conditions as they exist. The industry will probably continue on indefinitely just as it is without any material changes. Those interested can take the facts herein huddled together and make a mosaic of them that will give a right picture of conditions as they actually exist.

Incidentally, however, the industry is seemingly enhanced with more restrictions each year. Mention need only be made of legislative occurrences of a few years and months back,—increase of bond from twenty-five to fifty per cent,—recently, the enactment of compulsory workmen's compensation. One is inclined in a retrospective view to wonder what next will be added to the already overburdened builder.

Using the rule and not the exception as an argument, builders as a class deserve more credit and recognition than they receive. They seem to be brave as well as foolhardy. All of them are gamblers, no matter how much care and study is given the all important item of costs.

If a builder with real "gray matter" gives you a close price on a building, let us say in strong competition, he takes a chance, and the wise builder knows it. Did you ever meet or know a builder of much experience who would not admit of losses as well as gains? The causing of losses by ignorance, error, or shall we say, "bull headedness," are not considered.

How many owners would build should they be called upon to take the builders' chances? Or to go a step farther and ask, how many conservative bankers would loan money to improve real estate were they not surrounded by the strong legal safeguards that place all the elements of chance or risk on the builder and his bond?

The builder would undoubtedly be happier in his chosen field of trouble and chance if he received more recognition in general, and credit for the final results derived from his enterprise and sagacity.

Publicity organizations seem to fall over each other to get factories and industrial plants located in their community. Special meetings are held, free sites are offered, sometimes a coin bonus is raised as a special inducement. How startled a builder would be if he were "approached" by a public committee and offered an "inducement" to locate in some community. He usually has to induce himself to so locate.

A federal building was erected in a California city, and as it happened by local contractors. During a period of eight months thirty thousand dollars was expended locally, directly and indirectly for labor only. It would have to be quite a fair factory to have even a like payroll in the same time, and the money certainly went to more people than through the factory. In this case, the local press, "took occasion to remark," on the public spirit of the local congressman and others who "boosted," but the grit and ability of the contractors who finally saw it all through, and took all the chances was entirely overlooked.

Frequently permanent enterprises result from the impetus received from some good sized building operation. A county hospital contract was let a few years ago in one of California's then new counties. A trunk line railroad was just beginning to open up the county to its possibilities. The contractor made his first trip into the county in the caboose of a freight train, taking a whole day for the forty-mile trip with the frequent stops. A few months later he came out, when the job was completed in a Pullman sleeper. Facilities concerning availability of building materials were certainly problematical. A good road was built to get sand and gravel and it is still used for that purpose. The site selected on the railroad siding for unloading materials has since become the freight depot. The contractor bought wisely in car lots, lime, cement, brick, shingles, etc. Naturally much material was left over. This was left with the one-horse dealer and sold on consignment. The small stock of materials opened the eyes of the local people to further building possibilities, and the result, aided by the railroad, is a large and very flourishing building material business. The contractor did his own plumbing, and the young plumbing foreman "imported" for the job somehow "stuck" and is now a full-fledged local plumber doing a nice business and incidentally married to a local daughter.

Builders are not expecting much reward in the way of public praise and recognition and they certainly do not get it. The business of a builder is an independent one and has many compensating features to offset the many obstacles.

Perhaps, when the builders have all (?) gone to the realm where St. Peter is at the head of the Board of Public Works, some of the ideals will be realized. All architects will be fair and reasonable, owners will not think extras are "hold-ups," bonds, lien laws and thirty-five day payments will have been forgotten, roofs won't leak, no waterproofing problems, and finally a price for the work commensurate with the element of chance encountered and undertaken.

The Finkle Arms Hotel

FINKLE ARMS HOTEL, SAN FRANCISCO
Rousseau & Rousseau, Architects

TO HOBNOB with the clouds and contemplate the city in bird's-eye view while eating breakfast will be one of the novelties offered hotel guests in San Francisco with the construction of the Finkle Arms Hotel, the magnificent twenty-three-story edifice which is about to be erected on the northwest corner of Pine and Stockton streets by Frederick C. Finkle, a Los Angeles capitalist and consulting engineer, after plans drawn by Architects Rousseau and Rousseau, of San Francisco. Two hundred guest rooms are provided in the plans. The ground is 57 feet 6 inches by 59 feet 6 inches.

The dining room will be on the twenty-first floor, surrounded by a balcony of artistic design. Adjoining it on the same floor will be the roof garden, and the floor above it will contain an observation tower from which a view may be obtained that will excel any other in the city. Reverting to the dining room and descending from it one story, to the twentieth floor, we reach the scene of the "dansant," and below that will be the regular ball room. The interior arrangements and decorations of all these rooms will represent an exquisite combination of luxuriant splendor and esthetic taste.

Guest rooms with private baths and large closets, all equipped with the best that can be procured in furniture and fixtures, will occupy the eighteen floors comprising the main body of the building. Besides the single rooms, many of the floors will have elegant suites of two or more rooms. A spacious and beautiful lobby will be on the ground floor, and card rooms and ladies' rooms will be features of the mezzanine floor.

With its summit piercing the clouds at an elevation of 345 feet from the Stockton street level, the Finkle Arms Hotel will be the tallest hotel building west of Chicago and the highest structure in San Francisco, exceeding the present tallest building in the city by forty-five feet.

The Problem of the "Four Corners"*

By GEORGE A. DAMON

THE prototype of the modern American city was the four corners of the country community. Here was the church, the school house, the blacksmith shop, the postoffice, and the general store with its cracker-box conventions. Many a city grew from such an "origin"—oftentimes in a haphazard way, but as the community developed and life became more complex, there was always a tendency to crystallize about separate centers,—for retail trade, for wholesale business, for education, for recreation, and for culture. The time comes in most cities when the desire for a civic center for public buildings finds expression and a need is felt for a comprehensive transit system which will conveniently unite all centers with the home.

A complete system of urban transportation with its "radial" and "circuit" lines will naturally locate, at intervals throughout the city, a number of sub-centers which, in a way, resemble the "four corners" of our boyhood days. Unless there is some thought put into the control of these corners, the development will be about as crude as can be found in any provincial community. First comes a little tax-payer shack with perhaps a fruit-stand or a real estate office. Then follows a cheap grocery, and as soon as the struggling proprietor shows signs of making a small living, he has a competitor and we have two inefficient stores in a district which should be served by but one good trading center. A shoe repair shop—then a feed store, perhaps a garage, and a collection of packing boxes combine to make the finest kind of an arrangement for not only holding down realty values at the corner, but for depreciating residence property in all four directions.

Now why not get our heads together and do things in a more intelligent, efficient and artistic manner? We already know the value of "restrictions" in city building. Suppose we form a restricted district and agree to develop all four corners along the line of a preconceived plan of some architectural harmony.

Let one corner be devoted to a trading center with a limited number of stores, a market for fresh produce direct from the gardens, a branch postoffice, an express sub-station, office for real estate and insurance, a shop for a modiste, and such other business conveniences as the neighborhood demands. It even might be possible, by eliminating useless show windows, and by avoiding the usual "cubist" style of architecture, to make the commercial corner as attractive as the other corners.

In spite of the fact that some people do not believe in them, apartment houses appeal to a certain percentage of our population. But why not build them upon sites where the land values are low enough so that some space can be used to furnish a setting of lawn and shrubbery? Let us say that one of our corners should be used for homelike apartments set a little way back from the street, and furnished with all the unique features of buildings of this class.

A "community club house" suggests itself for the third corner. I have in mind a house of this kind built in Winnetka, Illinois, where sixty-three separate organizations hold their gatherings in one common building. The boy scouts, the girls' sewing society, the ladies' aid, the men's club, and many other local enterprises find here their home. Moving pictures three times a week, amateur theatricals, billiard and bowling tournaments, suppers, and socials make this building the social center of the community. A neighbor-

*Abstract of a lecture on "City Planning," by the Dean of Engineering, Throop College of Technology, Pasadena.

hood church should find a home in this congenial atmosphere—for Wednesday prayer meetings, Sunday school, and Sunday services, perhaps conducted on an interdenominational plan, could be very handsomely provided for in a building contiguous to the community house. Why not have a branch of the public library with a fine magazine room and a juvenile department convenient for both the church and the club house?

The last corner can well be dedicated to play,—not as a playground for the children, as it is too near the street car tracks, but for the older folks. In Pasadena we have what are known as "Tourist Clubs" where our visitors and retired residents meet for pitching horseshoes and matching their skill at chess and checkers. A favorite game called "roque" has reduced croquet to a science, while tennis can be played nearly every day in the year. We need permanent arrangements for these well established amusements, with rest rooms and lounging nooks where one can find shade or sunshine as he desires.

If "city planning is a good business proposition," then this smallest unit in a city can be made to pay. I have in mind a certain "four corners." An acre of vacant land can be secured at each corner for from twelve to fifteen thousand dollars an acre, but prices are likely to advance rapidly. The community surrounding the corners needs all of the social, educational, recreational, cultural, religious and commercial advantages I have outlined. It certainly would contribute to the lower cost of living to do a little thinking, and secure the land before the influence of the ever working "unearned increment" makes a comprehensive development of the "four corners" impracticable. A little foresight now will have a marked influence on the happiness and prosperity of the entire surrounding district for all time to come.

[Along lines suggested by Mr. Damon, an architectural competition is to be conducted in accordance with the rules of the American Institute of Architects. Following is the program:—]

Object of Competition: It is the object of this competition to awaken interest and to extend information concerning the most intelligent, effective and artistic arrangement of the smallest unit of the city-plan problem. To accomplish this purpose, the competitive drawings are to be given the widest publicity. It is hoped that some of the ideas brought out may be actually adopted in developing several "Four Corners" in Los Angeles and Pasadena.

The Problem: The lots on each of the four corners are 200'x200'. The streets are 70' wide between property lines with double car tracks running each way. The grade of the streets is level, and the lots have an elevation of not more than one foot above sidewalks. The value of the vacant lot on each corner may be assumed at about $12,500, and where buildings are proposed, the cost of the improvement should range from $30,000 to $50,000. It is suggested that buildings be of Class "C" type of construction.

Drawings: Designs to be on one sheet of Whatman's cold pressed paper, Antiquarian size 31"x52", mounted on extra heavy cardboard, with strong border lines, giving a space inside the lines of 47"x26". The drawings shall include,

A block plan of the entire group of buildings and all improvements.

A bird's-eye perspective.

A sufficient number of exterior details drawn at a scale of one-half inch to the foot, to fill the entire sheet.

Color Scheme—to be indicated either by key or series of notes printed on the sheet.

All drawings are to be in black ink without wash or color; except that the walls on the plans and sections may be blacked in or cross hatched. Graphic scales are to be shown.

Each drawing is to be signed by a nom de plume or device and is to be accompanied by a sealed envelope with the nom de plume on the outside, and cointaining the true name and address of the contestant lettered upon a slip or paster which, after the awards are made, can be attached to the drawing in a space left on the design for that purpose.

Delivery of Drawings: All drawings shall be delivered to George A. Damon, Dean of Engineering, Throop College of Technology, Pasadena, Cal., not later than 12 m., September 1, 1914.

Award: Judgment is to be rendered by a jury of three chosen from the membership of the Southern California Chapter of the American Institute of Architects. The award will be announced on or before September 10, 1914.

The jury will make the awards before opening the envelopes which contain the names of the competitors.

Three prizes will be awarded; the first of $200.00, the second of $100.00, and the third of $50.00, and honorable mention may be made as determined by the jury.

Inquiries: Inquiries for further information should be addressed in writing to "Four Corners Competition," Throop College of Technology, Pasadena, Cal. The answers will be in writing and will be forwarded, with the questions, to all known competitors who register for this purpose.

* * *

Haste in Building

THE modern tendency toward haste in building construction appears to have reached its consummation in the recently reported feat of erecting a two-and-one-half-story residence, from the cellar excavation to the final plaster coat, within twenty-four hours. From three to four hundred men were employed on the premises simultaneously and every time-saving device known to the builder's trade was utilized. In accomplishing this unusual enterprise the contractors must have had very much the same sensations that an architect feels in attempting to perfect designs for a prospective building within the time allowed by an eager client.

When an experienced business man urges that building operations be started, by contract, on a large apartment house within three weeks from the making of the first sketches, there is good opportunity for the architect to do some much-needed educational work. To tell his client the truth at the outset rather than entirely evade the issue will forestall much ultimate disappointment on the part of the owner and relieve the architect of the odium that attaches to supposed tardiness. To take an inexperienced client "behind the scenes" and give him some idea of the amount of time needed for perfecting the details of his commission is missionary work worthy of a busy architect's consideration, for it may dispel the popular idea that the work is principally pictorial and may be readily done by a clever draftsman in a few hours.

Very few things worthy of perpetuity in art or architecture have been accomplished when speed was the controlling factor. Doubtless the ceiling of the Sistine Chapel could have been decorated within six months, but Michael Angelo would not have cared to sign it as his own. The artist's or architect's function is creative, and such creativeness generally cannot be hurried if the best results are to be gained. The use of mechanical contrivances for lessening the labor of building operations, and the rendering of skill in the drafting room more efficient by wise organization, are legitimate and generally desirable, but to allow too short a time for creating the design or directing the work is to render uncertain results which might otherwise be thoroughly satisfactory. When the exigencies of the case demand, as in the recent erection of a notable bank building in New York, architects have frequently shown a spirit of accommodation in accelerating the work that was equaled only by the excellence of its performance. It is unreasonable, however, for a client to ask an architect to do every day that which is justified only in emergencies.—American Architect.

The Skyscrapers' Bath

By W. DOUGLAS MENG

Cleaning Down the Exterior of a Building is no Easy Matter and on Large Structures the Cost Runs Up Into the Thousands.

SKYSCRAPERS involve one item of expense for the owner, which is not dreamed of by the general observer. Buildings soon become dirty and displeasing to the eye, exposed as they are to the winds and currents which sweep through the canyon-like streets, which carry with them all manner of filth and refuse from the thoroughfares, depositing much of it on their expansive surfaces.

No high structure can be expected to remain clean and presentable for long in the maelstrom of city life. In a few years, at most, it must be cleaned, if it is to be kept in proper condition, which is the desire of both owner and tenants, of the former because filth is one of the most powerful forces of deterioration, and of the latter because cleanliness is one of the things which they pay for in their rents.

Of course, the ratio of dirt which accumulates on the outer surface of the skyscraper differs according to the location of the building. Cleanliness will be preserved longer in San Francisco, where the building is not subjected to the action of excessive smoke, than in a city like Pittsburgh, Chicago, or Cincinnati, where the busy factories are pouring out volumes of smoke, caused by the burning of soft coal. In these latter cities, the work of cleaning must be oftener, and the labor required in its prosecution more wearisome.

It is stated on good authority that the smoke nuisance in the United States costs the American people nearly $50,000,000 annually. This, of course, includes losses of all kinds due to the smoke, but the deterioration of materials is undoubtedly the largest item. The owners of buildings are forced to pay the annual cleaning bill, and it is not a small one, by any means.

The work of cleaning the outside surfaces of buildings must, of necessity, all be done by hand. A scaffold is swung from the cornice of the building to be treated, which is under the control of the men who do the cleaning, and is lifted or dropped, as necessity demands. The work is begun at the top, a strip of from twelve to sixteen feet being cleaned down the face of the building to the bottom. The scaffold is then raised again, and another strip added to the cleaned portion, and so the work is continued until every inch of the surface has been scraped and made presentable again to the eye.

Soap and water will not remove all the dirt and grime which has accumulated, and an acid is used to cut the mixture of smoke, slime, and soot. If a building is faced with glazed terra cotta, a mixture of hydro-chloric acid, half and half water, will remove the dirt rapidly, and the cost of the cleaning will run anywhere from $500 to $2,000.

In a building faced with granite, the process is more complicated, and more expensive, as the dirt has a tendency to sink into the pores of the granite, and stubbornly resists removal. Such buildings are sometimes cleaned by being brushed over every inch of their surface with fine steel wire brushes. On others a microscopic layer of stone has been removed by a sand blast. The cost by either process, swells to thousands of dollars, in the case of large buildings.

The big Ingalls building, the first reinforced concrete skyscraper built in Cincinnati, had not been washed off since its erection more than ten years ago, and having been submitted to Cincinnati's smoky atmosphere for so long a period, the necessity for its cleaning was apparent. At first it was believed that a sandblast would do the work satisfactorily, but it was soon found that the dirt gave way more readily to a good old-fashioned shampoo of soapsuds and water, supplemented with a muriatic acid bath. The latter was spread on first, to cut the dirt, and then the shampoo of soapsuds and water was applied with sponges. This revealed the snow-white surface of the building, which had been long obscured. It is estimated that if all the dirt removed from the building were in solid form, it would completely fill several wagons.

* * *

Just a Kick

By F. W. FITZPATRICK, Consulting Architect.

CRITICISM is a bully thing. I do a stack of it and, incidentally, get probably more of it than any other man in the profession. Everyone likes to take a whack at "old Fitz." It's enjoyable, though it seldom convinces any one albeit it does *do* a heap of good. But it is the privilege of the criticized to talk back and that's what I'm doing now.

When pleasing lines have been determined, then comes the question of decoration. In many instances this is carried to extremes, and we find exquisite examples of stone carving and cornice work being placed at the top of an eighteen or twenty-story office building, which no one can see or appreciate except a possible few located in the offices upon the opposite side of the street.

This may be said of the Chicago postoffice, with the exception that here the entire structure has been injudiciously placed. It is well recognized that a structure of this kind occupies a maximum ground area with a minimum return in floor space and light area. This building was a large undertaking from an engineering standpoint, but whether or not it is an architectural success, few may judge because of the impossibility of viewing the entire building at one time. Of the same type is the capitol at Washington, but so judiciously has it been placed that a full view may be obtained from all sides without obstruction. In the open, or upon the crest of a hill, the Chicago postoffice, even though inefficient in design, would be architecturally beautiful.

There is an old maxim to the effect that the designer should ornament his construction and not construct his ornamentation. This is an admirable saying, but should be subordinated to another rule, that he should ornament his structure only if he lacked the skill to make it beautiful in itself. A structure of any kind that is intended to serve a useful end, should have the beauty of appropriateness for the purpose it is to serve. It should tell the truth, and if the character were such that it can be permitted to tell the whole truth, so much he better. I should preferably be beautiful and not beautified.

Thus sententiously spake Messrs. Boynton and Libberton in a paper before the Western Society of Engineers, which was reprinted in the Architect and Engineer's April issue.

That postoffice was placed where the Government had a lot worth several millions of dollars, the centre of the city and where the people insisted it should be. Of course we might have planted it in the middle of a twenty-acre field, in the prairies somewhere, or placed it on a foot-hill of the Rockies, and it might have better pleased the gentlemen's artistic eye. So the designer had nothing whatever to do with the injudicious placing of the building.

The structure had to occupy the whole lot, but making it a cross shape above the main floor gave it precisely what they said it did not, "the maximum return in floor area and the best light any building could have. The cross form gives the offices not only the width of the streets but the depth of the great external angle courts for light and the plan contains more and better lighted rooms than any other shape that could have been devised. Besides it does enable one to get a view of the composition as a whole and of the central crowning feature, the dome, something no other form would have done.

There isn't a particle of ornament placed where the eye cannot take it in advantageously. Indeed, the little ornament there is is so judiciously placed that it impresses one as a very ornate building, which it is not. Besides people point to the admirable example of simply and logically decorated construction and so simple and dignified in its lines as to serve as a worthy model for all big monumental buildings.

And as to the design being inefficient those two gentlemen seem to stand pretty much alone. A contrary opinion has been expressed by Mr. McKin, Mr. Burnham and a number of domestic and European critics who have seen and commented upon this building. Recently M. de St. Leger a renowned French critic, went into raptures over it and declared that considering the commercial necessities, the trying local and climatic conditions and all the various difficulties that confronted the designer that building was ideal. Furthermore, even if we were not aware of *all* the obstacles in the way of that designer he believed it to be one of the four most perfect classic and beautiful modern monumental structures.

And I'd blame sight rather go by what M. de St. Leger says (being perfectly impartial and disinterested, you know) than to accept the dictum of Messrs. Boynton and Libberton, however worthy and weighty critics they may be. There now.

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Architects Should Design My Lady's Gowns*

By GLEN L. SAXTON, Architect

DOMESTIC discord and the divorce court would vanish, moving day would go with them, the world would be happy, and America would set the fashions for the nations, if American architects would become designers of women's wearing apparel and jewelry as well as of houses and furniture. Everything in the house, but the woman, should be designed by an architect; not a French modiste. Of course I leave the man out of consideration, for he was not endowed with artistic qualities except as they exist in his mind, while woman in herself is a creation of art. (The thought of a carefully designed and furnished house occupied by a woman whose gowns, shoes, hats, jewelry and slippers do not harmonize with the general architecture and furnishings, produces much the same effect on Mr. Saxton as would a blast of fish horns on the ear of a composer.) A hobble skirt and a circassian walnut beam won't harmonize, that's all. Neither will filagree jewelry harmonize with simple, massive interior finish. Is it any wonder that men leave home when the house is hideously designed in the first place and the woman clad in impossible creations? The woman should have room in her gown for she enjoys such room just as she does lots of room in a house. That's where harmony comes in.

Why, if the architects will carry out this plan, get into the game and do their rightful work of designing women's clothes, there would be no domestic troubles. The harmony of a beautiful house and a beautiful woman beautifully and simply gowned would banish dissension and a man couldn't be driven to his club or lodge. Even the kitchen utensils should harmonize with the dress of the woman of the house, and I have designed kitchens with every modern convenience that will permit a woman gowned in style to do her work without having to don a gingham dress. A high oven, if designed to harmonize with the straight front corset, doors and chutes that work with the feet make the word drudgery a misnomer. If a woman is uncomfortable she is ungraceful and inartistic. If a house is uncomfortable the same result follows. Make them both typical of comfort, harmonize their decorations as to color and lines and you have the perfect result. You can't make woman prettier, but you can make her look prettier by making good clothes for her. American modistes spend $23,000,000 annually to get the Parisian styles when more competent designers are in the architect's offices in this country. The French modistes never appreciated the beauty of women and they have mighty near spoiled them."

*Editor's Note—Mr. Saxton's comments should not be taken too seriously. From the standpoint of humor, they afford a pleasing relaxation, and that's about all we can say for them.

Effect of Salts on Strength of Concrete

TESTS to determine the effect of sodium chloride and calcium chloride, separately and together, upon 1:2:4 concrete were made at the University of Wisconsin during the winter and spring of 1912 by Messrs. H. E. Pulver and S. E. Johnson, instructors in mechanics. The test pieces were cured at temperatures of from 60 to 70 degrees Fahrenheit and below freezing. The results have been published in the Wisconsin Engineer by Mr. Pulver.

All mix was by volume and the salts were dissolved in the mixing water. The test pieces were 4-inch cubes, and those cured at a temperature below freezing were broken after 14 and 60 days, while those cured at normal room temperatures were broken after 14, 60 and 360 days. Four pieces were tested at each age for each batch of concrete. Atlas Portland cement was used, and to prevent variation in the quality it was mixed thoroughly in the beginning and a sufficient quantity stored in air-tight cans.

The test curves show that as the percentage of NaCl is increased there is a nearly straight-line decrease in the strength of the concrete cured under normal conditions. The effect of NaCl alone, when added to concrete cured at low temperature, is probably to reduce the freezing temperature, and hence retard the freezing of the concrete, thus permitting of its setting and hardening. The curves show an increase in strength for the addition of NaCl up to 12 per cent, after which there is a decrease. It may be that beyond 12 per cent the weakening of the concrete due to the excess of NaCl more than offsets the strengthening due to the reduction of the freezing temperature.

When $CaCl_2$ alone is added to the concrete, cured either at normal or low temperatures, the effect is to increase the strength up to about 4 per cent $CaCl_2$, at which point the maximum strength seems to be obtained. This increase in the strength of the concrete may be due to the acceleration of the setting of the cement by the $CaCl_2$. Serious disintregation was observed on the surfaces of the cubes cured at low temperatures with 6, 8 and 10 per cent of the $CaCl_2$. This disintregation did not appear on any of the cubes cured at normal temperature or where NaCl was used.

With concrete at low temperatures, the best effect seems to be obtained by using both NaCl and $CaCl_2$ in the mixing water. It was noted that a 2 per cent $CaCl_2$ and 9 per cent NaCl mixture appears to give the most satisfactory results. For concrete cured at low temperatures this mixture gives about as much strength as any of the mixtures tried, and for the concrete cured normally there was not a very great reduction in strength due to the addition of the salts in those percentages.

All tests were made with only one brand of cement. It is probable that there would be some variation in the results with other brands, but it is not thought that this variation would be great enough to affect the general conclusions. It is also possible that some brands of common salt might contain a sufficiently high percentage of calcium sulphate to affect the results to some extent.

CLOISTER AND CAMPANILE, SANTA CLARA GRAMMAR SCHOOL
William Binder, Architect

Unique Lighting Plan of Santa Clara Grammar School

CALIFORNIA has many beautiful and artistic school buildings, and nearly all of them combine utility with their beauty to a greater or lesser degree. None seem to be more in harmony with the surroundings and the history of the State than those erected along the lines of the old missions.

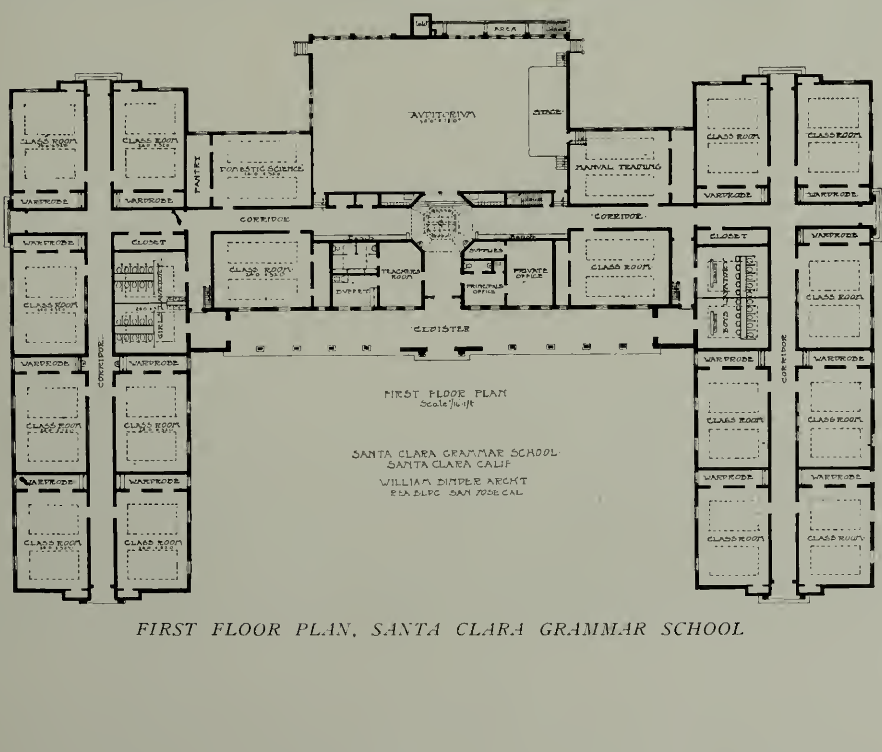
A splendid example of this type of architecture is found in the new grammar school building at Santa Clara, designed by Architect William Binder of San Jose. It is a grammar school of eighteen class rooms, all of the usual size, together with a large assembly hall. The structure is of heavy, in fact, extra heavy frame construction, covered with natural gray cement stucco, over one-inch "chicken wire." The floor is of concrete, inlaid with screeds, damp-proofed, and covered with maple flooring.

The most unusual feature of the building is the lighting system. This is a purely "overhead" arrangement and is a radical departure from the established methods of educational lighting. No room uses or depends on side windows, though some are provided for the sake of appearances. All light penetrates from the north, made possible by skylights deflected to a studied angle to get the best results without sunlight. The light is tempered by corrugated, or ribbed wire glass. The lighting has been in operation sufficiently long to be carefully tested, and the results are highly satisfactory. The blackboards have no reflections, the light being so distributed as to show no partiality, even the left-handed pupil having an equal chance. The proportion of lighting area to the floor space was evidently given much study.

The building is excellently heated and ventilated by a mechanical system, using low-pressure steam with oil-burner and a full automatic temperature regulation. No heating or ventilating ducts or pipes show anywhere, all being ingeniously hidden in the construction. The plumbing is solid porcelain, and the four toilet rooms are finished in white encaustic tile.

STUDY ROOM, SANTA CLARA GRAMMAR SCHOOL, SHOWING OVERHEAD LIGHTING

The building cost complete $60,000, of which amount $7,300 was expended for heating and ventilating. Exactly $35 worth of extras were found necessary, a point that speaks for itself. The walls of the building could have been erected of reinforced concrete for a little more than $6,000 additional.



FIRST FLOOR PLAN, SANTA CLARA GRAMMAR SCHOOL

Using an average of fifty pupils to a room, the building houses nine hundred pupils, at a cost for the building of a little over $66 each, which is a remarkably low average. Statistics show where schools in Boston, Chicago, and St. Louis have cost from two to three times that much.

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An Architectural Collision

WISCONSIN'S commendable efforts to give its architects a chance to compete for the plans of the Wisconsin building at the Panama-Pacific Exposition in San Francisco next year have developed trouble, says the Improvement Bulletin. The commission having the building in charge and the Wisconsin chapter of the American Institute of Architects have not agreed on the manner of conducting the competition for the plans. It appears that the Wisconsin chapter in trying to apply the institute rules to the competition ran against the authority and determination of the commission to be sole judges of the manner of receiving plans.

"The rules of the American Institute are based on experience," said George B. Ferry, a prominent Milwaukee architect, a member of Wisconsin chapter. "For ten years all the work of the U. S. government has been done under them, and as a result American public buildings generally are among the most artistic modern structures in the world. Men who are called upon to act as judges in a contest should be familiar with the subject involved. A shoemaker would not be called in to decide a contest involving medical matters. And I do not think that politicians are qualified to pass on architecture. When the name of the competitor is not written on the plans, so that the judge does not know whose work he is passing on, he is more likely to give an impartial decision than when the name is written on."

A. W. Prehn, member of the commission, announced that the commission would brook no dictation from any institute or society. The law makes the members the sole judges of the plans and leaves them no power to delegate the task to any other person or persons.

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Plastering Concrete Walls

"I have always been building concrete culverts and cellar walls and have had trouble with plastering surfaces. Sometimes I plaster the walls green and sometimes dry. Sometimes the plaster on the green walls checks and cracks and sometimes the plaster on the dry walls cracks. What is this due to and how can I remedy it?"

A solution to the above problem is offered by Concrete-Cement Age as follows:

While cracking of mortar-plaster may be due to the mortar being too rich in cement, the dryness of the wall plastered, or to the sun and wind removing moisture from the mortar surface, it has always seemed to us that the best means to prevent cracking of cement mortar applied to concrete surfaces is *not to plaster*. Better, neater and less expensive results can be obtained by building the forms neatly, by proportioning aggregates correctly, and by spading the concrete next to the forms so as to produce a mortar surface on parts visible. Facing boards likewise can be used for the same purpose. After the forms are removed, slight irregularities can be removed by rubbing with a carborundum stone or a cement brick. Then there is no checking of the surface.

The California State Normal School at Los Angeles

IN DESIGNING the group of ten buildings for the California State Normal School at Los Angeles, a rather unusual treatment has been followed by the architects, Messrs. Allison and Allison of that city. The scheme shows a pleasing example of brick architecture reminiscent of the Lombardy period in Northern Italy. The architects have laid out a splendid block plan for the buildings and grounds, the style of architecture fitting admirably the complete scheme.

The site covers twenty-five acres. In planning and building the group, Messrs. Allison and Allison had the co-operation of State Engineer Wilbur F. McClure and Dr. Jesse F. Millspaugh, President of the school.

Upon completion next August, the buildings will have cost the State of California something like $541,000. It is the largest educational group in Southern California and one of the most pretentious on the Pacific coast. The buildings are constructed of dark red ruffled brick, clay tile roofs and artificial stone trimmings. All halls and corridors and all stairways are constructed of fireproof materials. Some idea of the immense size of the grounds may be had from the statement that the Vermont avenue frontage is 1,254 feet, with a like west frontage on Heliotrope Drive, a south frontage of 800 feet on Monroe avenue, and a like north frontage on Willowbrook avenue.

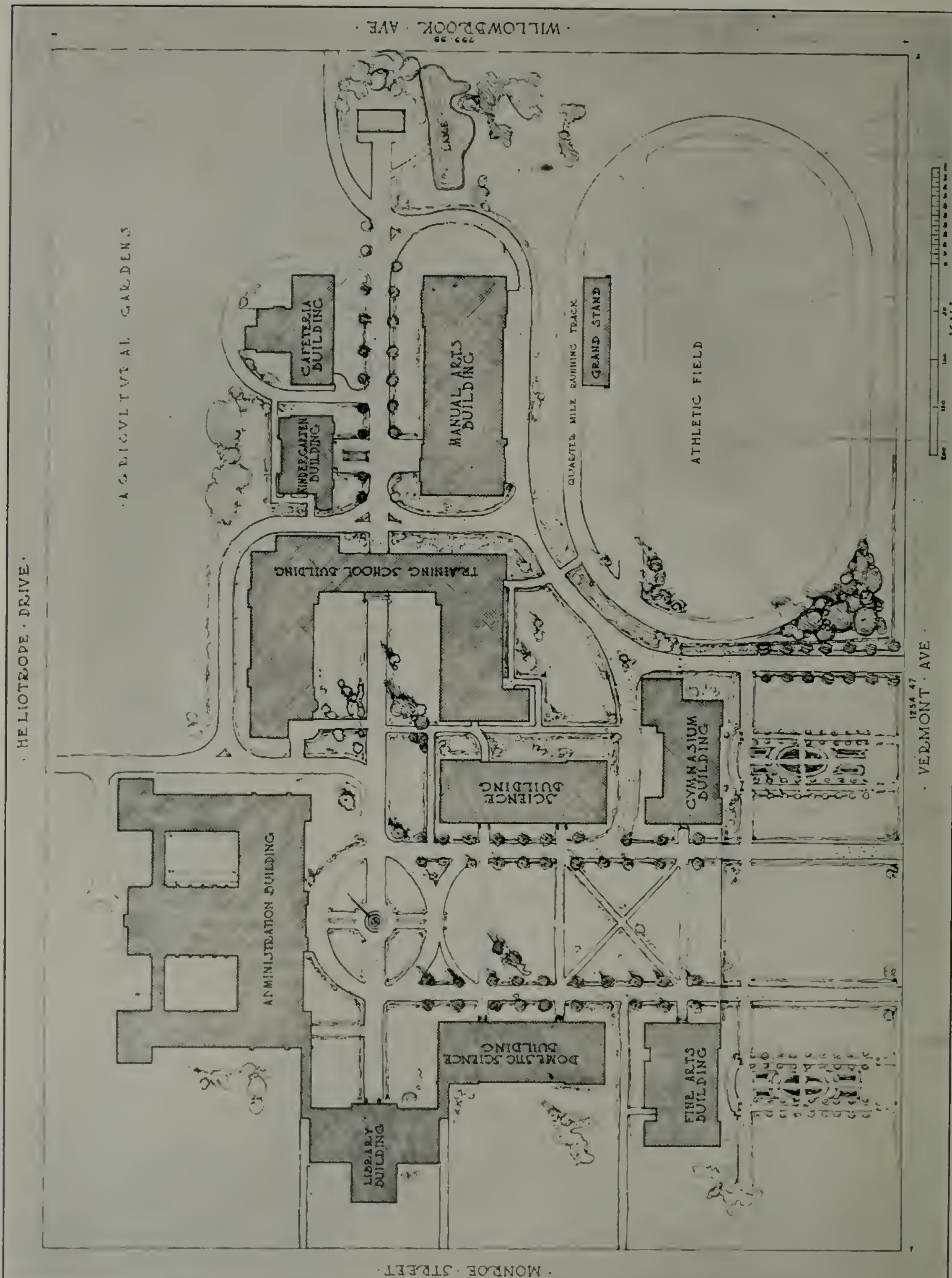
The accompanying illustrations show the buildings grouped together and by themselves, together with the floor plans and some of the decorations.

The Administration building, 260 feet by 202 feet in dimensions, contains office and class rooms for the officers of administration and faculty, and includes rest rooms for teachers and students. Opposite the main entrance, in the central portion of the building, is the auditorium with seating capacity of 1,650 and with completely equipped stage and dressing rooms. The following departments will be housed in this building: Child Study, Psychology, Pedagogy, History of Education, School Law, Reading, History, Mathematics, English, Modern Languages, Geography, etc.; and, in addition, a departmental library and health examiner's room. Rooms for Women's club are arranged on the third floor with kitchen attached.

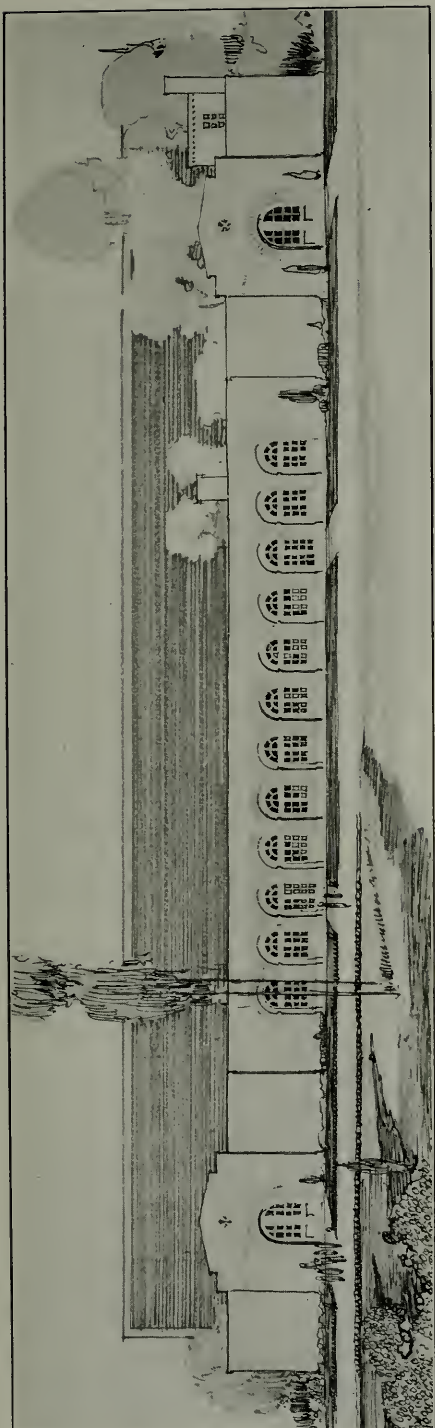
The Library building, 136 feet by 107 feet, contains general reading room, accommodating 350, and a children's department. There is stack room for fifty thousand volumes. There are also a librarian's room, children's room, a special reception room, class rooms, and magazine rooms. The building also includes a students' book store, printing office, store rooms, etc.

The Domestic Science building is 172 feet by 65 feet. It has room space for the following departments: Leather and Bookbinding, Clay and Concrete, Drawing, Weaving and Textile, Cardboard Work, Sewing, Millinery, and Cooking. It is equipped with a model apartment for instruction in housekeeping, also with lecture rooms, rest rooms, and all modern conveniences.

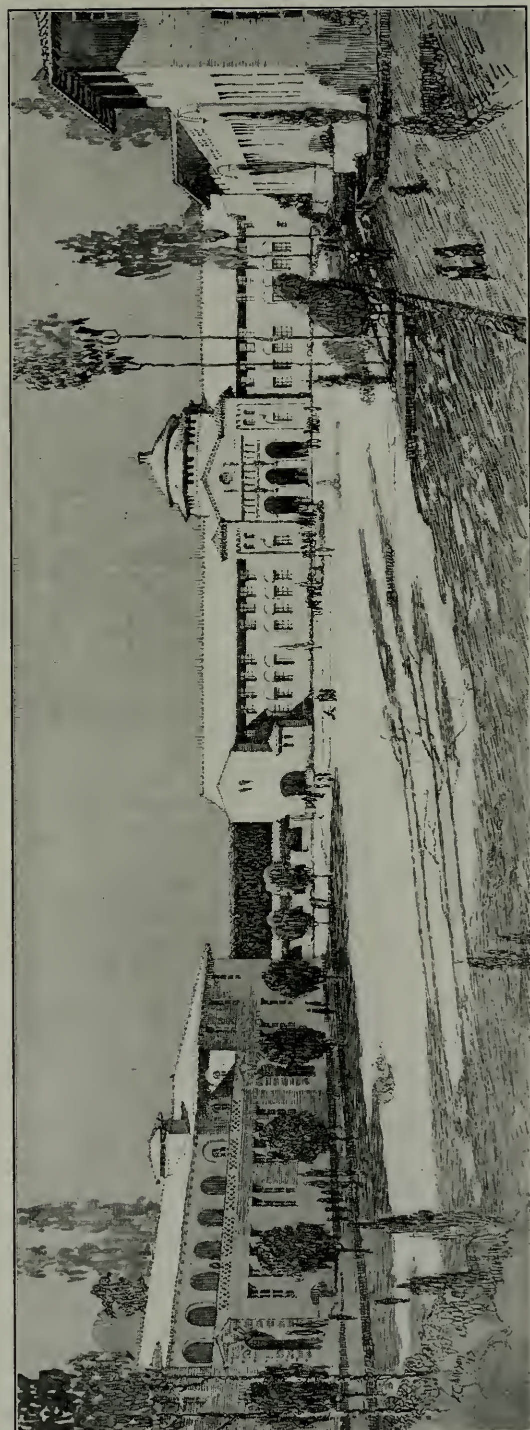
The Fine Arts building is 131 feet by 81 feet. The first floor provides class rooms for music, an auditorium and stage for musical productions, together with offices, library, mimeograph printing room, etc. The second floor has several art studios, work and supply rooms, offices, and a large exhibition gallery.



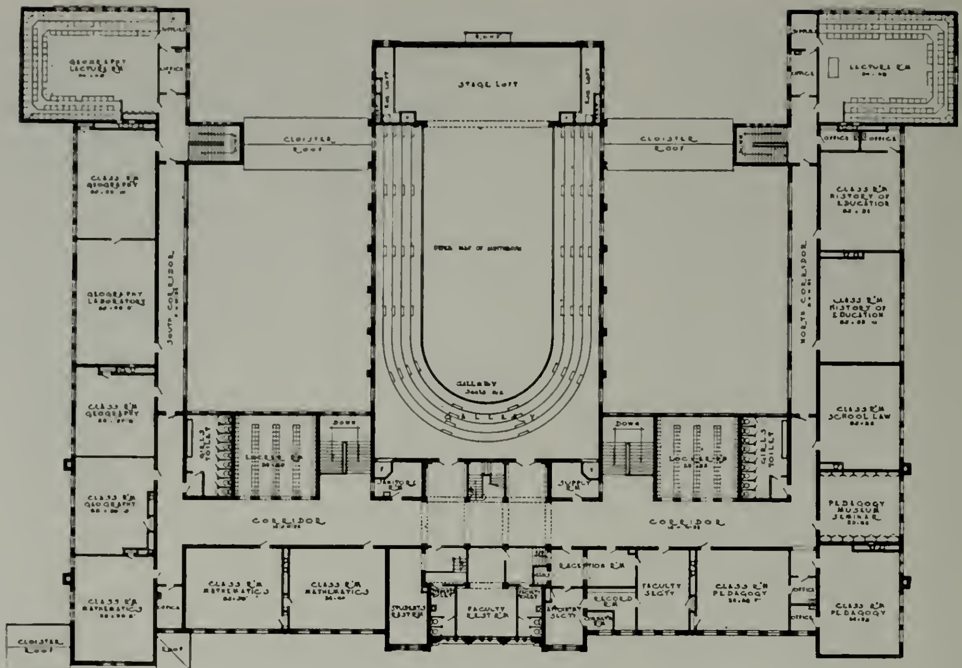
· WILLOWBROOK · AVE ·
· HELIOTROPE · DRIVE ·
· VERMONT · AVE ·
1254.47
· MONROE · STREET ·
AGRICULTURAL GARDENS
LAKE
CAFETERIA BUILDING
KINDERGARTEN BUILDING
MANUAL ARTS BUILDING
GRAND STAND
QUARTER MILE RUNNING TRACK
ATHLETIC FIELD
TRAINING SCHOOL BUILDING
SCIENCE BUILDING
GYMNASIUM BUILDING
ADMINISTRATION BUILDING
DOMESTIC SCIENCE BUILDING
FINE ARTS BUILDING
LIBRARY BUILDING



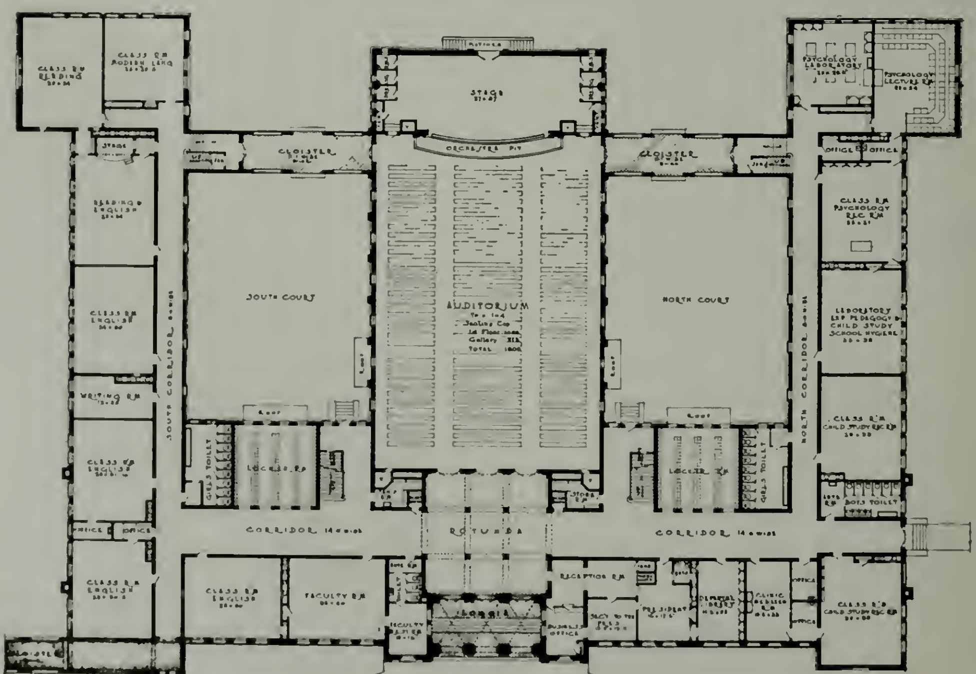
MANUAL ARTS BUILDING, STATE NORMAL SCHOOL, LOS ANGELES



ADMINISTRATION BUILDING—FRONT VIEW—SHOWING FORECOURT
ALLISON & ALLISON, ARCHITECTS



SECOND FLOOR PLAN, ADMINISTRATION BUILDING
Allison & Allison, Architects



FIRST FLOOR PLAN, ADMINISTRATION BUILDING
Allison & Allison Architects

The Gymnasium building is 131 feet by 81 feet, and contains main gymnasium hall, with locker, shower, and dressing rooms, as well as rooms for physical instruction, class rooms, a trophy room, and room for visiting athletic teams. This building also contains a complete living apartment for the caretaker and a central heating plant for the entire group.

The Science building is 172 feet by 65 feet. It contains laboratories for Biology, Physiology, Agriculture, Chemistry, Physics, Nature Study, etc., and is provided with four lecture rooms, a departmental library, rest rooms, storage museum, dark room, apparatus and reagents rooms, sink rooms, offices, etc.

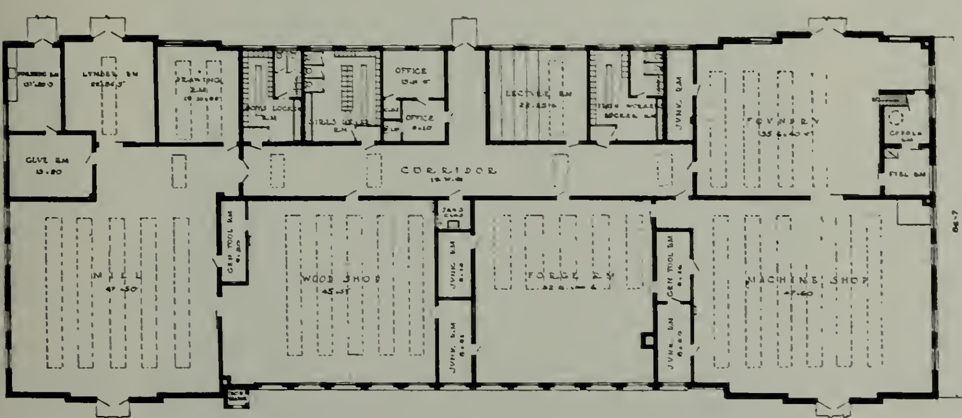
The Training School building is 298 feet by 176 feet. It contains departments for grade work, first to ninth grades, inclusive; also sewing and cooking departments, room for observation classes, Supervisors' offices; music, child study, coaching, and ungraded rooms, together with teachers' and students' rest rooms, Principal's office, and emergency room. The building will have a complete gymnasium for boys and girls, with lockers, shower baths, and dressing rooms attached; also a department for manual training and a library.

The Kindergarten building is 95 feet by 57 feet. It contains a large circle room, fully equipped with book cases and seats, and it has a large open fireplace; also class rooms, screen porches, alumnæ room, cloak and store rooms, as well as open terraces and porches.

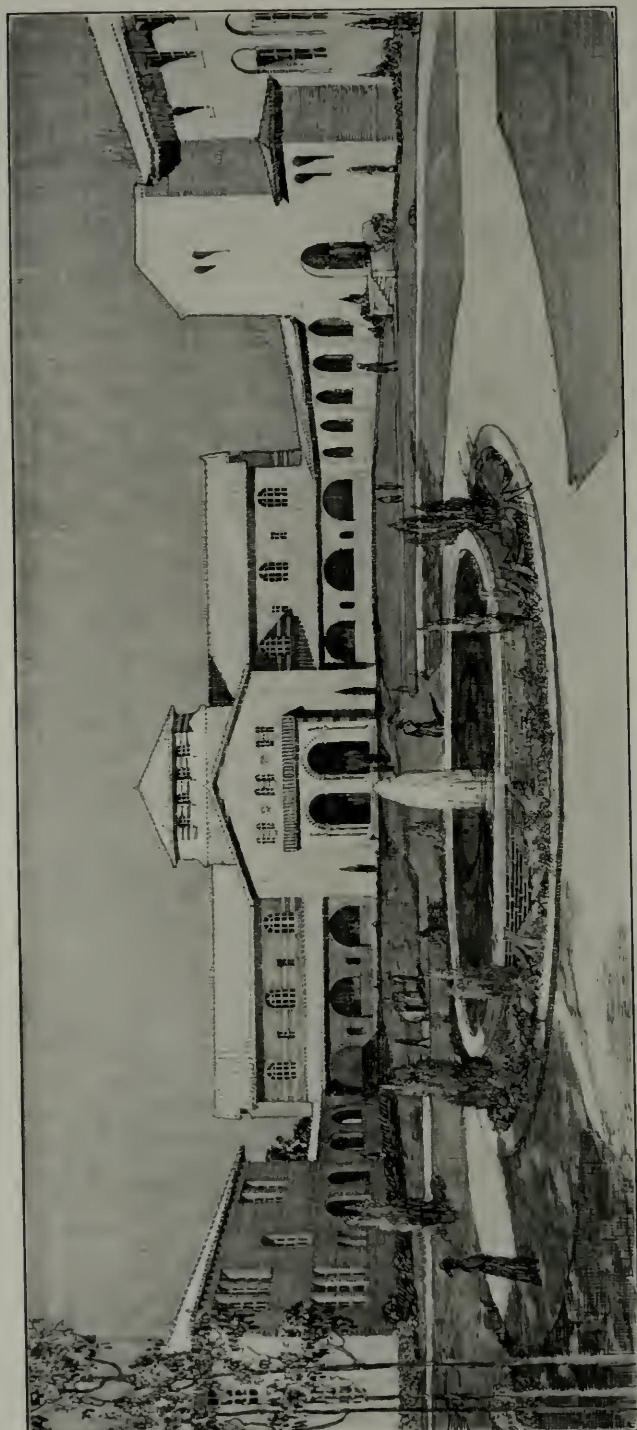
The Cafeteria building is 114 feet by 92 feet, with large dining hall and with complete kitchen and serving facilities.

The Manual Arts building is 226 feet by 86 feet. It contains fully equipped departments for cabinet work, pattern making, mill work, a glue room, finishing room, lumber room, forge room, machine shop, foundry for work in iron and brass, mechanical drawing room, lecture room, with lockers and wash rooms attached.

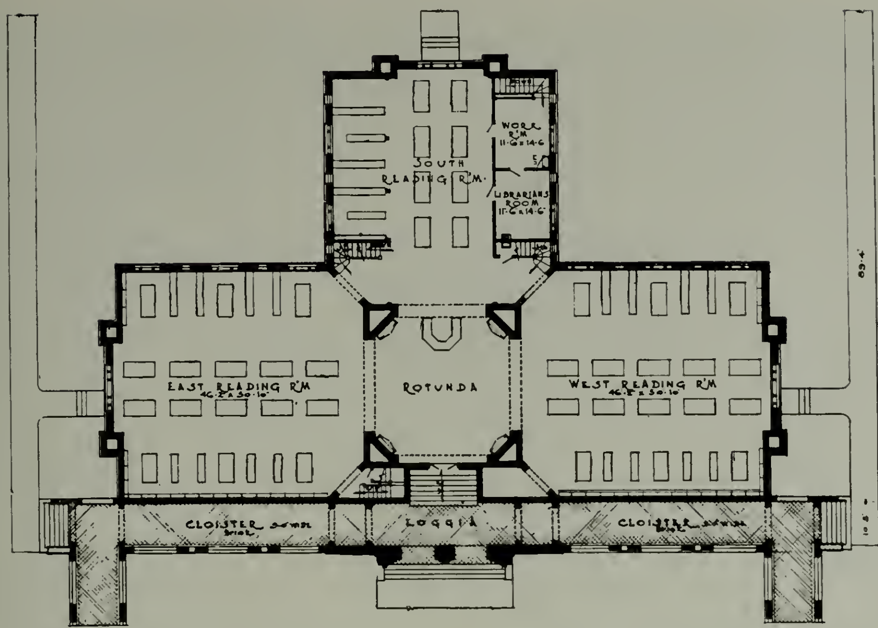
The heating will be by steam, generated in the central plant and piped to the various buildings through underground tunnels. The plenum or fan rooms will be located in each of the respective buildings. All departments will be supplied with fresh air, which is first drawn through mechanical air washers and humidified. The temperature will be regulated automatically by thermostats in each room.



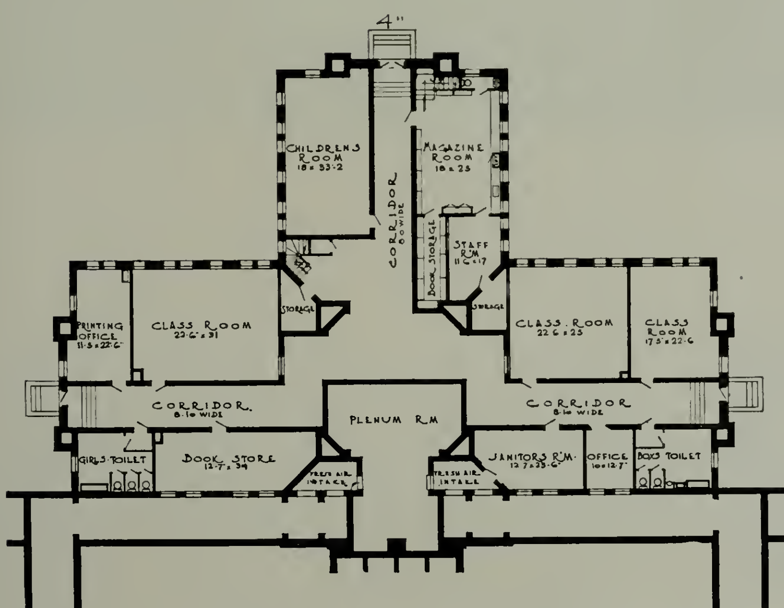
FLOOR PLAN, MANUAL ARTS BUILDING



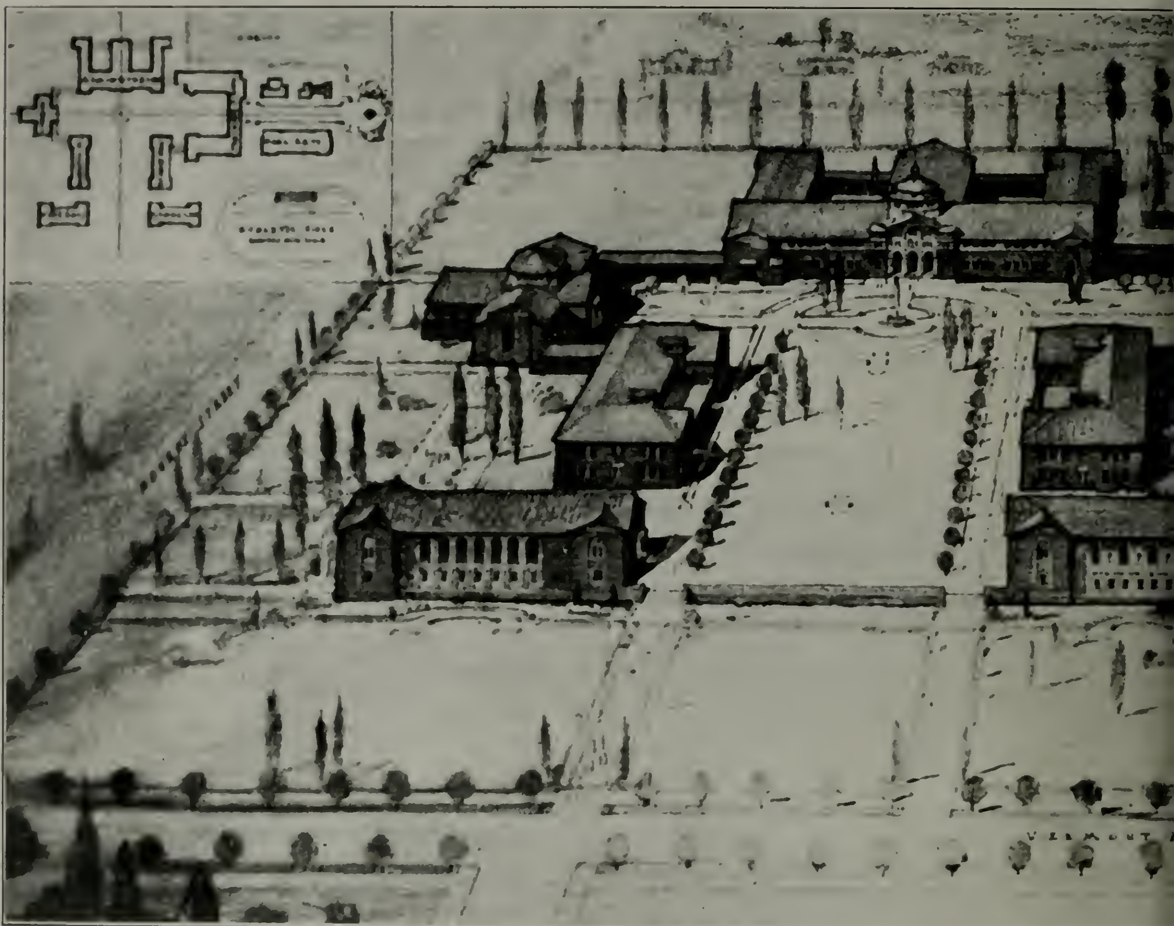
LIBRARY BUILDING—FRONT VIEW—CALIFORNIA STATE NORMAL SCHOOL, LOS ANGELES. ALLISON & ALLISON, ARCHITECTS



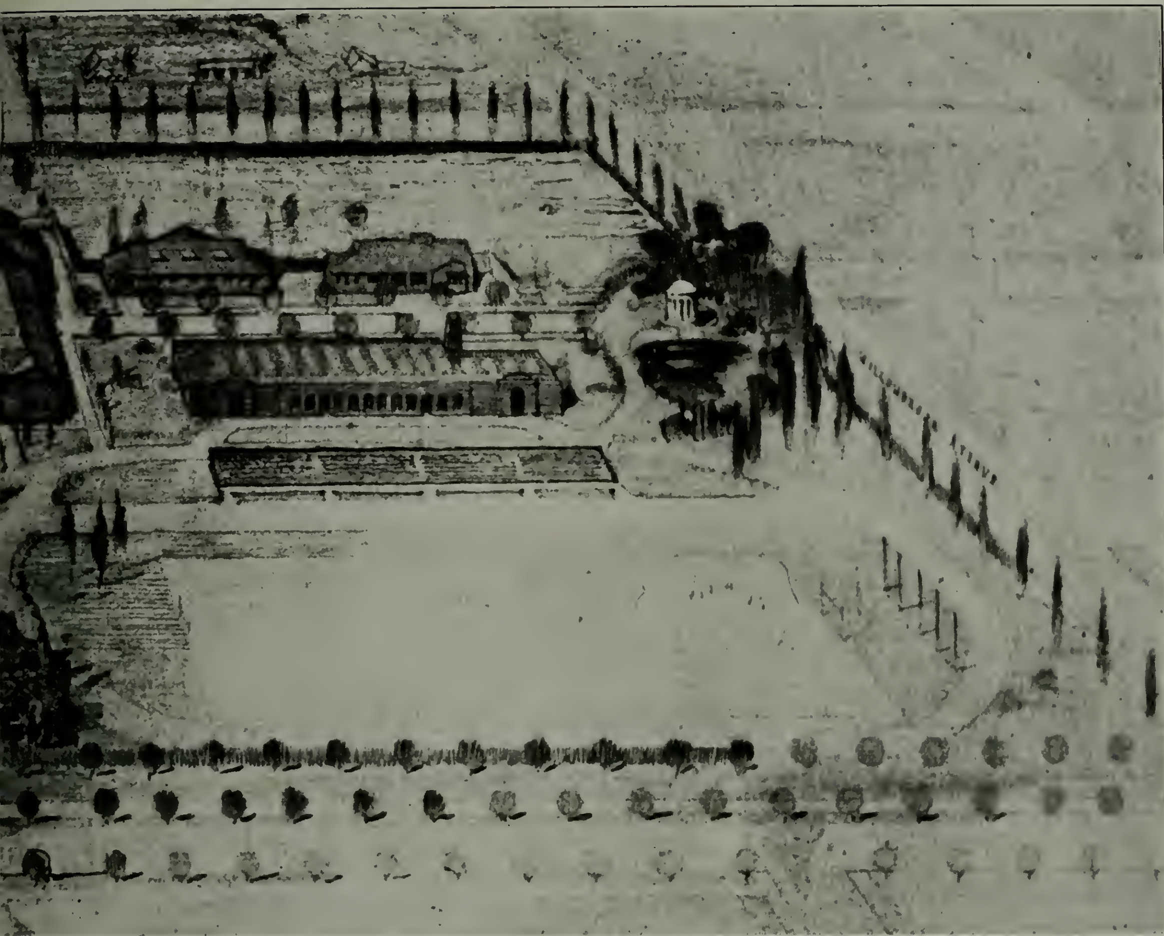
FIRST FLOOR PLAN, LIBRARY BUILDING
Allison & Allison, Architects



BASEMENT PLAN, LIBRARY BUILDING
Allison & Allison, Architects



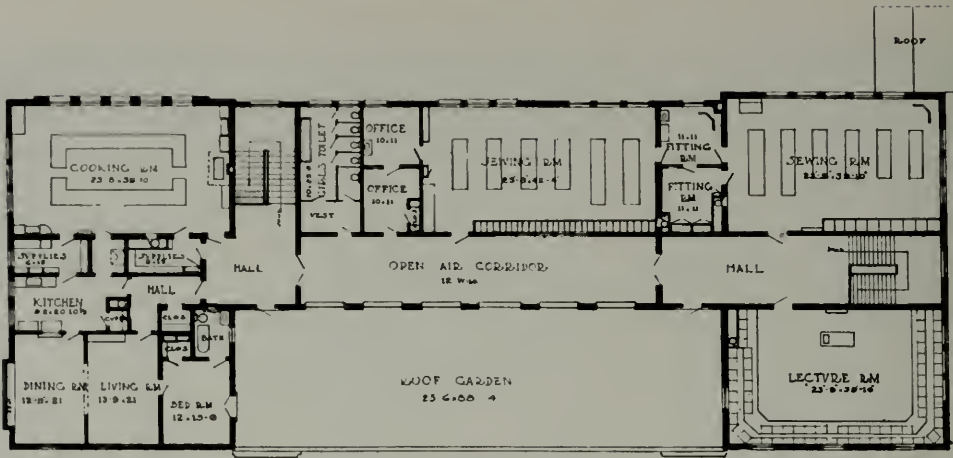
The latest modern electric program clock system for all buildings will be provided, also a complete system of intercommunicating telephones for all departments, connecting each with the Administrative offices. An efficient vacuum cleaning system is to be installed in each building. Both buildings and grounds will be furnished with sanitary drinking fountains. The plumbing and sanitary arrangements are first class and represent in all respects the approved conclusions of modern hygienic science.



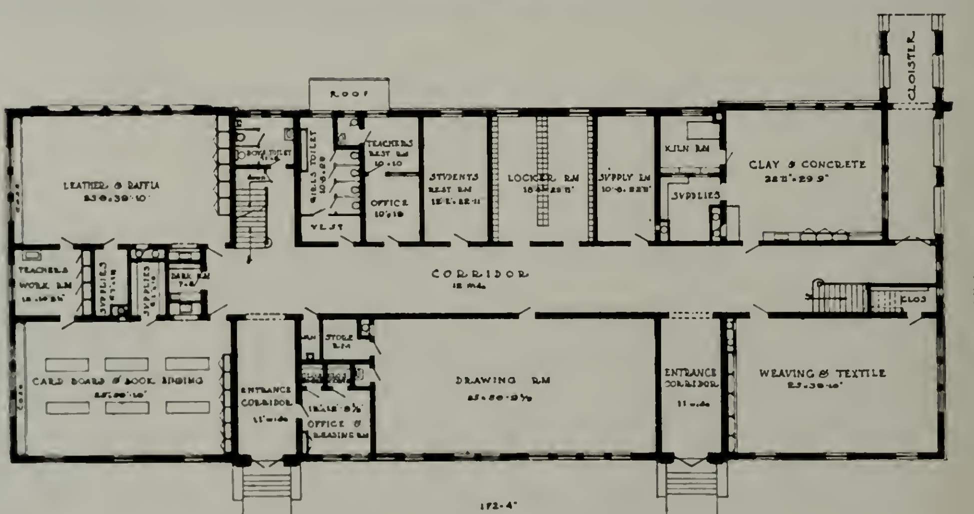
BIRDSEYE PERSPECTIVE OF CALIFORNIA STATE NORMAL SCHOOL GROUP, LOS ANGELES
ALLISON & ALLISON, ARCHITECTS

The athletic field will have a quarter-mile running track, a regulation football field and baseball diamond, and also a grand stand. Ample tennis courts and playground apparatus will be constructed on other parts of the grounds.

At the northerly end of the property is located a small artificial lake, fed by a permanent spring. Agricultural gardens, containing between four and five acres, will be laid out on the northwest portion of the property. Horticultural gardens are also included in the plans and a formal sunken-garden treatment will be given the quadrangle between the buildings and Vermont avenue.



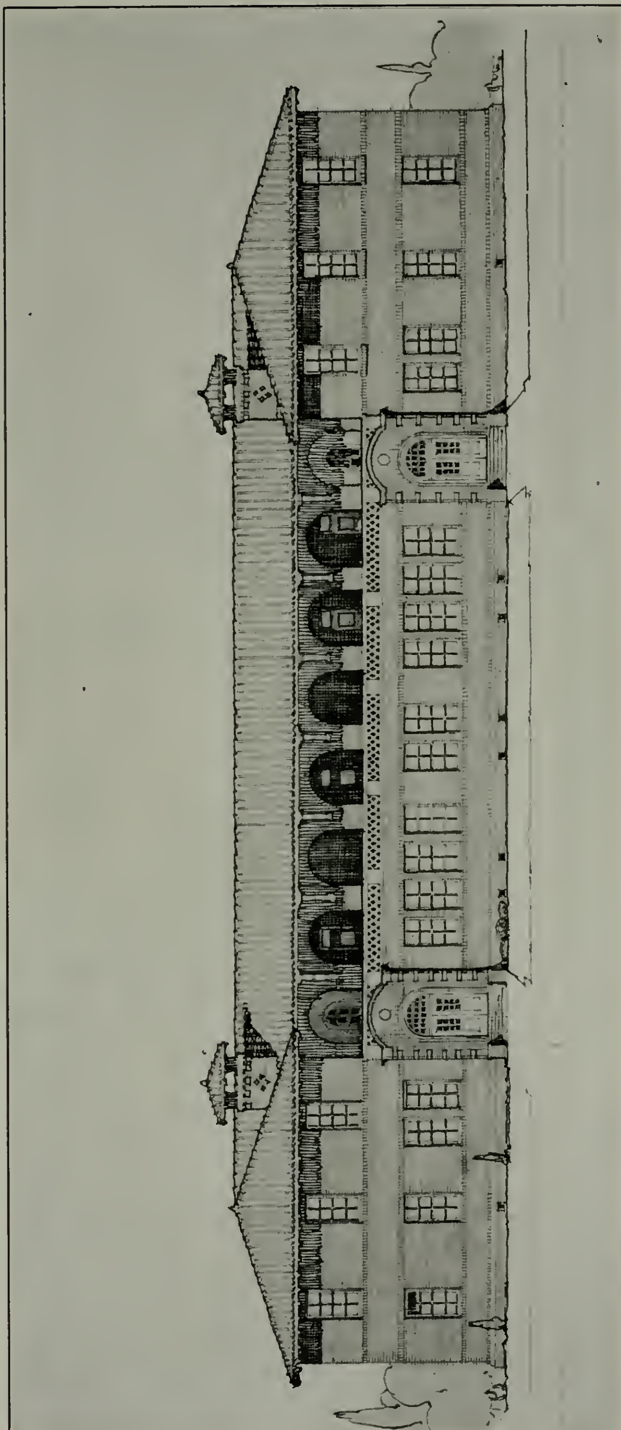
SECOND FLOOR PLAN, DOMESTIC SCIENCE BUILDING



FIRST FLOOR PLAN, DOMESTIC SCIENCE BUILDING

KINDERGARTEN SCHOOL BUILDING—FRONT ELEVATION

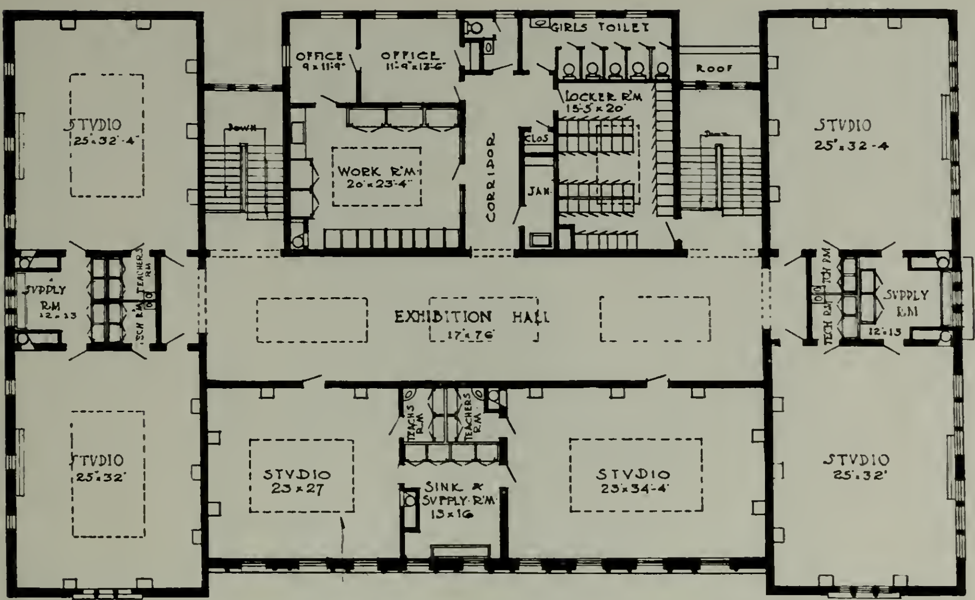
Allison & Allison, Architects



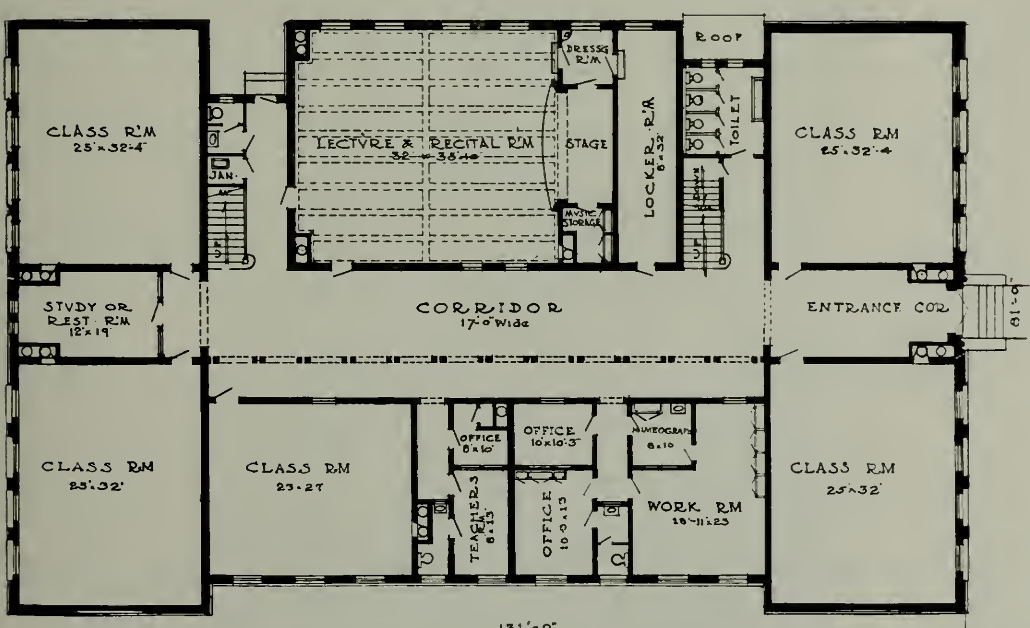
DOMESTIC SCIENCE BUILDING—FRONT ELEVATION—CALIFORNIA STATE NORMAL SCHOOL, LOS ANGELES

Allison & Allison, Architects

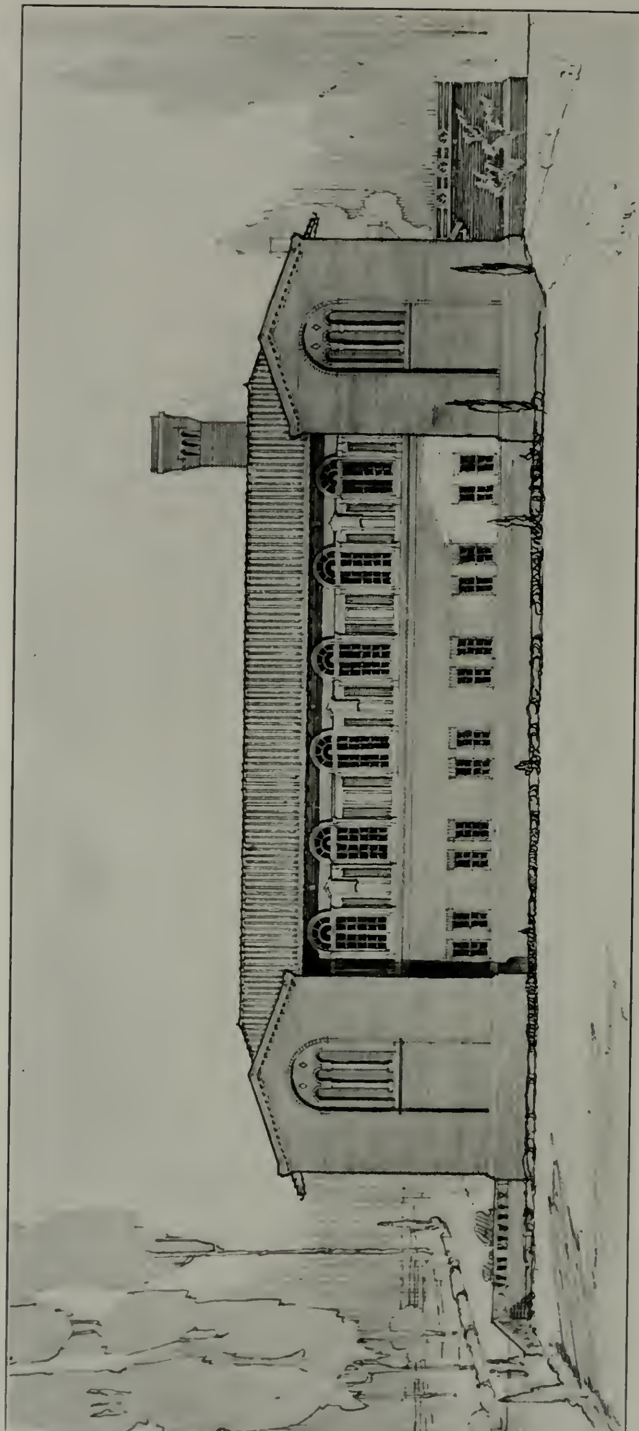
FINE ARTS BUILDING — FRONT ELEVATION
CALIFORNIA STATE NORMAL SCHOOL, LOS ANGELES
ALLISON & ALLISON, ARCHITECTS



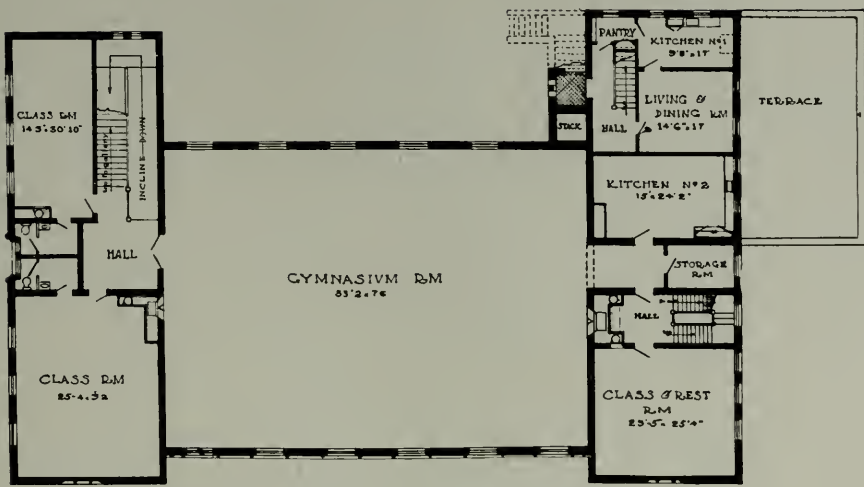
SECOND FLOOR PLAN, FINE ARTS BUILDING
Allison & Allison, Architects



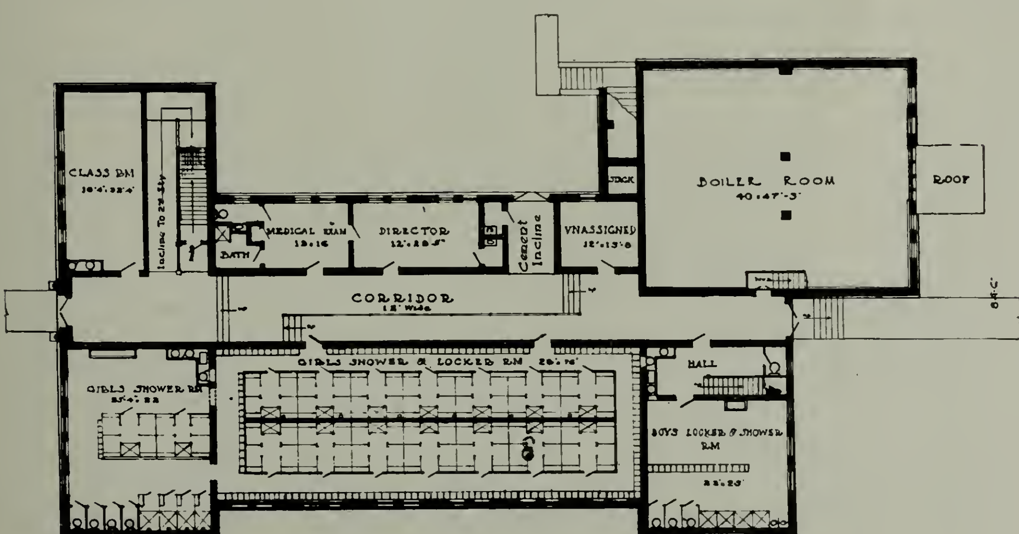
FIRST FLOOR PLAN, FINE ARTS BUILDING
Allison & Allison, Architects



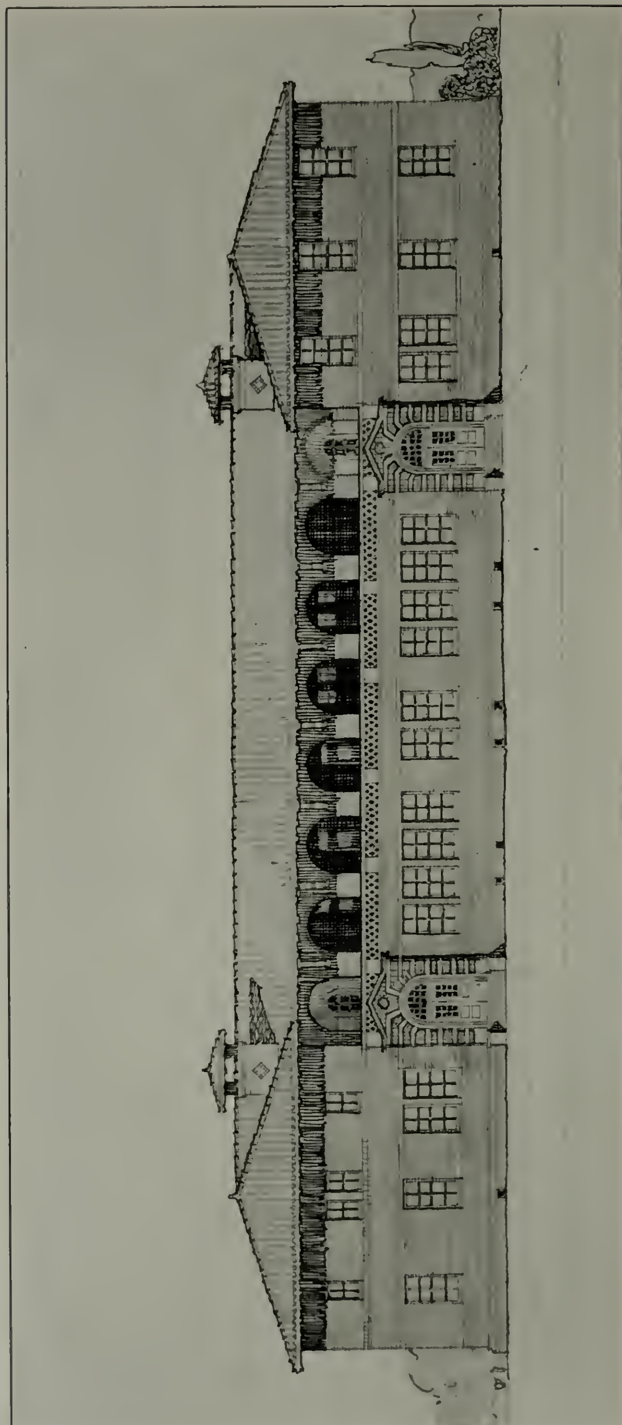
FINE ARTS BUILDING — FRONT ELEVATION
CALIFORNIA STATE NORMAL SCHOOL, LOS ANGELES
ALLISON & ALLISON, ARCHITECTS



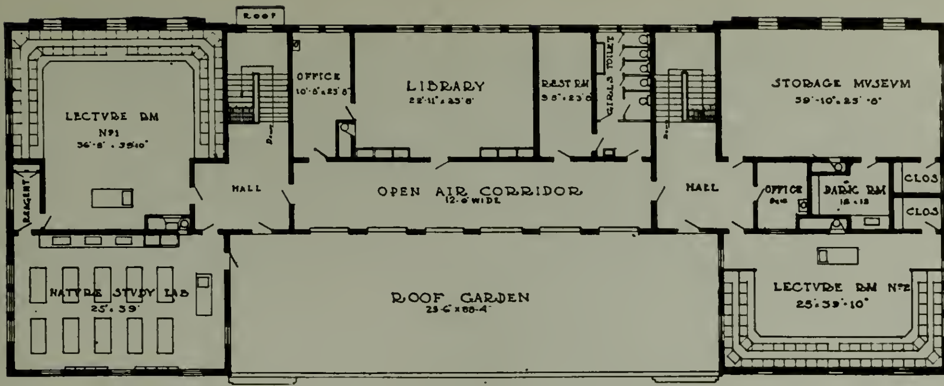
SECOND FLOOR PLAN, GYMNASIUM BUILDING
Allison & Allison, Architects



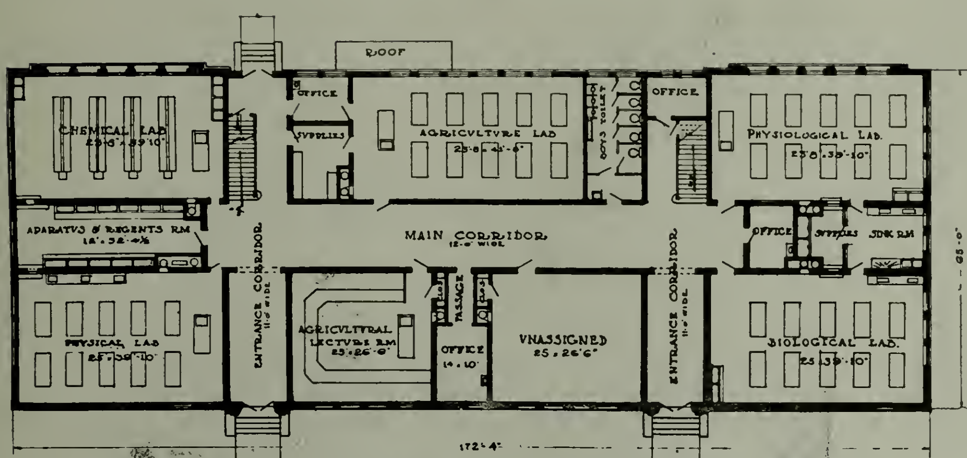
FIRST FLOOR PLAN, GYMNASIUM BUILDING
Allison & Allison, Architects



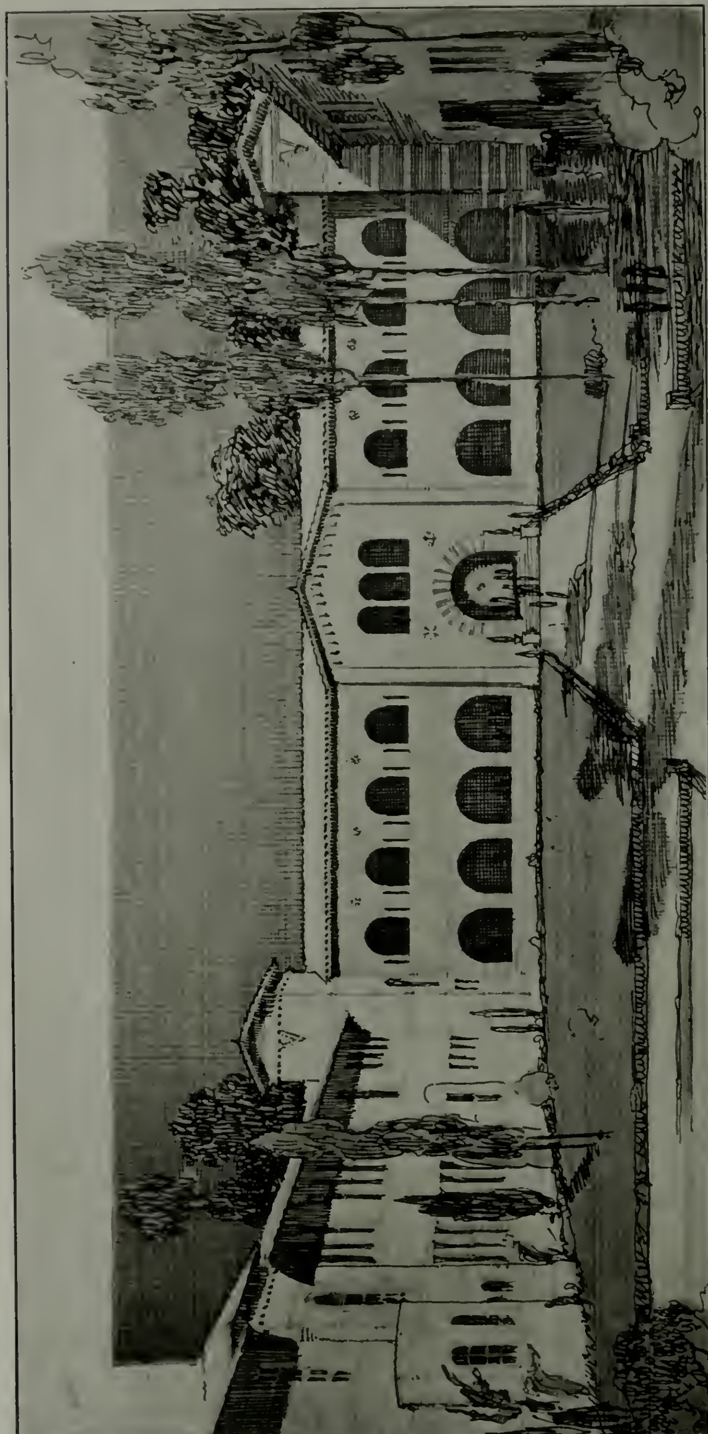
SCIENCE BUILDING — FRONT ELEVATION
CALIFORNIA STATE NORMAL SCHOOL, LOS ANGELES
ALLISON & ALLISON, ARCHITECTS



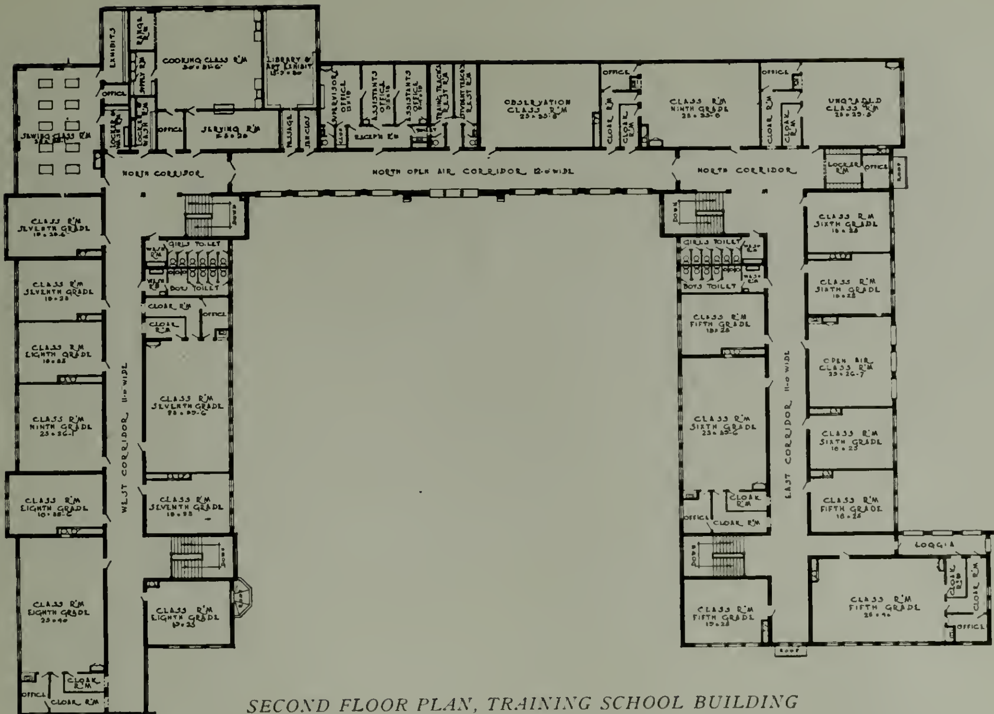
SECOND FLOOR PLAN, SCIENCE BUILDING
Allison & Allison, Architects



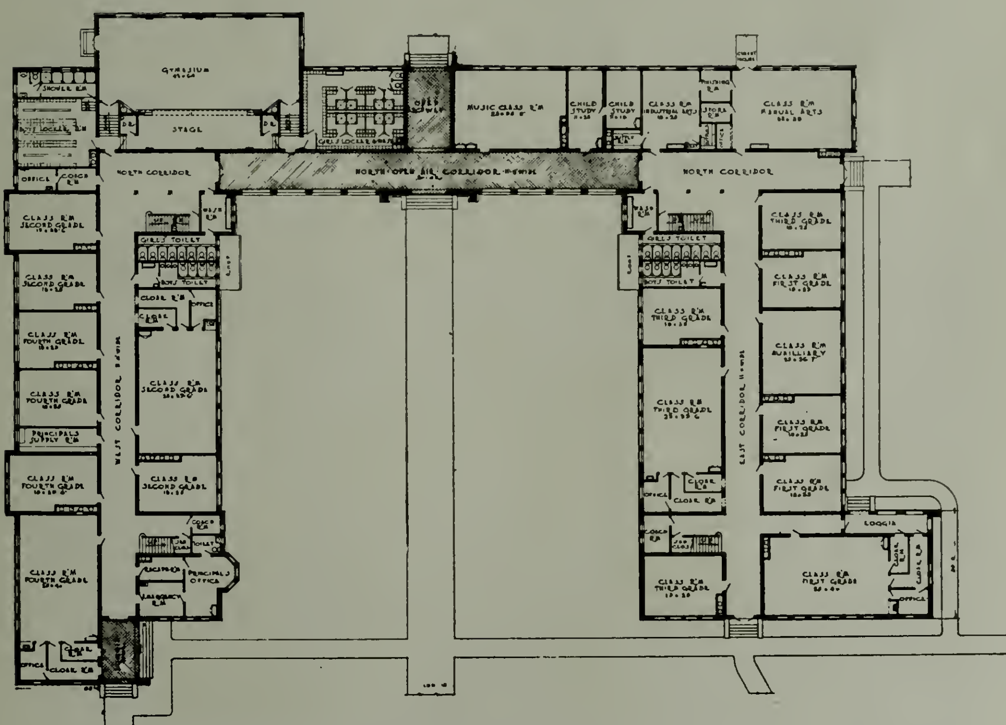
FIRST FLOOR PLAN, SCIENCE BUILDING
Allison & Allison, Architects



TRAINING SCHOOL BUILDING—FRONT VIEW, SHOWING FORECOURT
CALIFORNIA STATE NORMAL SCHOOL, LOS ANGELES
ALLISON & ALLISON, ARCHITECTS



SECOND FLOOR PLAN, TRAINING SCHOOL BUILDING



FIRST FLOOR PLAN, TRAINING SCHOOL BUILDING
Allison & Allison, Architects

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OF CALIFORNIA

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Vol. XXXVII. May, 1914 No. 1.

THE OWNERSHIP OF AN IDEA

This is a tale, of the honorable architect and the—well, business like, client who, by the way, was a banker. The same old story, but particularly pertinent because of the distinctive character of the architect's work and the "within the law" complexion of the banker's performance. The architect was not Sullivan, Wright or Cass Gilbert, but his work has a distinctive character known to laymen as well as the profession. The bank people were just plain businesslike men and as such not in business for their health. The architect was called to a town at some distance to consult with this banker regarding a new building. The banker was vouched for to the architect by a client and mutual friend. Studies were made, the plan developed and the possibilities discussed as the architect is wont to do when "consulted" by a client whom he supposes to be guided by the same sense of honor, and morality as himself. The architect left his ideas in the form of sketches, etc., and went home. He was soon notified that they had concluded not to employ him. His request that his sketches be returned was complied with after a delay of a number of weeks previous to which time another architect had been engaged. Upon completion of the building a delegation from the architect's city, including architects and newspaper men, as well as bankers, were invited to the opening. Here an art critic congratulated the bank people upon the success of the design even to the ornamental terra cotta and the lighting fixtures. On his return he congratulated the architect upon the success of his work, the unmistakable authorship of which he had recognized in the design. A prominent architect also repeated the congratulation. Both were surprised to learn that the designer was not the architect of the bank. Subsequently the fixture and terra cotta contractors both apologized for erecting the work, saying that they were compelled, to get the job, to copy some designs previously worked out in model from the designs of the architect for other buildings. The moral of this special rendering of a too common tale is easily read: * * * The bankers took a chance in their object of getting something for nothing. The hold-up man takes the same chance and if his gun is big enough he gets away with it.—Western Architect.

The above is one of a dozen similar cases—some worse, others not quite so "raw," that we could cite right here on the Pacific Coast. True, the clients were not all bankers, but there are other men besides bankers who are supposed to be honest and to live "within the law." There is a building going up in Oakland today, the original design of which is hanging on the wall in the office of a San Francisco architect. But the latter is not the architect of the building under construction. No such good luck for him. Another architect—a friend of one of the owners—is doing the work and is accepting the praises that would seem rightfully to belong to the other fellow.

The Supervisors adjourned after rejecting all bids for the erection of the new Court House and directing the architect to remodel the plans along a less expensive scheme. The architect secured the contract for plans upon his guarantee that the total cost of the building would not exceed $50,000. The lowest bid was $61,000.—(Extract from the Daily Press.)

GETTING A JOB BY FALSE REPRESENTATIONS

Here is another instance of where the incompetent architect failed to make good his estimate. Every now and then we hear that some irresponsible designer, frequently a non-certificated architect, has been selected to prepare plans for a building in competition with an architect of recognized standing. In the case at point the reputable architect submitted preliminary sketches along with the other fellow, and after both had explained their drawings, the Supervisors suggested some changes and additions that would of necessity call for more money. But their funds were limited, so they inquired of the two architects.

"Can you make these changes and still keep the cost within your estimate?"

"Emphatically no," answered the competent architect.

"Sure, I can," replied the other fellow, knowing well that the job would be his on the strength of such an assertion. He was given the commission, the plans were revised and bids were taken. The outcome was as published in the newspaper quoted above. This was one case out of ten where the irresponsible architect failed to get away with the job. Usually the city or county secures an additional sum so that the plans can be carried out without a second pruning.

There should be a State law dispossessing an architect of his commission when he falls down on a propositon of this kind, especially if he has deprived a fellow member of the profession of the job by deceiving the building committee.

Polk a Good Fighter

Mr. Willis Polk employs a press agent, but there is very little for him to do when the architect himself jumps into the arena. Polk is a fearless fighter, and even if he is not always in the right he has the courage of his convictions, backing them with a fusillade of hot-shot that is pretty sure to strike something before the firing is over. It makes no difference whether the other fellow is in the right or not. When the versatile little architect gets started he is bound to bring home something about his antagonist that is not far short of the truth. And too much of the truth hurts sometimes, especially when it relates to politicians.

The San Francisco newspapers gave Polk first-page stories beneath spread headlines some weeks ago, when the architect defied the Board of Public Works inspector, who undertook to stop work on the twenty-five-story Hobart building because the contractors were using metal lath and plaster for fireproofing instead of cement. The architect was right in maintaining that the materials being used were quite as effective as concrete, but as the building ordinance calls for the cement the architect, it would seem, should have complied with the law. Doubtless the matter has been amicably adjusted, for work on the building has been resumed and the newspapers have found other topics for their scare-headlines.

Eastern Architects Banqueted

Cass Gilbert of New York and Paul P. Cret of Philadelphia were banqueted by San Francisco Chapter, A. I. A., on the evening of May 4th. Messrs. Gilbert and Cret, with James D. Phelan, comprised the jury to select the architect for the new San Francisco public library.

Cret has won a number of prizes abroad for architectural designs, including the Paris prize of 1906, Rongevin prize of 1901 and the grand medal of emulation, Ecole des Beaux Arts, Paris, 1901. He was architect for the Pan-American Union in Washington, and is a member of all the notable architectural associations.

With the Architects and Engineers

American Institute of Architects

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Next Convention City—Seattle.

Railway Office Building

Architects Milwain Bros. of Oakland have completed plans for a three-story Class C office building to be erected at Twenty-second and Grove streets, Oakland, for the San Francisco and Oakland Terminal Railway Company. The structure will cost about $50,000.

San Francisco Society of Architects

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Education—JOHN G. HOWARD, BERNARD R. MAYBECK.
Competitions—ARTHUR BROWN, Jr., JOHN BAUR.
Constitution and By-laws—GEORGE W. KELHAM, W. O. RAIGUIL.
Special Committee on Institute Membership—JOHN G. HOWARD, ALBERT PISSIS, L. P. HOBART.

He Was Under Oath

Smith was one of the foremost engineers of his time. His one fault was an enormous bump of conceit. He completed a piece of work for a large corporation and was compelled to sue for his fee, which was $25,000, says the National Monthly.

He was being cross-examined by the attorney acting as counsel for the corporation:

"On what ground do you base your exorbitant charge for this miserable piece of work?"

"On the ground that I am the greatest engineer in the world."

After the suit had been concluded, one of Smith's friends came to him and in an admonishing tone said:

"Smith, you should never make such statements in public; allow others to acclaim you as the greatest in your profession."

Smith answered: "I know it, and I felt like a blooming idiot up there on the stand, but, blast it all, I was under oath."

Oakland Warehouse and Garage

Architect Walter Reed of Oakland has quite a little work in his office, including a two-story warehouse for the W. P. Fuller Company to cost $40,000, and a frame and concrete garage to be erected at Broadway and Webster streets at a cost of $16,000. Mr. Reed also has a substantial building for the business section of Oakland.

High School Building

Norman F. Marsh, 212 Broadway Central Building, Los Angeles, and Anthony Beimor, Byrne Building, San Bernardino, associated architects, have been commissioned to prepare plans and specifications and superintend the erection of the new Polytechnic High School Building to be built at San Bernardino. Bonds in the sum of $250,000 have been voted and $200,000 will be used for the buildings and $50,000 for equipment.

State Board's Annual

The annual meeting of the State Board of Architecture was held in Los Angeles in April, the following members being in attendance: John Bakewell, Jr., Sylvain Schnaittacher and B. G. McDougall of San Francisco, W. S. Hebbard of San Diego, and John P. Krempel, Frederick Roehrig and Sumner P. Hunt of Los Angeles. The vacancy on the board caused by the death of William Curlett of San Francisco, who was president of the board, has not been filled. Mr. Bakewell is acting president.

American Architecture at the P. P. I. E.

From an architectural standpoint the coming 1915 Exposition should prove interesting, to say the least. The majority of States will be represented by a State building, and in most cases each building is being designed by an architect of that State. An Eastern exchange comments that the grouping in one ground of so many different examples of the work of architects from various parts of the country should afford some foundation or basis for a distinct type of American architecture.

Tall Buildings an Architectural Joy

Herman Strunk, a noted etcher and portrait painter, after a visit to the United States, said: "Tall buildings in America are one of the greatest architectural joys of the world. American builders will do well to stick tenaciously to the skyscraper school they have created and keep it distinctive, developing it along strictly original lines, instead of trying to graft Roman, Grecian and Gothic ideas upon it."

Concrete Columbarium

Architect William H. Crim, Jr., 425 Kearny street, San Francisco, has completed plans for a reinforced concrete, marble and stone columbarium, to be built in Mount Olivet Cemetery. The structure will cost in the neighborhood of $75,000.

County Infirmary Buildings

Architect Charles Peter Weeks, Mutual Bank Building, San Francisco, is completing the drawings for a group of infirmary buildings to be erected near San Leandro by the Supervisors of Alameda County. The plans will be submitted probably at the next meeting of the Board of Supervisors, and as soon as they have been approved bids will be called for. The plans call for either Class A or reinforced concrete type of construction. The amount to be spent for the improvements will be in the neighborhood of $500,000. There will be at least six different buildings, including dormitories for men and women, dining hall, power plant, laundry and administration buildings, also a contagious disease ward. It is likely that the main hospital building will not be erected at present, as it is the opinion of the Supervisors that it should be built closer to the city of Oakland.

To Prevent Illegal Practices

The first arrest by the California State Board of Architecture, for illegal practice, was made recently, and resulted in a conviction. It is stated that the State Board intends to make a thorough investigation of the architectural field, and will weed out all illegal practitioners. The attorney to the commission has received instructions, it is stated, to proceed vigorously against all persons practicing architecture without the necessary certificate issued by the State Board. Examinations of the State Board, as now conducted, are much more inviting than they were years ago, and there is no longer any excuse for those desiring to obtain certificates to practice, if they are not successful in passing the examination.

Want Harmonious Buildings In Yosemite Park

In discussing the policy to be pursued, Mark Daniels of San Francisco, who was recently made landscape engineer for the Yosemite Valley by Secretary of the Interior Franklin K. Lane, had the following to say:

> The problems in the Yosemite Valley comprise sanitation, water supply, lighting, patrol, fire protection, insect control, control of concessions and many other things. The number of people visiting the valley has increased annually, the total last year being 13,735. The problem of laying out a village for the accommodation of these people is urgent and the need of action is serious.
>
> The architecture of the buildings in the valley at the present time is of a nondescript character and it is the desire of Secretary Lane that any plans submitted shall comprehend the adoption of a standard of architecture in harmony with the wonderful region.
>
> The plans I am now preparing will include designing of bridges, the selection of types of architecture for government buildings, the location of scenic roads, the thinning of vistas in the valley and the planning of others.

Architect Scholz Busy

Architect Arthur G. Scholz of San Francisco has several important undertakings on the boards or under construction. The Burnett estate will build from his plans a six-story and basement reinforced concrete building intended for a hotel. The plan provides for two stores on the ground floor and seventy rooms above. The front will be treated to imitate sandstone laid off in large blocks, and it will also have ornamental cornices and trim. The cost of the building is estimated at $40,000.

Plans have been finished by the same architect for an apartment building to be erected for John Bayles at the southeast corner of Third avenue and Hugo street, San Francisco. This house will have three stories and an English basement. There will be twelve apartments of three and four rooms, with private halls and baths, hardwood veneer doors, oak floors, tiled baths and kitchens, steam heat, hot water system, vacuum cleaning plant, wall beds and other conveniences.

The front will be done in pressed brick for the first story and stucco above.

Competition and Restricted Expense Responsible for Cheap School Houses

Discussing fire hazards in schools, and plans to avoid them, several writers recently gave special emphasis to their convictions as to the responsibility of architects. Nothing was said about the limitation, by inadequate appropriation, of the efforts of architects to provide the safest possible structures.

"Architects," says a writer in *Safety Engineering*, "have the greatest knowledge of planning and construction, they know the fire-resistance of materials and have the greatest chance in planning new building to convince the committee in charge of the necessity of the best protection against fire. It is to the interest of every architect that his building shall be constructed in the best possible way and that his public shall know why it is the best. In case of accident due to poor arrangement it is the architect who receives well-deserved public censure."

In his next sentence, this writer, Frank Irving Cooper, a Boston architect, says that "even Boston" builds outlying schools of second class construction. But he reiterates:

"An informed and awakened public will demand that an architect shall design school buildings to meet the demands of educators and protect the lives of school children. When the law holds him criminally responsible for faulty planning and construction, reform will be immediate."

Competition is responsible for many shortcomings. This and restricted expense, hurry to build schools before communities feel able to provide the best; and the various ideas of school board members, are much oftener the cause of fire hazards in schools, than lack of foresight, equipment for the work, or ability, or lack of ordinary interest in human welfare on the part of the architect. Give him a chance and he will provide a building in which fire will have almost no chance at human life.

Will Build Many Residences

Architect Frederick H. Meyer, Bankers Investment Building, San Francisco, has been commissioned to prepare plans for a number of residences to be erected at Ashbury Heights for Captain Edwards. The houses will cost from $3,500 to $6,000 each and will be built by day labor for investment purposes. Each will be of different design, the exterior finish being principally cement plaster. Mr. Meyer has completed plans for an apartment house to be erected at Fillmore and Green streets for Mrs. Bertha Overfeld.

Concrete or Stone Office Building

Architects Ward & Blohme, of San Francisco, are preparing plans for a two-story and basement concrete or stone office building to be erected at Woodland (Yolo County), for the Yolo Water and Power Company. The lower floor will contain the general offices of the company and a garage and the upper floor will be arranged for the legal department of the company.

Addition to Sacramento Skyscraper

Architect R. A. Herald, 437 Forum Building, Sacramento, is preparing working drawings for an additional five stories to be built to the Forum Building at Ninth and K streets, Sacramento. This will make the building a total height of ten stories. Construction will be Class A with steel frame reinforced concrete floors and walls and metal lath partitions. The additional stories have already been leased to the State of California for office purposes.

Bungalow Court

Preliminary sketches have been prepared by Architect Paul C. Pape, Union League Building, Los Angeles, for a group of bungalows to be erected on South Figueroa street, near Tenth street, and on Tenth street west of Figueroa street, for Frank M. Coulter, 225 South Broadway, Los Angeles. The houses will be one-story each of brick and frame construction.

New Hotel for Lodi

Mr. E. B. Brown, who designed the splendid Hotel Stockton, has been commissioned to prepare the plans for a modern hotel at Lodi. The building will be a three-story Class C structure with brick front and will cost approximately $90.000. A portion of the ground floor will be occupied by the First National Bank of Lodi.

Berkeley Appreciates a Good Thing

Allan C. Rush, the inventor of the proposed suspension bridge which may some day span the bay between San Francisco and Oakland, has received the indorsement of his plans by the city of Berkeley. The City Council of the University City has also indorsed Senate Bill No. 3677, now pending in the United States Senate, granting Mr. Rush the right of way across the waters of the bay, and invites the inventor to locate the east terminal of the bridge within the corporate limits of the city of Berkeley.

Mr. Rush, who spent several days in San Francisco the latter part of April, prior to going to Washington, acknowledged this action of the Berkeley authorities by addressing them a letter of appreciation and promising to give the communication every consideration.

Government Honors Berkeley Architect

After passing successfully the highest architectural test given by the government, Randolph Monro, son of Mr. and Mrs. William James Monro, of 2721 Channing way, Berkeley, has gone to Washington, D. C., to take up his duties as architect in the War department under Secretary Garrison. For the past few years Monro has been in the office of Mr. John Galen Howard, professor of Architecture at the University of California.

In addition to the architectural work, Monro has devoted himself to mechanical study and now has pending a patent for an automatic shifting device gear for automobiles. Monro has already secured a patent for an automatic equilibrium device.

Will Build Apartment House

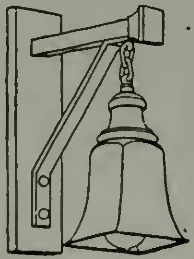
J. H. Dieckmann, the well-known San Francisco hardwood dealer, will erect a three-story frame and plaster apartment house at California and Laguna streets, San Francisco, from plans by Architect Clay N. Burrell of Oakland. There will be eight apartments of four rooms each with steam heat, wall beds and other conveniences.

Mrs. Baldwin's New Hotel

As a monument to the late E. J. "Lucky" Baldwin, Mrs. Anita Baldwin McLaughrey, one of the heirs to the Baldwin millions, is to erect a $250,000 hotel on the shores of Lake Tahoe, close to the present Tallac Hotel, of which she is the owner. John Tait and Gustav Mann will take charge of the old Tallac Hotel during the coming season.

Stockton Bank Building

Architect L. B. Dutton of San Francisco has become associated with Architects Stone & Wright, Stockton, in the preparation of plans for a $250,000 bank and office building for one of the leading banking institutions of the Slough City. Construction will start as soon as contracts can be let.



Heating and Lighting

Plumbing and Electrical Work

Lighting a Model Home

By F. Laurent Godinez, in Good Housekeeping.

THE lighting of the model home must be free from glare, and the color of the light must be right. Under no condition should one's eyes be exposed to glaring, unmodified lights, since eye-strain, which will lead to chronic headaches, insomnia, hysteria, or indigestion, may result. From the esthetic viewpoint, interior decoration to be appreciated must be seen, and an interior which is so glaringly lighted as to be annoying to one's sight can never be termed artistic. Over-brilliant lighting is opposed to refined taste, and a room so lighted is not fit to live in.

The white-light quality which is characteristic of modern illuminants is absolutely opposed to that *motif* of repose which should be the predominant theme in the home atmosphere. This obnoxious "white light" is uncomplimentary alike to individuals and their surroundings. It reveals every wrinkle, emphasizes each facial blemish, and makes one's features appear old, pallid, and unrelaxed. An amber light, on the contrary, is warm, soft, and inviting. It is restful to the eye, like the oil-lamp, and creates an atmosphere of repose. Everything is mellowed, softened, and beautiful by it.

It is not difficult to modify this unpleasant white-light effect. It can be accomplished gracefully by enclosing the offending illuminants within amber shades of glass, silk, or paper. These can be obtained to conform with any decorative treatment. Lighting globes of "ground" or "etched" glass are undesirable; their good effect by day is marred by their spotty, glaring appearance at night. Globes should be chosen which entirely conceal the glaring light within, and should always be observed *lighted* and *unlighted*. When the glass is too thin, or "etched" or "ground," the exterior design, which may be attractive when unlighted, becomes obliterated by the glare when lighted. When it is not feasible to change globes of white glass, the desired color change can be effected, in the case of gas, by substituting amber-light for white-light Welsbach mantles. With Mazda-Tungsten electric lamps, home-made cylinders of amber gelatine film, paper, or shirred silk can be placed over the electric bulb *within* the white globe. Increasing the thickness of these enveloping cylinders by extra layers of the material used gives the requisite depth of amber light, which can be determined by comparison with the oil-lamp as a standard.

The invention of reflectors formed by plating a corrugated glass shell with pure metallic silver has made possible what is known as indirect lighting. In this way lights placed within silver-plated reflectors direct every useful ray of light upward, where the diffusive action of the ceiling illuminates the interior with entire freedom from glare. Indirect lighting is just as cheap as direct to maintain, and is much cheaper to install, since the necessity for individual lights over desks, tables, sewing-machines, sinks, and all isolated working surfaces that require localized light is obviated by a perfect general illumination. Therefore the placement of one indirect-lighting source in an interior gratifies every conceivable localized requirement and saves the expense of time, labor, and material in conducting wires to remote points, not to mention the cost of the numerous special lighting fixtures required. Again, in placing individual fixed lights, under the assumption that the arrangement will be permanently satisfactory, one is apt to overlook conditions which ultimately necessitate rearrangement of furniture, and extra expense for additional lights. It is possible to cut estimates of installation costs at least seventy-five per cent. by carefully analyzing the requirements of local and general illumination.

Many persons prefer to "see" a source of light, rather than an opaque fixture, within which indirect-lighting equipment is often placed. The whole pictorial effect of a room may be enhanced or destroyed by its mode of lighting. Globes, or shades, which have become commonplace through vulgar usage, like the ribbed affairs of clear glass typical of commercial lighting, should never defile the atmosphere of the home. Every one should try to make his lighting as distinctive as possible, and it is just as lacking in good taste to tolerate commonplace lighting appliances in the home as to duplicate your neighbor's furniture, carpets, and interior decoration. One's desire for a visible light may be satisfied by utilizing the glass-makers' bowls and urns in combination with standard indirect-lighting equipment.

Dead-light ceilings should never be used with indirect lighting, unless strictly essential to the decorative plan. In such cases the white light can be changed by placing screens of amber-colored gelatine film over the reflectors. Ceiling finishes should always be mat-surface, or depolished. Polished surfaces reflect glare and produce eye-strain.

Now, referring to the plan of the model home, let us go through the house together, applying some of our lighting technique. Starting with the porch, direct or indirect lighting is applicable with either gas or electricity. If indirect lighting is preferred, the fixture can be home-made, consisting of a rustic hanging basket, with a center space to accommodate the indirect reflector and lamp; or an inexpensive terra-cotta urn can be placed on a pedestal, just high enough to prevent one from detecting the *modus operandi*. The control for the porch light should be from inside and out. If gas is used, this can be accomplished by a pneumatic valve connected by a fine hair-like copper tube, which while hollow, is thinner than an electric wire. The outside switch should be concealed (behind a hinged push-button plate, is a good way), a precaution which facilitates the location of obscure key-holes.

The living-room should have both general and local lighting. The local lighting is best rendered by portable gas or electric lamps, which are obtainable in designs of infinite variety. Floor outlets should be provided, also baseboard outlets for fans, etc. There is available a new gas-outlet which permits the attachment of a flexible armored tube connecting with a gas-iron, fan, chafing-dish, coffee-percolator, or portable reading-lamp, and when the tube is disconnected the gas cannot be turned on. The control for all the lamps, (some will presumably be used for decorative purposes) can be local or remote, thereby enabling one to change the effect from local to general lighting from one wall switch, which should be located at a convenient point. This, interpreted literally, with reference to egress or ingress, signifies three separate control switches. One at the front door, one at the hall door, and one at the head of the stairs would be the ideal arrangement, and if indirect lighting as a source of general illumination be used, the saving effected by not purchasing an expensive ceiling fixture would leave a surplus over the installation cost of the three-switch remote control. If a book-case or a piano is placed in this room, one indirect-lighting reflector, within an urn, with upright Welsbach mantles or one large Mazda lamp, will save fixture expense. A portable lamp may be had which gives both the indirect and local effect, a silver-plated reflector being concealed within the exterior silk shade, supplemented by small lamps on a separate pull switch. The advantage of this lamp is that it meets both general and local requirements, and reduces wiring or piping expense by operating from one floor outlet. Unless ceilings are high, hanging lighting fixtures have a tendency to make a room seem cramped and small particularly when the living-room and the dining-room are intended to be thrown into one, as in this instance. Unless one desires to spend a considerable amount for something quite different in the line of hanging fixtures, the procedure outlined is the best.

Where two rooms are to be combined for social functions, a hanging dome will interfere. Table candelabra afford charming lighting and can be made feasible by placing outlets beneath the dining-table. One central hole in the cloth (concealed at other times by a doilie or fern-dish) permits the attachment of gas or electric candelabra, the soft glow of the little candle shades being in agreeable contrast to a glaring lamp projecting noticeably below an "art" glass dome.

The candles can be supplemented by side-wall lights, if desired, but the side wall must be regarded as a desirable *locale* for other than lighting which is purely functional in the decorative sense. When the brightness of the side-wall light becomes offensively predominant, its pictorial value as a decorative symbol is destroyed. If general lighting is required for certain occasions, it can be supplied (indirectly) by one or two lights concealed in cornices, or behind buffets or china-closets. The control should be located conveniently near the door, and care should be taken to avoid the offensive brass plates, which deface a wall. These should be countersunk, and the paper placed over them, or painted to match the wall. They are not decorative symbols, and should, therefore, be subordinated.

Assuming that there is to be a table in the den, individual lamps for it and the desk, in combination with a general system as described for the living-room, would be appropriate. It is certain that the portable lamps will not adequately illuminate the book-cases for reference and selection of volumes. The control should be located near the hall door.

If direct lighting is used in the bathroom, wall brackets should be used. These should be placed on each side of the mirror and have pendent globes of opal glass on a level with the features of a person six feet tall. With indirect lighting, one wall bracket above the mirror will suffice. Control may be with pull chains or a wall switch, as preferred.

With direct lighting, separate fixtures will be needed over sinks and ranges, supplemented by a center ceiling fixture with opal glassware. With indirect lighting, one pendent center fixture will meet all local requirements, if the woodwork and side walls are not too dark in color. Several baseboard outlets should be supplied for gas or electrically operated domestic mechanisms.

The bed rooms require local and general lighting. Portable lamps attached to baseboard outlets should be arranged by bedsides on somnoes or telephone tables. Baseboard outlets for dressing table lamps should be provided. Indirect illumination renders the expense of interior closet lights, with their unreliable "automatic" switches, unnecessary, also providing an excellent light for viewing oneself in mirrors on bureaus and in pier or cheval glasses. When twin beds are placed as indicated on the plan, the tendency is to place one portable lamp between them. Sometimes this is less convenient than a separate lamp beside each bed.

One small light (a 25-watt Mazda electric or a Welsbach Junior gas-mantle) on a wall bracket, in a reflector directed against the ceiling at the head of the stairs will light the stairs and hall at a negligible expense, even if burned all night. A similar wall bracket on the side wall, facing the large closet adjoining the den on the ground floor, will insure safety and convenience at night. Duplex control from above and below can be economically installed.

From the foregoing, it is evident that the lighting of the home requires deliberate consideration, and that the indiscriminate installation of promiscuous equipment, by those whose sole motive is the sale of a fixed product, can never result in lighting which will satisfy the many physiological, psychological, and esthetic factors which in their entirety constitute the complex equation of light.

The Model American City

One of the features of the twenty-ninth annual Exhibit of the Architectural League held in New York City, recently, was the endeavor to present a model American city. This was out of the ordinary for the features of American Architecture are so hard to combine them into a typical American style of architecture.

For this Model City a committee of architects selected those structures which were best in their judgment, including a City Hall, library, museum, postoffice, schools, banks, churches, stores and residences, and from these types were constructed the Model City.

Simplicity and uniformity seem to have been desired. Among the structures selected there were probably thirty different designs representing work of a score of architects, and the designs were all good.

While the Colonial and Renaissance motives prevailed, the most striking feature was the way the group adjusted itself to the characteristic American scenes. This subject seems to be one well worth the attention of American architects.

Municipal Engineering

ROADS WASHED AWAY, BUT CULVERTS IN GOOD CONDITION, WAITING REPLACEMENT OF CONCRETE BULKHEADS.

CORRUGATED CULVERTS IN MADERA COUNTY, CALIFORNIA, AFTER THE HEAVY FRESHETS OF 1914.

The Destruction of Culverts by Floods

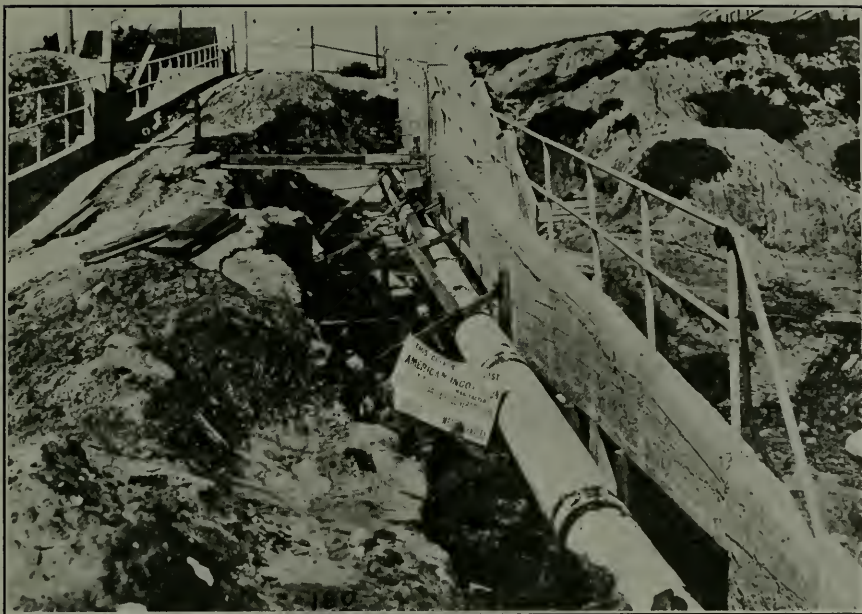
By John J. Tibbetts

THE contest now on among the manufacturers of the various irons which are used for culvert and flume purposes in respect to the chemical purity of their products has centered a great deal of attention on the corrugated culvert. A number of mechanical advantages in this style of construction have long been conceded, and the contention made by the principal manufacturers that the durability of any sheet metal product in exposed situations is proportionate to the purity of the basic material seems to have been established by experience. Corrugated iron pipe is found to be the most available form of culvert and storm-drain in many situations where, for one reason or another, there is doubt as to the permanence of other materials; and it is therefore increasingly prominent in highway and irrigation work. Heavier gauges than those first employed will undoubtedly be called for in the future by the increasing severity of traffic conditions on the main traveled ways. There is one feature in connection with the use of this pipe, however, which has not been fully appreciated until recently, and which has the utmost importance in the maintenance of drainage lines. I refer to its behavior in times of flood.

In Los Angeles county, the freshets of January and February, 1914, caused damage to roads, bridges and culverts which has been roughly estimated as in excess of two hundred and fifty thousand dollars. Many stretches of beautiful highway were ruined by the rushing water, but, of course, the brunt of the attack was upon the bridges and other drainage structures. Handsome and costly bridges of steel and concrete went down in the flood, while the old-fashioned wooden crossings were like the proverbial snow-ball in Hades. Carefully built culverts of masonry, along with the other types which require a solid and even bed, went to pieces because of the undermining of their foundations. From all this the corrugated pipes which have been so freely installed in that section, emerged practically unharmed. The photo-

DESTRUCTION OF STORM DRAIN AT LONG BEACH, CALIFORNIA

graphs show some of the instances in Madera county, which were paralleled nearly all over the State, where the roads themselves are washed away, but the corrugated culverts remain on the job, only awaiting the reconstruction of the fill and the replacement of the broken concrete bulkheads to be as good as ever. In some



REPLACEMENT WITH CORRUGATED PIPE

cases the pipe was carried a distance down the stream by the force of the current. It was then only necessary to haul it back into place and cover it over.

Reports coming from Ohio indicate similar experiences with corrugated pipe during the floods of 1913. Its ability to withstand some conditions which prove ruinous to other—in many respects excellent—materials will prove to be a large factor in its average length of service, and may in the end serve to extend this average beyond that of forms of construction which at first thought would seem to offer the ideal of permanence.

At Long Beach, a well constructed storm-drain of reinforced concrete had been in service for about a year, at the foot of Alamitos street. The storms carried away its foundation, and the pipe settled at the joints, and collapsed. Corrugated, pure-iron pipe was substituted; and this, while still uncovered and supported only by timbers set widely apart, was subjected to another big storm. No damage whatever resulted, and City Engineer Dupuy is of the opinion that he has permanently disposed of the matter.

Portland Cement Production

The final figures for the Portland cement industry in 1913, as obtained by the United States Geological Survey shows a production of 92,047,131 barrels, shipments of 88,689,377 barrels and stocks on hand 11,220,328 barrels.

Municipal Theaters in France

The cities of France quite generally subsidize theaters and exercise watchful supervision over the administration. In Havre (and probably in most other cities) the director is chosen by the city council and a citizen commission passes judgment on the candidates for the leading parts. This theatre seats about 1,400. The stock company contains 10 actors and 8 actresses for drama and for light opera 22 singers and a chorus of 18. During the past few years the attendance has been diminishing, owing to moving picture theaters and the habit of the more wealthy to visit Paris; and the season of 1912-1913 showed a loss of $1,930, which the city had to pay. The Havre Council a few weeks ago voted $9,650 subsidy for next winter. The prices range from 10 cents in the top gallery for all performances to from 77 cents to $1.16 for orchestra chairs, the latter price for grand opera.

D. Zelinsky Opens Los Angeles Office

Mr. D. Zelinsky has recently opened an office at 738 H. W. Hellman building, Los Angeles. This extension of a successful painting and decorating business is made necessary by a large number of important contracts in the southern city, including the Merchants Bank building, the Railway Owners' building and others. Mr. Herbert Zelinsky will have charge of the Los Angeles office.

Concrete Curb Protection

By SAMUEL H. DOLBEAR

There are five problems which the City Engineer must face in the installation of curbs, as follows:

1. Efficiency.
2. Permanency.
3. Ease in Construction.
4. Appearance.
5. Cost.

Unprotected concrete curbs satisfy only the last of these items and are not a satisfactory curbing for even residence districts. A casual inspection of unprotected concrete curbs in any city will testify to this statement. These curbs will be found broken and disintegrated from the rough treatment which is essentially the experience of any curbing.

I do not believe that any engineer will dispute the fact that cedar wood curbing is a makeshift construction at best. It is shoddy in appearance even when new and depreciates rapidly. This objection also applies, of course, to concrete curbing protected by wood strips.

For permanent work there are but two recognized types of curbing—one, steel armored concrete and the other solid granite or other stone.

It is the common conception that granite or solid stone is the most efficient type. Certainly it is the most expensive. As a general rule it costs installed from 100 to 150 per cent more than armored concrete. Granite or any other stone for that matter, will spall when struck a blow. It matters not what the origin of the blow—whether from a hammer or a wagon wheel, the result is the same. A glance at the photographs below will show the effect of traffic on granite curbs. These failures by spalling are so common that they may be found wherever granite curbing has been in use for a year or two.

Ostensibly, steel protected concrete curbing is the only solution of this problem.

The Dolbear steel curb guard is the writer's invention and was designed to eliminate the vital faults so obvious in various devices which have been offered for the purpose. I feel safe in stating (and the statement has been confirmed by the opinions of many prominent engineers) that the Dolbear bar is the most efficient curb armor which has ever been placed on the market. This may appear to be a rather broad claim, but it is fairly substantiated by the following facts:

1. It is of solid steel one piece construction, having no countersunk bolt heads and no detachable anchorage device to corrode and break apart.

2. This head portion is passed through rolls in the process of manufacture especially constructed to secure an exceptionally dense metal. At is is this portion of the bar which is exposed to wear and abrasion this factor of permanence is very important.

3. It has a rounded outer head constructed of high-grade rolled steel conforming in contour to the embedding concrete.

4. The head is constructed with a flat underside thereby eliminating the wedging effect of other types. Why any curb bar should be designed to resemble a wedge is hard to understand.

5. The head is so constructed that expansion takes place entirely outside of the concrete. Without this feature expansion and contraction quickly destroy the bond between the steel and embedding concrete and if the variation in temperature is great enough will spall away that portion of the concrete directly above or below the armor.

6. The impact when struck, is carried by the metal portion of the bar extending into the solid concrete and at right angles from the direction of the blow. The metal

RESULT OF ABRASION ON GRANITE CURBS

portions carrying the stresses are nearly two inches in combined width, thus the impact load is distributed over an area of nearly twenty-four square inches per lineal foot. When angle iron or full strap iron is used, the concrete surface itself must carry the full load, for it is merely overlain by a metal film or sheathing which must communicate the blow directly to the surface it covers.

7. The broad base or foot furnishes a solid anchorage. The bar cannot be severed from the concrete without completely destroying the curb. This feature is a very important one, not only on straight work, but on curves and corners where the bar must be bent on a radius to correspond with the street plans. Here there may easily be a tendency of the steel to spring outward and away from the curb, unless the device used is so constructed that it has a sufficient anchorage; with other portions so shaped that the bond between the steel and concrete cannot easily be severed by expansion or impact.

The points which I have tried to bring out may be readily appreciated by inspecting the accompanying perspective.

For the protection of users of this device the following is suggested to be incorporated in specifications for curb work:

"The curb shall be protected by a one-piece rolled steel bar, forming a rounded outer edge of about one and one-fourth inches arc, and about one inch radius. The bar shall be so constructed that when installed it will be firmly anchored in the embedding concrete, and shall be of a design satisfactory to the Board of Public Works. The bar shall be not less than eight feet in length, except where expansion joints are less than eight feet apart.

The construction of the bar shall be such that when a blow shall be struck at the center of the rounded outer edge, the impact load shall be carried by metal portions of the bar extending at right angles from the direction of the blow, which metal portions shall have a combined width of not less than one and one-half inches."

The Dolbear bar is the only single piece type curb armor manufactured on the Pacific Coast and being rolled at the mills of the Pacific Coast Steel Company for the American Steel Bar Manufacturing Company.

SPALLING OF GRANITE CURBING FROM TRAFFIC

A Record to Be Proud Of

The plumbing and heating firms of Central and Northern California "take off their hats" to the Petersen & James Company of 710 Larkin street, San Francisco. Certainly this concern is a proof that hard times do not exist where a firm has established a reputation for living up to their contracts and do only honest work. Architects feel that they can rely on them and this is shown by the number of offices from which they have taken contracts. Over $200,000 worth of work has been executed by this firm during the past year including the following:

Agricultural Building, P. P. I. E., Bliss & Faville, architects. Plumbing contract $26,000

Seven-story Hotel Kensington, N. E. cor. Geary and Jones streets, Milton Lichtenstein, architect. Plumbing contract 13,000

Six-story hotel Tonawanda, S. E. cor. of Geary and Jones streets, Albert Schroepfer, architect. Plumbing contract 8,400

Ten-story office building (Flat Iron Building), junction of Sutter, Sansome and Market streets, Havens & Toepke, architects. Plumbing and heating contracts 13,400

Six-story office building, California, near Front, for Hind Estate, John Reid, Jr., architect. Plumbing and heating contracts 8,400

Six-story apartment house for Mr. Schleicher, Dunn & Kearns, architects. Plumbing and heating contracts 9,400

Thirty-four apartments, 14th and Market streets, for Mme. Barroulett, Milton Lichtenstein, architect. Plumbing contract 5,500

Seven-story Hotel Cecil, R. S. Brown, owner, Creighton Withers, architect. Plumbing and heating contracts 9,000

Annex to Mills Building, Willis Polk & Company, architects. Plumbing contract 7,000

Cowell Estate Building, Sacramento and East streets, Henry H. Meyers, architect. Heating contract.. 3,600

Six-story apartment house, N. W. corner Bush and Leavenworth streets. E. L. Curtaz, owner, Wm. Helbing, designer. Plumbing and heating contracts 9,400

Ehrmann residence, 2820 Broadway, San Francisco, Willis Polk & Co., architects. Plumbing contract... 2,400

Mrs. Katherine Hooker's residence, Sacramento and Walnut streets, Willis Polk & Co., architects. Plumbing contract 4,400

The above is but a partial list, as they have quite a number of other contracts too numerous to mention.

The Petersen & James Company refer with considerable pride to any of the above owners or architects as to the firm's efficiency in executing contracts.

PRATT BUILDING MATERIAL CO'S. BOATS UNLOADING GRAVEL AT BOLINAS BAY

The **Pratt Building Material Co.**, C. F. Pratt, President, can deliver **Sand, Rock** or **Gravel** by either **rail** or **water**. They ship from **Sonoma, Napa, Yuba, Alameda, Placer, Contra Costa** and **Monterey Counties**. They will furnish you **white sand** from **Monterey County, Marysville sand** from **Yuba County** or **washed gravel** from **Alameda County**. If you want samples or prices write **PRATT BUILDING MATERIAL CO.**, Hearst-Examiner Building or phone **Douglas 300** — *easy to remember.*

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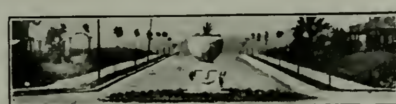

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APARTMENT HOUSE FOR MR. WILLIAM ROEDER, SAN FRANCISCO
A. W. Burgren, Architect

Spencer Passenger Elevator for This Modern Building

A Spencer full automatic passenger elevator will be installed in the above modern apartment house now under construction at Turk and Leavenworth streets, San Francisco, from plans by Architect A. W. Burgren. The owner is William Roeder and the contractor is J. W. P. Jensen. Other recent installations of Spencer elevators are three large freight and one automatic dumb waiter for the Honolulu Iron Works, one freight of 2,000 pounds capacity for the Guarantee Battery Company at Van Ness and Golden Gate avenues, one full automatic dumb waiter for Mr. Sleicher at Geary and Larkin streets, one freight elevator of 8,000 pounds capacity in the Surf Garage at Post and Leavenworth streets, Milton Lichtenstein, architect; one freight for the Fisk Rubber Company at Pine street and Van Ness avenue, Frederick H. Meyer, architect; and a large freight for Mercell & Haley, Sacramento, also Hall, Luhrs & Co., Front and M streets, Sacramento.

Personal

Mr. Hugh Braunton of the firm of Braunton & Leibert, architects of Vancouver, B. C., has returned from a five months' tour, having visited some 42 of the principal cities of the United States. Incidentally Braunton & Leibert have opened offices in Seattle, Wash., at 210 Haight building, in conjunction with their Vancouver office, where they will be pleased to receive catalogues and samples from the trade.

Architect C. O. Clausen of San Francisco announces the removal of his office from the Phelan building to suite 722-24 Hearst building. Mr. Clausen has close to $100,000 worth of new work under way in his office.

Oil Burner Company in Splendid New Quarters

The S. T. Johnson Company, manufacturers of oil burners, has just moved into its new home on the southwest corner of Mission street and Washburn avenue, San Francisco. The company also has an important branch at Grace and Lowell streets, Oakland. Mr. J. C. Johnson is in charge of the San Francisco office, and largely through his capable management the firm has prospered. Starting with a small establishment at 1334 Mission street immediately following the big San Francisco fire, the company has been pushing steadily forward until today it occupies an important place in the industrial field of Central and Northern California. Over 500 Johnson oil burners are in use on the Pacific coast, and the business has increased so rapidly the past year that larger quarters were absolutely necessary.

The new home of the company is a two-story class C building with about 5,000 square feet of room. The office and display rooms are on the ground floor front, while the shipping department is located on the same floor in the rear. Upstairs are the tool rooms, supply department and machine shop. Considerable new machinery has been added to insure prompt service in connection with increased demands for burners.

The S. T. Johnson Company claims the distinction of being pioneers in the oil burning business, manufacturing burners under its own patents. "A special burner for every need," is a slogan which Mr. Johnson has adopted and made good in fulfilling.

Besides hundreds of bakeries equipped with Johnson burners, the following list indicates the wide range of buildings that have Johnson installations:

SAN FRANCISCO

San Loretta Apartment House, Sacramento and Leavenworth streets, low pressure system.

Meyer's Apartment House, Polk and Turk streets, low pressure air.

Behlow Estate Building, Clay and Montgomery streets, low pressure air.

Grand Central Hotel, Market and Polk streets, low pressure air.

Peterson Apartment House, Market and Noe streets, low pressure air.

Polk Hotel, Turk and Polk streets, low pressure air.

Builder's Exchange, 180 Jessie street, low pressure air set.

Clinton Apartments, Jackson and Jones streets, low pressure air.

Claremont Apartments, Washington and Jones streets, low pressure air.

Cadillac Hotel, San Francisco, Cal., low pressure air.

Dannemark Bros., Apartment House, Washington street, low pressure air.

NEW HOME OF S. T. JOHNSON COMPANY, MISSION STREET, SAN FRANCISCO

DISPLAY ROOM AND OFFICE S. T. JOHNSON COMPANY

Episcopal Divinity School, California and Taylor streets, low pressure air.
Central Realty Building, Kearny and Sutter streets, low pressure air.
Ashcroft Building, Sixth and Stevenson streets, low pressure air.
St. Ignatius Church, Fulton street, low pressure air.
Auburn Hotel, Sixth and Minna streets, low pressure air.
Phillip's Apartment House, 1624 McAllister street, Whirlwind burner.
Hotel Potter, Ninth and Mission streets, low pressure air.
Hotel Ritz, Kearny and Sacramento streets, low pressure air.
State Normal School, San Francisco, low pressure air.
St. Charles Apartments, Sacramento and Hyde streets, low pressure air.
Hotel Vendome, Kearny street and Columbus avenue, low pressure air.
Hotel Victoria, Bush and Stockton streets, high pressure boiler.
Henry Apartments, Ellis street and Van Ness avenue, low pressure air.
Chantecler Apartments, Washington and Mason streets, Whirlwind burner.
Koenig Apartments, Fifth and Parnassus avenues, low pressure air.
Drummond Apartments, Gough and McAllister streets, low pressure air.
Shrieve Factory Building, Bryant and Third streets, low pressure air.
Hotel Roehampton, Golden Gate avenue and Larkin street, low pressure air.
Dr. Grant's Hotel, Bush street, near Powell, low pressure air.
Sobosky Apartments, Stockton street, near Bush, low pressure air.
The Blythedale Apartments, Washington street, near Polk, low pressure air.

OAKLAND

Herby Spring Works, Oakland, low pressure air.
Longfellow School, Oakland, low pressure air.
Western Pacific Depot, Oakland, low pressure air.
National Biscuit Co., Oakland, low pressure air.
Elmhurst School, Oakland, low pressure air.
Dewey School, Oakland, low pressure air.
Emerson School, Oakland, and Berkeley Y. M. C. A. Building, low pressure air.
Franciscan Monastery, Oakland, Whirlwind burner.
Wollendale Apartments, Oakland, low pressure air.

BERKELEY

Berkeley Inn, Berkeley, low pressure air.
Laguna Vista Apartments, low pressure air.

STOCKTON

United States Post Office Building, Stockton, Calif., low pressure air.
Yosemite Theatre Building, Stockton, Calif., low pressure air.
Y. M. C. A. Building, Stockton, Calif., low pressure air.
San Joaquin Building, Stockton, Calif., Whirlwind burner.
The Turner Building, Stockton, Calif., low pressure air.

RICHMOND

Richmond High School, Richmond, low pressure air.
Nystrom School, Richmond, Whirlwind burner.
Richmond Grammar School, Richmond, Whirlwind.
Abbott's Hospital, Point Richmond, Calif., Whirlwind burner.
Bon Air Hotel, Richmond, Calif., Whirlwind burner.

Better Cement Floors

If there be a comparison between the advantages and disadvantages of the cement floor there will be found a very comfortable balance in favor of the former, and as the cement world is no exception in the constant general effort toward improvement, it may be of interest to those interested in building to learn of a material being introduced into the local market which greatly adds to "advantage" column; and—it is necessary to mention it—diminishes the other side of the page.

Most of the few remaining undesirable features of concrete floors may be traced to one source—their porosity. To overcome this is to stop the tendency towards dusting, crazing and crumbling after a little wear. Patching and sometimes painting are usually resorted to when these bogies begin to assert themselves, but these are temporary remedies only, for no sooner is one spot patched than another somewhere else needs treatment.

Factories where sanitation is a feature need have no fear of the cement floor on account of the dust, and, for the same reason, cement floors will be fully reconciled to power plants with huge delicate machinery. And what of the wrath of the head of the shipping department when holes begin to form where the trucking is heaviest and he has to be inconvenienced with repairs?

The only way to permanently overcome the porosity of concrete floors is to eliminate it in the making of the concrete mixture when the floors are being laid. A new compound containing a large percentage of granulated steel, known as Federal Steel Cement Hardener, is claimed by its manufacturers to have the properties which will correct the foregoing faults. This is a finely divided and chemically treated hard material that is mixed with sand and cement and is used in the floor topping. It has a high tensile and compressive strength, enabling it to withstand abrasions to an exceptional degree.

E. A. Bullis & Co., the selling agents, state that their compound has an affinity for water as it stands in the bag, and anyone familiar with the mixing and setting of cement mortars will appreciate what this means. It means just what this article is headed.

Founder of Glidden Varnish Company Retires from Active Participation in the Business

F. H. GLIDDEN

AT the last annual meeting of the Glidden Varnish Company, Mr. Francis H. Glidden, its founder, and who for thirty-one consecutive years had filled the office of president, sprung a surprise to the board of directors by tendering his resignation.

In so doing and in words of deep feeling, Mr. Glidden expressed his gratitude to those present for the many years he had been honored with their confidence in the management of the company's business. He made it clear that the prosperity of the Glidden Varnish Company was due largely to the able assistance and co-operation of the competent young men and his four sons who had given so faithfully the many years of their best services in the upbuilding of the company.

Mr. Glidden, who is now past eighty years of age, but still active and enjoying good health, said it was time to give way to the merits of the younger element and declined to be re-elected president. The board of directors, in appreciation of the long service rendered by Mr. Glidden, created the new office of "Chairman of the Board of Directors," to which office he was unanimously elected. The following officers were then elected:

Mr. Fred A. Glidden, president; Mr. F. K. Glidden, vice-president; Mr. W. J. Glidden, treasurer; Mr. R. S. Leonard, secretary.

The new president is not only popular with all his associates in the business, but also with the trade he has so vigorously helped to build up, and it is assumed that with his thorough knowledge of the details of the extensive business that the Glidden Varnish will continue indefinitely its march of progress.

Thirty Years in Mexico

Mr. Frank H. Olmsted, of the firm of Olmsted & Gillelen, civil engineers, recently addressed the members of the Engineers and Architects' Association at the Hollenbeck Cafe, Los Angeles. Mr. Olmsted's subject was "Mexico and Mexicans." As hydrographic engineer on water supply and harbor work for nearly thirty years at Vera Cruz and along the west coast, he was well fortified with interesting information about that country.

A Correction

In the article of Messrs. Boynton and Libberton on "The Decorative Possibilities of Concrete," in the April Architect and Engineer the statement was made that the sculpture work on the Throop Polytechnic Institute in Pasadena was executed in New York. This was an error on the part of the authors, as the entire modeling was done in Los Angeles. Myron Hunt and Elmer Grey were associated in designing the Throop Institute buildings.

Cracks in State Highway Explained

Travelers on the State Highway where the concrete road is still unsurfaced frequently note the cracks in the concrete and wonder if they are defects in construction. These cracks, according to the Highway Engineer, are not only desirable, but they are economical as well. They take the place of the metal expansion joints sometimes used in concrete highway building, and when the concrete is covered with the bituminous surface the cracks serve a useful and necessary purpose, but are not apparent to the traveler. The ability to do without metal expansion joints in California effects a large saving in construction, which is put into additional mileage.

Engineering Societies Consolidate

At the annual meeting of the American Institute of Electrical Engineers a paper was read and discussion took place in regard to combining the membership, or parts thereof, of the several national engineering societies. The primary object being "To foster and develop the human factor in the engineering profession, to place the engineer on the same plane as the lawyer and doctor, and for the discussion of engineering in general, except scientific and technical subjects."

It will probably take considerable time to develop a scheme which will appeal to the members of four or five different bodies so large in numbers and pregnant with tradition as our national engineering societies, but in the meantime it cannot fail to be of interest to the profession at large to know that younger bodies are leaving the slow and heavy methods of debates to their elders and are, fittingly, up and doing.

The most important consolidation of societies which has taken place in the history of American engineering has just been effected by an order of the Supreme Court of the State of New York, which has merged the Technical League of Engineers and the American Society of Engineer Draftsmen, both incorporated bodies, into a new organization to be known as the Technical League of America. The name was adopted because it includes architecture and every branch of engineering as well as every grade of worker in all those branches from engineer-in-chief to tracer or technical student.

These two societies, though comparatively young, have done splendid work. The Technical League of Engineers among Civil Service departments and the American Society of Engineer Draftsmen in commercial fields.

This consolidation is the result of a thorough and comprehensive study of every phase of the question of placing the engineering profession on a higher social plane and obtaining for the engineer and his assistants that recognition, both economic and social, which is due to men through whose untiring efforts almost every possible safeguard for human health and every device for the higher development of the human race is conceived and perfected.

The Oakland Ferry Clock

The report published in the San Francisco daily press to the effect that an entire change was to take place in the Oakland Ferry clock system seems to be incorrect in so far as it affects the tower clock. Some of the clocks in the interior of the Ferry building (of two or three different makes) have been displaced and others substituted, but no action has been taken affecting the big tower clock, which is the largest of its kind, it is claimed, on the Pacific Coast.

A Leading S. F. Architect

Said recently: "The best Double Hung Reversible Window on the market is the Eclipse," and this opinion is shared by many others. This window can be raised or lowered—the sash can be turned—the window tilted and locked at any angle or indeed turned inside out. It is fitted with a sliding strip of metal which, when closed, draws close to the sash, thus completely excluding dust, wind and moisture. It is self evident that for comfort, ventilation, safety, security and ease of cleaning the Eclipse Reversible is the ideal window. The ease of cleaning the window from inside the room has direct bearing on the Employees' Liability Insurance for apartment houses, hotels, etc., as it makes the low Janitor's rate applicable instead of that of the Window Cleaner's, this effecting a substantial reduction in annual premiums. Its strength and durability, combined with its simplicity and ease of its operation will commend it to every one in the building line. It is made of the best seasoned stock, and every window installed is guaranteed to work perfectly. Being manufactured right here in California it can be quickly supplied in any quantity. Arthur T. Riggs, 510 Claus Spreckles building (Tel. Garfield 7189), San Francisco is the manufacturer's agent.

Victoria's New Hospital Building

Satisfactory progress is being made with the project for the erection of the new Provincial Royal Jubilee Hospital in Victoria, B. C., to replace the old institution on Upper Fort street, for which Mr. Loring P. Rixford of San Francisco and Victoria, is the architect.

All the plans have been prepared, and actual work on the construction of the building only awaits the awarding of the contract, tenders for which are to be called just as soon as some necessary preliminary details as to interior construction shall have been attended to by an advisory board of experts, whose services the directors of the hospital have enlisted.

The hospital, when built to its full capacity, will have 400 beds. For immediate use there will be built the central or administration building, and the east wing. The laundry and power house and the service building will also be built at this time.

The east wing is composed of two buildings joined together by a bridge corridor, thus making them virtually one building. The front portion will be occupied by private patients, and has a large solarium in front. Four of the private rooms will have open-air balconies overlooking the hospital grounds.

The central or administrative building will contain the administrative offices on the first floor; on the second floor will be the maternity ward and private rooms, with special operating room, nursery, etc., while on the third or top floor will be the children's wards and private rooms. The connecting corridors will be used by patients as solariums.

The laundry and power house will contain a modern laundry, as well as electric generators for supplying electric light and power, pumps and heaters for supplying the hot water heating system, high-pressures team for cooking and sterilizing and hot water in abundance for domestic use.

The new hospital, when completed, although not as large as some of the Eastern hospitals, will be one of the most modern and best-equipped in Canada, costing about $500,000.

Backs Up Every Contract with a Guarantee

MR. C. JORGENSEN

Mr. C. Jorgensen, President of C. Jorgensen & Co., was for many years engaged in the hardware business, both in Europe and this country. His entry into the field of building materials was in a small way at first, but from this modest beginning he has developed a great business. His rule of handling only first-class lines and of guaranteeing personally every installation made under his supervision has contributed largely to his success. Eastern manufacturers appreciate this sort of representation, and our architects, owners and contractors cannot help admiring such principles. C. Jorgensen & Co. is a corporation, but 98 per cent of the stock is owned and controlled by Mr. Jorgensen.

It is interesting to recall some of C. Jorgensen Co.'s accomplishments. They supplied all the interior trim in the Standard Oil building. They have furnished American Mason Safety Treads to about every public school building in San Francisco and vicinity. They equipped the Olympic Club swimming pool (the most beautiful in San Francisco, if not in the United States) with American Enameled Flatter. They installed their own special cross horizontal folding entrance and elevator doors in the U. S. Army Supply Depot building. A contract was lately secured by them for the bronze weather strips in the million dollar residence of Chas. Templeton Crocker at Hillsboro, and the same quality of trim has been furnished for many other large homes, including the Doble, Adams, Avenah, Griffith, A. A. Moore, Jr., and Ehrman residences.

In the Hollow Metal Door line they have done a great deal of work on the Pacific Coast during the past three years, including the following: The new central fire alarm station in San Francisco (recently awarded), the Standard Oil building, the Sacramento County Court House and the Pacific Telephone & Telegraph buildings in Spokane and Portland. In the Spokane Telephone building the Tabor sash fixtures have also been installed.

The scope of this notice will hardly permit of further elaboration of the firm's other and many important contracts, such as equipping most of the large public automobile garages in San Francisco with cross horizontal folding doors of special design and Vemanco elevator doors. Among those thus equipped are the Pierce-Arrow; the Cuyler Lee in San Francisco and Oakland; the Kissel Car Co. in San Francisco and Oakland, and other garages too numerous to mention. The Vemanco elevator doors were also placed in the American Can Company building.

Removal Notice

Mr. Edward Stephenson, who represents various Eastern machinery houses on the Pacific Coast, has removed his offices to the Monadnock building, sixth floor. He will pay special attention to the Elliott Company's line of power accessories and to the Liberty Manufacturing Company's tube cleaners' tools. Mr. Stephenson is also Pacific Coast distributor for Bishop's Adamant Gauge Glasses, made in England. A telephone call (Douglas 1114) will bring catalogues of these lines to the desk of any of our readers. Mr. Stephenson is favorably known as an engineer of experience, having been in the gas and electric business in San Francisco for 25 years, and "knows whereof he speaks."

"White Steel" for the Bath Room

White Steel equipment for the bath room is being specified quite generally by architects who desire to keep abreast of the times and give their clients the best the market offers at the least expense. "White Steel" is manufactured by the White Steel Sanitary Furniture Company of Grand Rapids and costs less than wood. It is absolutely sanitary and always clean and neat. The Johnson-Locke Company of San Francisco are the California distributors.

Changes in Pacific Coast Office of Bird & Son

The following circular letter from Mr. Chas. T. Stewart, Pacific Coast manager for Bird & Son, is interesting not alone for the information it contains, but also because of the underlying loyalty shown to his concern and his appreciation of their friendship and co-operation during his year of service:

TO OUR FRIENDS ON THE PACIFIC COAST

My plan for going into business for myself in California, having advanced to that stage where it is necessary that I relieve myself of the extra duties as Pacific Coast manager for Bird & Son, I have arranged with them to relieve me as soon after April 20th as possible. This they have kindly consented to do and we expect the new man to be on the ground and fully posted before that date.

In severing my connections with our grand friends, Bird & Son, I can assure you it is done with the greatest possible regret, and we all are not unmindful of the close personal friendship existing between them, yourselves and myself, and that while this friendship is too strongly cemented between yourselves and Bird & Son, that my stepping out now will in no way affect this close relationship, either personally or in a business way, and in this connection I want to assure you of my highest esteem and express the hope that I can meet all our old friends personally before many weeks to thank you for the splendid and loyal support you have given both Bird & Son and myself during the four years we have been working so pleasantly and profitably together.

I also want to ask you to give them that same good hearty support in the future, for they have gone over their plans with me for their future growth, and it spells—"Success." It is greater and better than ever dreamed of before—good men—good advertising—good promotion—that means the full strength of the great firm behind every one who carries the great Neponset line of goods, the absolute peer of all others in the United States today. Stay with the good old firm, boys; they will treat you right, better than any other *can* do. I'm actually sorry I'm not taking my own advice, for when it comes to the actual parting, it hurts. I sometimes want to "back-up" and stay, too, as I feel that the Neponset brand will be the leader in the Pacific Coast division very soon, the same as in the East.

Wishing one and all a double measure of the splendid success to which you are so abundantly entitled to, I am, with kindest personal regards,

Most sincerely,
CHARLES T. STEWART.

Simultaneously with Mr. Stewart's departure, Mr. H. C. Biggs severs his connection with the Pacific Coast office. The new manager, Mr. C. H. Martin, comes from the factory and will cover the entire coast territory, closing up their present office in the Sharon building and supplying the trade through local depositaries in each city, the San Francisco trade going to the United Materials Company.

Oil Burner Contracts

The Fess System Co., Inc., manufacturers of the Fess System rotary crude oil burners with factory and main offices at 218-22 Natoma street, San Francisco, has been awarded contracts for the installation of oil equipments in the Horticulture and California buildings, Panama-Pacific Exposition grounds, San Francisco.

A Billion in Schools

The common school property in the United States is worth $1,221,695,730 and the annual expenditure for the education of 18 035,118 pupils enrolled is $446,726,929.

50 Cents

will be paid for the July, 1913, Civic Center Number of the Architect and Engineer. 617 Monadnock building, San Francisco.

"High Speed" Elevator Equipment

IN a modern office building one of the largest factors of success is efficient high-speed elevator service, and unless the elevator doors are also high-speed, this is not obtainable.

In order to make the doors speedy it is necessary to equip them with a hanger which moves quickly and easily and without friction.

The new 1914 catalogue of the Reliance Ball Bearing Door Hanger Company shows a splendid line of sliding door devices, including several new features. The book contains a comprehensive description of the Reliance Hanger, of which the following is an abstract:

"Reliance Hangers are made from special analysis steel, which is high carbon (very hard, strong and tough) compounded and rolled to our specifications. The grooves are *milled*—not rolled—and set to the proper gauge by Hand so that the balls run perfectly free with no binding at any point. The balls are retained in their respective places by spacers best adapted to the purpose. The hangers are made to suit the weight of the doors and have a very large factor of safety.

"The method of installation has been arranged so that the cost of erection at the job has been reduced to a minimum, a few screws being all that is necessary. Templets can be furnished so that the drilling and tapping may be done at the shop instead of in the field.

"Modern equipment, highest grade material, together with best wormanship, by skilled mechanics, enable us to fill orders promptly, satisfy the most critical and make the Reliance Ball Bearing Door Hanger supreme."

The catalogue shows a new drawn metal hanger for elevator doors which is very compact and occupies very little space over the door, also several new elevator door locks which should be interesting to the trade.

Any one who is interested in "Safety First" should turn to the last page, where is shown for the first time, the Elevator Safety Device "Dead-Lock," which prevents the operator from starting his car until the doors are shut and locked.

The Reliance Company, for the past ten years located at No. 1 Madison avenue, New York City, has removed to new and larger offices at No. 30 East Forty-second street, opposite the Grand Central Terminal in order to be in closer touch with architects and builders, who are concentrating in that neighborhood.

The offices are fitted up with a complete line of models, and samples of Reliance products.

For the convenience of architects and builders throughout the country, the company maintains agencies in most of the large cities of this country and Canada. The Pacific Coast representatives are:

Louis R Bedell, Los Angeles, Cal.

Sartorius Co., San Francisco, Cal.

Portland Wire & Iron Works, Portland, Ore.

D. E. Fryer & Co., Seattle, Wash.

Wm. N. O'Neil Co., Ltd., Vancouver, B. C.

New Contracting Firm

P. A. Palmer, C. E., well known in the contracting and engineering field in San Francisco, having for years been connected with the firm of L. A. Norris Company, engineers and fireproofing specialists, has entered the building field independently and has associated with him Mr. W. L. Kelly and Mr. O. G. Hoass. The new firm has offices on the sixth floor of the Monadnock building, San Francisco, and will figure all classes of building construction, specializing in reinforced concrete and structural steel work. Mr. Palmer is a graduate of the University of Michigan and has been actively engaged in engineering and contracting work for ten years, coming to San Francisco from New York City, where he was associated with the Thompson-Starrett Company. Mr. Kelly was formerly with Architects MacDonald & Applegarth and B. G. McDougall, as engineer and superintendent of construction. Mr. Hoass was formerly superintendent of the L. A. Norris Company.

Big Bakery Planned

A baking company has been incorporated with a capital of $500,000 by a number of Oakland and San Francisco business men, a plant to be erected in Oakland in the near future. The incorporators are Carlton A. Wall, Charles Loesch, John B. Davitt, Edward Lagan, Edward McDavitt, George W. Banzhalf and J. A. Banzhalf.

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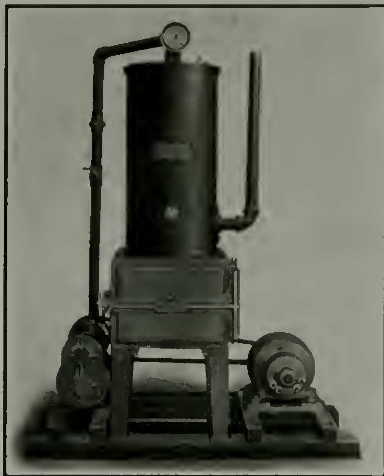

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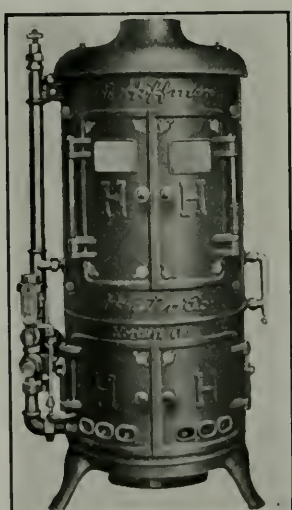

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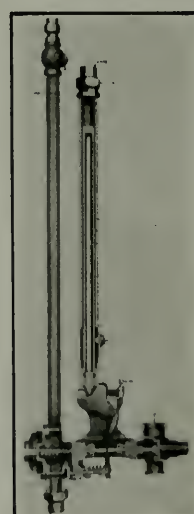

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¶ Metal Lath
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¶ Stair Tread
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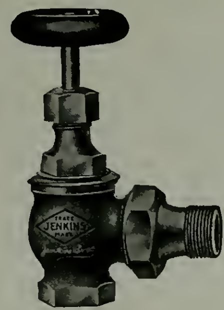

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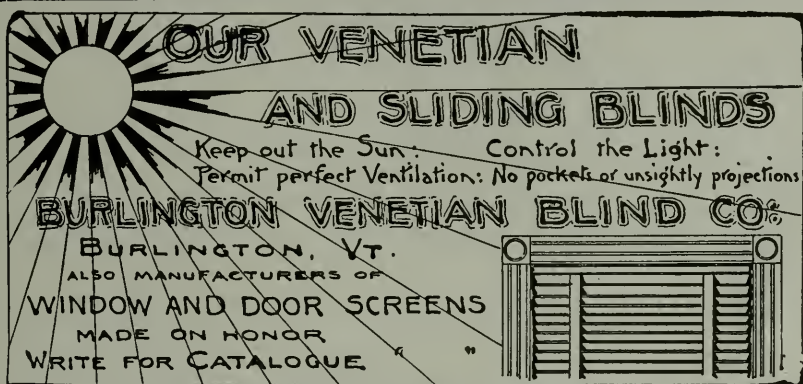

Agencies for California C. F. WEBER & CO., 365 Market St., San Francisco and 512 So. Broadway, Los Angeles. Agents for Oregon, Washington and Montana, NORTHWEST SCHOOL FURNITURE CO., 244 Third Street, Portland, Ore. and 113 South Jefferson Street, Spokane, Wash.

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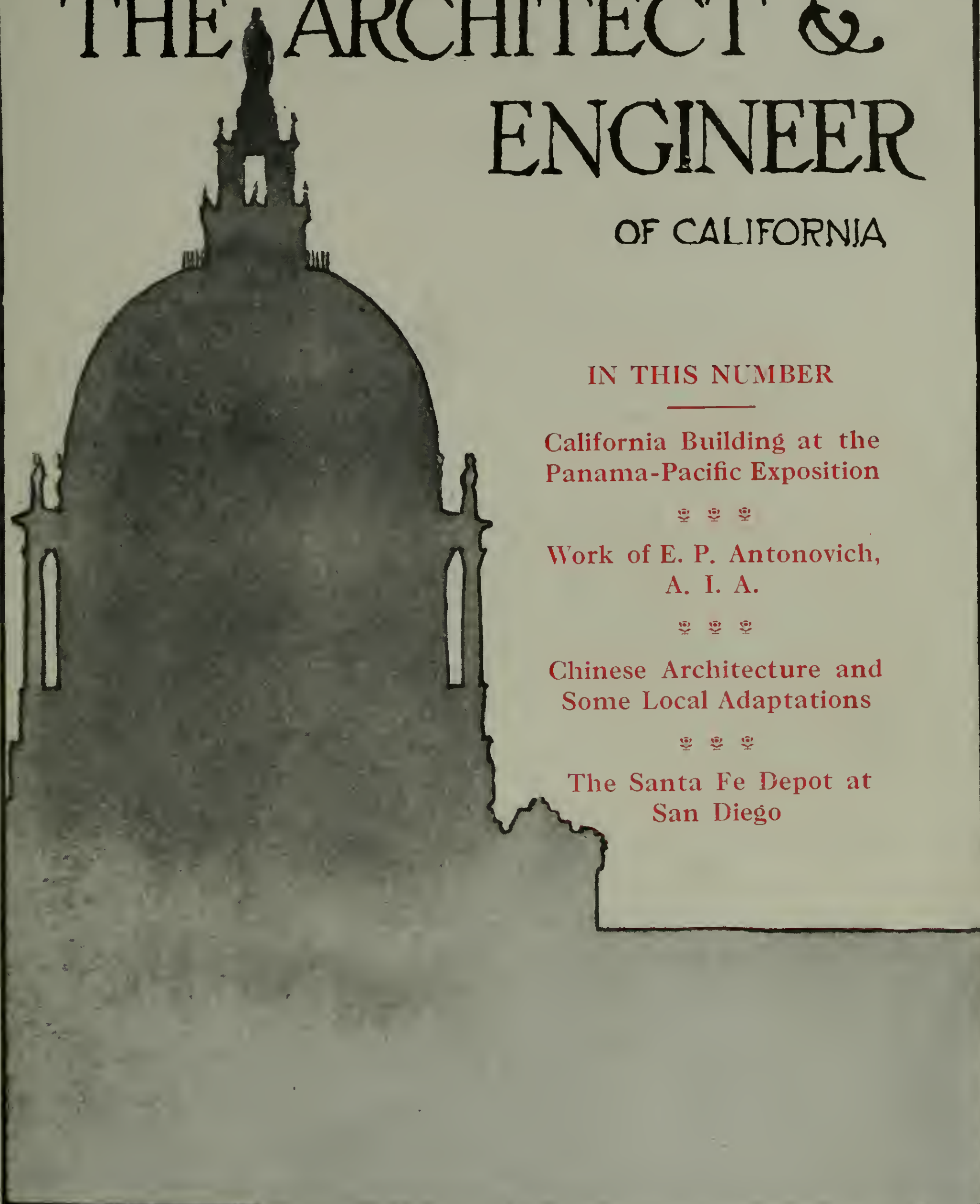

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JUNE, 1914

ARCHITECTS' SPECIFICATION INDEX

(For Index to Advertisements, see next page)

An Index to the Advertisements

ARCHITECTS' SPECIFICATION INDEX—*Continued*

ARCHITECTS' SPECIFICATION INDEX—*Continued*

CONCRETE REINFORCEMENT—Continued
- International Fabric & Cable, represented by Western Builders' Supply Co., 155 New Montgomery St., San Francisco.
- Triangle Mesh Fabric. Sales Agents, Pacific Building Materials Co., 523 Market St., San Francisco.
- Twisted Bars, sold by Woods & Huddart, 444 Market St., San Francisco.

CONCRETE SURFACING
- "Biturine," sold by Biturine Co. of America, 24 California St., San Francisco.
- "Concreta" sold by W. P. Fuller & Co., San Francisco.
- Wadsworth, Howland & Co.'s Bay State Brick and Cement Coating, sold by R. N. Nason & Co., San Francisco and Los Angeles.
- Liquid Stone Paint Co., Hearst Bldg., San Francisco.
- Glidden Liquid Cement, manufactured by Glidden Varnish Co., Whittier, Coburn Co., San Francisco, and Tibbetts-Oldfield Co., Los Angeles.
- Moller & Schumann, 1023 Mission St., San Francisco.

CONTRACTORS, GENERAL
- American Concrete Co., Humboldt Bank Bldg., San Francisco.
- Foster, Vogt Co., Sharon Bldg., San Francisco.
- M. Fisher, California-Pacific Bldg., San Francisco.
- Herman T. Ludwig, 24 California St., San Francisco.
- Howard S. Williams, Hearst Bldg., San Francisco.
- Graham & Jensen, Maskey Bldg., San Francisco.
- Monson Bros., 1907 Bryant St., San Francisco.
- Ransome Concrete Co., 1218 Broadway, Oakland.
- F. J. Rickon, C. E., 1859 Geary St., San Francisco.
- Williams Bros. & Henderson, Holbrook Bldg., San Francisco.
- Burt T. Owsley, 311 Sharon Bldg., San Francisco.
- L. A. Rose, Monadnock Bldg., San Francisco.
- Patrick-Nelson Company, 2011 Shattuck Ave., Berkeley, Cal.
- Sound Construction Co., Hearst Building, San Francisco.
- Barrett & Hilp, Sharon Bldg., San Francisco.

CORK TILING
- David J. E. Kennedy, Inc., Sharon Bldg., San Francisco.

CORNER BAR
- Dolbear Curb Bar, manufactured by American Steel Bar Co., 1034 Merchants Exchange Bldg., San Francisco.

CORNER BAR—Continued.
- Wainwright Steel Corner Bar, made by Steel Protected Concrete Co., Philadelphia, Pa.

CORNER BEAD
- Union Metal Corner Co., 144 Pearl St., Boston, represented on the Pacific Coast by Pacific Building Materials Co., 523 Market St., San Francisco.

CRUSHED ROCK
- Grant Gravel Co., Williams Bldg., San Francisco.
- Niles Rock, sold by California Building Material Company, Pacific Bldg., San Francisco.
- Niles Sand, Gravel & Rock Co., Mutual Bank Bldg., San Francisco.

DAMP-PROOFING COMPOUND
- Biturine Co. of America, 24 California St., San Francisco.
- Concrewaltum Paint, made by Goheen Mfg. Co., Canton, O., sold by Sherman, Kimball & Co., Inc., San Francisco; A. J. Capron, Portland, and S. W. R. Dalby, Seattle, Wash.
- Glidden's Liquid Rubber, sold on Pacific Coast by Whittier, Coburn Company, San Francisco, and Tibbetts-Oldfield Co., Los Angeles.
- Hercules Waterproofing, manufactured by Hercules Cement Co., Buffalo, N. Y. Distributors: Pacific Building Materials Co., 523 Market St., San Francisco.
- Imperial Co., 183 Stevenson St., San Francisco.
- Lithoid Product Co., Merchants Exchange Bldg., San Francisco.
- Trus-Con Damp Proofing. (See advertisement of Trussed Concrete Steel Company for Coast agencies.)
- "Pabco" Damp Proofing Compound, sold by Paraffine Paint Co., 34 First St., San Francisco.
- Liquid Stone Paint Co., Hearst Bldg., San Francisco.
- Wadsworth, Howland & Co., Inc., 84 Washington St., Boston. (See Adv. for Coast agencies.)

DOOR HANGERS
- McCabe Hanger Mfg. Co., New York, N. Y.
- Pitcher Hanger, sold by National Lumber Co., Fifth and Bryant Sts., San Francisco.
- Reliance Hanger, sold by Sartorius Co., San Francisco; D. F. Fryer & Co., Louis R. Bedell, Los Angeles, and Portland Wire & Iron Works.

DOORS AND SHUTTERS
- Kinnear Steel Rolling Doors and Shutters, Pacific Building Materials Co., 523 Market St., San Francisco.

ARCHITECTS' SPECIFICATION INDEX—*Continued*

DUMB WAITERS
Spencer Elevator Company, 173 Beale St., San Francisco.
Excelsior Dumb Waiters, manufactured by R. M. Rodgers Co., Brooklyn; M. E. Hammond, 217 Humboldt Bank Bldg., San Francisco.
Burdett-Rowntree Mfg. Co., Underwood Bldg., San Francisco.

ELECTRICAL CONTRACTORS
Butte Engineering Co., 683 Howard St., San Francisco.
Central Electric Co., 185 Stevenson St., San Francisco.
Scott Co., Inc., 243 Minna St., San Francisco.
Pacific Fire Extinguisher Co., 507 Montgomery St., San Francisco.

ELECTRIC PLATE WARMER
The Prometheus Electric Plate Warmer for residences, clubs, hotels, etc. Sold by M. E. Hammond, Humboldt Bank Bldg., San Francisco.

ELEVATORS
Otis Elevator Company, Stockton and North Point, San Francisco.
Spencer Elevator Company, 126 Beale St., San Francisco.
San Francisco Elevator Co., 860 Folsom St., San Francisco.
Pacific Gurney Elevator Co., 186 Fifth St., San Francisco.
Van Emon Elevator Co., Natoma St., San Francisco.

ELEVATORS, SIGNALS, FLASHLIGHTS AND DIAL INDICATORS
Elevator Supply & Repair Co., Underwood Bldg., San Francisco

ENGINEERS
F. J. Amweg, 700 Marston Bldg., San Francisco.
W. W. Breite, Clunie Bldg.. San Francisco.
L. M. Hausmann, Sharon Bldg., San Francisco.
Chas. T. Phillips, Pacific Bldg., San Francisco.
Hunter & Hudson, Rialto Bldg., San Francisco.

EXIT DEVICES
Von Duprin Self-Releasing Fire Exit Devices, manufactured by Vonnegut Hardware Co. (See Adv. for Coast Distributors.)

EXPRESS CALL SYSTEM
Elevator Supply & Repair Co., Underwood Bldg., San Francisco.

FIRE EXIT DEVICES
Von Duprin Self-Releasing Fire Exit Devices, Vonnegut Hardware Co. (See Adv. for Coast Agencies.)

FIRE ESCAPES
Pacific Structural Iron Works, Structural Iron and Steel, Fire Escapes, etc. Phone Market 1374; Home J. 3435. 370-84 Tenth St., San Francisco.
Western Iron Works, 141 Beale St., San Francisco.

FIRE EXTINGUISHERS
Scott Company, 243 Minna St., San Francisco.
Pacific Fire Extinguisher Co., 507 Montgomery St., San Francisco.
Levensaler-Spier Corporation, Monadnock Bldg., San Francisco.

FIRE BRICK
Livermore Fire Brick Co., Livermore, Cal.

FIREPLACE DAMPER
Head, Throat and Damper for open-fireplaces, Colonial Fireplace Co., Chicago. (See advertisement for Coast agencies.)

FIREPROOFING AND PARTITIONS
Gladding, McBean & Co., Crocker Bldg., San Francisco.
Los Angeles Pressed Brick Co., Frost Bldg., Los Angeles.
The Jackson Fireproof Partition Co., Levensaler-Spier Corporation, Distributors, Monadnock Bldg., San Francisco.

FIREPROOF PAINT
Liquid Stone Paint Co., Hearst Bldg., San Francisco.
Glidden Products, sold by Whittier-Coburn Co., San Francisco, and Tibbetts-Oldfield Co., Los Angeles.

FIXTURES—BANK, OFFICE, STORE, ETC.
A. J. Forbes & Son, 1530 Filbert St., San Francisco.
Fink & Schindler, 218 13th St., San Francisco.
C. F. Weber & Co., 365 Market St., San Francisco and 210 N. Main St., Los Angeles, Cal.
T. H. Meek Co., 1157 Mission St., San Francisco.

FLOOR VARNISH
Bass-Hueter and San Francisco Pioneer Varnish Works, 816 Mission St., San Francisco.
R. N. Nason & Co., 151 Potrero Ave., San Francisco.
Standard Varnish Works, Chicago, New York and San Francisco.
Moller & Schumann Co., 1022 Mission St., San Francisco.
Glidden Products, sold by Whittier-Coburn Co., San Francisco, and Tibbetts-Oldfield Co., Los Angeles.

FLOORS—CORK
Nonpareil Cork Tiling, David E. Kennedy, Inc., N. Y. Distributor for the Pacific Coast: G. H. Freear, Sharon Bldg., San Francisco.

FLOORING—MAGNESITE
Fibrestone & Roofing Co., 971 Howard St., San Francisco.

FLUMES
California Corrugated Culvert Co., West Berkeley, Cal.

GARAGE EQUIPMENT
Bowser Gasoline Tanks and Outfit, Bowser & Co., 612 Howard St., San Francisco.
Compressed Air & General Machinery Co., 39 Stevenson St., San Francisco.

GARBAGE CHUTES
Bill & Jacobsen, Rialto Bldg., San Francisco.

GLASS
W. P. Fuller & Company, all principal Coast cities.
Whittier-Coburn Co., Howard & Beale Sts., San Francisco.

GRANITE
California Granite Co., 776 Monadnock Bldg., San Francisco.

GRAVEL, SAND AND CRUSHED ROCK
Bay Development Co., 153 Berry St., San Francisco
California Building Material Co., Pacific Bldg., San Francisco.
Del Monte White Sand, sold by Pacific Improvement Co., Crocker Bldg., San Francisco.

ARCHITECTS' SPECIFICATION INDEX—*Continued*

GRAVEL, SAND, CRUSHED ROCK—Continued.
- Pratt Building Material Co., Hearst Bldg., San Francisco.
- Grant Gravel Co., 87 Third St., San Francisco.
- Niles Sand, Rock & Gravel Co., 971 Howard St., San Francisco.

HARDWALL PLASTER
- Henry Cowell Lime & Cement Co., San Francisco.
- American Keen Cement Co., 333 Monadnock Bldg., San Francisco.

HARDWARE
- Russwin Hardware, Joost Bros., San Francisco.
- Western Brass Mfg. Co., 217 Tehama St., S. F.

HARDWOOD FLOORING
- Parrott & Co., 320 California St., San Francisco
- White Bros., Cor. Fifth and Brannan Sts., San Francisco.
- Hardwood Interior Co., 554 Bryant St., San Francisco.

HARDWOOD LUMBER
- Dieckmann Hardwood Co., Beach and Taylor Sts., San Francisco.
- Parrott & Co., 320 California St., San Francisco.
- White Bros., Cor. Fifth and Brannan Sts., San Francisco.

HEATERS—AUTOMATIC
- Pittsburg Water Heater Co., 237 Powell St., San Francisco.
- Hoffman Heaters, factory branch, San Francisco.

HEATING EQUIPMENT—VACUUM, ETC.
- Edward Stephenson, 618 Monadnock Bldg., San Francisco.

HEATING AND VENTILATING
- J. M. Boscus, 975 Howard St., San Francisco.
- Fess System Co., 220 Natoma St., San Francisco.
- Mangrum & Otter, Inc., 507 Mission St., San Francisco.
- Scott Company, 243 Minna St., San Francisco.
- Wittman, Lyman & Co., 341 Minna St., San Francisco.
- Pacific Fire Extinguisher Co., 507 Montgomery St., San Francisco.
- Petersen-James Co., 710 Larkin St., San Francisco.

HOLLOW BLOCKS
- Denison Hollow Interlocking Blocks, Monadnock Bldg., San Francisco, and Chamber of Commerce Bldg., Portland.

INGOT IRON, SHEETS, PLATES, ETC.
- American Rolling Mill Co., Middleton, Ohio.
- California Corrugated Culvert Co., 5th and Parker Sts., West Berkeley.

INSPECTIONS AND TESTS
- Robert W. Hunt & Co., 251 Kearny St., San Francisco.

IRRIGATION GATES, SUPPLIES, ETC.
- California Corrugated Culvert Co., West Berkeley, Cal.

JOIST HANGERS
- Western Builders' Supply Co., 155 New Montgomery St., San Francisco.

KEENE CEMENT
- American Keene Cement Co., Monadnock Bldg., San Francisco.

LIME
- Holmes Lime and Cement Co., Postal Telegraph Bldg., San Francisco.
- Henry Cowell Lime & Cement Co., 9 Main St., San Francisco.

LIGHT, HEAT AND POWER
- Pacific Gas & Elec. Co., 445 Sutter St., San Francisco.

LUMBER
- Dudfield Lumber Co., Palo Alto, Cal.
- Sunset Lumber Co., Oakland, Cal.
- Santa Fe Lumber Co., Seventeenth and De Haro Sts., San Francisco.

MAIL CHUTES
- Cutler Mail Chute Co., Rochester, N. Y. (See Adv. on page 38 for Coast representatives.)

MANTELS
- Mangrum & Otter, 561 Mission St., San Francisco.

MARBLE
- Columbia Marble Co., 268 Market St., San Francisco.
- Joseph Musto Sons-Keenan Co., 535 North Point St., San Francisco.

METAL AND STEEL LATH
- Atlantic Fireproofing Co., Pacific Bldg., San Francisco.
- Jackson Fireproof Partition Co., Levensaler-Spier Corporation, distributors, Monadnock Bldg., San Francisco.
- L. A. Norris & Co., Monadnock Bldg., San Francisco.
- Pratt Building Material Co., Hearst Bldg., San Francisco.

METAL CEILINGS
- Berger Mfg. Co., 1120 Mission St., San Francisco.
- San Francisco Metal Stamping & Corrugating Co., 2269 Folsom St., San Francisco.

METAL DOORS AND WINDOWS
- U. S. Metal Products Co., 525 Market St.
- Dahlstrom Metallic Door Co., Western office, with M. G. West Co., 353 Market St., San Francisco.

METAL FURNITURE
- M. G. West Co., 353 Market St., San Francisco.
- Chas. M. Finch, 311 Board of Trade Bldg., San Francisco.

METAL SHINGLES
- Meurer Bros., 630 Third St., San Francisco.
- San Francisco Metal Stamping & Corrugating Co., 2269 Folsom St., San Francisco.

OIL BURNERS
- American Heat & Power Co., Seventh and Cedar Sts., Oakland.
- Fess System Co., 220 Natoma St., San Francisco.
- T. P. Jarvis Crude Oil Burner Co., 275 Connecticut St., San Francisco.
- Compressed Air & General Machinery Co., 39 Stevenson St., San Francisco.
- S. T. Johnson Co. (see adv. below).

ARCHITECTS' SPECIFICATION INDEX—*Continued*

ORNAMENTAL IRON AND BRONZE
- California Artistic Metal & Wire Co., 349 Seventh St., San Francisco.
- J. G. Braun, Chicago and New York.
- Ralston Iron Works, 20th and Indiana Sts., San Francisco.
- Monarch Iron Works, 1165 Howard St., San Francisco.
- C. J. Hillard Company, Inc., 19th and Minnesota Sts., Sain Francisco.
- Shreiber & Sons Co., represented by Western Builders Supply Co., San Francisco.
- West Coast Wire & Iron Works, 861-863 Howard St., San Francisco.
- Vulcan Iron Works, San Francisco.

PAINTING AND DECORATING
- D. Zelinsky, 564 Eddy St., San Francisco.
- Horace W. Tyrell, 1707 38th Ave., Oakland.
- Robert Swan, 1133 E. 12th St., Oakland.

PAINT FOR BRIDGES
- Briggs Bituminous Corporation Co., J. & R. Wilson, agents 117 Steuart St., San Francisco.

PAINT FOR STEEL STRUCTURES
- "Biturine," sold by Biturine Co. of America, 24 California St., San Francisco.
- Briggs Bituminous Corporation Co., J. & BR. Wilson, agents, 117 Steuart St., San Francisco.
- Carbonizing Coating, made by Goheen Mfg. Co., Canton, Ohio. (See Adv. for Coast distributors.)
- Joseph Dixon Crucible Co., Coast branch, 155 Second St., San Francisco.
- Trus-Con Bar-Ox, Trussed Concrete Steel Co. (See Adv. for Coast agencies.)
- Glidden's Acid Proof Coating, sold on Pacific Coast by Whittier, Coburn Company, San Francisco, and Tibbetts-Oldfield Co., Los Angeles.
- "Bitumastic" sold by Hill, Hubbell & Co., Fife Bldg., San Francisco.

PAINT FOR CEMENT
- American Paint & Dry Color Co., 414 Ninth St., San Francisco.
- Bay State Brick and Cement Coating, made by Wadsworth, Howland & Co. (Inc.). (See Adv. in this issue for Pacific Coast agents.)
- "Biturine," sold by Buturine Co. of America, 24 California St., San Francisco.
- Trus-Con Stone Tex., Trussed Concrete Steel Co. (See Adv. for Coast agencies.)
- Liquid Stone Paint Co., Hearst Bldg., San Francisco, Los Angeles and San Diego.
- Glidden's Liquid Cement, sold on Pacific Coast by Whittier, Coburn Company, San Francisco and Tibbetts-Oldfield Co., Los Angeles.
- Concreto Cement Coating, manufactured by the Muralo company. (See color insert for Coast distributors.)
- Moller & Schumann Co., Hilo Varnishes, 1022 Mission St., San Francisco.
- Samuel Cabot Mfg. Co., Boston, Mass., agencies in San Francisco, Oakland, Los Angeles, Portland, Tacoma and Spokane.

PAINTS, OILS, ETC.
- American Paint & Dry Color Co., 414 Ninth St., San Francisco.
- Concreto Cement Coating, manufactured by the Muralo company. (See color insert for Coast distributors.)

PAINTS, OILS, ETC.—Continued.
- Bass-Heuter Paint Co., Mission, near Fourth St., San Francisco.
- Whittier-Coburn Co., Howard and Beale Sts., San Francisco.
- "Biturine," sold by Biturine Co. of America, 24 California St., San Francisco.
- Heath & Milligan Mfg. Co., 9-15 Fremont St., San Francisco.
- Glidden Varnish Co., Cleveland, Ohio, represented by Whittier-Coburn Co., San Francisco and Tibbetts-Oldfield Co., Los Angeles.
- Moller & Schumann Co., 1022 Mission St., San Francisco.
- Berry Bros., 250 First St., San Francisco.
- Paraffine Paint Co., 38-40 First St., San Francisco.
- W. P. Fuller & Co., all principal Coast cities.
- R. N. Nason Co., San Francisco.
- Standard Varnish Works, 113 Front St., San Francisco.

PAVING BRICK
- California Brick Company, Phelan Bldg., San Francisco.

PHOTO ENGRAVING
- California Photo Engraving Co., 121 Second St., San Francisco.

PHOTOGRAPHY
- R. J. Waters Co., 717 Market St., San Francisco.
- Walter Scott, 558 Market St., San Francisco.

PIPE—CORRUGATED INGOT IRON
- California Corrugated Culvert Co., Los Angeles and West Berkeley.

PIPE—VITRIFIED SALT GLAZED TERRA COTTA
- Gladding, McBean & Co., Crocker Bldg., San Francisco.
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ARCHITECTS' SPECIFICATION INDEX—*Continued*

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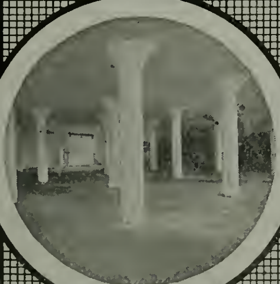

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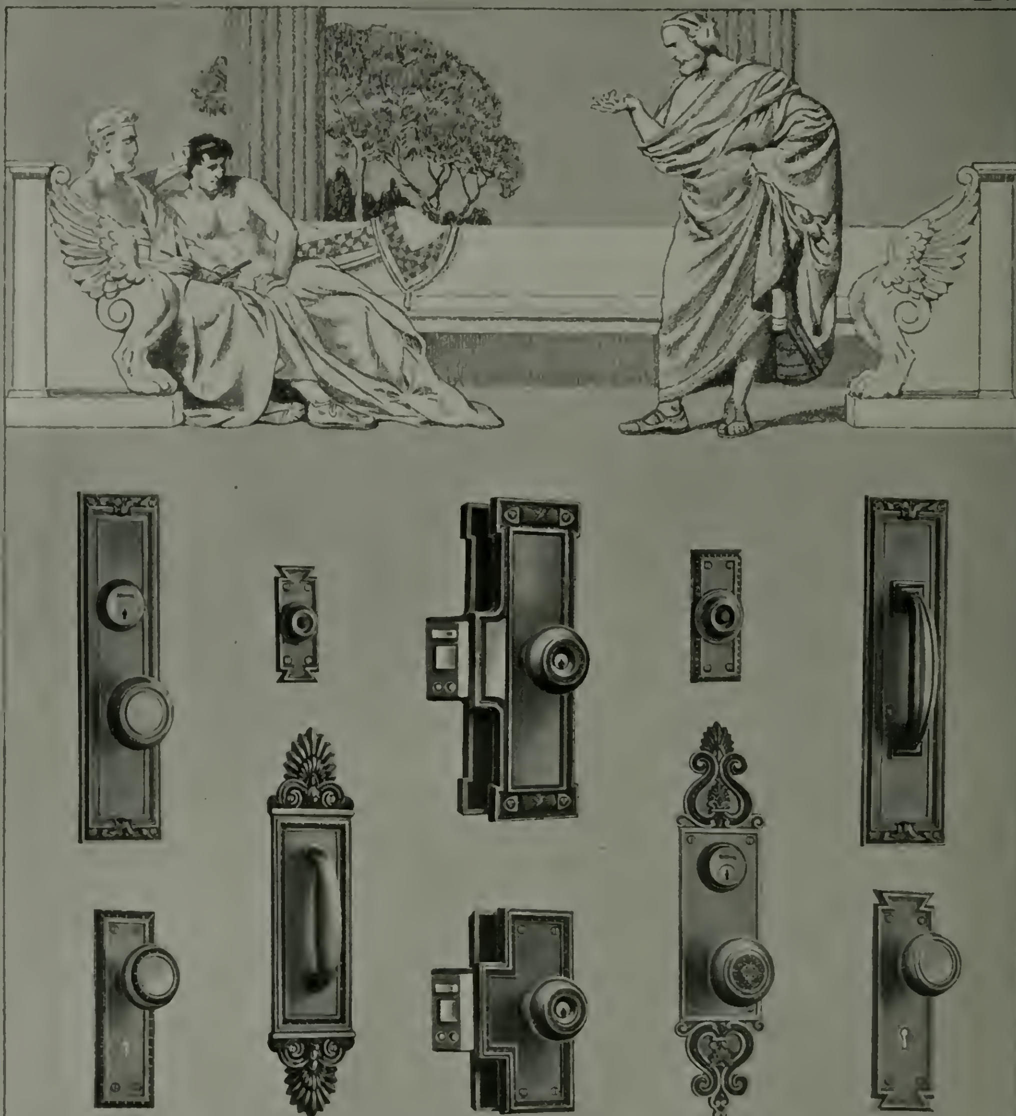

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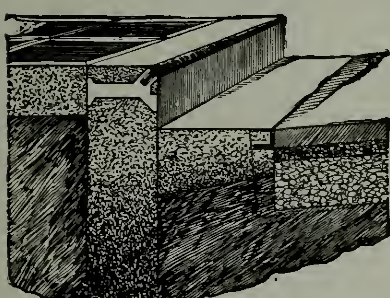

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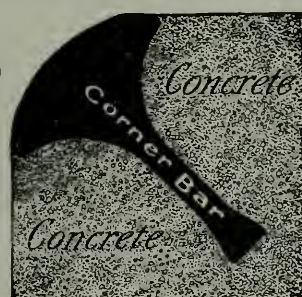

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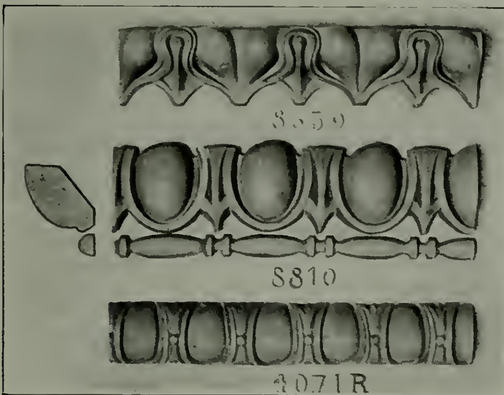

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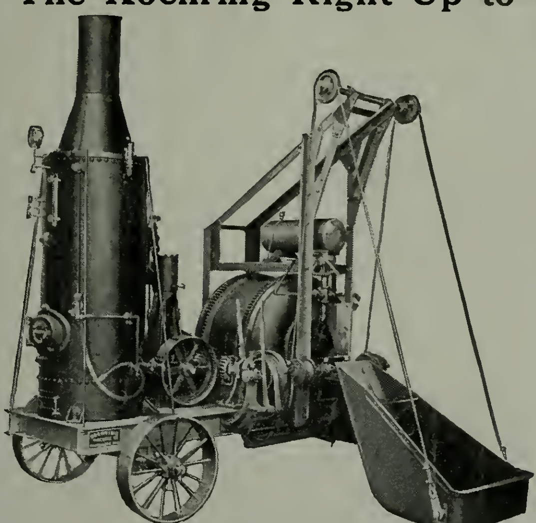

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Pacific Coast States

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Contents for June

[Index to Advertisements Page 8]

"THE BEAR HUNTERS"
DESIGNED BY DOUGLAS TILDEN

Frontispiece
The Architect and Engineer of California
For June, 1914.

THE

Architect and Engineer

Of California

Pacific Coast States

Vol. XXXVII. JUNE, 1914. No. 2.

FINE EXAMPLE OF THE OLD CALIFORNIA MISSION

California's Wonderful Building at the Panama-Pacific Exposition

By TODD CARSON

THE California building at the Panama-Pacific International Exposition, for which ground was broken May 7, 1914, will be a huge mission-like structure grouped around the California Forecourt—a plaza filled with arboral wonders. The most expositional feature of this building, which was designed by Thomas H. F. Burditt, a brilliant young architect employed in the architectural department of the Exposition, is the grouping within its walls of the several divisions which must collaborate in order to make this international exhibition a success. There are six divisions, which, in previous expositions have been housed in different buildings more or less disconnected, that will be grouped together around a magnificent breathing space.

In the great wings that mother the Forecourt are the divisions of the building. In the east wing, the Administrative Division, where will be the administrative offices of the entire exposition; on the north the Social Division, containing rooms for the entertainment of the 1915 visitors. The Woman's Board Division will be in the stately tower which rises over the entrance Foyer. At the northeast will be the entrance to the Display Division, where California counties will show their superior products to the world, and on the east near the driveway entrance is the Women's Club Division, designed especially for the convenience of visiting club women.

WOMEN'S BOARD ROOM IN THE CALIFORNIA BUILDING

ENTRANCE VESTIBULE, CALIFORNIA BUILDING
Copyright, P.-P. I. E.

ELEVATION SHOWING CAMPANILES, CALIFORNIA BUILDING, P.-P. I. E.

The Administrative Division will be entered through an elliptical stair hall, one of the show features of the building, from which spacious corridors lead to the offices on the first and second stories.

The President's quarters are to be at the northern end of the main corridor and will consist of offices, reception rooms, and dining room for the entertainment of official guests. These official reception rooms will be served from a great kitchen on the first floor by stairs and elevator.

The Social Division, where California will be hostess to the world—hostess, because the women of California are donating the funds with which to furnish and maintain this division with true western hospitality. The size of the rooms of this section will exceed in size the rooms of the largest hotels and are so inter-related through great arches that vast assemblages can be entertained.

The Foyer, sixty feet square, in the base of the main tower, is the chief distributing point to all rooms in the Social Division. The effect of the old California adobe is attained in this room by the doorways and arches which are cut

PRELIMINARY STUDY, CALIFORNIA BUILDING, P.-P. I. E.

through walls eight feet in thickness. These doorways lead, on the west to the main reception room, on the north, to the ball room through the ball room foyer, where the dressing rooms are situated.

In architectural character the social rooms have been designed with no attempt to follow any existing style, for the Mission architecture of which the exterior is reminiscent, provides no prototype for rooms of such splendid space; however, they have been designed by Mr. Burditt with the idea of maintaining the harmonious relation and spirit between the exterior and interior. The ornamentation of the ball room expresses in every possible way the characteristic qualities of the State. The caryatides supporting the gallery promenade of the ball room will be of Indian figures. Statuary bas-reliefs in the niches around this gallery promenade will represent Spanish life, in the days of the Missions, and their dances.

Much of the ornament throughout the building is designed to show the agricultural products of the State. The grape vine is used in profusion to decorate the shafts of columns along with festoons of the bright colored fruits of California.

California Building will boast one of the largest fireplaces ever constructed. This massive fixture, situated in the Administrative Division in the reception room, will burn logs eight feet in length.

One of the most attractive features of the building will be the roof garden, which is over the reception room, nestled between the thick walls of the rooms on the second floor of the main tower, which protect it from the winds. The south end of this garden is formed by an open arched wall of the Forecourt, in the arches of which will be hung a series of Mission bells of varying sizes. The fountain to the south of the center will play a continual stream of water into the basin, which will be partly surrounded by comfortable semicircular seats. Atlantes with masked faces and bearing fruits upon their heads will make a pleasing contrast between the hedges and flowers which will turn the roof garden into a garden spot.

Mr. Burditt has not forgotten to honor Father Junipero Serra, beloved of all Californians; he has planned a niche for his statue in the center of the main facade of the highest tower, which rises one hundred and twenty feet.

* * *

Architecture and Architectural Engineering at the Panama-Pacific International Exposition.

OF ALL CLASSES of craftsmen who will visit the Panama-Pacific International Exposition in 1915, there will be none whose delight will be keener or whose interest more general than the architect and the architectural engineer.

The exposition itself will be a huge and superb exhibit of the genius of architects. From the Palace of Machinery, which is the largest wooden structure in the world, to the Palace of Fine Arts, which will be constructed to conform with every modern demand for "class A" fireproof structures, the grounds will be constant challenge to the attention and interest of the architect. The reclamation of the exposition site will be likely to engross the attention of the architectural engineer who is acquainted even superficially with the problems of pre-exposition preparation when much of the 635 acres of exposition domain was marsh and tide land, submerged in the waters of San Francisco bay, or the abode of the long-legged water bird and the clam.

But, supplementing the architectural display represented by the exposition itself, there will be found in the Palace of Liberal Arts, a splendidly comprehensive exhibit of data, drawings, models and photographs related to architecture; there will be also an equally comprehensive display in the exhibit of architectural engineering. Here will be shown the models and working plans of public and commercial buildings, large and small dwelling houses, flats, apartment houses, models, detail drawings and specifications for foundation walls, partitions, floors, roofs, stairways and wood and metal framing, while there will be great general interest in the safety contrivances provided against the terrors of panic and danger by fire, as well as in novel means of convenience provided by such media as moving stairways, elevators, etc.

The displays of drawings and models of public buildings will be particularly effective and comprehensive, showing to what extent the various needs of complicated metropolitan life have been cared for by the designer of modern structures, hospital buildings, court houses, hotels, bank buildings, libraries, boat houses, tennis courts, gymnasiums, riding academies, stables, stations, lodge buildings, churches and finally, the most important of all, homes.

These models and designs of ideal homes will range through all degrees of elegance, and will not only include dwellings in their entirety but special designs of particular rooms, such as dining and bed rooms, library and drawing rooms, model kitchens and even model pantries, so that the visitor who contemplates building a home of his own will here find a thousand hints to be utilized to his lasting advantage.

Architects who have specialized in various lines of their splendid profession will here provide the world with a view of the latest developments of their art and there will not be a problem which the builder encounters but will be covered by the displays which the greatest architects of the world will disclose in the Palace of Liberal Arts. The assurance of the complete character of the exhibit is direct from the host of proposed participants themselves and from those whose earnest inquiries indicate their intended participation.

DRUIDS' TEMPLE, SAN FRANCISCO
E. P. ANTONOVICH, ARCHITECT
Golden Gate Cement Used

The Work of E. P. Antonovich, A. I. A.

By HARVEY E. HARRIS.

ARCHITECTURE in the West has gained much in excellence from the contributions of young men. San Francisco is no exception to this general statement, but it is significant to note that the progressive spirit in the designs of her best-conceived buildings come from those who have made themselves familiar with the best thought and expression in all architecture. The work of Mr. Antonovich embodies much of this quality; the constructive units of his designs show a full acquaintance with the best examples of the old and new world.

An earnest student of the architecture of others, his own efforts reflect skill, imagination and taste. Like many men who come in contact with the architecture in and about New York City, where Mr. Antonovich spent two years in the offices of some of the foremost architects of the East, his work follows generally the modern tendency towards expression in the Renaissance and shows a scholarly handling of this style.

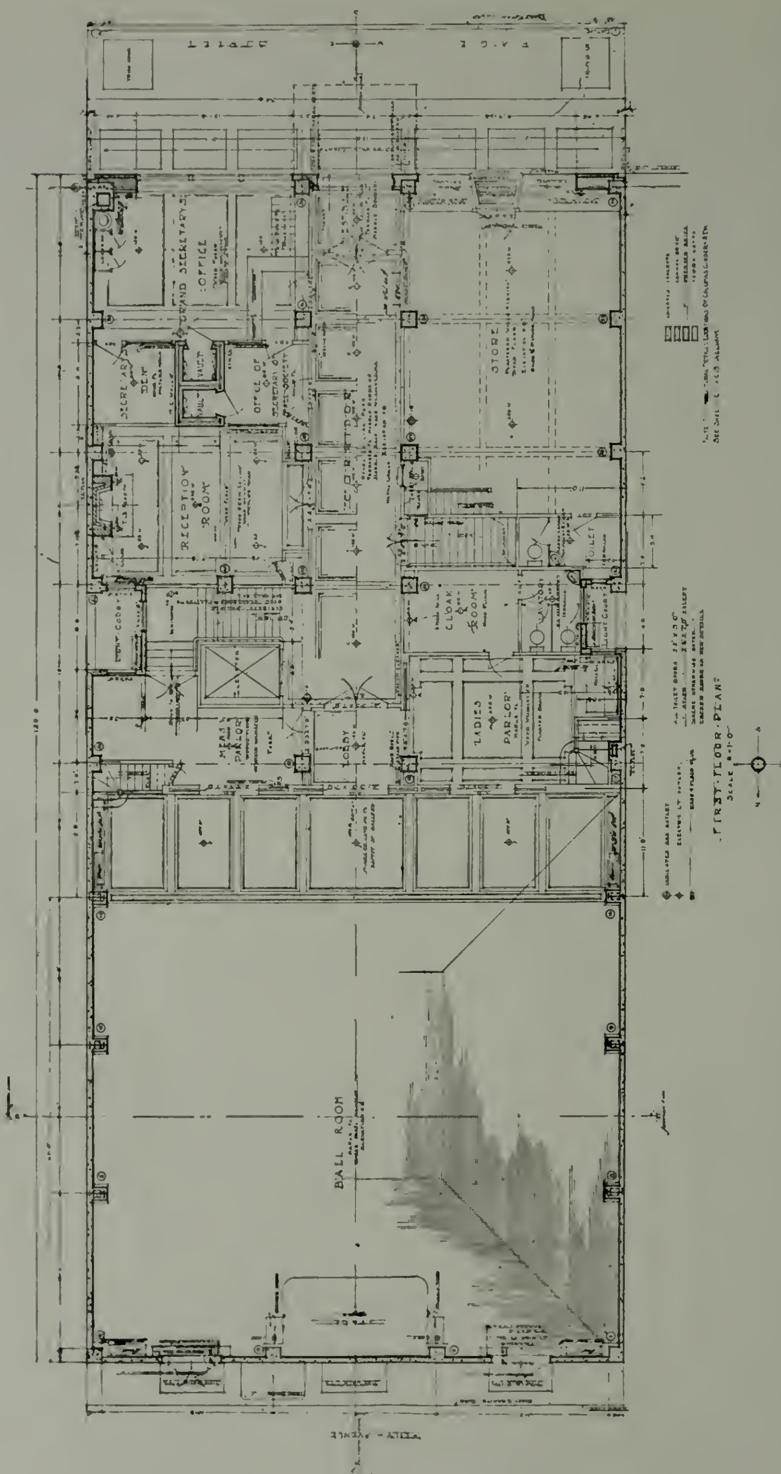
An excellent contribution to this type is his recently completed Druids Temple in San Francisco. The facade is singularly expressive of the internal uses and is a dignified example of the semi-public fraternal building. The carefully studied interior plan is fully consonant with the exterior architectural divisions, is convenient in point of arrangement and developed, far more than usual, in the manner of (axial) balance. The architectural decoration of the large ball room is by means of boldly projecting wall pilasters which aid conspicuously in developing an elaborate ceiling entablature decoration of beam and crossbeam. The entire interior wall surface is fittingly developed in a simple and effective color scheme.

The Shasta hotel, on the corner of Kearny and Bush streets, San Francisco, is a more simple though not less pleasing design. The most effective feature of the whole of this facade lies in the delicately repressed balconies at the seventh story level, which half hide the circular headed mullion windows. This detail suggests the street architecture of Florence or Rome in addition to the feeling that the architect intimately knew Letarouilly. Both fronts seen from a diagonally opposite point present a stately, reposeful effect, heightened by the soft texture of the faintly hued cement finish.

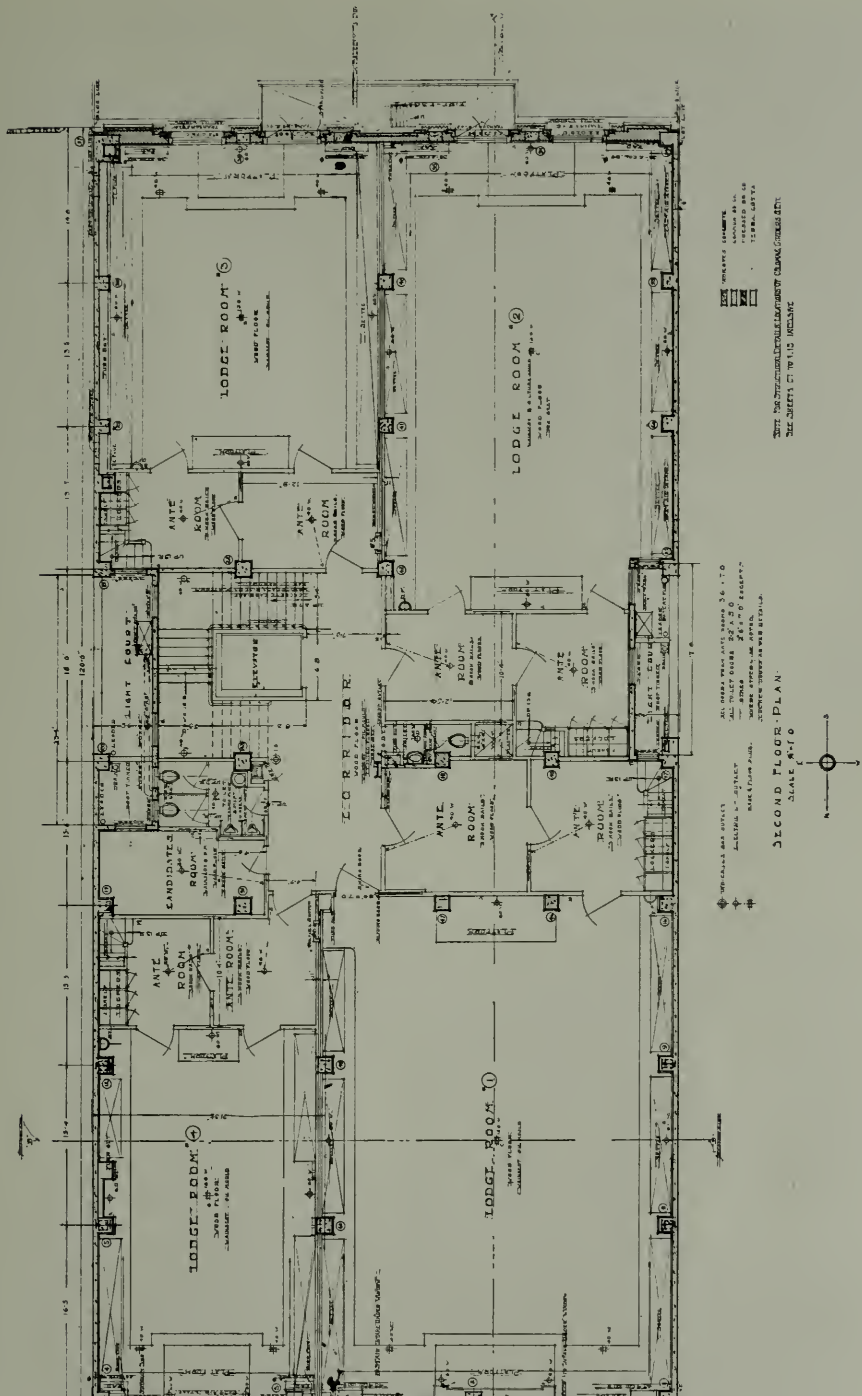
Much might be said of the automobile building in Fulton street, but buildings of this type restrict their architectural virtues to the street fronts; and their uses have not been sufficiently long established to secure for themselves a dignified style or mode of treatment. This garage building of Mr. Antonovich shows a very creditable handling of this new and difficult kind of problem; it rejoices in the fulness and splendor of abundant light. Constructively it contains some concrete girders of forty feet span, which support the heavy upper floor loads of auto-trucks.

Two very sensible-looking warehouses are shown; it is an uncommon skill that can pass suavely from the design of hotel and civic buildings to that of less conspicuous warehouse and factory. Here it is done; well and honestly done with care and restraint, but without conceit.

Passing to other work of the same architect, most of it shows a fitness to fulfill the best architectural precepts of today. The residence work strives to develop the limitations of the restricted and narrow city lot—a very difficult problem. We praise his versatility of house exteriors; by remembering the caution to the harpist of over-straining the patience of one string, notwithstanding the delight of the tone heard once or twice. How often do we see the same architectural elements in the work of one man done to death!



FIRST FLOOR PLAN, DRUIDS' TEMPLE, SAN FRANCISCO
E. P. ANTONOVICH, ARCHITECT



TYPICAL LODGE, FLOOR PLAN, DRUIDS' TEMPLE, SAN FRANCISCO
E. P. ANTONOVICH, ARCHITECT

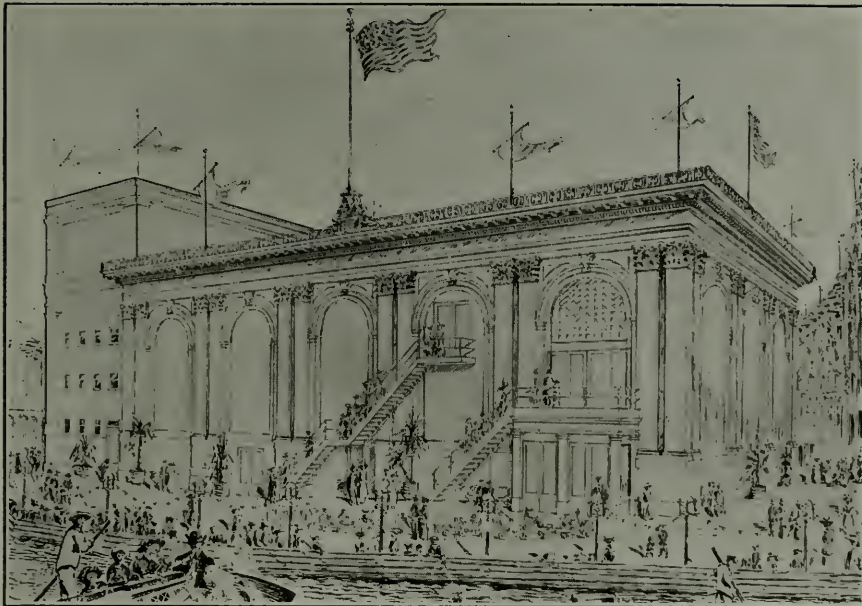
BALL ROOM, DRUIDS' TEMPLE, SAN FRANCISCO

WAREHOUSE FOR PACIFIC COAST SYRUP CO., SAN FRANCISCO
E. P. Antonovich, Architect

BUILDING FOR THE LOCOMOBILE COMPANY, SAN FRANCISCO
E. P. Antonovich, Architect
A. D. Johnson, Associate

BUILDING FOR LOCOMOBILE COMPANY, SAN FRANCISCO
Showing Heavy Concrete Beam and Girder Construction

SHASTA HOTEL, SAN FRANCISCO
E. P. ANTONOVICH, ARCHITECT
Bluxome Company, Concrete Construction

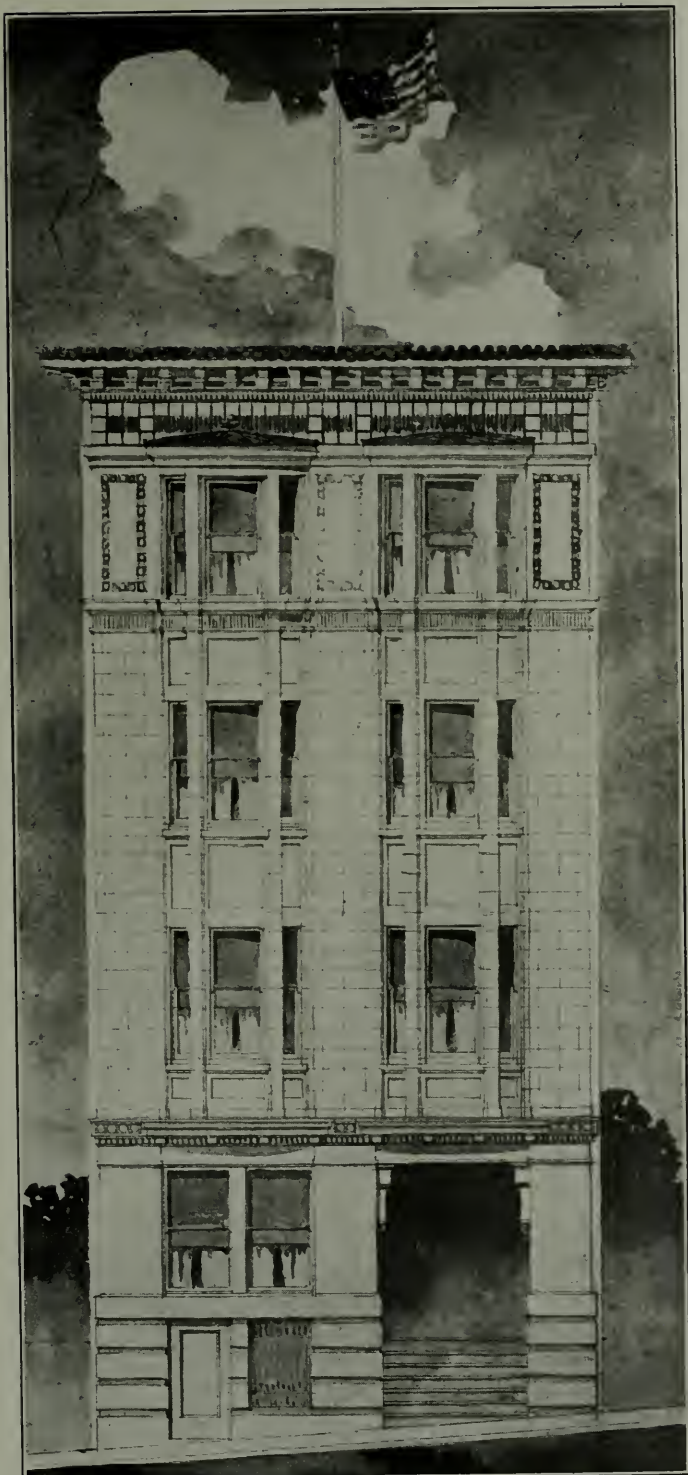


CHUTES THEATER, SAN FRANCISCO E. P. Antonovich, Architect

MOVING PICTURE THEATER, PANAMA-PACIFIC EXPOSITION
E. P. Antonovich, Architect

DETAIL OF GRAFF ESTATE BUILDING, SAN FRANCISCO
E. P. Antonovich, Architect

HOSMER WAREHOUSE FOR THE SIMMONS MANUFACTURING CO., SAN FRANCISCO
E. P. Antonovich, Architect

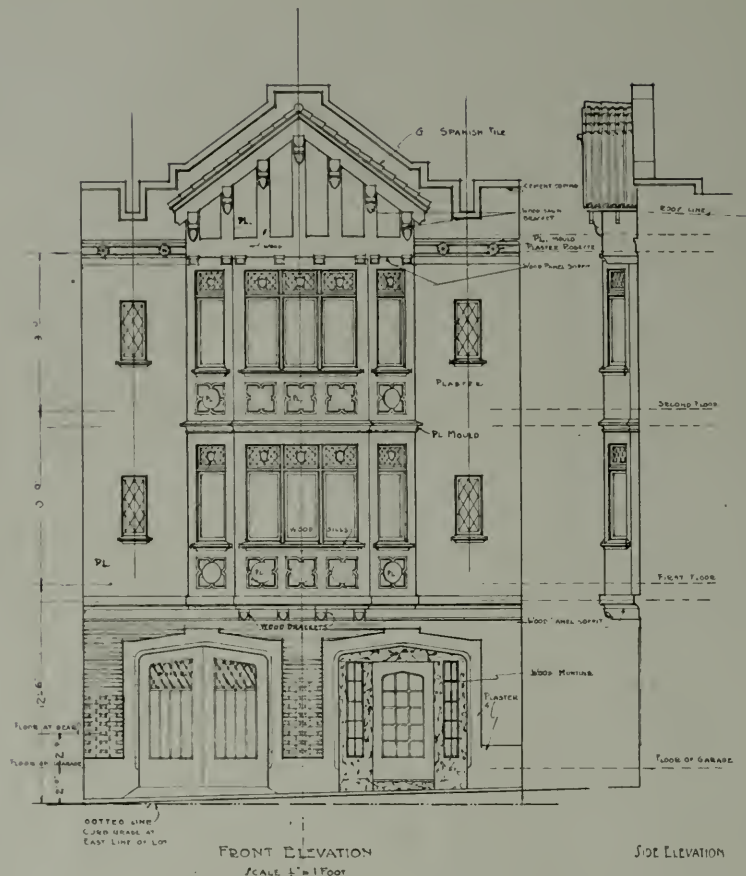


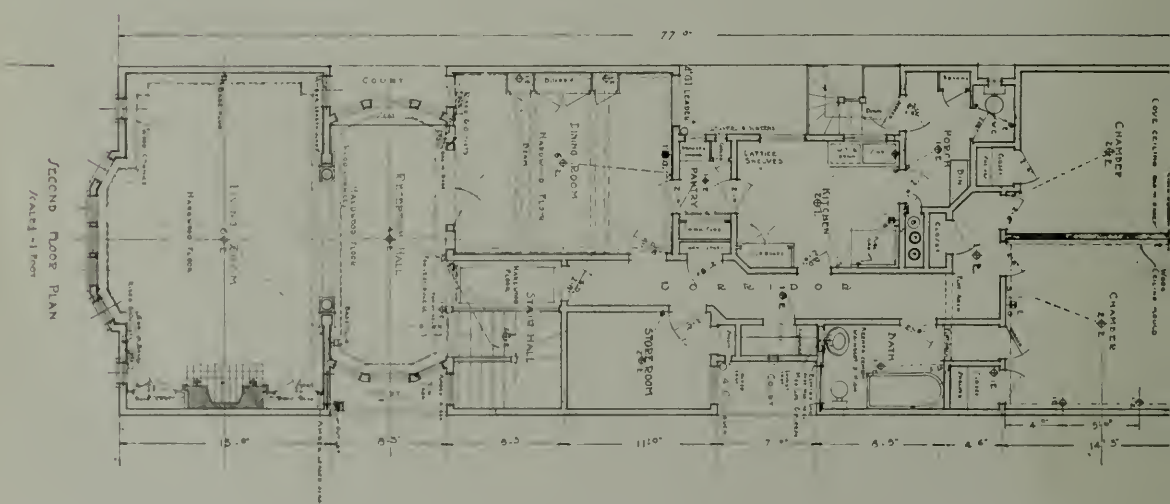
APARTMENT HOUSE FOR DR. HENRY J. KREUTZMAN
E. P. ANTONOVICH, ARCHITECT

RESIDENCE FOR MR. PHILLIP WEINMANN, SAN FRANCISCO
E. P. ANTONOVICH, ARCHITECT

REDWOOD CITY TOWN HALL
E. P. Antonovich, Architect

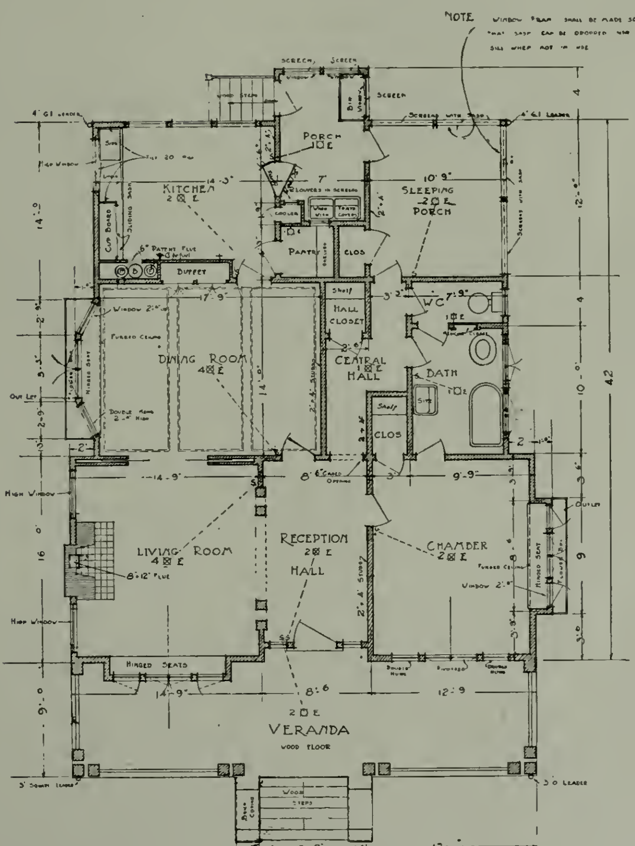
A ROW OF CONCRETE HOMES
E. P. Antonovich, Architect





RESIDENCE FLATS FOR MR. WALTER E. TRE
FRONT ELEVATION AND FLOOR PL
E. P. ANTONOVICH, ARCHIT

BUNGALOW FOR MR. J. M. SOUSA, MERCED, CALIFORNIA
E. P. Antonovich, Architect



FLOOR PLAN, BUNGALOW FOR MR. J. M. SOUSA, MERCED

DESIGN FOR SECOND CHURCH OF CHRIST, SCIENTIST
E. P. Antonovich, Architect

Competition for a Cuban Capitol

A CAPITOL building at a projected cost of a million dollars is proposed by the Cuban government to be located at Havana. Of course this newest of Western Republics follows the oldest in desiring to secure architectural services by competition, says the Western Architect. But there the imitation stops, or rather goes back to those that thirty or forty years ago gave to the United States the worst designed public buildings in the world. This competition, which is announced by Director Barrett, of the Pan-American Union, will be conducted under the direction of the Cuban Department of Public Works, in conjunction with a committee consisting of the President of the Senate; the Speaker of the House of Representatives; the Secretary of the Senate; the Secretary of the House, and the Secretary of Public Works. The committee will select three of the preliminary designs and then grant a further extension of time, not to exceed ten months, for the development of the detailed descriptions and plans. From these three latter plans the committee will choose one which contains a majority of desirable features. All things being equal, plans of Cuban architects, residing in Cuba, will receive preference over foreign entries. The "job" goes with the selected design and the second and third choice "will each receive $3,000 and their designs will become the property of the government." While not for a moment allowing that this program has not most of the defects that are found to be fatal to the securing of good design and honest execution, we are inclined to make it an exception to the rule. Cuba has probably few architectural experts and these will wish to compete. The government would be reluctant to place the selection of an architect in the hands of foreigners, and its intention is, as ours used to be before we learned better, to secure a plan and design. A logical, though narrow view makes those supposed to be most conversant with the requirements, the arbiters of the competition instead of its advisors. It is a question whether the rules of the Institute would permit its members to enter an improper foreign competition, but there are many young men who might "take a chance" in this "Havana Lottery," which in spite of its irregularity from a code standpoint, under the control of the chief executive of the Cuban Republic, should be at least fairly conducted.

* * *

The Residence of Z. P. Smith, Berkeley, California

By SAMUEL ARNOLD, Architect.

IN THE lea of the beautiful undulating hills of Cragmont, on Keith avenue, Berkeley, is to be erected an unusual residence for Mr. and Mrs. Z. P. Smith. Mrs. Smith is one of California's foremost artists, and Mr. Smith is president of Berkeley's efficient business college. They will embody in their new home an art gallery which will be known as the Cragmont Art Gallery.

The site is unexcelled, overlooking cities, sea and bay from Tamalpais to San Jose. The sloping hillside is to be cut to form terrace, lawn and garden on lines just formal enough to preserve the beauty of their natural contours. Gentle inclines and easy flights of steps through pergolas with seats for rest will form the approach from Keith avenue to the main terrace, from which with unobstructed view we may watch the busy traffic of the cities' streets, the trend of commerce by rail and sea, the passing of ships to and from foreign lands through the Golden Gate, or the ever changing panorama from the mist shrouded hills of Marin to the sunny slopes of Alameda.

From the terrace you enter the reception hall and living room, which forms an atrium or salon to the art gallery. The dining room, breakfast room, kitchen and accessories are to the right; the bedrooms, bath room, linen room, toilets and lavatories to the left, the sleeping porch and studio in the roof space over.

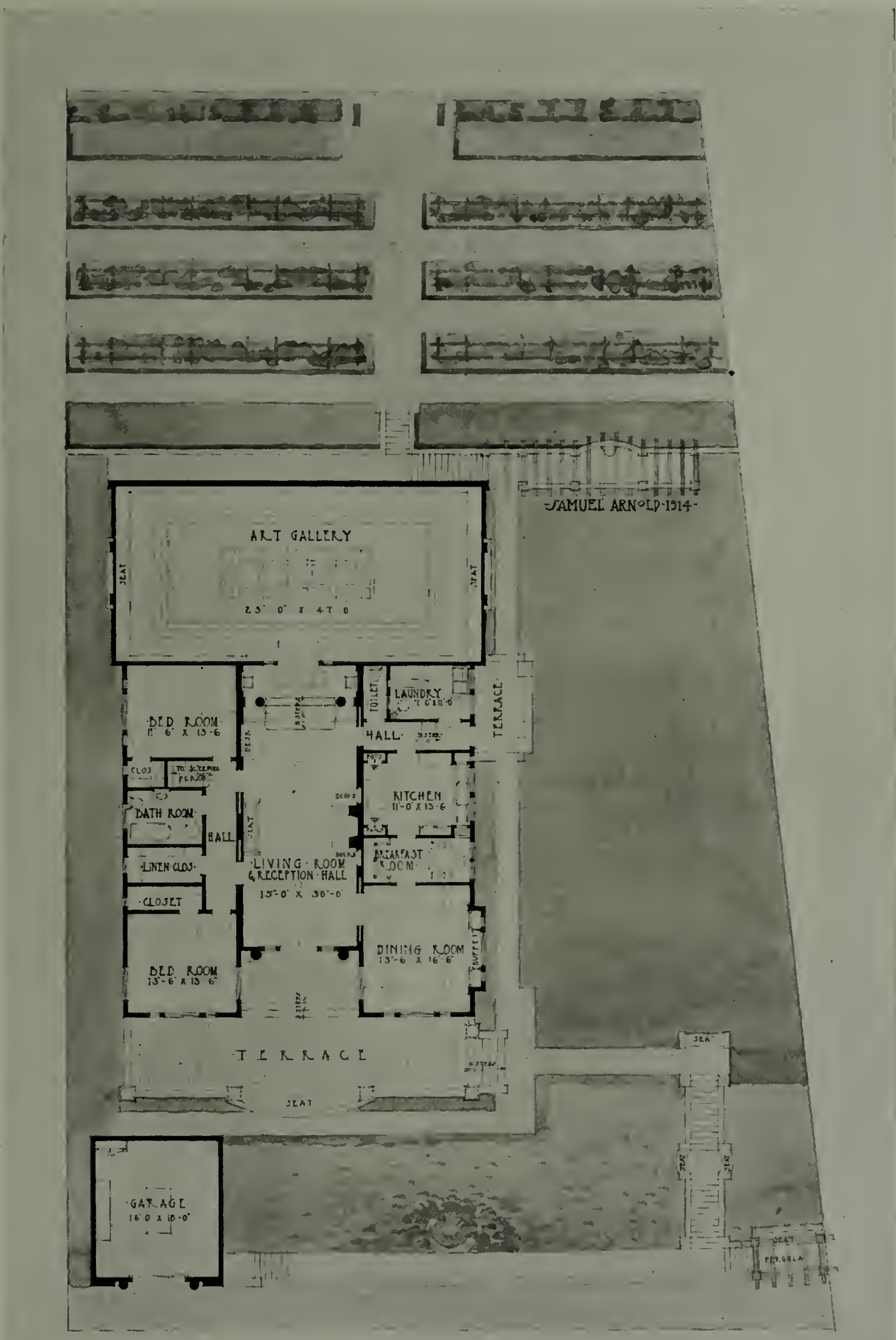
The art gallery is to be 24 x 47 x 13 feet, raised five steps above the main floor, with an open vestibule between, a niche at each side for statuary. The gallery is to be used as a ball room for dancing on occasion. A wide plinth at side and ends will serve for seating. The illumination will be by overhead art glass ceiling lights.

The exterior will be finished with Atlas white cement and terra cotta tile roof. The interior will be in Eastern red oak and California redwood, natural finish throughout. The lighting, heating and ventilating will be by the latest approved electric system.

There will be a garage of reinforced concrete at the street level built into the hillside, like a rock-cut temple in the Egyptian order.

The cost, including grounds and garden furniture, is estimated at $12,500.

RESIDENCE FOR MR. Z. P. SMITH, BERKELEY, CALIFORNIA
SAMUEL ARNOLD, ARCHITECT



PLAN OF THE HOUSE & GARDEN
SCALE 1/8" = 1'-0"

RESIDENCE FOR MR. Z. P. SMITH, BERKELEY
SAMUEL ARNOLD, ARCHITECT

Means of Egress—The Vital Problem in Building Construction†

By WILLIAM WALTER JOHNSTON
Supervising Expert, Pennsylvania State Building Code Commission, Lebanon, Pa.

OUT! Let us out! At first a frightened cry. Out! Out! The cry rises to a scream, an agonized, despairing scream issuing out of the depths of masses of black smoke which enwrap the building. Smoke darkens the heavens; it pours into hallways and passageways; it travels up and down stairs with the speed of a giant athlete; it routs out the occupants of rooms and drives them choking and gasping to the windows for air.

Inside there is a mad rush hither and thither; first to windows looking down from a height of many stories; then to the single stairway where red tongues of flame are already lighting up the dense smoke; then to the fire escape enshrouded in smoke and flame. Out! For God's sake, help us out!

Within is frenzied terror, with death in a most horrible form clutching at human throats. In the street below we hear the screams of despair. They mingle with the hoarse cries of the firemen rapidly arriving on the scene and the rumble and roar of engines and trucks.

The lurid red of the flames now leaping up around the doomed building adds color to our imagination; the screams of the helpless victims rend us to the soul. In a fever of excitement we cry out in voices strained with emotion, "Raise a ladder!" "Get a rope!" "Do something; can't you do something?" But nothing can be done. No one can live in that smoke and flame. Approach to the building is impossible. A few weak streams of water are thrown on the fire and are licked up gleefully by the flames.

A face appears at a window, then another and another. Poor souls! they are white with fear; no more cries are heard. One jumps and is broken to pieces on the pavement. Another attempts to leap and falls unconscious on the window sill where the flames burn the body past recognition. As a prologue, the blackened remnants of humanity are carted to a morgue and solemnly laid in a row for identification.

Out! Out! Oh! God, out! The cry comes to us in our dreams. It comes to us from the charred lips of those martyrs, martyrs to human stupidity. It rises from the tomb where the earthly remains of those who were near and dear to us were laid with many tears. Oh, that God had given us understanding! Oh, that the curse of stupidity had been removed from us! We might still have our loved ones with us. We might again live in their loving embraces. Life again would be a joy and not a burden. He knew this terrible tragedy might happen. Our eyes had been opened many, many times to the danger. Thousands of other people in past years had met death in the same horrible way that we might live and learn. But we took a chance. It had happened elsewhere, to be sure, but it might not happen here. We staked our all on one throw and lost.

Why didn't we put in just one more stairway? Even a door that couldn't be locked might have saved them. Why didn't the law compel an approved fire escape to be put on the building? Alas, these are fruitless ravings. We might have done this or that. We can see now what should have been done. But one thing we know and the knowledge staggers us with the recollection of the heavy fragrance of the fresh graves upon us. Our loved ones are gone. They might have been saved. It would not have cost much money, but money was worth more than lives. Judgment and reason had been ensnared in the greed for gold. So the old story was told all over again. The fire department was

† Prepared for the Architect and Engineer of California.

criticized; the building department was excoriated; everybody blamed everybody else; and the scene is laid for a fresh catastrophe.

I have not attempted to tell the story of any particular event. I have merely described what any fire might be and which many have been. Have I overdrawn the picture? You know better than that. I could not. Words cannot paint the picture as it stands out against the background of the blue sky of heaven. Have I overdrawn it? Ask those who with bitter weeping laid to rest all that the fire had left of their husband, sister, brother, wife; ask those who passed through the inferno of smoke and flames, and who lay for weeks hovering at death's door!

No, the picture is not overdrawn and, furthermore, it depicts a condition which we face every day of our lives. Every day we walk into a fire trap and never think to give thanks that the angel of death did not appear while we were there. Every week we attend theaters, churches, lodge meetings where, of the cry of "fire" were raised, the ensuing catastrophe would be recorded in the annals of great disasters. But we must remember that every so often the wheel stops at the fateful number and it will be our turn to pay the fiddler.

Are these great tragedies to pass on into history without leaving some lesson for us? Are all those sufferings to have been in vain? No, there is a lesson, a lesson that grows and grows in importance as each new calamity takes its toll. It is a lesson that overshadows every other, and there are many others, too. It is expressed in the one word "Egress," or, better yet, "Out." "Out," that is it. As living human beings our first thought is to preserve our lives; to get out of the building; to get out where there is air and life.

Isn't this simple? Standing in the shadow of a great calamity like the Iroquois Theater fire in Chicago or the Missouri Athletic Club fire in St. Louis, it is even absurd; it is almost enough to make a child laugh. And yet we go right on putting up buildings of combustible construction without providing proper means of egress. As an example,—within three months after the school house fire at Collinwood, Ohio, in which one hundred and sixty little children lost their lives, a plan for an exact duplicate of the building was submitted for approval.*

This is only an instance of what every building inspector knows is repeated every day. Worse still, every effort to require more and adequate means of egress is fought bitterly. The Boatmen's building, St. Louis, Mo., in which the Missouri Athletic Club was situated, was condemned long before the fire which was pronounced the worst in the history of St. Louis. The Building Commissioner, having been notified of the dangerous conditions in the building, made an inspection and ordered two fire stairways to be put in. This was objected to and a court proceeding was commenced. After interminable wrangling on the part of the club owners a compromise ruling was obtained; but the original orders of the Building Commissioner, designed for the protection of the club members themselves, were never enforced.† Yea, verily, the lesson is for children,—adults seem not to be able to see past the ends of their noses.

Why can't we have adequate means of egress from our buildings? Is it a question of cost? Rarely. Is it a question of inconvenience? Occasionally. Is it a question of architectural taste? It need not be. In my humble opinion it is principally a question of indifference, of ignorance. The probable chance of disaster is weighed against cost, convenience and taste. The builder judges from events within the range of his own experience; and, as his experience is necessarily limited and of narrow proportion, and as the other matters seem to be of immediate importance he tips the scale in favor of cost, convenience and taste, and trusts to luck. Isn't this true in almost every instance? But how

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* This statement is made on authority of Fred W. Elliott, formerly Assistant Chief Inspector of Workshops and Factories in Ohio. (See Safety Engineering, September, 1913.)

†See St. Louis Post-Dispatch, March 10, 1914, page 4.

foolish it seems when confronted with the dire consequences. It is at this point that the sovereign authority of the State should be exercised and adequate means of egress required on every building.

In considering the question of egress, what is the fundamental principle? I say it is this: With one or two minor exceptions every building should have at least two effective means of egress located as far apart as practicable and opening onto a public thoroughfare or onto an unobstructed space leading to a public thoroughfare. And these should be required regardless of the type of construction. I venture the assertion that if there had been two such means of egress on any of the buildings in which there has been great loss of life by fire and by panic, that not over one in ten of those who were killed, would have lost their lives. This is only an assertion, but I believe it is abundantly supported by the evidence. The able general always tries to leave two lines of retreat open; the wise banker never risks the fortunes of the bank on one investment. And when it comes to human lives we should always play the game safe; we should give ourselves at least two chances.

There are, of course, subsidiary principles in the matter of egress. The number and size of all means of egress should be increased as the standard of construction is lowered, the number of occupants increased, or the occupancy changed to one of a more hazardous nature. As to standard of construction, we might say that the number of ways of egress should increase inversely as the standard of construction. As the probabilities of danger increase the means of escape should increase. The building is the least consideration. Get the people out and let it burn.

It is obvious that a building designed for occupancy by a large number of people should have more ways of egress than one designed for a smaller number of people. A theater, for instance, should have many more means of egress than an office building of the same type of construction. Of course, in the case of a theater the reason is as much the hazardous nature of the occupancy as it is the disparity in numbers of occupants, but the rule holds good just the same. The principle as to the hazardous nature of the occupancy is exactly the same. The means of egress should in every case be increased where the nature of the occupancy becomes more hazardous.

So much for the number of means of egress. How about the cost? I will admit that in some cases to put in an adequate number of means of egress may increase the cost of construction. This, of course, depends on the particular means of egress employed. A mere exit opening in the auditorium wall of a theater is less expensive than a solid wall. On the other hand, a tower fire escape is perhaps more costly than an ordinary stairway. I think the principal element of cost is the room or space taken up by the means of egress. This room or space is valuable and in many cases can be made to yield a revenue. However, in by far the majority of cases there is enough unoccupied space on the lot to allow for the construction of additional means of egress; and, on the same principle that we insist that a certain percentage of the lot occupied by a tenement house be left vacant, we have a right to insist that a certain percentage of the lot on which a building stands that is occupied by a large number of people, should be used in providing adequate and effective means of egress. While every person should be secure in the enjoyment of property and in the income derived therefrom, they certainly have no right to stake human lives against a few additional dollars of revenue.

The question of convenience is perhaps a larger question than it seems at first. In dwelling houses, for instance, two independent means of egress might constitute a decided inconvenience to the owner or occupant, and yet where dwelling houses are of frame construction and three stories in height the necessity for two means of egress is just as imperative as it is in any other class of buildings. We must remember that while buildings may be designed principally for a certain class of occupancy, they may at times be used for different purposes. For instance, a short time ago it came to the writer's attention that one hundred people were congregated in a small dwelling. In this case the dwelling really became an assembly hall, and as such it certainly should have had two means of egress. Convenience is also a serious consideration in the case of buildings which are difficult to patrol, such as large tenement houses, office buildings, factories, etc. Every means of egress constitutes a means of ingress, and exposes the property to the depredations of thieves and "second-story men." However, I think this objection can be obviated with a little extra care by the owner or occupant.

The question of architectural taste is not trifling by any means. The writer recently saw a picture of a pretentious hospital building which was completely disfigured by two immense, very unbeautiful, iron fire escapes extending across the facade. We all know many other cases where the architectural beauty of the building is ruined by external means of egress; and in some cases the architectural arrangement is hampered in caring for internal means of egress. But after all beauty should be subordinate to safety, and the architect should be required to work out the problem of beauty combined with safety.

So far I have purposely avoided mentioning any particular means of egress. Of course, any door, stairway, or passageway leading to an opening in the building may be termed a means of egress. What we mean, however, by the expression, "means of egress," is a safe means of egress. What is a safe means of egress varies under different conditions. It may depend largely on the type of construction and the nature of the occupancy of the building. Generally speaking all means of egress should be protected by enclosures built entirely of fire-resisting materials; that is to say, materials that are not combustible. This includes walls, stairways, doors and trimmings.

Without considering the ordinary means of egress from a building, I wish to compare the few means of egress designed especially for emergency exit. These are the outside fire escape, the tower fire escape, the horizontal exit through fire walls and the enclosed stairway. There are objections to all of these particular means of egress. The outside fire escape has been much abused. It really ought to be a very safe means of egress. An outside fire escape constructed as a stairway with a pitch not exceeding forty-five (45) degrees, amply supported, hooded, with sheet metal treads or treads of non-slipping material, and opening onto a public thoroughfare or onto an unoccupied space leading to a public thoroughfare, and without passing across windows or other openings ought to be an ideal means of exit. The ladder fire escape should never under any circumstances be permitted. It never was intended as a fire escape. It was first intended as a means of ingress for firemen in entering the building in case of fire. The trouble is that outside stairway fire escapes are constructed as cheaply as possible with the view of complying with the letter of the law, and not with the view of really providing a safe means of egress.

The value of the fire tower as a safe means of egress, is, in the writer's opinion, still subject to demonstration. The objection to the fire tower is the cost of construction, which certainly restricts the number of them in any one building and, as a corollary thereto, the difficulty of access to the tower. If access to a fire tower could be had directly from every floor area not over a certain size, and if enough towers could be provided to relieve conjection in moments of emergency, I believe that the fire tower would be superior to other emergency means of egress. But there is the difficulty. Access to a fire tower is more or less easy in a fireproof building; but in a building of combustible construction, access to a tower might be very difficult. In fact, in many cases it is impossible. Another serious objection to the tower fire escape is the infrequency of its use. Being enclosed it is necessarily dark, at least in places, and consequently is not much used. It becomes a store room for all kinds of miscellaneous apparatus and rubbish appurtenant to the building, and the occupants hesitate to explore its cavernous depths in times of emergency. Other ingenious, although futile, means of egress, such as sliding or chute fire escapes which are sometimes constructed in the form of a tower, should absolutely be prohibited. The horizontal exit through a fire wall,* in some respects affords the safest and quickest means of egress from a burning building. It is, of course, based on the theory that a fire does not start in a building at more than one place at a time. If fire walls extended from the foundation to the roof of a building it is safe to assume that some portion of the building would be free from fire. Consequently a horizontal exit through a fire wall to another section of the building provided with means of egress to the street, would afford a quick and safe means of egress from the building. In recognition of this fact, the Industrial Commission of Wisconsin have provided in their code for a horizontal exit to an adjoining building. This means of egress is perfect in theory and in practice; but it is difficult in many cases, to construct a building with this means of egress. In the first place, it contemplates a large building and a large number of occupants; otherwise, the cost would be prohibitive. It also contemplates a safe and adequate means of egress from each section of the building.

I have purposely discussed the other means of egress before considering the enclosed stairway. I believe that the enclosed stairway is the most practical and the most efficient safe means of egress from a building. It has most of the advantages of the outside stairway fire escape, practically all the advantages of the fire tower and all the advantages of the horizontal exit. In addition it is the regular means of ingress and egress used by the occupants. This last is a consideration of the greatest importance, as we well know that people invariably seek to leave by the same means by which they enter. Its cost is little; it affords a means of horizontal exit on every floor; it is available from every section of the building, for each section of the building should have at least one stairway; if provided with self-closing fire doors it is practically smoke proof, at least in the early stages of the fire, and it leads directly to a public thoroughfare. The only serious objection to the enclosed stairway is the matter of doors and door openings, and the question of draft. No stairway should be continuous from the top to the bottom of the building; but each flight should be accessible to succeeding flights through enclosed spaces at floor levels. These enclosed spaces should be provided with self-closing fire doors, and there should be a severe penalty for locking or propping these doors open.

Different classes of buildings each present different problems as to means of egress to be employed. In theaters and places where large numbers of people assemble the most imminent danger is the panic danger. The panic risk calls for many means of egress, easy and quick of access. The standard of construction of building of this type is today very high. The danger, therefore, is less of fire than of panic. At Calumet, Mich., last December, when seventy-two women and children lost their lives in a panic in an assembly hall there was no fire at all.—but there was only one means of egress. The panic fear seems to increase geometrically as the means of egress is impeded, and conversely it subsides geometrically as egress is accelerated.

In buildings of other classes, such as factory buildings, the danger is a fire danger; and consequently, more importance should be attached to the fireproof character of the means of egress. And so on with other classes of buildings;

* We are indebted to Mr. H. F. L. Porter of New York City for his earnest espousal of the value of this means of egress. His views are worthy of the greatest consideration, although they have not been adopted by all authorities.

but I contend that the vital problem is always one of adquate means of egress, and that every other consideration should be sacrificed to this one all important consideration. It is only in this way that we can prevent a repetition of the numerous holocausts which shock us, and which really are a disgrace, and a reflection on our intelligence and on our ability.

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Steel Corporation Will Have Instructive Display at Panama-Pacific Exposition

THE Iron and Steel Industry will be given a prominent place among the various attractions at the coming Panama-Pacific International Exposition in San Francisco by the comprehensive exhibit of the United States Steel Corporation and subsidiary companies.

A general committee headed by A. T. De Forest of the United States Steel Products Company, of San Francisco, has been directing the work, and H. V. Jamison, advertising manager of the American Sheet & Tin Plate Company of Pittsburgh has just been appointed Director of Exhibits for the entire corporation and at present is busily engaged in mapping out plans for the exhibits of the various companies.

Among the features which will be shown will be the process of manufacturing iron and steel products, from the mines where the ore is taken out of the ground to the production of the hundreds of products of the corporation. It is intended to show how the ore is transported both by rail and water, the dock operations, the production of coal, coke and pig-iron and thence to the specialized lines of manufacture. The exhibit will even go so far as to show how the by-products are produced and will show many of the products in practical use.

A motion picture show will be part of the exhibit and through this medium will be portrayed the operations of the corporation throughout all its departments. In the pictures will also be shown the great benefit to the social world brought about by the United States Steel Corporation, as no other institution does more to further the social welfare of its employees. The corporation's many devices for insuring safety of employees will be exhibited and data will be given as to the enormous amounts expended for this purpose.

This is the first time in the history of the steel industry that the United States Steel Corporation has planned a comprehensive exhibit or display of any kind embracing all of the subsidiary companies. It is certain that this feature of the coming Exposition will make a strong appeal to visitors at San Francisco in 1915.

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Why Hollow Tile is Popular

THE popularity of hollow tile is due principally to the fact that the clay which is used is more carefully prepared, harder burned, and used where it will do the most good, and in the manner in which it will do the most good. Since these walls and webs of well manufactured clay perform all necessary functions in carrying loads and resisting strains, the balance of the wall may as well be void. The voids are cheap. They require no clay. It costs nothing to dry and burn them. The railroad and cartage men transport them for nothing. They do not tire the hod carrier or brick mason. No steel is required to support them in the wall, and they are very good non-conductors of heat, cold and moisture. It is this economy from the clay pit to the finished wall that makes hollow tile popular.

ELECTROLIER FOR ORPHEUM THEATER
SALT LAKE CITY, UTAH
G. A. LANSBURGH, ARCHITECT

FOUNTAIN FLOWER POT FOR WICKHAM HAVENS, OAKLAND
Finn H. Frolich, Modeler

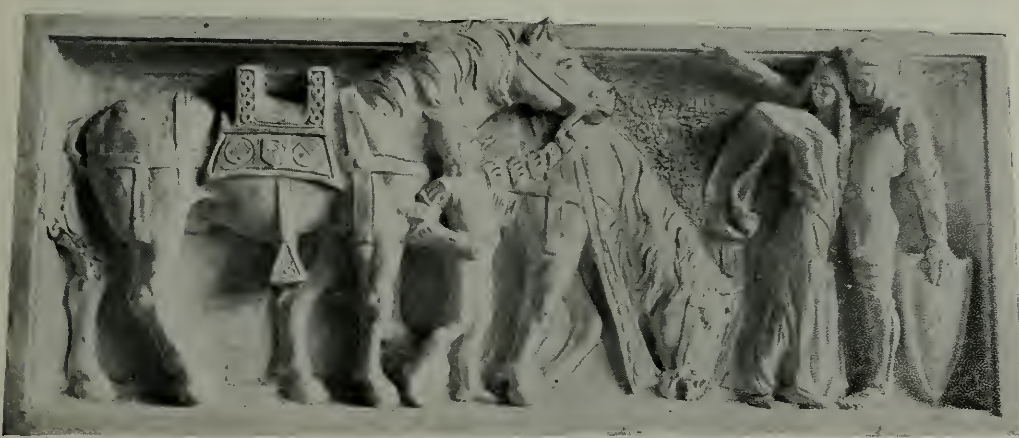
Artistic Garden Decorations in Concrete

THE accompanying illustrations give some idea of the possibilities of cement work for garden embellishment. Vases, window boxes, settees, flower stands, sun-dials, bowls, etc., executed in concrete make a pleasing contrast to the green foliage and bright blooms and add very materially to the charm of the home surroundings. The work shown was executed by the Western Sculptors, a San Francisco firm of which Mr. Finn H. Frolich is manager.

COURT IN HOUSE OF MR. D. JACOBS, SHOWING CEMENT SUN-DIAL, FLOWER POTS, ETC.
Milton Lichtenstein, Architect

ANOTHER VIEW OF SAME COURT, SHOWING FLOWER POTS IN NICHES

A BURBANK FLOWER BOX FOR LAWN DECORATION



FRIEZE, KING ARTHUR PERIOD

OLD ENGLISH FLOWER POT

FRIEZE FOR GRAVE MONUMENT

GOTHIC
FLOWER POT

OLD VIKING
FLOWER POT

Attitude of the Public Toward the Architect

By WILFRID BEACH, in the Architectural Record.

THE architectural profession is composed of four rather distinct types of practitioners

First, the experienced ethical man.

Second, the novice of proper education and training, lacking only experience.

Third, the "architect."

Fourth, the shyster.

We will arbitrarily allude to the first only as architect, calling the others for convenience by their more descriptive titles.

It does not appear difficult on the face of the matter for the public to discriminate between the different types, if it would; but there is just the trouble: it won't.

A prospective builder seeking his first experience does not, ofttimes, appear to care who makes his drawings, just so he obtains them cheaply.

Having no particular respect for the building he is about to erect, he has even less for the architect who appears to be a necessary evil in the affair. The architect himself, if he be of the first class, is probably not lacking in self-esteem and is far from relishing the patronizing attitude of the prospective client. He neither kotows nor cringes; and the man with money to spend is too likely to resent what he considers "high and mightiness" in one who is only a servant after all.

And, if the client be a woman with a house to build, the kind of woman who has already made her own plans and only needs an architect "to kind o' put on the finishing touches." ("You know, if I were a man, I should just love to be an architect, it's such nice, clean work. And everybody says I'm so artistic. You know I've studied china painting. I'm sure I could succeed at this without half trying. Of course, *these* are only rough sketches and my husband says they are not to scale, whatever that is. But I planned a real model house once for our settlement work club and all the other ladies thought, etc., etc.") If she be that kind of woman, she will be very easily offended by any lack of tact on the part of the architect.

You can hear her a year or so later saying: "I know the house isn't just what it should be, although I had it all worked out exactly as we wanted it; but the architect just simply spoiled it; and I had it designed so artistically, too."

"I always wondered why you didn't go to Mr. Blank. He has built some beautiful homes out on the Drive."

"Well, I did go to see him first. But he was so horrid and dictatorial, I simply couldn't stand him. I just felt like a little child when he talked to me. He said he wouldn't do this and I couldn't have that, and anyway it would cost a lot more than we had figured on. I just made up my mind I wouldn't have any house at all if I had to have him plan it. So I went to Mr. Brown. I know he is only a carpenter, really, but he could at least do as he was told, though he deceived me dreadfully about the cost."

"Oh, they all do that. It's proverbial that you never can depend on an architect's estimates, you know."

"Of course, you can't. We found that out to our sorrow. But we feel worse about the outside. We only told Mr. Brown what we wanted in a general way and gave him a kodak of the Smith house to follow and he simply butchered it."

"Yes. I know the Smith house. Mr. Blank planned that, didn't he? But I didn't suppose yours was modeled after it."

"Of course, you'd never suspect it. The next time we build, we're going to send away for plans for one of those perfectly charming bungalows you see so many pictures of in the magazines nowadays; one with a 'patcho' in the center, real Spanish you know, like the Grays have down in Florida."

It is thus greatly to be feared that the dignity of the real architect does not command the respect of the uninformed and careless public.

The building supply trade constitutes a considerable factor of that public which architects desire to see enlightened. The attitude of these people toward the architect is of great importance because of its reflexive influence. If a large portion of the material men of the country believe that architects in general are "looking for something on the side," they probably believe also that those who will not accept it are either supremely foolish or are getting it elsewhere. This opinion of architects is easily passed on into too credulous ears. We know that there still exists in the business world a large number of financially successful men who believe that "every man has his price." Perhaps they also know that if it were less true, they themselves would not have arrived. Such men will not hesitate to impute improper motives to the most upright character, and it would be an exceptional reputation that would be absolutely impregnable to such slander.

Thus we have heard that this architect owns stock in factories from which he insists upon contractors making purchases of material for use in his buildings; another is said to furnish a very limited number of blue prints to contractors and charge many times the value of others that are found necessary; or we are told that still another habitually favors certain manufacturers who have done much for him—their competitors cannot even get a hearing with him. And the traducer will add, "But I don't really blame the architect. I'd get all I could in his place, and so would you. See how the owner cuts him down when he gives him a job—makes him take the work for almost nothing."

In such manner is the whole profession besmirched by the remissness of the quacks and those who profit by their machinations. The evils are plainly the direct fault of the public, because the public does not attempt to discriminate between the ethical architect and the charlatan. It would appear that it really prefers to be humbugged.

We find this indifference sometimes so marked as to be well nigh inconceivable.

The common council of a small city met to select an architect for their proposed city hall. They had taken no trouble to advertise the matter and had only six candidates, one of whom, a member of the Institute, happened to be in the town on other business. Hearing of the work to be assigned, he called upon the mayor, who assured him that, there being no local practitioner, all comers would be treated alike. At the solicitation of the architect, the mayor requested the city attorney to wire certain parties for information as to the professional standing of this particular candidate. Nine such telegrams were sent (at the expense of the architect). The town council met in the evening and listened to each applicant in turn, asking but few questions, and these briefly touching upon the fee to be charged. When the stranger appeared before them without pictures or other paraphernalia of his "trade," he found himself at a considerable disadvantage. He requested the attorney to read the answers to the telegrams, which were accordingly produced, but, before they could be read, the mayor interposed, saying: "Never mind the telegrams. We are quite willing to assume that you are all right. What we would like is for you to show us what kind of a city hall you could build for us."

The telegrams remained unread and the work was given to the *lowest bidder,* an "architect" who boasted that he had been a "practical man" until he was forty years old and then took up architecture because he knew building so much better than these "fancy fellows" who had never in their lives worked at a bench. His charge was two hundred and fifty dollars (one per cent.) for full services.

Owners continue to employ these shysters, even when they know them to be such, but thinking to take advantage of their low rates and deeming themselves clever enough, forsooth, to beat them at their own game. Fatuous fallacy! Such owners only connive at the evils and help them along.

The business section of a small town burned. The business men got together and agreed to build their new stores much better, even going so far in the right direction as to adopt a building code with certain fire preventive restrictions. Then some one suggested that, having gotten together, they might save considerable money by agreeing to employ an architect jointly and getting a combination rate. A man was found who had "ARCHITECT" printed on his stationery and who was willing to sell them plans and specifications for twenty-five dollars per building. The offer was accepted, in spite of the protest of a real architect who attempted to show them that buildings could not be properly designed that way.

Strange as it may seem, although they wanted fairly good buildings, as was evidenced by their previous action, yet they all went into the deal.

Their "plans" came by express, C. O. D. The buildings were started under hastily prepared contracts. The contractors never told that they were able to do about as they pleased from start to finish, that the details did not fit the plans nor the plans fit the elevations, and that the sub-contractors furnished their own drawings and could also do as they pleased. The owners had saved a lot of money (they supposed) by refraining from employing an "expensive" architect and by not wasting good cash in having a useless superintendent on the work. It would have been hard to convince them that they spent their savings several times over in paying for things they didn't get.

The real extravagance was in not employing an "expensive" architect and paying him to supervise as well as to design the work.

* * *

Fire Retardent Paints for Shingles

ONE of the many interesting papers read at the twenty-sixth annual convention of the Master Painters and Decorators' Association of Pennsylvania recently held in Pittsburgh, was that on the above subject by Henry A. Gardner of the Institute of Industrial Research, Washington, D. C. The paper was of considerable length and dealt with many phases of the subject, including a description of a series of laboratory tests to determine the heat deflecting properties of various types of roofing materials. Miniature houses were roofed with bare shingles, painted shingles, tin and stone. These houses were placed in an oven heated to 150 degrees Centigrade. At the end of 15 minutes thermometric readings were taken and the interior of the houses roofed with stone and tin showed a much higher temperature than those roofed with shingles. The house with the roof covered with painted shingles showed the lowest temperature. On account of the heat deflecting properties of shingles they will probably always find a wide application in warm climates, and the point was also made that shingled dwellings are much cooler in summer than ironclad or stone roofed dwellings.

A summary of the conclusions reached were given as follows:

The shingled roof is highly desirable on account of its durability, light weight, low cost and non-conducting properties.

Shingled roofs are subject to conflagration when they become dry. Hot cinders from chimneys are glowing sparks carried by the wind from nearby fires are common causes of roof fires.

The use of high-grade mineral paints upon shingled roofs eliminates such fire danger. Shingled structures of all types, when properly painted, are not only fire resistant but they are moisture proof and highly ornamental.

The painter shingle dwelling constitutes one of the most desirable types of modern suburban homes.

The Correct Color Tone

THE importance of color in any scheme of decoration is paramount, says the Journal of Decorative Art of London. Bad or indifferent forms well colored may easily pass muster, but, no matter how good the designs may be, if the color is faulty, then the result is poor; but, beyond the application of color where pattern is concerned, there is an immense field where no pattern is involved, and where the problem is to color only a plain surface. It may appear to some that it is attaching too much importance to a simple thing to describe this as a problem, but if anyone thinks so he is falling into grievous error. We have recently seen an instance of this, where an important public building is altered in its aspect entirely by a mistake of this kind. There are three divisions where the color has gone wrong. First, the staircase. This is always an important part in any place, but in the building under notice it is a feature. The woodwork is of polished pine, and age has turned it to a nice brown color. The walls have a paneled dado of the same wood, and the space between the dado and the ceiling is painted. This time it has been done a tone of blue.

This description may convey something or nothing, but the color in the actual work is a flagrant instance of hitting the wrong shade. It dulls the staircase, and makes it look somber and devoid of interest. It hangs heavy on the sense as one traverses it up and down, and yet it is not much that is required to make it a success. A little more white and a little more yellow in it, and we should have had a tone that would have softened into the woodwork and illuminated the place. So fine, in a word, is the line that separates the work from what is successful to what is a failure.

The dining room in the same building is a very fine, spacious apartment, with a pitch-pine ceiling, stained and varnished, and aged to a deep brown. A paneled dado goes some five feet up the walls, and then follows a large field of wall space that at one time has been megilped and combed, and afterwards painted and stenciled upon. Above this is a frieze some six feet deep, broken up by dwarf shafts springing from the corbels which break the frieze into long panels.

Here were the conditions: A rich brown pine roof, a framed frieze and a rich paneled pine dado.

The frieze was painted a warm olive shade of green, full in tone, and decorated with a good bold flowing scroll painted in tones of lighter and darker green inclosing a shield painted with a device. This was very well colored, and had a harmonizing effect with the ceiling. So far so good. The important feature in the room, the coloring of the walls, still had to be determined, because whatever color was placed there dominated the entire room, and made of it a success or otherwise.

Unhappily, the decorators or the committee determined upon a laky red, where a terra or orange red would have been best. The result is an unhappy conjunction which does not really harmonize with either the frieze or the dado, and, though the field was powdered with a large, open pattern, it failed to give the harmonizing quality required.

Here there was a fine opportunity missed by the use of the wrong tone of color. A very little alteration of tone would have made it right, and have insured a success where it cannot now be said to exist. The margin between success and failure, or non-success, is slight—a little will turn it either way—but that little is of immense importance; and any master painter who wants to become a decorator should make a point of mastering these subtleties of color. He will find it time well spent to do so.

PACIFIC TELEPHONE COMPANY'S ORIENTAL EXCHANGE IN CHINATOWN, SAN FRANCISCO
ENGINEERING DEPARTMENT, ARCHITECTS

GATEWAY AT THE TEMPLE OF HEAVEN, LOOKING EAST FROM ONE OF THE MAIN ALTARS

Some Features of Chinese Architecture

By R. I. GEARE

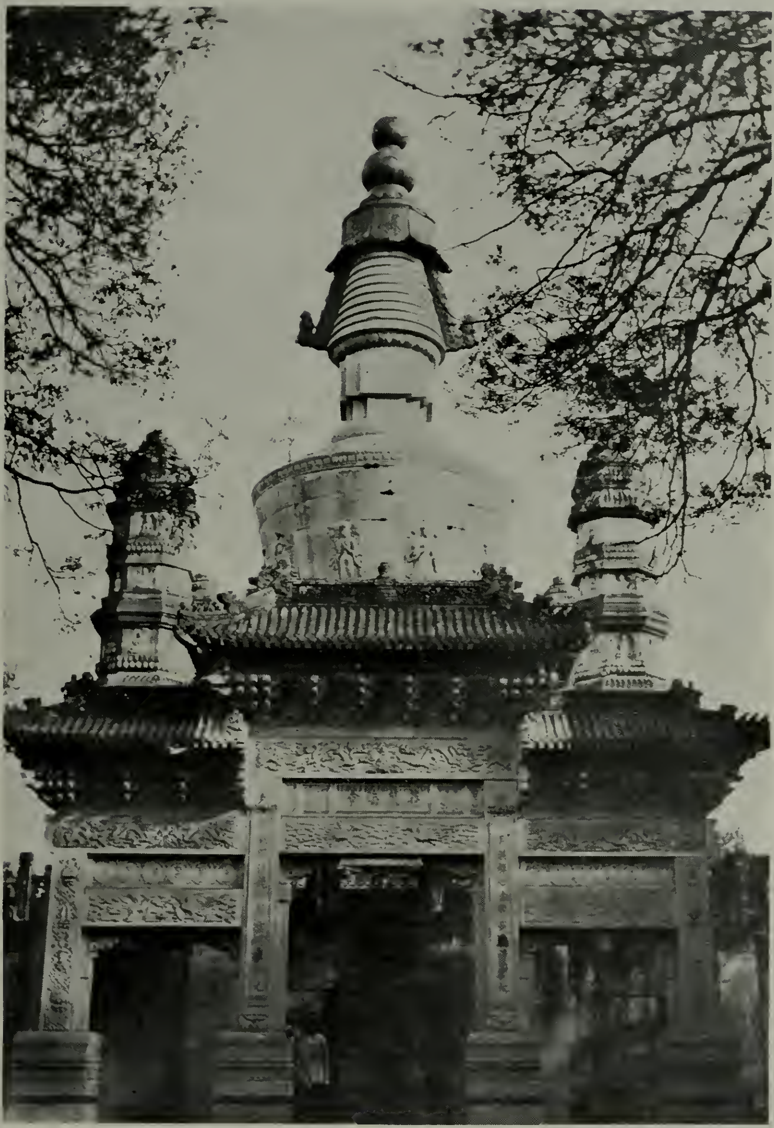
THAT the straight line suggests death and demons and pertains to Hades is a firmly fixed belief in the Chinese mind. It is, therefore, an abomination to them, and they have steadily avoided its use in the construction of their houses and temples, which, on the contrary, are characterized by curves and peaked roofs, ornamented with fantastic patterns. Indeed, the Chinese may be said to have idealized the curve and zigzag; and conspicuously so in their national emblem, the dragon.

The most sacred portion of a Chinese dwelling is the hall, to which the other parts are merely accessories. The receiving of guests is one of their most important duties; in fact it has been idealized into fine art. The guest's room is adorned with specimens of the artist's skill. These are usually done with the pen, as Chinese artists are wont to scorn the use of color, as shown by many of their most approved landscape pictures. It has been claimed, indeed, that this peculiarity is a survival of the early days when the ancients are said to have been at least partly color-blind, and this theory of accounting for the lack of color in Chinese art work seems to gain support from the fact that the five elements of the Chinese spectrum are black, red, ts'in (which is a neutral tint and stands for "the color of life, the color of olives, the color of bamboo-skins, the deeper color of the rocks," etc.), white and yellow.

Viewed from the city wall, the first impression of any Chinese city is decidedly monotonous, the result of the predominance of a single type of architecture, known as the t'ing. Even when new models were introduced, the lines have been gradually toned down to harmonize with the general standard.

A GOOD EXAMPLE OF THE CHINESE PAGODA

The large majority of Chinese buildings are furnished with a massive roof with turned-up edges resting on short columns, and this feature is supposed to be a survival from the days of the tent-dwellers, who used to hang the angles of their canvas partitions on spears. Indeed, the roof is the predominating feature of most Chinese buildings, imparting to the whole either grandeur or simplicity, strength or grace. The stability of the structure depends principally on the wooden frame-work; for the walls, as in our modern buildings, are not intended to act as supports, but are filled in afterwards with blocks of stone or brickwork. The ridge-poles and corners of the sagging roofs are covered with finial dragons and



THE YELLOW TEMPLE

A CALIFORNIA EXAMPLE OF CHINESE COMMERCIAL ARCHITECTURE
Ross & Burgren, Architects

long rows of fantastic animals, arranged after a symbolism known only to the initiated. The eaves are underlaid with elaborately carved woodwork brilliantly lacquered, while the walls are outlined with bands of terra-cotta reliefs molded with figures and floral sprays.

Chinese buildings, usually consisting of only one story, are developed horizontally. The main buildings and wings, the side buildings, avenues, court-yards, pavilions, motives of decoration—and all the details in fact—are planned symmetrically. Only in the case of gardens and summer residences does the Chinese architect depart from this rule, and these are designed in the most capricious fashion, with pagodas and kiosks elevated at random, detached edifices of irregular fashion, rustic cottages and one-winged pavilions dotted down in the midst of surroundings of the most complicated and artificial nature, composed of rockeries, lakes, water-falls, and running streams spanned by fantastic bridges.

Perhaps the most interesting architectural feature of Peking is the Temple of Heaven, which is within the Southern or Chinese City. It is surrounded by beautiful cypress trees in the midst of a walled park.

Most sacred of all Chinese religious structures is the "Great Altar of Heaven" (T'ien T'an), consisting of three circular terraces with marble balustrades and triple stair-cases at the four cardinal points. These as-

TEA HOUSE USED BY THE LATE EMPRESS DOWAGER

cend to the upper terrace, which is 90 feet wide, with a base 210 feet across. The platform is laid with marble stones in nine concentric circles, and everything is arranged in multiples of "9."

North of the "Great Altar" is a three-tiered marble altar (Ch'i Ku T'an) or "altar of prayer for grain," which is dominated by an imposing triple-roofed temple, covered with tiles of deep cobalt blue.

The plan of a Buddhist temple, which, in a general way, resembles that of a private residence, consists of a series of rectangular courts with the principal edifice in the center, the less important buildings being placed on the sides. A pair of carved stone lions usually guards the entrance, and this is flanked by lofty twin columns of wood, which on festival occasions are mounted with banners and lanterns. The ponderous gateway is roofed so as to form a vestibule in which are ranged, on either side, huge figures of the four Kings of the devas, while in the middle are enshrined small images of the Buddhist Messiah, and the State God of War, Kuanti, who is represented as a mailed figure, garbed in the costume of the Han period and seated in a chair.

On either side of the first court, inside the vestibule, is a pair of square pavilions containing a bronze bell and a huge wooden drum. In front is the main hall of the temple. The surrounding walls are commonly studded with small figures of celestial Bodhisats, molded in gilden bronze or clay. The wing buildings are devoted to the deceased inmates of the monastery, while the side cloisters, which in large temples are two-storied, contain the treasures of the monastery, the library, blocks for printing books, etc.

The Rhyme and Crime of the Bungalow

By FRANCIS W. REID, Architect

There are a lot of brainless freaks
Who add to human woes
Planning or building crazy shacks
Which they call Bungalows.
The joists and rafters are too light,
The studs scarce hold the lath,
And out of space for single room
They get four rooms and bath!

They cut barge boards and rafters
Till the wood shrieks out in pain;
The walls are thin like pasteboard,
The roof won't shed the rain.
There's little space inside a room
For furniture to set,
And everything's in the worst place
It's possible to get.

The boiler's next the "cooler"
And heats it like a torch;
You can't squeeze into the "breakfast room,"
Or stretch out on the "sleeping porch."
The inside is an awful mix
Of the worst horrors known;
The outside mingles shingles, bricks,
Shakes, plaster, cobblestone!

And when the loathsome job is done
They laud it to the skies,
Their language mixed with ignorance
And slush and gush and lies.
When fool enough to send for plans
They cost at least a ten,
For changes you must wait a month
And may not get them then.

And when you try to build the thing
In bankruptcy you're lost,
Because expenses far exceed
The estimated cost!
Then why not hire an architect
And some refinement show
By leaving all the bungles out
When you build your Bungalow?

The Architect and the Structural Engineer

THE following is a summary of a paper read at the forty-ninth ordinary general meeting of the Concrete Institute at Westminster, S. W., April 23, 1914, by Mr. William E. A. Brown, A. R. I. A. B., M. C. I.:

An architect is necessarily a structural engineer, with the addition of the artistic sense and skill to clothe the structural forms with beauty of line and contour, and to so arrange mass and void into one harmonious whole, studying the great lessons of the past, and carrying on the architectural traditions of Ancient Greece and Rome, down through the Middle Ages, and on through the Renaissance. The architects of such buildings as the Church of Santa Sophia at Constantinople; St. Peter's at Rome; the Pantheon, Rome; the Duomo of Florence; and to come down to more recent time, Sir Christopher Wren's masterpiece in London, and Bentley's last great work of Westminster Cathedral, were structural engineers.

Were not all our cathedrals, which were the delight of artists and lovers of the beautiful, wonderful examples of architects' engineering skill?—majestic buildings with vaulted roofs poised on slender pillars, and held in position by flying buttresses, each thrust met by a counter-thrust, all combined so as to keep the whole structure in a stable condition.

Structural engineering included not only steelwork used in buildings, but also all forms of construction, whether in brick, stone, timber or concrete, and in designing buildings, and other structures the architect was called upon, not only to exercise his artistic ability, but also so to plan and arrange the various materials to carry safely; in addition to their own great weight, all superimposed loads and external forces, so that the whole might remain perfectly stable.

No doubt the Council of this Institute had this in mind when it was decided to enlarge the scope of the Institute by adding structural engineering, and not to confine itself to one branch only, i. e., concrete and reinforced concrete. The wisdom of this, he thought, was manifest by the large increase in the membership as well as by the greater attendance at the meetings.

It was the architect and the architect alone, who should determine the position of all main girders, stanchions and supports. In many buildings it was impossible to proceed with the design until these positions were determined. In some cases it was the run from north to south or east to west. In others it would be such a feature as a dome; for example, how could Wren have planned St. Paul's, unless he knew beforehand how he was going to support that great and glorious crowning feature of his design? That building could not have been erected had Wren simply made a drawing and handed over the structural work to someone else to deal with; or had that course been adopted, the resulting design would have been different to that made by the architect.

There was no doubt that tradesmen and others who did not realize the importance of having a properly qualified professional man to advise them. They were led to believe and fondly imagined that they were saving a large sum in fees, until they found by experience that their folly had cost them more. It was not his intention or wish to belittle in any way the status of the consulting engineer, as he occupied a very important position in the building world. But what he did wish to emphasize was that it was the architect's duty to determine the position of all girders and supports in the building he designed. He should also be able to make the necessary calculations for the steelwork in, at any rate, the smaller buildings under his control. Architects often did employ consulting engineers to do the calculations for the steelwork—first for lack of time to do so themselves, and often because in some modern buildings, the steelwork was of so complicated a character that it was advisable and necessary to do so; but that did not alter the question of the position of the architect in the matter.

A good deal of stress has been laid upon the question of whether the steelwork should be designed, and quantities taken out by the consulting engineer before being sent to the constructional firms for estimates, or whether these firms should be allowed to do the calculations themselves. For contracts involving a large amount of steelwork of a complicated character, the author agreed that a consulting engineer should be appointed by the architect, but there were many smaller works where this was not necessary, nor would the outlay on the building work warrant the expense incurred. It was quite satisfactory, given certain conditions, laid down, for the architect to send the drawings to several firms of engineers, and let them make their own calculations and quantities; but to enable the various contractors to estimate on the same basis, the following information must be given to each:

1. Plans of all floors showing the lines of all main girders and the positions of stanchions and columns; also a section or sections and outline elevations must be given.
2. The loads that each floor had to carry and whether live or total loads.
3. Whether British or foreign steel was to be used, and whether the L. C. C. Regulations under the General Powers Act, 1909, were to be complied with. If not, the stresses should be specified that were to be worked to.
4. Whether price was to include for hoisting and fixing, or only for steelwork delivered to site.
5. If it was to be delivered unpainted, painted, or oiled, and if painted with what materials, and that all scale and rust must first be removed.
6. Workmanship, whether connections were to be riveted or bolted and if the latter whether ordinary bolts would be allowed.
7. Whether the price was to include 10 per cent. profit for the builders or only 2½ per cent. cash discount.

The author's practice was to state the latter.

There was a diversity of opinion as to whether dead loads and superloads on a floor should be kept separate in making the calculations, or whether a load to include the dead weight of the floor itself, should be taken. The author's practice was to work to the latter, as the calculations were much simpler and the liability of error was materially reduced.

One must, of course, take into consideration the point loads which often occurred from partitions, etc. This was often neglected by competing firms of engineers, but some of the concrete partition blocks on the market weighed a considerable amount, and one was often surprised when the weight was calculated out.

Another matter that he sometimes had to argue with the steel contractors was the central loading on girders carrying walls with openings and narrow piers between. Some assumed that the loads were evenly distributed over the span through the brickwork below the window sills. If the sills are very high up, this may be so, but in many cases the sills are only 12 in. or 18 in. above the girder, and, in his opinion, the loading in such a case should be considered as a point load, or as a distributed load over a length of the girder equal to the width of the pier.

In calculating the loads on stanchions, etc., he did not take advantage of the reductions allowed by the 1909 Act. He did not think it advisable, as buildings were often loaded to a greater extent than was allowed for. How often was an architect told that the floors will never have to carry more than a certain weight, and on going over the premises, when occupied, he is surprised to find these loads greatly exceeded.

When the various estimates and plans showing the steelwork were received the architect should carefully go through each set, and compare the sections of the girders, etc., and make rough calculations to check the sizes, and ascertain if the allowable stresses had been adhered to. It was also necessary to check the depths of the joists in relation to the span, otherwise undue deflection might occur.

After the plans had been gone through, the architect was in a position to determine which estimate he would accept, and when giving the general contractor instructions to accept the estimate it was important to state that all dimensions were to be taken from the site, and that the whole of the work was to be carried out to the architect's satisfaction, detail drawings of all parts to be submitted to him for approval. The steel contractor must take his own dimensions from the site, arranging, of course, for the general foreman which portions of the steelwork were to be delivered first, and the order of delivery of the remaining consignments. When the cleared site had been measured with steel tapes and all angles carefully triangulated, it should be possible for engineers to set out and scale off the lengths of the various parts. The connections and workmanship were, in the author's opinion, very important matters to be considered and as far as his experience went they did not always receive the attention that should be given them. Of what use was it to have a strong joist or stanchion if the cleats under the joist, or the joists under the stanchion were not properly designed, or if the design is correct the connections themselves were badly made. It was a regular practice to use ordinary bolts to take shear, such as the ordinary ¾-inch bolt in a 13/16-inch hole, the shank being threaded to within ⅜ inch of the head. He has examined connections made in this way, and often out of five bolts in the connection four of them could be taken out with the fingers when the nut was removed. What amount of bearing area did one get on the threaded end of the bolt, supposing that the bolt was bearing on the plates. The bearing surface consists only of a series of knife edges. If bolts must be used in shear then the holes must be carefully drilled concentric through all the plates without the usual amount of clearance, and bolts with plain shanks long enough to pass right through all of the plates should be driven in. In order to make sure of having no portion of the threaded end bearing on the outer plate a ⅜-inch washer should be placed under the nut. I am aware that the 1909 Act says that rivets should be used in all cases where reasonably practicable, but there were a very large number of buildings to which this Act did not apply. He thought that all steelwork should be designed in accordance with the provisions of the 1909 Act, but that the conditions for bolted work should be amplified in the Act, the only requirement now being that the bolt should extend through the nut and the latter be secured so as to avoid risk of becoming loose. Another important point, and one that was not always attended to, was that all holes through two or more thicknesses of metal should exactly coincide. If they did not coincide, how could the rivets or bolts take a proper bearing and transmit the loads from one to the other?

Filler joists in concrete floors should be bolted or cleated at least every third joist to the main beams. He had seen cases in which this was not done, but the fillers simply rested on short cleats on beams connected to stanchions running through three floors, next the street, and with no other tie than that afforded by two ¾-inch bolts at each floor level; the end stanchion, built on the face of the party wall with only 4½-inch brick casing around it, was not tied in at all. He believed it was becoming a common practice to place the smaller filler joists on a concrete haunching resting on the bottom flange of the main girder and not tied in any way to the girder. In his opinion this method of construction should be condemned. The area of the stanchion bases should be chocked to see of the concrete was not loaded more than 12 tons to the square foot. Large gusset plates should not be allowed unless properly stiffened to prevent buckling. It was a good practice to encase the whole of the stanchion base right up to the floor line with concrete. This prevented rusting, and also held the floor of the stanchion firmly in position. He did not advocate the putting of stone templates under stanchions. There was no difficulty in bedding both the template and stanchion and if the latter had to be grouted in the stone it might as well be absent. Girders supporting walls as well as main floor girders if they are formed of two or more plain I-beams side by side should have plates riveted on top and bottom. To simply bolt them together is, in his opinion, not sufficient, as the load from the main floor girders was not transferred to the outer joists, though some engineers think it is.

Caution must be observed in casting girders and stanchions with patent plasters, especially those that are stated to adhere without the intervention of any lathing. He had one in mind that corroded the steel to an alarming extent in a short time.

Stanchions and girders are best encased with fine Portland cement concrete, the steelwork having ⅛-inch wire wound round same, spaced about 12 inches apart. This held the concrete firmly in position and it was not easily damaged even by motors.

When he told them that he had seen specialist firms' own men sawing up timber for centering and the sawdust and shavings and small pieces of wood all left and mixed up with the concrete, he thought one's faith in trusting to such people was rudely shaken. One required a good clerk of works, well up in reinforced concrete construction, with several smart assistants under him, to look after the work.

In calculating the sizes of steel joists embedded in concrete the author's practice was to let the steel carry the load as an independent beam, but taking the depth of the beam anything up to 1/36 of the span, limiting the stress to 7½ tons per square inch. This was quite enough, and he often found that these small joists, such as 3 inchs by 1⅛ inches and 4¾ inches by 1¾ inches were of foreign make.

He had also a preference for joists with 3-inch flanges over those with 1½-inch and 1¾-inch flanges, for the reason that the concrete had a much better bearing on the joist. He then uttered a warning against using breeze for floors. There was a great danger of expansion and he knew of several cases where this had occurred and pushed walls several inches out of upright, and even when the wall was rebuilt it happened again. There was also a corrosive action between the concrete and steel which in time might endanger the stability of the floor. The modern architect had to be a man of many parts, a jack-of-all-trades—a bricklayer, mason, carpenter, joiner, plumber and painter—always an artist, often a lawyer and last, but not least, a structural engineer.

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Hollow Tile as Structural Material

The use of hollow tile as a structural building material has been given a great impetus by the recognition by the United States Government of this type of construction. Notable instances of this fact may be found in the new Post Office building to be erected at Grass Valley, California, and in a new dormitory building to be erected for the Phoenix Industrial school for Indians at Phoenix, Arizona. In both of these cases, hollow tile are specified for the construction of exterior load bearing walls.

What is an Architect?*

By JOSEPH LOSEKANN, Architect

TO BEGIN with, an architect is a man, or woman for that matter, who has made a thorough study of all branches of the construction of buildings and has had the practical experience as well. He should have studied architectural design through all its evolutions from long before the Christian era and before Egypt itself, through the different periods to the present day, and should embody in his design of a building that which is essential for its present needs and style, having learned from what has been done in the past and erect a building that should stand as a monument for the future. It should be modern in appearance as well as in material in order to meet the present-day requirements.

An architect must thoroughly understand building construction—a most vital point—as a building poorly put together is little better than no building at all. He should understand the weight and strength of materials, in order to properly apply them and make the building he is constructing a complete whole.

He should understand the planning of a building, which requires thorough training and experience, without which no building can be succesful unless its arrangement of plan is simple and economical. The successful plan, therefore, is the one that meets all requirements as to beauty of design and good construction with the least expenditure.

The architect should understand and know of all the different materials that enter into the construction of a building and should specify and see that only the best are put in for the money. He should keep in touch with the newest materials through their many agents and by reading the advertisements, and should always be abreast of the times as to what is the very best and latest on the market.

He should be an impartial superintendent and work for the best interests of the owner, though with proper regard for the contractor as well. It is to the architect that all difficulties that may arise and the proper interpretation of the plans and specifications are left and it is the satisfactory handling of these things that determine the architect's real competency. Judgment should be rendered impartially and a firm stand taken to effect a speedy completion of all matters. The inability to decide quickly and finally on many small things is often the cause of unnecessary delay, and could be avoided by quick action on the part of the superintendent.

Finally, I would ask: Why should you go to an architect to have your plans drawn for a building when there are many contractors, carpenters and others that will make them for you without cost? By way of comparison let me ask, why do some people, when they are sick and in pain, go to a drug store for advice and medicine instead of seeking the professional services of a physician? To save the doctor's fee, of course. The druggist, except in exceptional cases, is not a doctor and does not understand the planning and arrangement of the human body. The wise person is the one that goes directly to a good physician at the start and pays a reasonable fee for professional advice. The doctor furnishes the prescription as the architect supplies the plans; the druggist fills the prescription as the contractor would construct the building, and the result is, the patient (owner) has a body (building) when properly attended to that is left in the best condition possible for the skill and money expended and in that he more than saves the doctor's (architect's) fee. Everything has been done by the right person in the right way and naturally is bound to bring the right results.

*Abstract of an Informal Talk before the Stockton (Cal.) Rotary Club.

Quantities and Quantity Estimating

A Bit of Satire Touching Some Pet Hobbies Which Broad-Minded Architects Cannot Fail to Appreciate.

By LE ROY E. KERN, Architect.*

WITH feelings of surprise, horror and shame, I read the article by Sullivan W. Jones, which appeared under the above title in the December issue of The Building Age. (Mr. Jones' article also appeared in the Architect and Engineer.—Ed.) The surprise was at the article being published; the horror was at the thought of what would happen to us architects if the public should begin to require us to show and specify neither more nor less than we meant for the low bidder to furnish—the shame was that a member of our most honorable profession should cast aspersions on its most sacred, revered and time-honored traditions.

Had the article been written by some practically unknown architect we could have treated it with silent contempt. This, however, was not the case. It was written by a member of one of the leading architectural firms in the country, and might possibly be read by some of our clients. If it is, then we are ruined forever.

It would not have been nearly so bad if he had merely hinted in general terms something to the effect that there might possibly be some slight chance for a little improvement or rather change in some of the details of the way that in some places the building game was being conducted. No one then would have paid a particle of attention to it; we could have said to ourselves that it does not apply to us personally and would have regretted that there was no way to rid the profession of those incompetent members.

He, however, not only states that our drawings are unintelligible and lacking in pertinent information, but (shades of our forefathers, what are we coming to?) that our specifications are rubbish.

In its fundamentals this specification is the same in all architects' offices. It has been handed down from office to office and from father to son for untold generations. Personally I believe forever. It has been copied millions upon millions of times, but never written. Some one, though, must have written the first one, unless "in the beginning" it was created.

Trade unions have come into existence, new materials have been put on the market, new methods of construction have been advanced, but in spite of all this we have been able to preserve our specification in practically its original form. Should anything in the world be held in more veneration? Why, even to hint that it might be changed a little should be regarded as worse than any known criminal offense. What, then, shall we do to one of our own profession and one who ought to know what he is talking about when he says that our specifications are rubbish?

What difference does it make to us that the courts of law do not uphold our General Conditions? Some day some archæologist will dig up the original signed contract copy of the specifications for the oldest pyramid. It will be well for him, however, to have his find witnessed by several disinterested parties of unquestionable veracity, for otherwise he will most assuredly be accused of having translated into Egyptian the greater part of a modern specification.

*Formerly specification writer in the office of Bruce, Price & De Sibour, architects, New York and Washington.

When this find is made it will be indisputable proof that all buildings that ever had any specifications had the same general conditions, standard clauses, and said the same nasty things about what they were going to do to the contractor in case he made an error or failed to correct all the architect's errors. With this original document to back us up we ought to be able to have the laws changed to fit our specifications.

In place of the contractor being pessimistic about any change it seems to me that his position is about the same as that of the blacksmith who when asked why he allowed his wife to beat him replied that it did not hurt him and it amused her.

The only pleasure that the architect has in life is reading his general conditions and blanket clauses to his new client. The contractor, if present at this reading, never raises his eyes and appears to be suffering some great mental anguish. He does not really feel that way. He knows that the architect does not mean a word of it. That is the way he is expected to look, and it would spoil the effect of the whole thing if he did not look that way.

In the subject matter proper of the average specification there have been some changes made from year to year. To what extent these are due to inaccurate copying I am unable to say. I am convinced, however, that this is not the reason for them all. Some have been made in an honest effort to show the bidder that the architect really thought he wanted this or that particular thing done this or that way. I have heard that in some instances this has been found to be a help to the bidder. However, I am afraid that they have often prevented his being awarded the work by raising the question of doubt in his mind as to the other requirements.

As for the change to the quantity estimator as suggested by Mr. Jones, I am not sufficiently well posted to express an opinion, but on the face of things it looks as though it would be a vast improvement, especially for the smaller offices. Of one thing, however, I am certain, and that is that it could not possibly be any worse.

* * *

Los Angeles Chapter Postpones Action on Quantity Survey System

The Southern California Chapter of the American Institute of Architects, held its last meeting until fall Tuesday evening, June 10th. It was expected that Mr. A. M. Edelman would address the meeting with a stereopticon lecture on Egypt, but on account of illness Mr. Edelman could not be present. His address will probably be given at the next regular meeting in September.

The committee appointed to consider the advisability of adopting the Quantity Survey System of estimating reported that they were unable to present a unanimous report. All members of the committee recognized the merits of the system but some of them felt that it would not be practicable to introduce the system at this time. After a lengthy discussion by the members, the matter was postponed for future consideration.

As the meeting adjourned, President A. C. Martin announced that arrangements would probably be made for an informal meeting during the summer in the nature of an outing.

The Architect, His Competition and Competitors

[San Francisco Call.]

A WEEK ago there was published on this page a quiet comment to this effect: "The board of award has now chosen plans for the new city library. Who is the first defeated architect who will break into print on the subject?"

The lines were written with no more pride of prophecy than would be attached to the assertion: "It is raining; the street will soon be very wet." It is inevitable that dampness follows rain and that incrimination follows an architectural competition.

All trades and professions have their peculiarities. Most of the professions are bands of defenders mutually protecting one another against the assaults and insinuations of the layman. A doctor will defend another doctor in public and insist that the surgeon did right when he took out the patient's left lung, though within the masonic sanctity of the clinic he will denounce the man as a murderer. The lawyer will stand on the high hilltop and summon the higher heavens to witness before the world that the judge on the bench is the most immaculate combination of wisdom and learning that ever honored the ermine, though in the mystic retreat of his office he will tear the reputation of the judge into scattering fragments. But the architect takes the world into his confidence when he finds something amiss in his profession. He is a frank fighter.

There has come a squabble over the plans of the San Francisco library, a competing architect asserting that the plans chosen by the committee were plagiarized.

Whatever truth there may be in that claim—and we do not pretend to pass judgment on the controversy—we must admit that the art of the architect is the art of plagiarism. There has been little new in architecture in the last hundreds of years—that is, in monumental architecture. There are several general types—classic, with its ramifications expressed by variations in the columns of Doric, Ionic, Corinthian; Gothic, of which we do not see a great deal of hereabout; the several types of renaissance.

It is high praise for an architect to say that his work is a true sample of the Doric, for instance. Yet it would not be high praise to say of a poet that he had faithfully copied "Hamlet" in writing a play; that the only difference between his drama and the original was that the deaths are due to automatic revolvers and bichloride of mercury rather than to daggers and the subtle poisons of the dark ages.

The tower of the San Francisco Ferry building is a very close copy of a tower in Seville, but that does not detract from the reputation of the architect who designed the graceful elevation. A section of the Children's hospital in California street is practically a replica of a corresponding portion of a famous Italian building—in Florence, if our memory serves—but that is not an indictment against the architects.

It would be a very remarkable fact if the new city library were not like some other building.

Variety is desired in architecture, as in every other art, and the architects give it, showing their ingenuity by taking ideas and designs from here and there—Athens, Rome, Florence, Seville, Paris, Cologne, New York—some say from Detroit—blend those suggestions together and produce a structure that represents their individualities.

If a building were entirely unlike anything ever erected before, it would doubtless be a monstrosity, for the standards of beauty have always existed and were adapted from nature by the first wonderful Greeks and the brilliant enthusiasts of the renaissance, and have rarely been improved upon.

An Economical Hardwood Flooring

By C. H. WHITE.

THE standard thicknesses in hardwood flooring are and have been for a long time past, thirteen-sixteenths, which is made out of one-inch lumber; three-eighths, which is made from half-inch lumber; and five-sixteenths square edge, which is made by resawing one-inch lumber into two pieces.

When thin flooring is required to lay over an old floor or where the greatest economy has to be exercised, a three-eighths tongued and grooved or five-sixteenths square edge floor has been laid. Where a better job and a more lasting floor is required the custom has been to use thirteen-sixteenths tongued and grooved either in plain or quarter-sawed oak.

There has, however, lately been introduced a flooring, the finished size of which is half-inch. This is taken out of five-eighths oak and has many advantages over both the thinner and the thicker flooring. Its advantages over the three-eighths tongued and grooved and the five-sixteenths square edge strips are, of course, its durability and stiffness. Where the half-inch floor, however, shows up to its best is in comparison with the thirteen-sixteenths by two and a quarter face, ordinarily known as one by three inch plain or quarter sawed oak flooring. The face of the half inch is two inches wide and the flooring is measured as two and a half inches, whereas the thirteen-sixteenths has a two and a quarter-inch face and is measured as three inches. It is thus seen that the half-inch flooring wastes only 25 per cent in laying, whereas the thirteen-sixteenths wastes 33⅓ per cent. In other words, when you use thirteen-sixteenths flooring and you wish to estimate the number of feet required, you must add one-third to your floor space, whereas, in using the one-half-inch flooring you only add one-quarter to the floor space. The half-inch, therefore, has one-quarter less waste than the thirteen-sixteenths, or in other words there is a saving of 8⅓ per cent in the total quantity required to cover any given floor space. Added to this saving in quantity, the price of half-inch flooring is from 14½ per cent to 20 per cent less than the thirteen-sixteenths. The following table shows the cost in both thicknesses of sufficient material to cover 1,000 feet of floor space:

1000 FT. FLOOR SPACE.		
Clear Plain Oak T. & G.		
13/16" requires 1333 ft. @ $86.50 M	$115.30	
½" " 1250 ft. @ 74.00 M	92.50	
Saving effected	22.80	M ft. = 18-8/10%
Clear Quartered Oak T. & G.		
13/16" requires 1333 ft. @ $120.00 M	$159.60	
½" " 1250 ft. @ 96.00 M	120.00	
Saving effected	39.60	M ft. = 24-8/10%

Some architects may urge that thirteen-sixteenths flooring is much more durable than the half-inch. As a matter of fact, it would take a very great number of years under ordinary conditions for any kind of an oak floor to wear out and while, theoretically, the thirteen-sixteenths, being a little thicker than the half inch, should wear longer; as a matter of fact, and in actual practice, the life of a half-inch floor is as long as the life of a thirteen-sixteenths. The half-inch has all the advantages of the thirteen-sixteenths in that it can be laid over a rough sub-floor of pine boards or even directly over the joists when these are close enough. In other words, it can be used in all cases where a thirteen-sixteenths floor has heretofore been thought necessary, and, through its economy in measurement and lower price, effects a saving of practically 19 per cent to 25 per cent on a hardwood floor, and in these strenuous times of retrenchment and enforced economy this is a great item.

Vacuum Cleaning Again

MUCH has been written about vacuum cleaning, some of it good, some of it bad and a great deal of it misleading. The fact is, however, that vacuum cleaning, a wonderful application of an old principle, has come to stay, is becoming daily a greater factor in the economy of the home, the public building, the modern store, church, etc., and the subject is being stripped of the fallacies that have heretofore been so multitudinous and complex that the ordinary laymen felt as lost as a "cat in a strange garret," says Geo. O. Kretsinger, in the Pacific Builder and Engineer.

Cyclones and windstorms are phenomena of nature which are not only very destructive, but display a force for cleaning (if it were possible to confine it and direct it) that is unparalleled, as is evidenced by places swept bare of trees and buildings following in their wake. In other words, high winds, consisting of large volumes of air moving at great velocity leave in their wake open spaces, where the remaining air is so thin, or so wholly exhausted that we term it a "vacuum."

This natural phenomenon then, produced, no matter by what mechanical means, and confined and directed so that its value as a cleaning agent may be utilized, is what we call "vacuum cleaning."

The problem that confronts the prospective buyer, his architect or engineer, is, therefore, the simple one of establishing a fixed requirement at the cleaning point, of a certain volume of air, moving at a constant speed and maintaining a constant vacuum, and experience has shown that if 80 cubic feet of air is displaced per minute, while at the same time one inch of vacuum is maintained inside of the orifice of the tool on the floor, efficient results are obtained.

Given this fixed requirement, the prospective buyer can then easily determine the system of vacuum cleaning which will give him the best results, there being but two remaining factors to consider, i. e., first, cost of installation, and second, necessary care and cost of upkeep.

The necessary care and cost of upkeep is so important, almost as important as the question of "cost of installation," that an intelligent investigation should be made, in order to ascertain which system offers the greatest simplicity of construction combined with sound mechanical principles, it being easily understood that simplicity of construction, few bearing surfaces, and direct operation, mean efficient service at all times, without mechanical care and attention, which requires a technical knowledge of machinery.

To sum up, when one is investigating vacuum cleaning machinery, there are three features to be considered: First, efficiency at the cleaning point (80 cu. feet of air displaced per minute while maintaining one inch of vacuum, within the orifice of the tool on the floor); second, cost of installation complete; and third, simplicity of construction and consequent freedom from mechanical trouble, requiring expert attention.

Having these points well fixed in one's mind, a true comparison must then be drawn, between portable and stationary systems, bearing in mind not only the difference in original cost, which is decidedly in favor of the portable type, but also, the efficiency, long life, and lack of care and upkeep, which is decidedly in favor of a rightly chosen stationary type.

A stationary vacuum cleaning system is an investment, that properly chosen pays better dividends to the home owner or building owner, than any other feature that enters into the construction of the home or building, dividends that are paid daily, in removing all dust and dirt, germs, etc., with the least effort, and thus lightening the load of the busy housewife, where the home is under consideration, or reducing the pay roll and annual bills for redecoration and upkeep, in the case of the public building or apartment house.

Washington's Survey Gets Government Indorsement

GOVERNMENT surveyors, who have just been checking up some of the lines reputed to have been run by George Washington in his days of chain and compass work, have found them good.

About 1751, according to tradition, George Washington, then 19 years old, ran out for Lord Thomas Fairfax the line between what was then to be Augusta and Frederick counties, Virginia, this being only a part of a great deal of surveying which he is said to have been engaged upon at that time. These two counties were separated from what was then Orange county, and the grant to Lord Fairfax was supposed to extend westward to the Pacific ocean. Subsequently these large tracts were further subdivided, so that the "Fairfax line," as it is generally known, runs now between Rockingham and Shenandoah counties, with the original Augusta and Frederick counties to the south and north respectively.

In the organic act for the formation of the two counties, or "parishes" as they were then called, it was required that the line should be a straight one from the head spring of Hedgman river, one of the sources of the Rappahannock, to the head spring of the Potomac.

Since it was required that the line should be straight, it was first necessary to get the approximate course by building large bonfires on the intervening high points. Then starting from the top of the Massanutten mountains, the line was run straight away over intervening mountains and rivers toward the northwest.

The Fairfax Stone

Away off across a part of what is now West Virginia there is a large rock known today as the Fairfax Stone. It is the monument which marks the southwest corner of Garret county, Maryland, the southeast corner of Preston county, West Virginia, and prominent points in the boundaries of two other West Virginia counties. A line from Orange court house, coinciding with the Shenandoah and Rockingham county line, passes through this Fairfax Stone, which gives the name to a nearby station, Fairfax, on the Western Maryland Railroad. It has been assumed that, in running this line, a high peak northwest of Orange court house was the starting point, and that from here it was possible to see a distant peak in the north mountain range over the top of the intervening Massanutten mountains.

Washington, of course, used a simple compass, and his line could not be expected to check absolutely with that obtained by the government surveyors who have retraced his survey, using high-power transits and all the refined and accurate methods which modern instruments allow. Nevertheless, the line was run so carefully in the first place that but little variation has been found in it. Even without instruments it is possible to distinguish the course of the line with surprising distinctness. From the top of Middle mountain in the Massanutten range, the Shenandoah-Rockingham, or Fairfax, line, can be readily followed by means of the boundary fences dating from earliest days, and by the blocks of timber, alternately cleared away or left standing, which come up from either county and stop at the line, like squares in a checkerboard. Then if one turns to the southeast the same demarkations are plain across the valley of the south fork of the Shenandoah, cutting straight through the present Page county, which is made of land formerly in Shenandoah county, belonging to the Fairfax grant, and partly from land formerly in Rockingham. Thus, as far as the eye can see in either direction, this old line shows plainly.

The Washington compass, now to be seen at the U. S. National Museum in the city named for its owner, is presumed to be the same one used in running this line more than 160 years ago.

Washington's Survey Marks

The Fairfax Stone stands as a permanent monument. In addition, there are, throughout that section of the country, various other records of these Washington surveys. For example, a large white oak which stands at the corner of a farm about one and one-half miles from Lost City, Hardy county, West Virginia, was, according to a persistent story of that section of the country, marked by Washington.

Survey blazes cut into trees, and since grown over, have been cut away, and a count of the annual layers of growth over the old wounds shows them to have been made at the time Washington was surveying. One strange thing about these blazes is that they are several feet higher than those put on trees by woodsmen of today. This fact has given rise to a sort of superstition that Washington, known to have been very tall, was actually a giant. Other authorities have said that Washington did much of his work on horseback, and made his blazes with a long-handled ax from the saddle.

The town of Whitepost, Clarke county, Virginia, takes its name from a post presumed to have been set by Washington as one of his survey marks. The post, formerly exposed, is now covered by a protecting case which shelters it from the weather and from the despoiling hand of the vandal tourist.

Why the Line Is Retraced

The reason that this old Washington survey line is being retraced is because the federal government is purchasing lands in this neighborhood, in connection with the new Appalachian forests which are being acquired at the headwaters of navigable streams, under the terms of the Weeks law, designed to protect these watersheds from the evils of deforestation. The government requires a clear title before the land can be paid for. In making sure of the titles it is necessary, in many cases, to go back to original royal grants, or to colonial records, and to have recourse to resurveys before the facts of ownership can be indisputably established.

* * *

The Perfect Specification

THAT there is a lawsuit in every building contract (at the pleasure of the parties concerned) is an accepted axiom; hence, the contract is a document that is usually drawn up with considerable care and legal minds are not infrequently requisitioned in its preparation. When it comes to the specification, however, laxity is more honored in the observance than in the breach. The classes are strung together one below the other, with but little regard to what has gone before or what is to follow. Repetition and tautology become wearisone, while an infinity of unnecessary detail prolongs the length of the document beyond the bounds of necessity. The fact is only too often overlooked that the specification is as much a legal document as the contract; indeed it forms, with the plans—and for the matter of that with the correspondence that ensues—a part of the contract, and the two must stand or fall together. Specification writing must be regarded as an important branch of the work of the engineer and the architect, and it is difficult to understand how the lamely-worded, halting, ungrammatical documents that one only too often sees can come from the pens of men whose calling presupposes the receipt of a fairly advanced education.

Clearness, brevity and consistency are the three things to aim at in writing a specification. Lengthy sentences of necessity become involved, and the snappiness of modern journalism may be followed with advantage. Reiteration of descriptions of similar work and materials does not, as is commonly thought, add strength to the document; and, too, there is ever the danger of dissimilar clauses on similar matters creeping in, to the confusion of all parties concerned. Tautology is to be avoided if possible, but true literary excellence is not to be attained and an expressive word or phrase had better be used over and over again if to ring the changes on it would mean any danger of confusion of ideas. A general clause to the effect that everything shall be done in the best and most workmanlike manner will save an infinity of that needless description of working processes which, to use the words of an authority on the subject, is often carried "to the verge of absurdity." Words such as "proper" and "sufficient" have practically no meaning at all, and the writer should avoid them by stating clearly and concisely what is proper and sufficient. Small detail sketches may be introduced in the margin with advantage, not necessarily as saving description but as helping to elucidate it; but even these may be overdone and "carried to the verge of absurdity" unless the writer places due restraint upon himself. "The description in specifications of workmanship and material of the highest class in positions which any practical builder knows to be unreasonable and unlikely to be insisted on," says the authority already quoted, "leads to a general system of discounting the written requirements by the experienced estimator, who tenders accordingly, and at a much lower rate than his deluded competitors, who weakly suppose that the specification means what it says." To sum the matter up: If the specification drafter clearly understands what he is writing about, says exactly what he means and not a word more, clearness, brevity and consistency will have been attained.

Many books have been published giving complete specifications or specimen specification clauses for both building and engineering works. Used with judgment such books may prove of the greatest service; but there is ever the danger of irresponsible consultation and the extraction of clauses which may, when strung together and read as a single document, have all the bad features that have been referred to above. Stock clauses to fit the requirements of every class of work cannot be drafted, and the architect or engineer who dabbles in such things may court serious trouble with his clients. Every clause must have precision of application, for incertitude is fatal. The wide tendering of which so much is heard is due largely to the atmosphere of uncertainty which attaches to many specifications. Two men may read a badly framed clause in two different ways, three men in three different ways. Make the specifications positive, avoid the "or equal" as far as possible, for who is to be the judge of the quality of the "equal to" article?

* * *

Couldn't See the Smile

Mr. Jones had recently become the father of twins. The minister stopped him on the street to congratulate him.

"Well, Jones," he said, "I hear that the Lord has smiled on you."

"Smiled on me?" repeated Jones. "He laughed out loud."—Ohio Farmer.

CLASSIC COLUMNS, IDAHO STATE CAPITOL BUILDING
BUILT OF BOISE SANDSTONE

Suggestions for a Small, Fireproof Garage

By DR. LEONARD KEENE HIRSHBERG, A. B., M. A., M. D. (Johns Hopkins).

TO KEEP an automobile safely and in the most efficient order and to preserve its appearance there should be provided a permanent, fireproof garage. Concrete is a suitable material for this purpose, making a building warm in winter and cool in summer, and its fireproof qualities are self-evident. The garage should not be planned of too small dimensions. It is desirable to provide space for a work bench fitted with a good machinist's vise and rack for tools, and allowance made for room to store oil, gasoline, extra tires, and other supplies. For a single car a size of eighteen feet long by fourteen feet wide by nine feet high, inside measurements, will be found ample.

The foundations for a little garage of this type should be twelve inches wide by three feet deep and should extend five inches above ground level to provide for a concrete floor of this thickness. The concrete for the foundation should be made in the proportion of one part of cement to two and one-half parts sand to five parts screened gravel or crushed rock. Upon the foundations the six-inch wall will be placed, made in the proportion of one to two to four. The walls should be reinforced with three-eighth of an inch round steel rods, spaced fourteen inches apart, and running both horizontally and vertically. The forms for the walls can be built the full height, or movable forms of a height of about three feet can be used. Forms are made of one-inch siding, well supported by lumber to prevent bulging when concrete is placed. The movable forms are filled and raised each day until the entire nine feet is completed. In order that the car can be easily run in and out of the garage it is well to leave the entire entrance side open and fitted with large swinging doors. In the sides of the doorway imbed bolts with heads in the concrete. These bolts will be used later for fastening the wooden door jamb, which carries the hinges for the doors. Provide a good-sized window in each of the three walls, so that there will be plenty of light on the car when it is to be repaired or washed.

The concrete floor, five inches thick, rests directly on the ground. It should be of the same proportions as the foundations. The ground should be scraped and well rolled or tamped to secure a good foundation for the floor, which is laid after the walls are finished. Where the car will stand the floor should be sloped to a drain at the centre to carry off the water used in washing. If running water is obtainable the pipes should be laid before the foundation and floor are started. It is a good plan to provide for an underground gasoline storage tank with a pump extending up through the concrete floor.

The roof can be made either peaked or flat. The flat form is much easier for the average person to build. Such a roof should be constructed with a slope of about four inches toward the back of the building to drain off water. Make the roof six inches thick of one to two to four concrete, and reinforced with three-eighths of an inch round steel rods spaced five inches apart for the short lengths and nine inches for the long lengths. These rods are located one inch from the bottom of the roof. Where the rods cross wire them together to prevent shifting when the concrete is placed. Over the doorway, where there is no wall to support the roof, the weight is carried by a concrete beam 5 inches wide by 14 inches deep, including the thickness of the roof. Both beam and roof are built at the same time. Two inches from the bottom of the beam place two one-half-inch square twisted steel rods. The form for the roof consists of a flat platform of one-inch boards on joists supported by upright studding. Be sure that the forms are strongly made and well supported, so as to safely hold the weight of the wet material. This form should remain in place for a week or two after it has been placed.

Make provision through the roof for a chimney or sheet-iron smoke pipe for a small coal or gas stove. The garage should be heated in winter to prevent freezing of the water in the cylinders and radiator of the car. For a garage of the size given there will be required thirty-eight and one-half barrels of cement, twelve cubic yards sand, and twenty-four cubic yards stone or gravel.

* * *

World's Heaviest Office Building

THE Equitable building, now under construction in New York City, from its great area presents an interesting problem in heavy erection. It will be the heaviest office building in the world when finished. The steel erection was made especially difficult by extensive cross-lot timber bracing, which holds the basement retaining wall until sufficient steelwork has been installed to take the load. It was necessary to set the derricks and with them erect the steelwork for the three stories below ground, all without damage to the cross-lot bracing.

The new building will be about 160 x 312 feet in plan and about 500 feet above the street and 65 feet below at lowest point. It is considered a 36-story building, but there will be intermediate floors at the third and thirty-fourth-floor levels, making thirty-eight floor levels.

The elevators, stairways, lavatories, smoke-stack, etc., will be placed in the center or core of the building. All offices will have an exterior exposure.

The steelwork was erected to the second floor by six steel guy derricks, with 76-foot masts and 65-foot booms. The heaviest column weighed 32 tons. Above the second floor the heaviest piece to be handled weighs about 16 tons, and 15-ton derricks with 90-foot masts and 85-foot booms replaced the original six. The longer reach of these lighter derricks rendered them much more useful in handling material from the street.

After the steelwork west of wall columns 7 and 125 was erected, derricks proceeded to erect the basement steelwork eastward, moving forward along the basement steel, erecting steelwork ahead, similar to the moving of a traveler. In this way, liability of accident to the cross-lot bracing was reduced, and the expense of building bents for supporting the derricks was eliminated.

The total steel aggregates 33,000 tons. It is shipped to Greenville, N. J., lightered over to New York City in the vicinity of the Battery, and trucked to the job. Each derrick handles the steel from the street for its particular section. —Engineering News.

* * *

Cracking in Concrete Roads

PROBABLY more criticism of concrete pavements is centered on the cracks which occur than upon any other features of this kind of construction. A. N. Johnson, state highway engineer of Illinois, in a paper before the American Road Congress attributed the formation of cracks to unequal settlements of the subgrade, supplemented by external stress due to the passage of heavy traffic or to the movement of the slab under temperature changes. In commenting upon this, Henry S. Spackman refers to experiments conducted by him which showed that when concrete is mixed as wet as it generally is in modern road work it shrinks during the first twenty-four hours and then expands during the next three or four months, the shrinkage being undoubtedly due to a draining out of the water and the expansion to the continuation of the chemical action, which continues for months and even for years in a continually lessening degree. In view of this shrinking which begins almost as soon as the concrete is laid, it seemed impossible to prevent the cracking of the pavements unless the exudation could be prevented. Mr. Spackman has experimented

CONCRETE AND RUSTIC HOME, BERKELEY, CALIFORNIA
Hughson & Donnolly, Builders

with the addition of hydrated lime for this purpose, and compared 18 test pieces to which hydrated lime had been added to the extent of 10 per cent. of the amount of cement in some instances and 20 per cent. in others, and 9 test pieces containing no lime. During the first twenty-four hours the average contraction for those containing hydrated lime was .007 per cent., as against .015 per cent. for the pieces containing no hydrated lime. At his suggestion also the Office of Public Roads laid a short stretch of road at Chevy Chase, Washington, D. C., using hydrated lime, and another was laid near Salisbury, Md. These experiments all lead him to believe that the addition of 10 to 15 per cent. of hydrated lime will be found beneficial not only in reducing cracks, but also in eliminating the formation of holes and soft spots. Such addition, he says, not only causes the mortar to hold the water, but the more plastic and viscous mortar eliminates the segregation of the cement from the sand and secures a more homogeneous mixture, lessening the liability of pockets of material deficient in cement.

* * *

Women's Athletic Club Building

Architects Righetti & Headman, of San Francisco, are preparing plans for a women's club building to be erected on Sutter street, between Mason and Taylor, in San Francisco, for the Women's Athletic Club, which has a charter membership of one thousand. The building is to be four stories high with steel frame, reinforced concrete walls and pressed brick and terra cotta exterior. It will have the same equipment found in the best athletic clubs of the country, including a salt water swimming pool, Turkish baths, gymnasium, tennis and handball courts, library, reading room, assembly hall, etc. Among those active in the club is Mrs. James Ellis Tucker, of 2030 Broadway. The estimated cost of the building is $250,000.

THE NEW SANTA FE PASSENGER STATION, SAN DIEGO, CALIFORNIA
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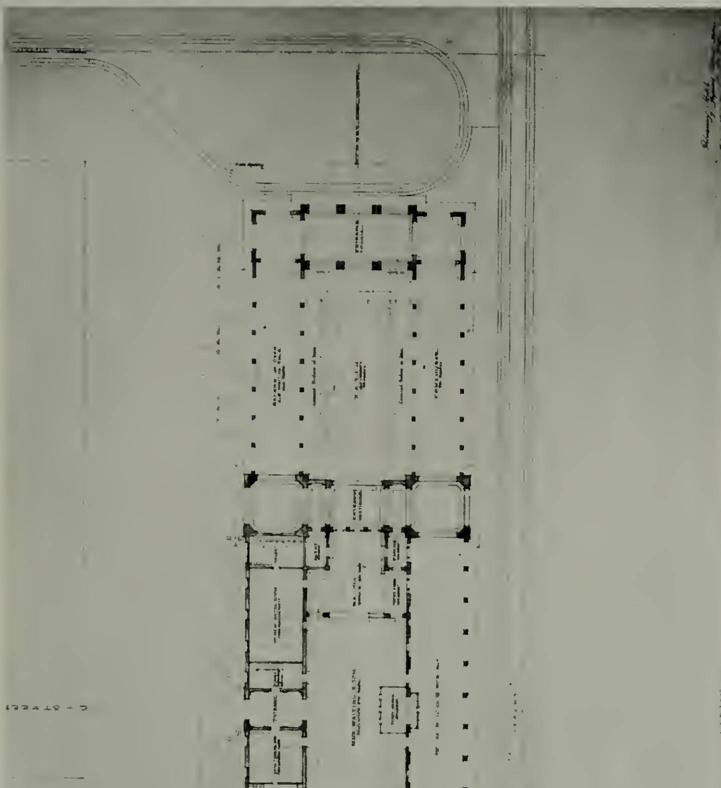

FLOOR PLAN, SANTA FE PASSENGER STATION, SAN DIEGO, CALIFORNIA
BAKEWELL & BROWN, ARCHITECTS

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QUANTITY SYSTEM INSURES RELIABLE ESTIMATING

We often hear contractors complain that architects' plans and specifications are contradictory, ambiguous, incomplete, and a number of others things. The architect is blamed, even by those of his own profession. To this cause is attributed many of the evils from which the building industry suffers. Few persons, however, admitting that some of this is true, ever stop to consider the reason why such conditions exist. We are inclined to think it very seldom arises from downright professional incompetence. Some of it comes, probably, through negligence, some through accepting work at a fee which makes it unprofitable for the architect to go to the trouble of making proper contract documents. The owners, of course, suffer for this, but it would be a farce to extend to them the least sympathy. They may have sought to get their work done at a low fee, too low for their own good, or for the good of anyone concerned. Most of these alleged defects arise through the undue speed which so many owners seem to insist upon.

Now an estimate of the cost of a building cannot be accurate without accurate quantities. That much must be admitted. Accurate quantities on the other hand cannot be prepared from inaccurate or doubtful plans and specifications. It stands to reason, therefore, that among the many advantages which the quantity system has over our present practices, the greatest perhaps are the great saving of time, greater accuracy in figuring, and last, but by no means least, the undeniable fact that the drawings and specifications must be complete and entirely free from the before mentioned alleged objections. No competent professional quantity surveyor would risk his reputation and his living, by winking at or overlooking incompleteness and uncertainty such as contractors often have to contend with now, when figuring. With plans, specifications and details as perfect as the human brain can make them, many, if not all the pernicious conditions existing now, will disappear.

ARCHITECTS FROM THE OWNER'S VIEWPOINT

Discussing the employment of an architect by the unsophisticated owner the Improvement Bulletin of Minneapolis says:

In a recent conversation with a man who has spent a very large sum on one modern downtown building, of much detail, he asked us to try to realize the position of an investor, trying to choose an architect, after deciding to erect a structure of high cost.

"Imagine," he said, "a man who is not acquainted by experience or otherwise with any architect. He has reached the point where he needs one, and is to spend through his guidance, from $600,000, $800,000, or $1,000,000. How is this investor to find which architect he would better engage? He wants the man who knows best how to build say, a theater, or hotel, or office building. He wants the man of the best character so that there will be no needless waste of money. He wants the man equipped with the most complete knowledge of practical details. Such a man knows what he is about in avoiding blunders and watching the construction. There is where the shoe pinches. The strong man on the stern facts of the building is the man the large investor wants. Then, of course, he wants a good design, an attractive exterior. Which way shall the owner, seeking such an architect for a big structure, turn? How shall he select?"

These are leading, pointed questions. They reveal the other side, to the architect and builder. Each side has its rights. Naturally the architect who has built a number of theaters in a satisfactory manner, is entitled to more consideration than the architect who has never designed a play-house. The investor should either find out the architect of experience, who can point to work of this character and refer to the owners, or he should choose the architect who has proved his ability and established the fact that he has practical knowledge, general equipment and good character. A prospective investor should have no difficulty getting in touch with such a man. If it's a theater, a hotel, an office building, or even a residence, the thing to do is to seek the acquaintance of an owner and get his advice. If the architect has proved his competency, the owner will not hesitate to praise him, but if, on the other hand, the owner is displeased, he will probably say so and the prospective builder will, if he is wise, act accordingly. It is the same in the architectural profession as in many other lines of business, a man's work is his best advertisement, and one good job will lead to another. There is an architect in San Francisco who has been able to trace no less than a dozen commissions for country bank buildings from one job. This one he did so well that the banker seems never to tire of praising the man who designed it. Next to turning out a good plan an architect's strongest asset is his ability to keep the cost inside his estimate. That's what pleases the owner and makes him your friend and booster forever after.

PASSING OF THE CHURCH STEEPLE

The dwarfing of steeples in city churches by surrounding buildings,—Trinity in New York City offering a good example, and the insistence on the part of building departments that they be made safe beyond all question is said to have had much to do with their omission in many recent designs of ecclesiastical structures. This is noticeable in San Francisco, where many of the new churches are entirely without steeples or towers. We might mention the Christian Science, Episcopal and new Congregational edifices.

In the earlier days when society was of a less peaceful nature than at present, the church steeple was considered to be a necessity. In times of peace it enabled the traveler to determine from afar the location of villages and in turbulent periods it served as a tower from which to scan the surrounding country and detect an approaching foe.

While the steeple or tower may be losing its popularity in ecclesiastical designs, it has every evidence of coming into increased favor for municipal and county buildings. The bell and clock are two features which no discerning architect will overlook.

With the Architects and Engineers

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Fillmore Street Building

Architect William Mooser, of San Francisco, has recently let contracts for a store and apartment building to be erected on Fillmore street, near Filbert, for Mr. Frederickson. Mr. Mooser is busy on plans for two buildings to be erected in the apartment and hotel section and which will represent an outlay of approximately $60,000.

San Francisco Society of Architects

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Work in Offices of San Francisco Architects

Architects Charles Paff & Co. have an addition to the Class C building on Stevenson street, west of Fifth, for Joseph Shoong.

Architect Ralph W. Hart has let a contract for the erection of a $20,000 residence at Hyde and Francisco streets for Dr. F. Dudley Tait.

Architect Charles Peter Weeks is completing working drawings for a handsome marine view home for Miss Mary Phelan, sister of Former Mayor Phelan. The house will cost more than $100,000.

Architects Rousseau & Rousseau have plans for a four-story reinforced concrete apartment house to be erected on O'Farrell street for Messrs. Green & Hallen. The estimated cost is $35,000.

Architects Ward and Blohme have completed plans for the Netherlands building, to be erected on the grounds of the Panama-Pacific Exposition at a probable cost of $70,000.

Architect Smith O'Brien has let a contract to the Clinton Fireproofing Company to build a fireproof steel, concrete and brick novitiate at Los Gatos. The entire work will cost close to $100,000.

Architect C. E. Gottschalk has prepared plans for a two-story Class C store and office building to be erected on Sutter street, east of Powell, for Jas. D. Phelan; also an apartment house to be built near the Fair grounds, and a residence in Northbrae, Berkeley, for W. J. Joost.

Architect Wants His Fee

Complaint has been made to the Oakland city council by C. W. Dickey, architect, and W. T. Veitch, contractor, employed under authorization from the city council over a year ago to give an expert opinion as to whether a certain patented system of flat slab construction should be permitted in Oakland. Dickey and Veitch have been making unavailable efforts ever since to collect $200 each for their services. The matter was referred to the city attorney.

Architects Do Cross the Alleghenys Going East

From the Improvement Bulletin

"Do architects of taste cross the Alleghenys?" asks the San Francisco Architect and Engineer. Yes, they do—going east. Cass Gilbert, for instance, who went from St. Paul to New York and showed the people there the last word in tall building architecture. D. H. Burnham remained a resident of Chicago and produced a White City, a revelation of architectural beauty which brought millions over the Allegheny mountains, westward, to see what the east had never equaled. Mr. Burnham frequently crossed the Alleghenys, going east and returned west, satisfied to remain there. Some months ago the Improvement Bulletin reprinted from the Architect & Engineer a number of illustrations showing the beauty and originality of architecture in the far west, and particularly near the Golden Gate. The best taste comes from inborn graceful feeling, from talent; and that talent may appear anywhere. The west may send east another Gilbert and it may furnish another Burnham his great opportunity. Architects of taste will flock across the Alleghenys whenever the coupon-clippers cease to affect the east and appear in large numbers to the westward.

Optimistic in California

E. O. McCormick, vice-president of the Southern Pacific Company, returned from the East the other day and gave a very optimistic estimate of the outlook for California and the Coast generally. In part he said:

> The most significant evidence of approaching prosperity on the Coast is the marked proportionate increase in carload shipments of freight as compared with less than carloads. This shows that Western merchants are confident enough of a good market for the coming year to lay in a large quantity of merchandise. Undoubtedly the prospects for big crops as a result of ample rainfall are the fundamental causes. I am told that the 1914 crops in California will be the best for many years. The westward passenger movement promises to be large this fall on account of exhibitors and others who are coming out here to prepare displays at the exposition. There is also indication of a heavy colonist and homeseekers' movement westward during the autumn months.

Washington Memorial Award

The jury of award of the George Washington Memorial Association has given first honors to the architectural firm of Tracy & Swartwout, 244 Fifth avenue, New York. The judges were Philip Sawyer, Charles A. Plant and Walter Cook. The selected drawings will now be presented to the national commission of fine arts and, with their approval, the association will give the architects charge of the construction of the building.

Tracy & Swartwout's drawings depict a fine colonial building with pillared front, and square ground plan. The main feature is the great auditorium seating 6,000 people, which is artistically arranged in the form of an ellipse, with the stage at one end and a deep balcony encircling the whole. The site of the building is to be in that part of the Washington mall known as Armory square.

The competing architectural firms were: Warren & Wetmore, with Richard A. Walker, associated, New York; McKim, Mead & White, New York; Tracy & Swartwout, New York; John Russell Pope, New York; Electus D. Litchfield, New York; Allen & Collens, Boston; Peabody & Stearns, Boston; John Galen Howard, San Francisco, Eames & Young, St. Louis; Parker, Thomas & Rice, Boston and Baltimore; Hornblower & Marshall, Washington; Paul Cret, Philadelphia; Howard Van Doren Shaw, Chicago.

Honor for Portland Man.

The judges to consider the competition for the Technology Traveling Fellowship for 1914 have awarded the scholarship to Louis Conrad Rosenberg of Portland, Oregon, with special mention to G. I. Edgerton of Cambridge. There were five competitors in all, the subject being the design of an American Embassy in Rome.

The design was deliberately chosen because of the crying need of the establishment and ownership of suitable embassies in the great capitals of Europe. American ambassadors are obliged to occupy houses that they may find for rent. Unlike Great Britain, France, Spain, etc., this country does not own regular buildings for ambassadorial service.

The jury of award consisted of Stephen Codman, of the firm of Codman & Despradelle; Professor J. S. Humphreys, of the Harvard School of Architecture; A. H. Cox, of Putnam & Cox; C. G. Loring, of Loring & Leland, together with Professors LeMonnier and Williams and Mr. Everett, of the Technology Department of Architecture.

The award is one offered by the Institute itself and amounts to one thousand dollars. The student goes to Europe and travels and works according to a pre-arranged itinerary and in a manner laid out by the Institute faculty, with frequent reports.

Mr. Gilbert Says Tall Buildings Are Uneconomic

Architect Cass Gilbert's declaration some months ago through a newspaper interview in London that the 100-story building was a possibility and would probably be a reality in the not very distant future was considered so sensational that his discussion with the newspaper men was sent broadcast all over the world, and his views were regarded as visionary by many. Mr. Gilbert does not like to talk about the 100-story building, in fact, he considers the skyscraper uneconomic and contrary to natural civic development.

"I do not wish to be the advocate of excessively tall buildings," said Mr. Gilbert in an interview while in California recently. "While the building of one hundred stories or even more is possible, I do not think it desirable for a number of reasons.

"In America I think that we have gone to an extreme in the height of our buildings. There are exceptional cases, as in New York, where the excessively high value of land makes tall buildings necessary, but on general principles I am opposed to them.

"Excessively tall buildings are a disadvantage because they are likely to produce congestion of traffic on the streets. When the occupants of a 100-story office building come forth at the close of the day's work, streets in the vicinity would inevitably be crowded.

"The excessively high building draws business from other properties to the general disadvantage of the city. Economic conditions are better in Paris, for instance, where the buildings are all under twelve stories.

"London, with a population of between 6,000,000 and 7,000,000, has managed to transact business in buildings of moderate height, and London is the great financial and commercial center of the world."

Winner of Landscape Plan

The prize of $5,000 offered for the best design for street plans of the Canal Subdivision in Richmond, California, has been awarded to Arthur C. Comey, landscape architect, of Cambridge, Mass. Comey was one of the 146 competitors in the contest, in which $10,000 was offered in prizes.

Second prizes of $1,000 each, were awarded to Taggart Aston, civil engineer, San Francisco; Leopold Wuth, assistant surveyor of Alameda county, Oakland; W. S. Farley, Stege, Cal.; Phillip W. Foster, landscape architect, Cambridge; Latham A. de Mille, Jr., Indianapolis.

Honorable mention was given the plans of the following: J. H. Weatherford, Memphis, Tenn.; Woollett Woollett, San Francisco; A. H. Payne, Memphis, Tenn.; H. J. Bernier, Oakland; J. F. Beaman, San Rafael; A. R. Walker and John T. Vawter, Los Angeles; F. C. Innes, Sheridan, Placer county, and R. H. Debell, Portland, Ore.

Lumbermen's Building at Panama Exposition

The project for the Lumbermen's building and House of Hoo-Hoo at the Panama-Pacific International Exposition has assumed definite shape and the structure will be erected by the lumber interests of the Pacific Coast. The building will be a unique one-story affair covering a large area and surrounded by attractive gardens. It has been designed by Architect Bernard R. Maybeck, of San Francisco.

Los Angeles Has New Reinforced Concrete Building Ordinance

The new reinforced concrete section of the Los Angeles building ordinance has been adopted by the city council of that city and signed by the mayor. It will go into effect on July 1st. This is the first comprehensive division of the proposed new ordinance to be finished by the revision commission, which has, however, from time to time made recommendations regarding special cases or individual sections that have been incorporated in the working building laws as amendments. The new section repeals several sections of the present ordinance and amplifies the subject of reinforced concrete construction in a way that has hitherto not been covered by specific requirements.

The new ordinance again requires that plans and specifications shall bear the signature of a licensed architect, omitting recognition of the structural engineer in this respect.

It also requires that the architect, owner, builder, or other person in charge of the construction shall employ a duly qualified and competent inspector on the work who must report both to his employer and the board of public works any violation of the ordinance or from the plans and specifications, and in the event of failure to so report shall be punishable by a fine of not more than $500 or imprisonment in the city jail for not more than six months, or both fine and imprisonment.

The ordinance also goes thoroughly into tests of cement and steel, proportioning and mixing of concrete, stresses, design, forms and tests of the finished building.

Knights of Columbus Building

San Mateo Council, Knights of Columbus, has completed plans for a splendid structure to be built on the northeast corner of Griffith and Baldwin avenues. The estimated cost of the building is $50,000 and Will D. Shea of 244 Kearny street, San Francisco, has drawn the plans, which have just been accepted. The Knights of Columbus recently incorporated and purchased the ground for the building in San Mateo.

The building will cover a considerable ground area and will be devoted entirely to the use of the organization. The interior has been arranged for a large auditorium, gymnasium, handball court, swimming pool, bowling alley and clubrooms.

Booklet on School Architecture Issued

"School Architecture in California" is the title of a new and handsome booklet just issued by State Printer Richardson. It is intended to help the school trustees of the State in building and improving their school houses.

It was compiled under the direction of State Superintendent Hyatt, by a committee of architects, viz.: Lewis P. Hobart, Charles S. Kaiser, J. W. Woollett, J. J. Donovan and C. H. Cheney. It contains 64 pages, includes 77 cuts, and has a cover designed by the State architect's office, showing a typical one-story California schoolhouse, with red roof and wide sheltering porches, against a brilliant sunset sky

The object of the bulletin is to show in graphic form some excellent examples of the different types of school buildings that are being constructed today in California, so as to build up in the minds of the people a distinct ideal of what modern schoolhouses ought to be. The tendency is toward better conditions for the boys and girls and finer landscapes for the Golden State.

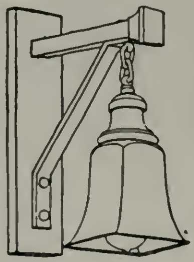
Early Reinforced Concrete Construction

The work of demolishing the old power house at the corner of Seventh street and Grand avenue in Los Angeles is being observed by architects and engineers of that city as in this building is to be found the first plain and reinforced concrete used for structural purposes in Los Angeles. Theo. A. Eisen was the architect and the building was erected under his supervision in 1887. The heavy masonry was required as a foundation for the power machinery used to operate the cable road and by the original intention of adding two stories to the building at a later date, the upper stories to be used for an auditorium. The railway system was sold to a Chicago syndicate and the project of adding to the building was abandoned.

Personal

Architect A. F. Rosenheim, of Los Angeles, has submitted a proposition to the Los Angeles board of education to design and supervise the construction of all the school buildings to be erected under the recent bond issue, establishing a special office and architectural department for this work, for a lump sum of $75 000, based on the assumption that there will be $3,000,000 worth of new construction work.

The city of San Diego has engaged P. E. Harroun, hydraulic engineer of San Francisco, to fix a valuation on the properties of the Volcan Land and Water Co., offered to the city of San Diego for $2,500 000. His fee will be $5000 and he will be allowed $1500 for expenses.



Heating and Lighting

Plumbing and Electrical Work

The Lighting of our Homes

By J. C. HOBRECHT *

THE lighting of our home is the one phase of the lighting question where thought and energy expended in improving conditions will, perhaps, be of more real benefit to humanity than any other of the many problems confronting the illuminating engineer.

Many of the ills that human eyes are heir to, can no doubt be traced directly to the faulty illumination of the home. Perhaps in the very first moments that baby eyes are allowed to look upon some of our modern light sources the trouble is begun, to be aggravated later through bad illumination of study or play rooms, the family living rooms, or in fact most any or everywhere from cradle to grave. Faulty illumination enough is encountered to wreck all but the strongest eyes, and if we observe the number of even very young children wearing glasses, we, in the lighting business might ask ourselves whether we are guilty of some of this misery.

I think we will agree that at least a majority of homes are incorrectly lighted and many are simply atrocious. This statement holds true both from the artistic as well as the hygienic viewpoint.

The question then arises, who is responsible for this condition of affairs, and what is the remedy.

When we find a house that is poorly built, having seams and cracks, letting in the rain and weather, with poor ventilation, inconvenient arrangement of rooms, unsanitary plumbing, and an awkward, unsymmetrical exterior, on whom do we place the blame? Without hesitation, we blame the architect.

If a client should come to any reputable architect and ask him to design a house having all the faults just referred to, would he give the client what he asked for or would he refuse to build a house which violated all the principles of art and hygiene? I think the answer is obvious, yet the writer once asked the manager of a large lighting fixture house, why he placed on the market a certain fixture which was both horribly ugly and hopelessly inefficient, and listen to the answer he gave, "It sells." Does he not put himself exactly in the position of the architect who would knowingly and willingly design a house that would be an eye-sore, uncomfortable, and a menace to the health of its occupants.

Anyone who will but give the lighting question a little study will see that those responsible for the creation of much of the lighting equipment of our houses are guilty of that very thing every day, and then they try to place the blame upon the unsuspecting layman who of course does not and cannot be expected to know better.

We can thank the Illuminating Engineering Society for the great work it is doing to remedy this condition, but much remains to be done. To educate the general public directly would of course be attacking the problem from the wrong end, but those interested in the industry and making their living out of it, should, at least, study and be familiar with the principles of "good lighting," if not from a humanitarian or æsthetic viewpoint, then at least with a mercenary one, as it has been demonstrated time and again in many lines that the public is willing to pay for better things and will spend money freely for comfort and service, while the price of a mediocre article is usually paid grudgingly.

There is so much to be said upon this question that it will be impossible in an article of this kind to go deeply into detail. I will, however, enumerate a few of the faults commonly found in residence lighting with the hope to soon be able to give a more specific paper with more concrete examples and suggestions.

A short time ago the writer was in the drawing room of a very wealthy family. The room was most elegantly furnished. The work of an expert decorator was plainly visible in the hangings, wall coverings, pictures, and all the general furnishings but, Oh! the poor unfortunate lighting fixtures. They were about as much in harmony with their surroundings as the proverbial pig in the parlor. A ceiling fixture, a terrible example of the "Mission Craze" of a few years ago, was resplendent in a dressing of French Crys-

* Journal of Electricity, Power & Gas.

tals and its bare tungsten lamps literally burned the eyes out of you, unless you shut them or kept your face to the wall. The writer tried the latter, as there, at least, he found brackets which in other surroundings he could have much admired, as they were really beautiful examples of the Louis XIV period, and the light of the low candle power carbon lamps was, at least, bearable, even if adding but little to the illumination of the room. This was evidently a case where the owner got what he selected, but what should we think of the man who sold it to him. The fixture salesman is often blamed for paying too much attention to the artistic and neglecting the practical side of the question, but in this case the salesman must have been devoid of any semblance of artistic feeling as well as brains.

Another example just the opposite. A dining room with dark tapestry walls and dark woodwork. An indirect fixture, made of composition of rather pleasing design, but hung much too low, throwing its light on an almost white ceiling, leaving the table dark in comparison and giving one rather the impression of being down in a well.

How easily in both of these cases might the lighting have been made a happy addition both to the artistic effect as well as adding to the comfortable occupancy of these rooms and, no doubt, the owners would have gladly accepted suggestions had they only received them. With a little study and thought on the part of the salesman, he could have made these rooms not only a joy to the owner but also a credit and a satisfaction to himself and would possibly have brought more business to himself or his house in the future.

A doctor may prescribe good pills but if the druggist mixes in the wrong drugs, he will most likely do harm.

The illuminating engineer and the clever designer may work out many correct combinations of "good lighting" and "good taste," but if the fixtureman persists in handing the public the wrong thing, he injures not only the patient but himself and the whole industry as well. Here might be a good chance for that overworked but little heeded word "Co-operation."

Grant Gravel Company Moves.

The Grant Gravel Company which has been located in the Williams building at Third and Mission Streets, San Francisco for several years has removed to more commodious quarters in the Flatiron building at Market, Sutter and Sansome streets, Havens & Toepke, Architects. This Company is one of the most successful in its line in California and in order to keep up with the steady growth of business, is adding extensive new equipment in screens and conveyors which will materially increase the capacity for delivering high grade concrete gravel as well as road, roofing and topping gravel.

Plumbing at Its Best

NO ADVANCE in modern house building is more interesting or significant than progress in design of modern plumbing and plumbing fixtures. Indeed, one might almost say that no other part of the house equipment has been developed to such a high point, for, in truth, latest types of plumbing apparatus are wonderfully effective in operation—well-designed, well-made pieces of household machinery acting to a large extent automatically.

There are two important points to seek when selecting plumbing goods: simplicity and durability. Other points should be considered, of course, but goods of simple parts made from honest materials are the only kind to buy and all other considerations should give way to these more vital ones.

Improvements in modern sanitation have been largely brought about by manufacturers, themselves, eagerly investigating new ideas in sanitation and bringing out apparatus to meet the requirements of most advanced thinkers. Plumbing fixtures in the old days were at best crude and ineffective makeshifts compared with modern plumbing fixtures. No matter how expensive an old-time house may have been, the simplest and most modest cottage today is far better equipped with plumbing apparatus. This is well known by countless owners of old houses who have overhauled the plumbing, causing it to be torn out and replaced by new. Health is altogether too important a matter to endanger with bad drains or fixtures improperly trapped. Unsanitary apparatus must give way to the demands of modern sanitation. Cities recognizing evils of insanitary plumbing have passed stringent laws concerning old as well as new plumbing installations and nothing is now more carefully guarded than the plumbing apparatus of the house.

When planning to build, every prospective house owner should know something about the fundamentals of modern plumbing—information easily obtained and which should prove interesting to anyone. Casual visits to any house in process of construction will inform one along these lines. Examination of catalogues or, better, viewing the fixtures themselves in the show rooms of dealers will complete one's education along this line.

Examining a new house containing, for instance, a single bath room you will find a cast-iron pipe extending from roof to basement and thence (usually under the basement floor) to the outside foundation wall. From this point a clay (tile) pipe line connects to the sewer, cesspool or septic tank.

This pipe, a main trunk line in fact, is ordinarily one size throughout (four inches in diameter) except where it passes through the roof, when it is usually increased slightly in size. "Soil pipe" is what the pipe is called, and it should extend smoothly without sharp turns or bends from roof to cellar because it is the drainage system into which all water closets, wash bowls and bath tubs discharge. Therefore, it naturally follows that the straighter and smoother the pipe, the easier and more silently will its contents reach the sewer. These are the two most important requisites of a drainage system—easy flow and ample ventilation. Extending through the roof as it does with the upper end entirely open to the atmosphere a soil pipe gets ample ventilation.

In different places practice varies as to details of connecting this house drainage system with the sewer. In many cities (especially in the west) drains connect directly with the sewer. In other places (notably the east) a trap is interposed between drains and sewer. Whichever method is in operation in any town or city is, of course, the method to use. Indeed, most cities have plumbing ordinances which must be followed in this regard.

When there is more than one bath room, two soil pipes may be required. If two or more bath rooms come side by side, however, a single stack will prove sufficient, made large enough to do the extra work. When bath rooms are widely separated a plumbing stack must be provided for each. This is why architects usually endeavor to group bath rooms so that a single stack will suffice. One should not, however, spoil the house plan to get this result, as cost of an extra stack or two is not excessive and should not be allowed to stand between a good floor plan and one inconveniently arranged.

Kitchen sinks and laundry tubs do not usually discharge directly into the soil pipe. So much grease collects in kitchen and laundry drains (from excess soap) it is considered better practice to discharge them into a catch basin which in turn overflows into the tile drains running to the sewer. Thus grease floating on top of the water is deposited in the catch basin from which it can be periodically removed.

Grease traps, which intercept the grease before it enters the drains, are also frequently used in connection with kitchen sinks and laundry tubs.

To return once more to the soil pipe stack, one should examine the construction of a good job of plumbing to see how the different lengths of cast-iron pipe are connected. This is accomplished by placing the small (spigot) end of one section of pipe into the large (bell) end of the next. Then oakum is caulked tightly in the joint and molten lead poured in. The result ought to be an absolutely air and water-tight tube through which sewage flows without danger of leaks. Such a stack should rest at the basement end on a cast-iron or brick support so it cannot settle and displace any of the sections, later.

Tile drains out in the yard are usually cemented together at the joints with mortar composed of Portland cement and sand

In selecting plumbing fixtures one instinctively gives most importance to the water closet. In choosing a water closet the owner should demand, first, one that is strongly built, connected to the soil pipe by means of a strong, leak-proof flange at the floor. Almost everyone has had experience with a leaky water closet; all will understand why it is better to have a metal floor connection than one in which the joint between closet and pipe is made tight merely by short-lived cement.

The next point to consider in selecting a closet is silent operation.

Recognizing these two requisites, durability and noiselessness, manufacturers have brought out designs of water closets which are wonderfully successful. No householder need anticipate difficulty in getting what he wants when he buys from reliable dealers.

Of great and constantly increasing annoyance in a poor plumbing job are faucets. All faucets look alike to the average citizen building his first house, and he is often influenced in favor of a particular type because it is cheapest. This is always unwise economy. Above all things choose only faucets of the best grade, for one must remember that these little instruments are really important valves that stand between the municipal waterworks and the house—valves that are opened and closed dozens of times during the day and must, therefore, be conscientiously built to withstand wear. No one wants to be fussing with leaky, noisy faucets, yet that is what follows when cheap goods are used.

Faucets should be made of good, thick brass. Faucet mechanism should be simple in operation and so constructed as to prevent that snapping noise in pipes apt to occur when a poorly designed faucet is suddenly opened or closed. Water hammer, as it is called, can also be avoided when pipes are scientifically connected to faucets (as every plumber knows) by providing an air chamber in the system beyond each faucet.

Latest types of faucets are of excellent design, being quick-opening (often merely a quarter-turn is required), noiseless with most durable construction of non-leakable type.

When it comes to selecting wash bowls and bath tubs one finds a bewildering array to choose from. Plumbing apparatus is now generally made of three materials—enameled iron, vitreous ware and porcelain, cost being about in the order named: that is, enameled iron is least costly and porcelain most costly.

Beginning with the kitchen sink one finds upon looking at a catalog (or, better, viewing goods in the display rooms of a dealer) that sinks are procurable in enameled iron and porcelain, the former being most used because least costly. Roll rim sinks are always to be preferred, of a pattern smooth and easy to keep clean.

Pantry sinks are usually of copper or German silver because they are used almost exclusively for washing dishes and one is less liable to break dishes when a metal sink is provided. German silver is the best metal, since it does not require polishing. Most pantry sinks are made to order to fit the space required.

For the bath room one can choose an enameled iron bath tub or one made of porcelain. Latest types are known as built-in tubs. That is, they fit snugly against the tile walls of the bath room and come down tight against the floor. These are very sanitary, as anyone can see, besides being very fine in appearance. For those who prefer them, there are other types of tubs standing free from the wall, on legs or with a base set close on the floor.

Pedestal lavatories (wash bowls) have come to be the "last word" in plumbing perfection. They are usually made of enameled iron, vitreous ware or porcelain. Many beautiful designs are carried in stock by all manufacturers; each pattern can be supplied with any of the various types of faucets. Other lavatories are hung to the wall on brackets or supported by enameled iron porcelain or metal legs.

Seat baths or foot baths are being installed more in present-day bath rooms than formerly, for many have found how very convenient they are both for sitz and foot baths. They are especially convenient to small children. Enameled iron and porcelain are chiefly employed for these baths.

Nine out of ten householders now require a shower bath in the new home, for women as well as men have come to appreciate the delights of a good shower. There are tub-showers (installed over a bath tub), built-in showers (placed in a niche in the wall), and open showers, standing free in the bath room over a receptor. The simplest type of tub showers are so inexpensive they are practicable for even the most modest homes, while elaborate built-in apparatus to suit the most expensive houses is obtainable. Stalls of built-in showers can be obtained in marble, glass, tiles or enameled iron.—Extracts from an article by C. E. White, Jr., in House Beautiful.

Useful Charts Prepared by the National Electrical Contractors' Association

THE attention of all architects is called to the charts which have been prepared by the above association. Members of the Institute and Chapters are all familiar with the standard symbols for electric outlets which are published by the same association, and requests for which are frequently received by the Institute. The standard symbols have had the effect of greatly simplifying practice, and have been of the greatest assistance in the preparation of intelligent plans and specifications. We believe that they have already come into wide general use and that without them few architects consider their draughting-rooms well equipped.

The new charts to which reference is made have been prepared for the purpose of indicating the standard sizes of conduit required for the installation of wires and cables. These charts are naturally based upon long study and experience and, while the recommendations are based upon sizes sufficient to cover all working conditions, careful consideration appears also to have been given to the factor of extravagant sizes and the consequent useless expenditure.

The charts indicate the full size of the conduit and conductors, so that further calculation is unnecessary. The actual external diameters of the conduits and the carrying capacity of the wires are also given in accordance with the latest National Electrical Code. Framed in wood and hinged to a backing-board for convenience, these charts are furnished by the National Electrical Contractors' Association, at 41 Martin building, Utica, New York.

City Engineers vs. Private Engineers

An engineer of wide experience both in municipal work on salary and in private practice raises a question of engineering ethics. Should engineers on city pay-rolls at presumably full-time salaries, and with no private offices and no personal staff, compete for outside work with engineers who have to maintain both?

In such cases the public official or employee has no office rent to pay, and if he has sufficient energy and executive ability he can call to his aid his fellow employees and thus carry on a business of considerable magnitude practically clear of all charges except those for strictly personal services.

Two main points are more or less deeply involved: (1) The two-thousand-year-old question, "Can a man serve two masters?" with its well-known and generally accepted answers; (2) fairness of competition with engineers in private practice who must meet office rent and other overhead charges. The chief danger as regards unfair competition lies in the temptation to take advantage of lack of overhead charges and to offer to work for lower fees in order to get more engagements or engagements more easily. This danger could be obviated by charging a standard fee—if there is such a thing that can be adjusted to various degrees of education, experience and ability.—Engineering News.

$610,000 to be Expended for Improvements in the Modesto Irrigation District, California

The Modesto (Cal.) Irrigation District has authorized a $610,000 bond issue for construction, enlargement and replacement work. The main and larger separate portions of the construction and replacement to be taken care of under this bond issue are the placing of new and larger radial headgates at the La Grange dam, or intake of our canal system.

Three long, high wooden flumes are to be replaced with hydraulic fills of reinforced concrete-lined conduit. Two short high wooden flumes are to be replaced with either a steel or reinforced concrete structure. A reinforced concrete stop gate is to be placed between the two lakes composing the district's foothill reservoir, known as the Dallas & Warner lakes reservoir, situated some ten miles below the La Grange dam. The earth dams of the Warner lake are to be raised, dams to have reinforced concrete core walls which will double the capacity of the upper lake, increasing the storage approximately 15,000 feet.

Some sections of the canal are to be reinforced concrete lined and other sections, pretty generally the main canal, are to be widened in the earth sections and the banks strengthened. Throughout the district at the heads of diversion points, reinforced concrete weirs are to be installed. Throughout the district where it is necessary for the anticipated increased capacity, canals and laterals will be widened and banks generally strengthened.

These improvements cover the main feature of the proposed bond issue and it is estimated that it will require the entire amount to cover the work. C. S. Abbott, Modesto, Cal., is secretary of the Modesto Irrigation District; R. A. Edwards, Modesto, is engineer.

Want Master Plumbers to Meet Here in 1915

MR. ALEX. COLEMAN

IF the National Convention of Master Plumbers is not held in San Francisco in 1915 it will be no fault of Alexander Coleman, one of San Francisco's leading master plumbers and vice-president of the State association, to which position he was unanimously elected at the recent convention in Los Angeles. The California State Association is affiliated with the national body, and is comprised of local associations located in various California cities. Mr. Coleman is president of the San Francisco local, which has united with the State organization in a campaign to bring the national convention to the coast next year. Mr. Coleman is now in the East with John Firmin, secretary of San Francisco local. If the meeting comes to the Coast it will mean a convention of from one thousand to fifteen hundred delegates, representing every master plumbers' association in the United States. It is interesting to note the interest being taken by the San Francisco master plumbers to bring the big ble to make the coming exposition a success. gathering here and to aid in every way possi-

Other officers elected at the Los Angeles convention are as follows: President, Edward Wright of Los Angeles; treasurer, Frederick A. Wilson, San Francisco; secretary, John E. E. Firmin, San Francisco; state executive board, John Hokum, Los Angeles, A. Newman, Fresno, J. Cahill, Sacramento, and F. A. Heilbron, San Diego; national delegates, E. R. Wright, Los Angeles, and Alexander Coleman, San Francisco. The next State convention will be held in San Francisco in 1915. The convention adopted a resolution extending a hearty invitation to the national association to hold its 35th annual convention in San Francisco next year and as already stated, the delegates have been instructed to carry this invitation and do their utmost to bring the meeting out here.

A feature of the convention was the passage of a resolution giving the executive board full power to amend the State law, making it mandatory to segregate all State construction work.

John L. E. Firmin called the attention of the delegates to the importance of the "California Workmen's Accident Compensation Law." He was followed by Colonel Weinstock of the California State Commission, who gave a clear and most entertaining talk on the object of and benefits to be derived from the new law. The address was lengthy but was rendered in such well chosen language that every attention was given. It is the intention of the master plumbers to print the Colonel's address in full. At the conclusion of his remarks Mr. Weinstock asked the delegates to fire all the questions at him they wished and in response numerous interrogations were put and fully answered. Among those questioning was a guest, Mr. Adolph Mueller, of Peoria, Illinois. Mr. Mueller is a large manufacturer and his firm employs from 800 to 900 men, and answering Colonel Weinstock he stated that the Illinois act had been in operation some two years or more and had proven highly beneficial both from a humanitarian and a business standpoint, and answering a direct question, that in a strict business sense it was a most profitable investment, and one which was strongly indorsed by his firm.

An Inside Bungalow

The Pacific Building Materials Company has taken a step for in advance of any similar house of its kind on the Coast, by building a model California bungalow inside its office at 523 Market street, San Francisco, the idea being to show the uses of the different building materials and equipment sold. There is not a detail in construction or furnishing that has been overlooked. The prospective home builder will find in this complete bungalow many valuable hints that should go a long way in solving their building and furnishing problems.

Women, as well as men, will in interested in seeing this artistic and tastily designed building, and the company has shown good judgment in going to so much expense to put before home builders of California a practical demonstration of what can be done in the way of making the home practical and attractive.

By the Way

Some Industrial Information Worth the While

HEATH & MILLIGAN'S SAN FRANCISCO WAREROOMS ON FREMONT STREET, AT JUNCTION OF MARKET

A Concern Which Has Made History

By FREDERICK JENNINGS.

"H. M." in England stands for "His Majesty"—H. & M. in this country stands for something equally important and impressive. For more than half a century (or to be exact, 63 years) it has been identified with the highest accomplishments in paints. From a small beginning it has developed into one of the great industries of Chicago, where a square block is given to its up-to-date plant. When we consider what has been necessary to convert the architect, contractor, painter and owner to the desirability of using a Prepared Paint, we can understand that this business must have evolved from its beginning and grown so big on solid merit. At the start the painter was the apothecary, so to speak. He would retire into dark recesses and with some mysterious passes and unintelligible incantations produce a mixture supposed to represent the color desired. Perhaps a little doctored oil was stirred up with some cheap coarse pigment, but to the lay mind it was all so mysterious and bewildering that the result became invested with extraordinary merit. It was only when the oil evaporated and the rain washed the rest of the compound away that one awakened to the fact that all was not as it seemed.

Even today the architect and the house owner often yields to the glib "Knight of the Brush" who says, "I never allow any man to mix my paints for me." The shrewd builder, however, knows enough to specify brands which are known to have stood the test (whether it be in paints, varnishes, white leads, coatings, enamels, finishes, etc.) and insist upon their use. This caution is necessary when we consider, as in the case of the Heath & Milligan Prepared Paints, that every drop of paint is subjected to 2200 lbs. pressure and goes through 7 slow, thorough processes of manufacture, thus securing complete unification or mixing. Being made of the best materials, scientifically combined by heavy machinery, there is secured uniformity, ease of working, beauty, durability and economy. It is needless to say that the individual painter with-

MR. W. A. EMERICK

out facilities or machinery or scientific knowledge cannot secure the same results as the manufacturer who has spent years of effort, research and accomplishment in perfecting his product. The finest machinery obtainable, the most skilled workmen, the highly equipped laboratories, all combine to put the individual mixer at a disadvantage. The architect who neglects the precaution of specifying carefully and then insisting upon his specification being lived up to, will have many a "come back" in the way of spotty walls, cracked surfaces, leaky interiors, scaly or blistering exteriors and a dozen and one results from age, dampness, heat, cold and other natural causes, all of which are guarded against in the Best Prepared Paints. The Heath & Milligan motto is, "Quality goes in before the paint goes on," and their slogan is, "Looks best, covers most, wears longest."

Perhaps no institution in this country offers greater co-operation with the architect and builder than does the Heath & Milligan Mfg. Co. Not only color sheets of all their lines are freely furnished, but also color schemes for all manner of interior and exterior decorating—showing harmonizing shades for upper and lower body of building, roof, trim and sash—or, in the case of interiors, tints for each room and part of house, for wall, ceiling, floor, furniture and woodwork. If these schemes are not sufficient, they have an Art Department which will, free of charge, submit individual color suggestions if photos or plans of buildings are sent to them. Those interested will do well to write for some of Heath & Milligan Mfg. Co.'s most interesting literature, covering every phase of structural decoration.

The general manager of the Heath & Milligan Mfg. Co. is Ernest W. Heath and the general superintendent Arthur M. Heath. Perhaps the member of the home staff most familiar to Pacific Coast architects is Frank Noa, the genial sales manager, who makes semi-annual trips to this section. The San Francisco sales agent is W. A. Emerick, who has put lots of energy in his work of making the H. & M. line known to California architects. The new wareroom at Fremont street, at junction of Market, is probably the finest Paint Show Room on the Coast and as a full

THE LARGEST PAINT AND COLOR PLANT IN THE WORLD
Heath & Milligan Mfg. Co., Chicago, Ill.

line of the H. & M. paints are warehoused here, it should be a favorite resort for all interested in Paint Problems.

Perhaps no better idea can be given of the Heath & Milligan line than by enumerating some of their specialties:

H. & M. Best Prepared Paints. 60 shades.
H. & M. Family Prepared Paints for Interior work. 24 shades.
H. & M. Flat Interior Wall Finishes. 21 shades.
Creolite Floor Paint. 10 shades.
Porch and Floor Paint. 7 shades.
Satsume Interior Enamels. 17 shades.
I X L—Barn and Roof Paints. 7 shades.
Best Graphite Paint.
Climax Tinted Paints. 24 colors.
H. & M. Cement Coating.
H. & M. Railway White.
Oil Wood Stains. 8 shades.
H. & M. Yacht and Boat Paints. 9 shades.
Art and Crafts Finishes. 15 shades.
Sunshine Finishes. 17 shades.
Wagon and Implement Paint. 6 shades.
Liquid Enamels—Bath Tub Enamels—Stone Pipe Enamels.
Ajax Crack and Crevice Filler.
Luna Aluminum Paint.
Screen Paints.
Wizard Paint and Varnish Remover.
H. & M. Furniture Polish. 8 colors.
H. & M. Strictly Pure White Lead.
H. & M. Barn Paint.
Universal Shingle Stains.
H. & M. Zincs in Oil.
H. & M. Zincs in Varnish.
Best Oil Colors, 48 shades.
Best Patent Dryer.
Distemper (Fresco) Colors. 38 shades.
Superfine Coach Colors. 75 shaues.
Sanitary Enamels.
Gold Paint.
H. & M. Prepared Wax.
H. & M. Dry Colors. 40 shades.
Superfine House Finishes. 10 varieties.
Superfine Carriage Varnishes and Japans. 13 colors.
Varnishes for General Use. 26 varieties.
Electric Wood Filler.
H. & M. Enamel Carriage Top Dressing.
Climax Liquid Surfacer.
Veneers.

What Has Become of That Cement Contract?

The State of California was to have begun to take delivery of cement from the Old Mission Portland Cement Company on March 1st last. So far as we can learn this company's plant at San Juan is idle and no shipments have been made to the state thus far.

It would appear as if there was a "joker" attached to this contract which seems to have been prepared and signed just to frighten the other cement companies and force them to bid lower. Following is a copy of Paragraph 10 in the articles of agreement between the Department of Engineering of the State of California and the Old Mission Portland Cement Company of San Francisco. Note the clause, "or whatsoever other causes," which lets the company down most beautifully:

10. It is hereby stipulated and agreed that neither the party of the first part, nor the party of the second part shall be liable for any damage or delays occasioned by or arising from strikes or other labor disturbances, invasion, insurrection, riot, fire, war, earthquake, or total or partial destruction of the cement plant, *or whatsoever other causes*. In event of such interruption or delay, as soon as the cause of delay is removed, either the party of the first part, or the party of the second part, as the case may be, will immediately proceed to carry out and perform the terms and conditions of the contract. If such disability is within the control of either party the same is to be remedied as soon as possible after it occurs.

These pictures give you an idea of the immense stock of hardwoods carried by the Dieckmann Hardwood Company in their San Francisco Yards, and indicate superior facilities for handling both rough and finished material.

Stockton Planing Mill

Architects and building contractors always appreciate a mill devoted to the production of mill work, when the said mill is capable of supplying the wants of a building in its entirety. Furthermore, a mill must have efficient management as well as complete equipment. The writer has seen and visited all the leading planing mills on the Coast and knows whereof he speaks in stating that the firm of Totten & Brandt, of Stockton, Cal., have one of the very best woodworking factories devoted to the production of finished woodwork, as applied to building construction, on the entire Pacific coast. The Messrs. Totten & Brandt are gentlemen whom it is a pleasure to meet, both of them being genial, hearty men of business and integrity. The Evening Mail of Stockton, a few weeks ago had the following to say concerning them:

They are today shipping their mill work into Nevada—to Reno, Lovelock, Winnemucca, and other points in that direction, half way to Salt Lake City, Utah; into northern California and throughout central California—north, east and west.

More than this, the big success of this firm was made, not under normal conditions, but under conditions the most abnormal, in that in the midst of the first harvest that came of their early efforts fire wiped them out, catching them at a time when their connection with insurance companies, in the matter of policies, was not all it should have been to cover their losses. They straightened up, however, after the blow, knowing the extent of the possibilities lying before them in this field. They are bigger today than ever, and better off, for their successful rise impressed others—and in that impression and their greater success Stockton as a center possessing vitality and promise, has gone up several points.

The Totten & Brandt mill of today, while not the largest in the State, is at least rated in that class; and when it comes to the matter of equipment this Stockton institution yields place to none. Better than a hundred men are employed here under ordinary conditions, while as high as a hundred and twenty have been on the pay roll.

Outcome of This Suit Will Be Watched With Interest

Suit was filed in Oakland by the Berkeley Development Company to prevent William H. Nettelmann from building a flat in Northbrae Terrace. The complaint explains that Nettelmann agreed with the development company to only build a certain class of building. It is argued that a flat is among the prohibited buildings and that in direct violation of the agreement he has undertaken to build one. It is asked that the courts issue an injunction restraining him.

Architect Lewis Hobart Busy

One of the busiest architectural offices in San Francisco is that of Lewis P. Hobart, Crocker building. Owing to press of work Mr. Hobart has increased his working force and has taken additional offices on the top floor of the Crocker building.

Mr. Hobart has received bids on various parts of the work for an addition to the country estate of William H. Crocker at Burlingame. The addition will be Class "A" and will cost approximately $150,000. A contract for the structural steel has been let to the Western Iron Works. Plans will be completed this month for the University of California hospital group to be erected in the vicinity of the Affiliated Colleges in San Francisco. These buildings will be Class "A" and will cost close to one half million dollars. Segregated bids for this work are to be taken. Working drawings are being made in the same office for a palatial country home for Mrs. W. K. Vanderbilt at Long Island, New York. This house will be of fireproof construction and will cost $500,000 or more. It is Mr. Hobart's intention to go East as soon as the plans can be finished and personally superintend the construction. The Vanderbilt house will be of steel, concrete, stone and terra cotta, with interior finish of marble, tile and expensive hardwoods.

Richmond Depot

The city of Richmond has filed an application with the Railroad Commission in which it asks that an order be made directing the Southern Pacific Company to erect a stone, concrete, brick or other fireproof passenger depot in the city of Richmond, Contra Costa county.

A $235,000 Marble Contract

The Board of Public Works has recently awarded the contract for the interior marble work for the new San Francisco City Hall, to the Joseph Musto Sons-Keenan Company, San Francisco and Los Angeles, the contract price being $235,000. This includes select white marble wainscoting, floor tile and stair treads.

The marble treatment of the Registrar's, Treasurer's, Tax Collector's and Auditor's offices will be particularly artistic and ornamental and is sure to add laurels to the already enviable reputation of Messrs. Bakewell & Brown, the architects, as well as to the artisans in the marble work.

This is the largest individual contract for interior marble work ever awarded on the Pacific Coast, and the successful bidders, Messrs. Joseph Musto Sons-Keenan Company, may well take pride in the fact.

The company has just completed the marble work in the new Oakland City Hall, the amount of their contract being $105,000, and they also have the contract for the marble work in the new 22-story Hobart building, the French-American Bank, Physicians' building, and many other prominent buildings now in the course of construction.

Sacramento Has Drastic Building Laws

Probably the most voluminous document that ever was presented to the Sacramento City Commission for passage is the proposed city building ordinance recently submitted by City Commissioner E. M. Wilder.

City Building Inspector W. L. Rutan has been working upon the document for more than a year. It comprises a veritable encyclopedia of building restrictions (some of them most drastic) and is designed to take the place of about thirty ordinances now upon the city books.

The draft comprises about 28,000 words and has 742 sections and has been highly commended by former State Senator Lester G. Burnett, author of the State Tenement House Act.

Among other things the ordinance fixes the height of business buildings at 120 feet. It provides a business section with suitable building restrictions and extends the fire limits for warehouses and factories out R street to Thirty-first.

Mechanics' Lien—Right of Architect

An architect is held in the Washington case of Gould vs. McCormick, 47 L. R. A. (N. S.) 765, to have a lien on a building for furnishing plans for it and superintending its construction, under a statute providing that every person performing labor upon or furnishing material for a building has a lien upon the building therefor.

The right to a mechanics' lien is not lost by claiming an excessive amount in the notice, if it was not done wilfully or in bad faith.

Dull Finishes for Interior Woodwork

AN INTERIOR finished in high gloss is of itself very attractive, as it tends to show up the grain, and to bring out all the beauties of the wood to best advantage. Still many people prefer a finish on the woodwork of their rooms that is more subdued and more in harmony with the rubbed effect of their piano and other best furniture.

A piano is bought once in a life time; it is rarely, if ever, refinished and that rich polished appearance is expected by the buyer who never figures what part of the price is due to the finish.

Not so with the house; it requires refinishing in part at least every few years, the expense is carefully considered and in most cases the cost prohibits the treating of the woodwork to the many coats of varnish and rubbings and polishing of a piano.

To get the appearance and wearing of a rubbed job at a moderate cost, has been the problem of the master painter. Wax was first tried, it gave the desired appearance, still it was difficult to apply; it was always sticky and caught the dust; it required going over at least once a month, and it turned white wherever water had been in contact with it for a few hours.

The varnish manufacturers were appealed to for a product to meet this demand. Many so-called flat varnishes were soon offered, all were liquids which could be easily applied; all dried more or less dull; some contained wax and gave all the troubles of a genuine wax finish; others contained pigments which settled quickly in the can and even caked at the bottom, so that results were never uniform; some contained partly dissolved soft gums which settled out quickly, giving varied results and after drying were very brittle, chipped and scratched readily.

The Moller & Schumann Co. carefully studied this problem of a rubbed finish without rubbing. They realized that the desired article must first of all be a rubbing varnish, that it must contain no wax, must have no pigments or other substance which would settle out, it must be of the same uniform body from top to bottom of the can, no matter whether it was one week, one month, or one year old.

Thorough laboratory investigation satisfied this manufacturer that no clear liquid varnish could be made to dry dull of itself, and that the various easy ways to get dullness were unsatisfactory. After several years of patient endeavor, they developed a varnish that combined all the desired good points.

It was a high grade rubbing varnish.

It was absolutely free from wax, pigments, or other matter which settled out.

It was of one uniform body and appearance from top to bottom of the can.

Every drop, whether used all at once or part one day and some a week or a month later, dried with the same rich, velvety dullness.

It was as little affected by contact with water as the best rubbing varnishes.

This "Hilo" flat finish is different in appearance from all others. It looks like soft jelly in the can, yet stirs up readily and brushes out as easily as the finest varnish. It should be used as it comes in the can, stirring up thoroughly, brushing out well and laying off with the grain of the wood.

No special preparation is required in order to get good results with this flat finish. It dries always the same; it can be used over natural wood, stain, shellac, or varnished surfaces. For Mission finishes best results are obtained by staining the wood to the desired color, applying one thin coat of shellac, and then one coat of this flat finish. The stain and shellac should be sanded slightly as in general wood finishing.

Any gloss surface can be quickly changed to a rich dullness by sanding lightly and applying one coat of this flat finish. A dull surface made with this varnish can be rubbed and polished if desired or it can be changed to gloss by sanding lightly and applying the gloss varnish.

For a more dull or dead effect, this varnish can be reduced with turpentine in any desired proportion. To obtain a semi-gloss, add to the flat finish enough high grade rubbing varnish to bring the finish wanted.

Excellent results can be obtained with this flat finish on trim, doors, wainscoting, wood ceilings, chairs, tables, etc., and all interior woodwork. And it lends itself as readily to obtaining equally good results on manufactures of wood, especially around carvings, etc.

Valuable Handbook Free to Architects

Architects and heating engineers can secure free (by sending their address to the American Heat and Power Co., Seventh and Cedar streets, Oakland) a most valuable handbook entitled "Burning Crude Oil." The book is replete with useful information and contains many pages of hitherto unpublished data and information, together with descriptions of various styles of oil-burning apparatus. It is well worth having and as the edition is limited our readers are advised to send for it promptly.

The American Heat and Power Co. have recently equipped the French Bank building, 110 Sutter street; the Flat Iron building, Market and Sutter streets; the Columbus school, the St. Rafael hotel, and many other buildings in San Francisco with their centrifugal rotary burners. A sample burner can be seen at their Oakland sales rooms and any of the following coast agencies: Frank A. Stevens Co., 258 So. Los Angeles street, Los Angeles; Latourrette-Fical Co., Thirty-fifth and Sacramento streets, Sacramento; The Gauld Company, 69 Twelfth street, Portland, Ore.; The Ben Olson Co., 1130 Commerce street, Tacoma, Wash, and Steam Specialty & Supply Co., 79 Washington street, Seattle.

Safety Treads

Any mention of safety treads suggests the name of Mason, which is everywhere recognized as "the standard." It would seem that in a double sense it has gained a foothold, and insurance companies, building inspectors and prudent owners insist so rigorously upon its use that one would almost think that the manufacturers could lay back and take the food which the gods keep sending them. Not so, for, judging from a circular which the American-Mason Safety Tread Co. has just issued, "improvement is the order of the hour," and the adaptability of their tread to the most varied of uses is shown by scores of new forms and combinations. Whether it is a department store, a school, a trolley car or a railway platform, the Mason tread can be installed, so that accidents from slipping seem almost an impossibility. The Mason treads may be had in any of six widths and is of uniform thickness. It can be had square edged or curved, and can be attached to or imbedded in stone, tile, iron, concrete, wood, or other materials.

For concrete surfaces, the Mason tread is provided with iron straps and anchors which are bedded into the plastic cement.

A notable innovation is their combination mat (made of cork and tread), for revolving doors, thus eliminating the usual slippery marble surface. These mats are in four sections, thus permitting easy removal for cleaning purposes. The Astor hotel, New York, and other large buildings are using these mats.

A list of the large buildings where the Mason treads are installed would be too lengthy for our pages. We can only mention a few of the Pacific Coast installations:

San Francisco, Cal.—Steamers New Western Pacific Ferry; U. S. A. transports "Logan" and "Thomas" and S. S.'s "Beaver" and "Bear"; cars of the United Railroads and Municipal Railway; Emporium, Hale Bros. department stores; Standard Oil Co., American Can Co., Municipal Railways car barns, Pumping Station, Ensign saloon, Harrison street and P. G. C. North Beach play grounds; Philadelphia Shoe store, Walker building; four Pacific Telephone & Telegraph exchanges; thirteen schools and colleges.

Portland, Ore.—East and West Side Pacific States Telephone & Telegraph Co., Holts department store; Odd Fellows', C. K. Henry, D. P. Thompson, Washington, Public Comfort Station, Oregon Agricultural College, Troy Laundry building.

Spokane, Wash.—Old National and Union Trust & Savings banks; Hyde, Rookery, Empire State, Paulsen; Lindelle; New City Hall and Federal buildings; Kemp & Hebert department store; Pennington hotel and Davenport's restaurant.

Seattle, Wash.—G. N. & U. P. station, Hinckley block; Independent Tel. and Pacific Tel. & Tel. Co., Amos Brown and Frederick & Nelson buildings.

The factory and executive offices of the American Mason Safety Tread Co. are at Lowell, Mass. C. Jorgensen & Co., 356 Market street, are the California agents and will be glad to furnish any samples, data and forms for specifications to architects who are interested.

Echo of the Portland, Ore., Public Auditorium Competition

It is stated in Portland papers that architects Freedlander & Seymour, who were the successful competitors in the Portland, Ore., public auditorium competition, have been informed that they will be required to prepare a new set of plans, that will bring the cost of the building within the sum of $450,000 set down in the program. It is claimed by the City Council, which body has the matter in hand, that estimates based on the plans prepared from those that were awarded the prize by the jury indicate that the building as designed would cost considerably more than the amount stipulated.

Holmes Lime Company Reorganizes

The Holmes Lime Company, one of the oldest lime industries in California, and producers of the well-known "Santa Cruz" brand, has been reorganized and the concern will hereafter be known as the Holmes Lime and Cement Company. The general offices have been moved from the Monadnock building to the Postal Telegraph building. The company is controlled by new capital and there has been a complete change in the management. John Buck, Jr., is president with Walter E. Buck vice-president; Harry Gregg, secretary and O. M. Tupper general manager. The latter is also manager of the Western Lime and Cement Company, and is well and favorably known to the building trade. Holmes' Santa Cruz lime has been on the market since 1854 and is specified quite generally by San Francisco and Bay Cities architects. The company's deposits are at Felton in the Santa Cruz Mountains, and it is planned to double the present capacity of the plant by installing new machinery and replacing much of the old paraphernalia. The company will aim to keep up the standard of the product as maintained for the past 60 years.

Prosperous in Hard Times

Probably no one San Francisco concern has enjoyed greater prosperity in spite of the business depression of the past few months than the Western Furnace & Cornice Company, of which Jas. T. Conway is the capable manager. This company has managed to keep a full force of workmen busy, while other firms in the same line have been laying off their help. Mr. Conway is a close figurer and this probably explains why he has landed so many good contracts, and thereby kept his shop going. Architects speak well of his work, which is assurance that he does not skimp on a job. For E. P. Antonovich, whose work is shown in this number, the Western Furnace & Cornice Company did all the sheet metal work on the Hihn Estate building at Bush and Kearny streets, and the beautiful Druids' Temple on Page street. Mr. Conway has done a great deal of galvanized iron work for some of the most prominent architects in San Francisco, including Smith O'Brien, J. J. Foley, Wm. H. Weeks, and the Consulting Board of Architects of the city of San Francisco.

Specialized Media for Specialized Things

It must be evident to any thinking man that the place to advertise commodities or appliances special to any given industry is in the publications that reach that industry and that such advertising, if well written, well displayed and persistently kept up, will not only effect the desired sales, but will build up a permanent good-will asset of inestimable value.—R. R. Shuman, in Standard Advertising.

COUNTRY BUILDING PROSPECTS

$110,000 for Petaluma Schools.—Petaluma—At the election here for voting for a new school building and site, the $110,000 bonds proposed carried three to one.

New Watsonville Schools.—Watsonville—For the purpose of providing funds with which to build a new and modern high school building, the voters of this place have authorized a bond issue of $125,000.

Carnegie Library.—South San Francisco—The town trustees have decided to accept the offer of Andrew Carnegie to give the city a $10,000 library, providing that the municipality guarantees the maintenance expenses. No architect has ben selected as yet.

Benicia to Have New School.—Benicia—The bond issue of $18,000 to be used in extending the school department here, carried by forty votes over the necessary two-thirds.

Street Paving.—Hollister—Contracts for paving nine blocks of San Benito and Fifth streets and laying curbs and gutters were let by the town trustees to the Granite Rock Company of Watsonville.

Designing Two Residences.—Architect William H. Weeks, 75 Post street, San Francisco, is preparing plans for two $5,000 residences to be erected at Watsonville. One will be for Roy Eaton and the other for Dr. Wayland. Both will be of frame and plaster construction.

Alterations to Flats.—Architects O'Brien Bros., Clunie building, San Francisco, have let contracts for alterations to a frame flat building on Devisadero street. The flats are to be rearranged into apartments.

Exposition Exhibit Work.—Architect Bernard Joseph, First National Bank building, San Francisco, is preparing plans for the exhibit booth of the Zellerbach Paper Company at the Panama-Pacific Exposition.

Steel Bridge.—Dinuba—Plans are being drawn by County Surveyor Byron Lovelace for the new $27,000 steel bridge over the Kings river near Dinuba. The bridge will be a link in the extension of the Del Monte way out of Dinuba.

$5,000 Warehouse.—Work will be commenced within two weeks in Sacramento upon the largest almond shelling plant in the United States. The plant is to be owned and operated by the California Almond Growers' Exchange. The building will cost about $8,000.

Municipal Water Plant.—Tehama (Tehama county)—Plans for the new municipal water system being prepared by County Surveyor Luning, provide for mains reaching twenty-five blocks. A well is to

be sunk adjacent to the present pumping plant on the river bank. Twenty-one fire hydrants will be provided. The cost of the installation will be about $10,000.

To Build Fifteen Cottages.—Sacramento —E. A. Pierce has commenced the erection of fifteen cottages in the vicinity of the Libby, McNeil & Libby cannery plant, at Thirty-third and R streets. The cottages will be leased to employes of the big cannery. The cost will average $600 each.

Commercial Hotel for Sausalito.—Sausalito—According to Attorney Louis Pistolesi, of Sausalito, a San Francisco syndicate has been formed to erect a $50,000 modern hotel on the site of the old Arbordale Cafe, now owned by Henry Kround.

Porterville Business Block.—Porterville —Anton Konda, large owner of Main street business property, is considering the plans for a building which is to be built adjoining the Arlington Hotel block, of which Konda is also one of the owners.

New Buildings for Alameda.—Alameda —Among the improvements now being planned for various sections of Alameda is one contemplated at the northwest corner of Lincoln avenue and Ninth street. Charles R. Allen, the owner of this property, will build a mission style apartment house on the lot, with stores below. With the erection of this building will probably come the improvement of the 100-foot lot lying immediately west of it on Lincoln avenue, and owned by the Dahmke heirs. Darrington Christopher will also probably erect a new building on the southwest corner of Lincoln avenue and Ninth street in keeping with these other improvements.

Big Street Contract. — Concord — The Ransome Crummy Company of Oakland was the lowest of three bidders for the building of the new streets in this place.

New Home for Moose.—Vallejo—Supreme Dictator Walter Dorn, of San Francisco, with L. A. Eaton, J. R. Dally, William Tyler, and William Pilgrom, prominent members of San Francisco Lodge, spent some time in Vallejo, looking over the local situation and taking observations regarding the acquisition of the Vallejo White Sulphur Springs for the Mooseheart-home for aged Moose, and vocational school for orphaned children of members.

$18,000 School Bonds.—Benicia—School bonds for $18,000 are to be used to purchase a site for the erection of a new primary school building, to furnish the same with furniture and also to improve the West End Primary School building.

Pottery for Oroville.—Oroville (Butte county)—With the taking of options upon two tracts of land north of Oroville, L. A. Jenks announced that a company would be formed here to erect a pottery and put the clay deposits in the foothills here to use. Eastern capital is ready to erect the plant.

City Hall for Winters and Hayward.—The building of a new city hall for Winters and also for the town of Hayward, Cal., is being agitated. The idea is to erect a two-story concrete or stone building, with city offices and Council chamber and quarters for the fire apparatus and city jail.

To Rebuild Slaughter House.—The Noonan Meat Company wlll rebuild its slaughter house at Santa Rosa. The structure was burned to the ground recently. The building cost $30,000.

$60,000 for New School.—Rio Vista (Solano County)—By an overwhelming vote the citizens of this district voted $60,000 bonds for a new Union High School.

Plans Danish Building.—Panama-Pacific International Exposition—Plans for this building were prepared in Copenhagen and submitted to Panama-Pacific officials for approval and then returned to Denmark for changes. Herman J. Korell, 300 Lick building, is secretary of local Danish Commission.

Hollow-Tile School Houses

As soon as the sites are selected by the North Sacramento School Directors, work will be commenced on two new buildings for which $25,000 bonds have been voted.

One of the buildings will cost $15,000 and the other, to be erected in the Del Paso Park region, will cost $5,000. The remaining $5,000 will be used for furnishings.

Both buildings were designed by Architect C. C. Cuff of Sacramento and will be built of hollow tile manufactured at the Dennison Hollow Tile Block Co., which has a plant in Sacramento.

Toadstools Lift Heavy Pavement

Albert Raisch, identified with an improvement company, announces the discovery that toadstools, exerting a pressure of more than 700 pounds to the square foot, have lifted a section of asphalt macadam dressing an inch and a quarter thick on the boulevard fronting the Burlingame Country Club. Before attacking the roadwork the fungi fought its way through three inches of crushed rock base underlying the asphalt macadam.

Successful Berkeley Contracting Firm

One of Berkeley's successful contracting firms is Hughson & Donnolly, of which G. H. Hughson is the senior partner and R. M. Donnolly is the junior partner. The two have been associated for the past six years, during which time they have erected more than fifty buildings in Berkeley and Oakland. Most of these structures are residences, although the list includes several store buildings, including one for Rasin Bros. in Oakland and a bakery for E. Pederson in Berkeley. Among the houses may be mentioned three homes for W. W. Rednall, a handsome residence for Mrs. Faught of the San Marco Hotel, San Francisco, and homes for Mrs. M. J. Barnett and Engineer James Reid. Clients of this firm speak highly of the workmanship turned out by them.

This Book Free on Request

One of the most attractive booklets called to our attention for some time is that just published by Hill, Hubbell & Company, Fife building, San Francisco, describing "Bitumastic," the well-known protection for steel. This solution is manufactured by the American Bitumastic Enamel Company and is used on some of the largest steel structures in the country. For example:

The forty-six pairs of steel lock gates controlling the waters of the Panama Canal are protected with bitumastic enamel; some of the great stand pipes of the Southern California Edison company have their interior surfaces coated with this enamel, and the Liverpool Elevated Railway has used Bitumastic solution on all the steel work of its overhead lines. This railway is over seven miles long and is constantly exposed to salt air. Bitumastic enamel is also much in demand for protection of pipe lines. It is a positive prevention of corrosion and it is also an excellent preventive of electrolysis. The Westinghouse Electric and Mfg. Company of San Francisco has tested the enamel up to 27,500 volts without puncture. The booklet on Bitumastic is attractively illustrated and will be sent free to any reader of this magazine upon request.

General Office Moved

The Trussed Concrete Steel Company, of Detroit, announces the removal of its general sales offices to its extensive plant at Youngstown, Ohio. The object of this is, of course, to bring the selling and manufacturing organizations in closer conjunction, and in this way better the service to its clients.

The company will continue to maintain district representatives in the various cities throughout the country, who personally will handle business in their territory. In addition the company will establish a competent enginering and selling organization in Detroit to handle Michigan business.

The publicity department of the company will remain in Detroit, as heretofore.

Burlington Venetian Blinds for the Modern Schoolhouse.

Coast architects who design schoolhouses find that one of the most essential features for the proper lighting of class rooms is a dependable shade for the windows. They have found in the Burlington Venetian Blind a splendid device for the proper diffusion of sunlight and nearly all the modern schoolhouses located in the warm belts are equipped with the Burlington shades. These blinds are vastly superior to the ordinary window shades as the slats may be arranged so as to admit light at any part of the window, and at any time, whether entirely or partially excluding the light, air can pass freely through them, thus affording superior ventilation. When the slats are tilted to an angle of about 45 degrees the direct rays of the sun are totally excluded, but the full amount of light is reflected from the varnished surface of the slats to the top of the room and thence downward. The tilting of the slats is done easily and without noise and they will remain in that position until changed. In short, the Venetian Blind keeps out the sun, controls the light, and permits a perfect ventilation.

All the new school buildings in San Jose are equipped with these blinds. Other California buildings similarly equipped are the Claremont public school, Covina Union High School, Compton Primary School, San Fernando Union High School; Sierra Madre city school; San Diego school buildings, Pasadena school buildings, Tuolumne County High School, Inglewood High School, Harvard Military School of Los Angeles, Riverside High School, and the Modoc County High School. From the superintendents and principals of all of these schools letters have been received in praise of the blinds. In every case the installation has given entire satisfaction and many of the school authorities declare that a schoolhouse would not be complete without them.

Burlington Venetian Blinds are handled on the Pacific Coast by the C. F. Weber Company of San Francisco and Los Angeles.

Too Many for the Boss

One of the bosses at Ex-Governor Foss' blower works had to lay off an argumentative Irishman named Pat, so he saved discussion by putting the discharge in writing. The next day Pat was missing; but a week later the boss was passing through the shop and he saw him again at his lathe. Going up to the Irishman, he demanded fiercely:

"Didn't you get my letter?"

"Yis, sur, Oi did," said Pat.

"Did you read it?"

"Sure, sur, Oi read it inside and Oi read it outside," said Pat, "and on the inside yez said I was fired, and on the outside yez said, 'Return to B. F. Sturtevant Company in five days.'"

To Stop Promiscuous Marquise Erection

In the future the Los Angeles Municipal Art Commission, acting upon a ruling of the city attorney on section 279 of the city charter, will require the submission for its approval of all designs and plans for a canopy or marquise to be fixed on a building, and it is said that the commission will be very rigid in its consideration of such structures, refusing to approve designs like many that now grace (?) downtown buildings.

This action is the result of widespread criticism made of the so-called marquise decorations that have been increasing in number of late, to the detriment of the aesthetic appearance of downtown streets.

The opinion of the city attorney is as follows, addressed to the Municipal Art Commission:

> An opinion is requested as per letter of April 22, 1914, relative to the following portion of section 279 of the charter, which reads as follows:
>
> "No arch, bridge, structure, or approach belonging to any private individual or corporation shall be permitted to extend over, into or upon any street, avenue, highway or other public place belonging to or under the control of the City of Los Angeles, other than parks, unless the design and location thereof shall have first been approved by the Municipal Art Commission, as hereinbefore provided."
>
> I desire to inform you that in my opinion you are correct in your conclusion that under the above quoted charter provisions the design or plan, with a statement of the proposed locality of the canopy or marquise to be fixed to a building or structure intended to extend over a street from a privately owned building, should be submitted to, and be approved by, your commission, before same is allowed to be erected, or before a permit for the same be issued by the building department.

Garish canopies over entrances to bars and the gaudy restaurant are said to be the most obnoxious.

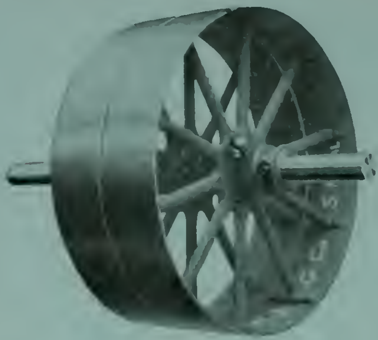
And this Is What Hurts the Concrete Game

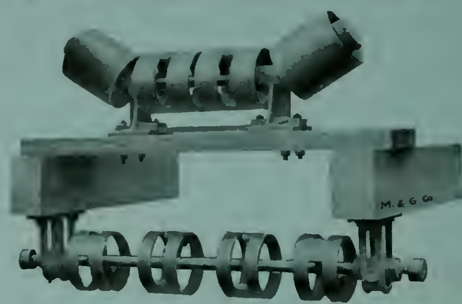
Thomas Lundy, Board of Public Works inspector for the city of San Francisco, has been suspended on a charge of allowing Flynn & Tracey, contractors, to do street work not up to specifications.

Lundy's suspension was the result of an investigation made by T. A. Reardon, president of the Board of Public Works; Commissioner Judell, City Engineer O'Shaughnessy and Assistant City Engineer Loren Hunt.

They found that Lundy had inspected inferior street work in Webster street, between Green and Union, to which he had raised no objection. The concrete had been laid for eight days, yet when Reardon stuck a pick into the pavement it sank into it as though it had been so much soft earth.

They obtained samples of the mixture and had them analyzed. They found that instead of there being one part cement to nine parts rock and sand, that the best of it only contained one part of cement to twenty parts of rock and sand, while in others it was one part of cement to twenty-four parts of the mixture.





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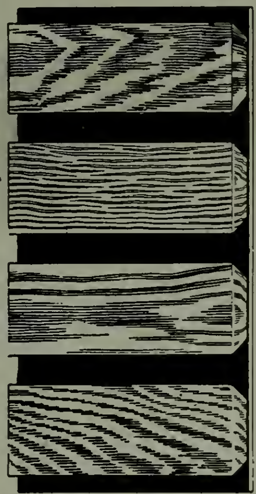

This shows the construction of stucco or plaster board—Dovetail Lath — damp proof mastic-fiber board.

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This installation was placed under the direct supervision of William Cullen Morris, Chief Engineer for the Consolidated Gas Company, and the engineering construction force of the George A. Fuller Company, General Contractors; also under the inspection of the Architectural Department of the Consolidated Gas Company, and of the architect of the building, Mr. F. J. Hardenburgh.

This material was erected on all floors throughout the building without exposed screws and with the *only practical* concealed fastening in use today. This method originated with and was developed and perfected by the Dahlstrom Metallic Door Co. and patent rights have been applied for.

Work on the hollow metal contract was begun in July, 1913, and completed eight months later, in March, 1914.

After the work was finally inspected by the general contractors, engineers and various officials of the owners, the following comments were made:

"The finest hollow metal job in the world."

"The Dahlstrom Company should be proud of this job. It is not only the best job ever turned out, but the material was delivered on time and erected far in advance of all other sub-contractors on the building."

"Undoubtedly the finest hollow metal work ever erected in any building. Dahlstrom produces a quality of work that has never yet been equaled."

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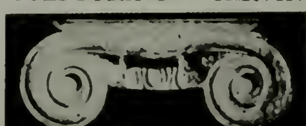

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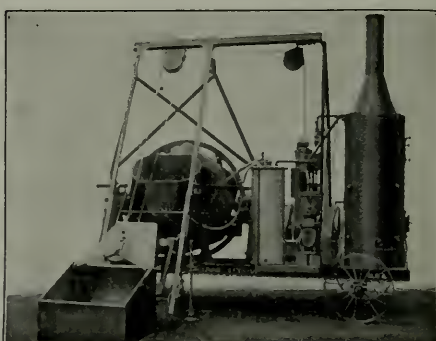

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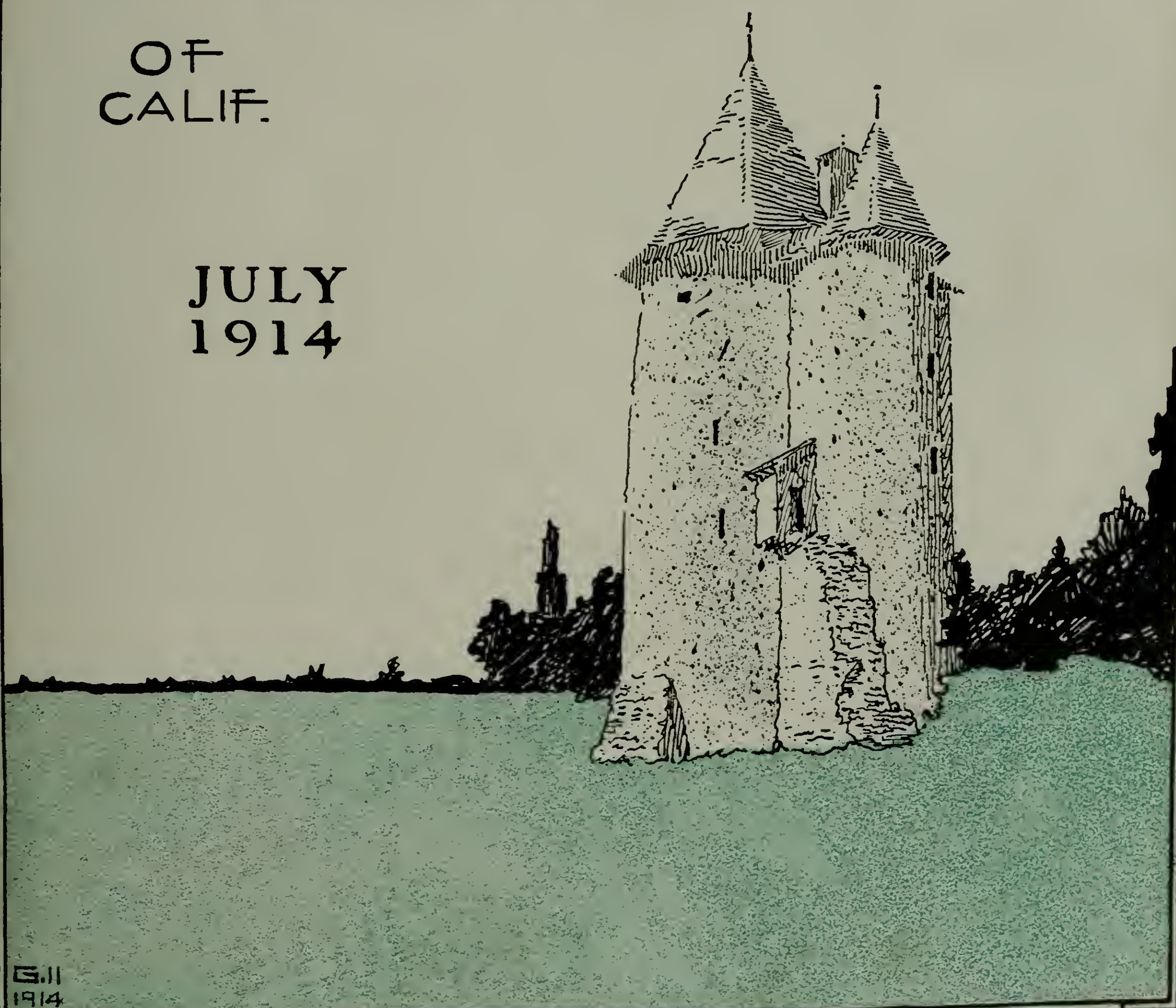

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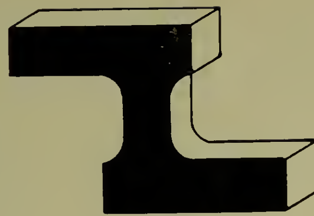
B. J. S. CAHILL says:

"Some inventions, when once seen, are instantaneously recognized as inevitable."—He refers to Thermos Bricks. *See page 83 in this number.*



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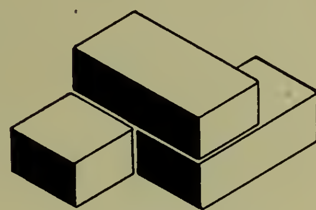
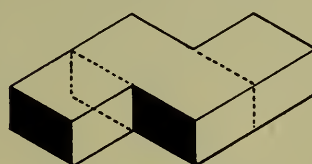
His article "WEB BRICKS" tells in a clear, concise way about the wonderful new building material which combines the strength of concrete, the fireproof qualities of hollow tile, and the beauty of brick, in one simple, practical system. It has the endorsement of every architect, engineer, builder, mason, and bricklayer; who has seen it. Have you seen it?



OF TWO STRETCHER BRICKS CONNECTED BY A HEADER

Sooner or later, Thermos Construction will come up to you as a dollar and cent proposition. The unique exhibit in our San Francisco office will familiarize you with it. Come and see it now. It may solve your next building problem.



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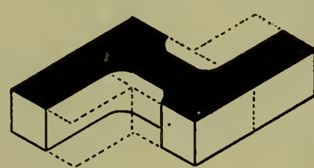
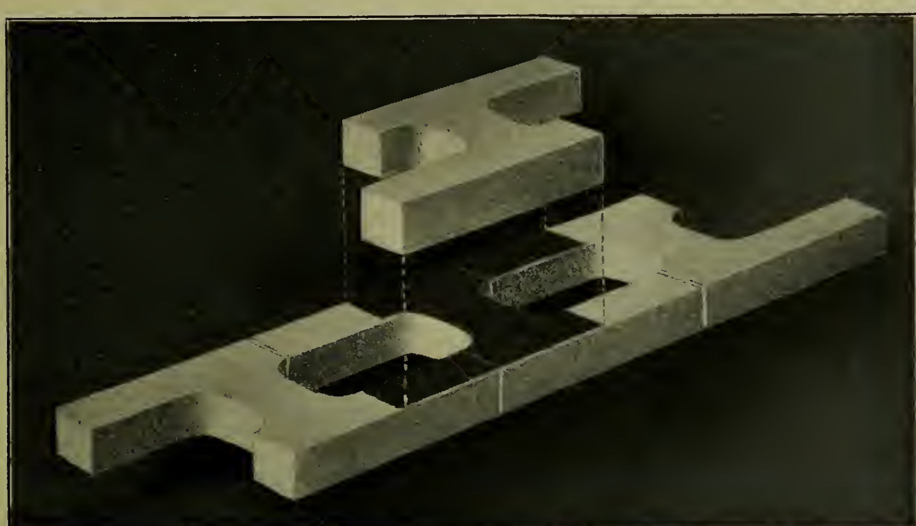


THE UNNECESSARY MATERIAL CUT AWAY IT IS EASY TO LAY



Each Thermos brick bonds with three bricks in the alternate course, hence the great strength of Thermos walls. A 9-in. Thermos wall is as strong as a 13-in. brick wall.

ARCHITECTS' SPECIFICATION INDEX

(For Index to Advertisements, see next page)

AIR CLEANERS
- Giant Suction Cleaner Co., 731 Folsom St., San Francisco; Bacon Block, Oakland.
- "Tuec" air cleaners, manufactured by United Electric Co., 110 Jessie St., San Francisco.

AMERICAN INGOT IRON
- American Rolling Mill Co., Middletown, Ohio.

ARCHITECTURAL SCULPTORS, MODELING, ETC.
- O. S. Sarsi, 123 Oak St., San Francisco.
- Florentine Art Studio, 932 Vallejo St., San Francisco.
- G. Rognier & Co., 233 R. R. Ave., San Mateo.
- The Schoenfeld Marble Co., 265 Shipley St., San Francisco.
- Western Sculptors, 533-535 Turk St., San Francisco.

ARCHITECTURAL TERRA COTTA
- Gladding, McBean & Company, Crocker Bldg., San Francisco.
- Steiger Terra Cotta and Pottery Works, Mills Bldg., San Francisco.
- Independent Sewer Pipe & Terra Cotta Co., 235 S. Los Angeles St., Los Angeles.

ART GLASS
- Sylvain Le Deit, 124 Lenzen Ave., San Jose.

AUTOMATIC SPRINKLERS
- Scott Company, 243 Minna St., San Francisco
- Pacific Fire Extinguisher Co., 507 Montgomery St., San Francisco.

BANK FIXTURES AND INTERIORS
- A. J. Forbes & Son, 1530 Filbert St., San Francisco.
- Fink & Schindler, 218 13th St., San Francisco.
- C. F. Weber & Co., 365 Market St., San Francisco.
- T. H. Meek Co., 1157 Mission St., San Francisco.
- M. G. West Co., 353 Market St., San Francisco.
- Home Mfg. Co., 543 Brannan St., San Francisco.

BEDS—INDOOR-OUTDOOR
- California Fresh Air Bed Co., Monadnock Bldg., San Francisco.

BELTING, PACKING, ETC.
- H. N. Cook Belting Co., 317-319 Howard St., San Francisco.

BELLS—TOWER, ETC.
- McShane Bell Foundry Co., 461 Market St., San Francisco.

BLACKBOARDS
- C. F. Weber & Co., 365 Market St., San Francisco.

BONDS FOR CONTRACTORS
- Fidelity & Deposit Company of Maryland, Insurance Exchange Bldg., San Francisco.
- Globe Indemnity Co., Insurance Exchange Bldg., San Francisco.
- Levensaler-Speir Corporation, Monadnock Bldg., San Francisco.

BONDS FOR CONTRACTORS—Continued.
- Massachusetts Bonding & Insurance Company, First National Bank Bldg., San Francisco.
- Pacific Coast Casualty Co., 416 Montgomery St., San Francisco.

BRICK—PRESSED, PAVING, ETC.
- California Paving Brick Co., Phelan Bldg., San Francisco.
- Diamond Brick Co., Balboa Bldg., San Francisco.
- Gladding, McBean & Company, Crocker Bldg., San Francisco.
- Los Angeles Pressed Brick Co., Frost Bldg., Los Angeles.
- Livermore Fire Brick Co., Livermore, Cal.
- Pratt Building Material Co., Hearst Bldg., San Francisco.
- Steiger Terra Cotta & Pottery Works, Mills Bldg., San Francisco.
- United Materials Co., Crossley Bldg., San Francisco.

BRICK AND CEMENT COATING
- American Paint & Dry Color Co., 414 Ninth St., San Francisco.
- Wadsworth, Howland & Co., Inc. (See Adv. for Pacific Coast Agents.)
- Biturine Company of America, 24 California St., San Francisco.
- Trus-Con Par-Seal, made by Trussed Concrete Steel Co. (See Adv. for Pacific Coast Agents.)
- Glidden Products, sold by Whittier-Coburn Co., Howard and Beale Sts., San Francisco, and Tibbetts-Oldfield Co., 908 Swain St., Los Angeles.

BRICK STAINS
- Samuel Cabot Mfg. Co., Boston, Mass., agencies in San Francisco, Oakland, Los Angeles, Portland, Tacoma and Spokane.

BUILDERS' HARDWARE
- Russell & Erwin Mfg. Co., Commercial Bldg., San Francisco.
- Vonnegut Hardware Co., Indianapolis. (See Adv. for Coast agencies.)
- Western Brass Mfg. Co., 217 Tehama St., S. F.

BUILDING MATERIAL, SUPPLIES, ETC.
- Pacific Building Materials Co., San Francisco.
- Burt E. Edwards, 1025 Phelan Bldg., San Francisco.
- C. Jorgensen & Co., 356 Market St., S. F.
- Western Builders' Supply Co., 155 New Montgomery St., San Francisco.
- Biturine Company of America, 24 California St., San Francisco.
- C. Roman, 173 Jessie St., San Francisco.
- C. F. Pratt Building Material Co., Hearst Bldg., San Francisco.

CAEN STONE
- A. Knowles, 985 Folsom St., San Francisco.

CEMENT
- Atlas Portland Cement Co., represented by United Materials Co., Balboa Bldg., San Francisco.
- Mt. Diablo, sold by Henry Cowell Lime & Cement Co., 9 Main St., San Francisco.

An Index to the Advertisements

ARCHITECTS' SPECIFICATION INDEX—*Continued*

CEMENT—Continued.
"Golden Gate," manufactured by Pacific Portland Cement Co., Pacific Bldg., San Francisco.

CEMENT EXTERIOR WATERPROOF COATING
Jones-Duncanson Co., successors to American Paint & Dry Color Co., 414 Ninth St., San Francisco.
Bay State Brick and Cement Coating, made by Wadsworth, Howland & Co. (See distributing Agents on page 32.)
Biturine Co., of America, 24 California St., San Francisco.
Hercules Waterproofing, manufactured by Hercules Waterproofing Cement Co., Buffalo, N. Y. Distributors: Pacific Building Materials Co., 523 Market St., San Francisco.
Liquid Stone Paint Co., Hearst Building, San Francisco.
Concrete Cement Coating, manufactured by the Muralo Company. (See full-page advertisement, color insert.)
Imperial Waterproofing, manufactured by Imperial Co., 183 Stevenson St., San Francisco.
Trus-Con Par-Seal, made by Trussed Concrete Steel Co. (See Adv. for Coast agencies.)
Glidden's Liquid Cement and Liquid Cement Enamel, sold on Pacific Coast by Whittier, Coburn Company, San Francisco, and Tibbetts-Oldfield Co., Los Angeles.

CEMENT EXTERIOR FINISH
Jones-Duncanson Co., successors to American Paint & Dry Color Co., 414 Ninth St., San Francisco.
Biturine Company of America, 24 California St., San Francisco.
Bay State Brick and Cement Coating, made by Wadsworth, Howland & Co. (See list of Distributing Agents on page 31.)
Concrewaltum Paint, manufactured by Goheen Company, Canton, O. Coast branches, San Francisco, Portland and Seattle.
Glidden''s Liquid Cement and Liquid Cement Enamel, sold on Pacific Coast by Whittier Coburn Co., San Francisco, and Tibbetts-Oldfield Co., Los Angeles.
Liquid Stone Paint Co., Hearst Bldg., San Francisco.
Medusa White Portland Cement, California Agents, the Building Material Co., Inc., 587 Monadnock Bldg., San Francisco.
Concrete Cement Coating, manufactured by the Muralo Company. (See afull-page adverment, color insert.)
Samuel Cabot Mfg. Co., Boston, Mass., agencies in San Francisco, Oakland, Los Angeles, Portland, Tacoma and Spokane.

CEMENT FLOOR COATING
Bay State Brick and Cement Coating, made by Wadsworth, Howland & Co. (See list of Distributing Agents on page 31.)
Glidden's Concrete Floor Dressing, sold on Pacific Coast by Whittier, Coburn Company, San Francisco, and Tibbetts-Oldfield Co., Los Angeles.

CEMENT FLOOR COATING—Continued.
Heath & Milligan Mfg. Co., 7-15 Fremont St., San Francisco.
Moller & Schumann Co., Hilo Varnishes, 1022 Mission St., San Francisco.

CEMENT TESTS—CHEMICAL ENGINEERS
Robert W. Hunt & Co., 251 Kearny St., San Francisco.

CHURCH INTERIORS
Fink & Schindler, 218 13th St., San Francisco.

COAL CHUTES
Majestic Furnace Co., Sherman Kimball & Co., Inc., 1st and Howard Sts., San Francisco.

COLD STORAGE PLANTS
Vulcan Iron Works, San Francisco.
T. P. Jarvis Crude Oil Burning Co., 275 Connecticut St., San Francisco.

CLOCKS—TOWER
Standard Electric Time Co., 461 Market St., San Francisco.

COMPOSITION FLOORING
Fiberstone & Roofing Co., 971 Howard St., San Francisco.
Lithoid Products Co., Merchants Exchange Bldg., San Francisco.

COMPRESSED AIR CLEANERS
Excello Stationary Vacuum Cleaner, F. W. Schaer Co., Pacific Coast Agts., Santa Maria Bldg., San Francisco.
Tulc, mfrd. by United Electric Company, Coast Branch, General Contractors' Association, San Francisco.
Giant Stationary Suction Cleaner, San Francisco and Oakland.

CONCRETE CONSTRUCTION
American Concrete Co., Humboldt Bank Bldg., San Francisco.
Bluxome & Co., Monadnock Bldg., San Francisco.
Clinton Fireproofing Co., Mutual Bank Bldg., San Francisco.
"Mushroom" System of Concrete Flat Slab Construction, Industrial Engineering Co., Clunie Bldg., San Francisco.
McGibben & Taylor, 2125 Shattuck Ave., Berkeley.
Otto, W. H., 269 Park Ave., San Jose.
Barrett & Hilp, Sharon Bldg., San Francisco.
Foster, Vogt Co., Sharon Bldg., San Francisco.
P. A. Palmer, Monadnock Bldg., San Francisco.
Petersen, H. L., 62 Post St., San Francisco.
A. Lynch, 185 Stevenson St., San Francisco.
Ransome Concrete Co., Oakland and Sacramento.
F. J. R. Rickon, 1859 Geary St., San Francisco.

CONCRETE MIXERS
Austin Improved Cube Mixer. Pacific Coast Offices, 338 Brannan St., San Francisco; the Beebe Company, Portland and Seattle, and P. B. Engh, Los Angeles.
Foote Mixers sold by Edw. R. Bacon, 40 Natoma St., San Francisco.
Koehring Mixer, sold by Harron, Rickard & McCone, San Francisco.

ARCHITECTS' SPECIFICATION INDEX—*Continued*

ARCHITECTS' SPECIFICATION INDEX—*Continued*

ARCHITECTS' SPECIFICATION INDEX—*Continued*

GRAVEL, SAND, CRUSHED ROCK—Continued.
Pratt Building Material Co., Hearst Bldg., San Francisco.
Grant Gravel Co., 87 Third St., San Francisco.
Niles Sand, Rock & Gravel Co., 971 Howard St., San Francisco.

HARDWALL PLASTER
Henry Cowell Lime & Cement Co., San Francisco.
American Keen Cement Co., 333 Monadnock Bldg., San Francisco.

HARDWARE
Russwin Hardware, Joost Bros., San Francisco.
Western Brass Mfg. Co., 217 Tehama St., S. F.

HARDWOOD FLOORING
Parrott & Co., 320 California St., San Francisco
White Bros., Cor. Fifth and Brannan Sts., San Francisco.
Hardwood Interior Co., 554 Bryant St., San Francisco.

HARDWOOD LUMBER
Dieckmann Hardwood Co., Beach and Taylor Sts., San Francisco.
Parrott & Co., 320 California St., San Francisco.
White Bros., Cor. Fifth and Brannan Sts., San Francisco.

HEATERS—AUTOMATIC
Pittsburg Water Heater Co., 237 Powell St., San Francisco.
Hoffman Heaters, factory branch, San Francisco.

HEATING EQUIPMENT—VACUUM, ETC.
Edward Stephenson, 618 Monadnock Bldg., San Francisco.

HEATING AND VENTILATING
J. M. Boscus, 975 Howard St., San Francisco.
Fess System Co., 220 Natoma St., San Francisco.
Mangrum & Otter, Inc., 507 Mission St., San Francisco.
Scott Company, 243 Minna St., San Francisco.
Wittman, Lyman & Co., 341 Minna St., San Francisco.
Pacific Fire Extinguisher Co., 507 Montgomery St., San Francisco.
Petersen-James Co., 710 Larkin St., San Francisco.

HOLLOW BLOCKS
Denison Hollow Interlocking Blocks, Monadnock Bldg., San Francisco, and Chamber of Commerce Bldg., Portland.

INGOT IRON, SHEETS, PLATES, ETC.
American Rolling Mill Co., Middleton, Ohio.
California Corrugated Culvert Co.,, 5th and Parker Sts., West Berkeley.

INSPECTIONS AND TESTS
Robert W. Hunt & Co., 251 Kearny St., San Francisco.

IRRIGATION GATES, SUPPLIES, ETC.
California Corrugated Culvert Co., West Berkeley, Cal.

JOIST HANGERS
Western Builders' Supply Co., 155 New Montgomery St., San Francisco.

KEENE CEMENT
American Keene Cement Co., Monadnock Bldg., San Francisco.

LIME
Holmes Lime and Cement Co., Postal Telegraph Bldg., San Francisco.
Henry Cowell Lime & Cement Co., 9 Main St., San Francisco.

LIGHT, HEAT AND POWER
Pacific Gas & Elec. Co., 445 Sutter St., San Francisco.

LUMBER
Dudfield Lumber Co., Palo Alto, Cal.
Sunset Lumber Co., Oakland, Cal.
Santa Fe Lumber Co., Seventeenth and De Haro Sts., San Francisco.

MAIL CHUTES
Cutler Mail Chute Co., Rochester, N. Y. (See Adv. on page 38 for Coast representatives.)

MANTELS
Mangrum & Otter, 561 Mission St., San Francisco.

MARBLE
Columbia Marble Co., 268 Market St., San Francisco.
Joseph Musto Sons-Keenan Co., 535 North Point St., San Francisco.

METAL AND STEEL LATH
Jackson Fireproof Partition Co., Levensaler-Spici Corporation, distributors, Monadnock Bldg., San Francisco.
L. A. Norris & Co., Monadnock Bldg., San Francisco.
Pratt Building Material Co., Hearst Bldg., San Francisco.

METAL CEILINGS
Berger Mfg. Co., 1120 Mission St., San Francisco.
San Francisco Metal Stamping & Corrugating Co., 2269 Folsom St., San Francisco.

METAL DOORS AND WINDOWS
U. S. Metal Products Co., 525 Market St.
Dahlstrom Metallic Door Co., Western office, with M. G. West Co., 353 Market St., San Francisco.

METAL FURNITURE
M. G. West Co., 353 Market St., San Francisco.
Chas. M. Finch, 311 Board of Trade Bldg., San Francisco.

METAL SHINGLES
Meurer Bros., 630 Third St., San Francisco.
San Francisco Metal Stamping & Corrugating Co., 2269 Folsom St., San Francisco.

OIL BURNERS
American Heat & Power Co., Seventh and Cedar Sts., Oakland.
Fess System Co., 220 Natoma St., San Francisco.
T. P. Jarvis Crude Oil Burner Co., 275 Connecticut St., San Francisco.
Compressed Air & General Machinery Co., 39 Stevenson St., San Francisco.
S. T. Johnson Co. (see adv. below).

ARCHITECTS' SPECIFICATION INDEX—*Continued*

ORNAMENTAL IRON AND BRONZE
California Artistic Metal & Wire Co., 349 Seventh St., San Francisco.
J. G. Braun, Chicago and New York.
Ralston Iron Works, 20th and Indiana Sts., San Francisco.
Monarch Iron Works, 1165 Howard St., San Francisco.
C. J. Hillard Company, Inc., 19th and Minnesota Sts., Sain Francisco.
Shreiber & Sons Co., represented by Western Builders Sapply Co., San Francisco.
West Coast Wire & Iron Works, 861-863 Howard St., San Francisco.
Vulcan Iron Works, San Francisco.

PAINTING AND DECORATING
D. Zelinsky, 564 Eddy St., San Francisco.
Horace W. Tyrell, 1707 38th Ave., Oakland.
Robert Swan, 1133 E. 12th St., Oakland.

PAINT FOR BRIDGES
Briggs Bituminous Corporation Co., J. & R. Wilson, agents 117 Steuart St., San Francisco.
Biturine Company of America, 24 California St., San Francisco.

PAINT FOR STEEL STRUCTURES
"Biturine," sold by Biturine Co. of America, 24 California St., San Francisco.
Briggs Bituminous Corporation Co., J. & BR. Wilson, agents, 117 Steuart St., San Francisco.
Carbonizing Coating, made by Goheen Mfg. Co., Canton, Ohio. (See Adv. for Coast distributors.)
Joseph Dixon Crucible Co., Coast branch, 155 Second St., San Francisco.
Trus-Con Bar-Ox, Trussed Concrete Steel Co. (See Adv. for Coast agencies.)
Glidden's Acid Proof Coating, sold on Pacific Coast by Whittier, Coburn Company, San Francisco, and Tibbetts-Oldfield Co., Los Angeles.
"Bitumastic" sold by Hill, Hubbell & Co., Fife Bldg., San Francisco.

PAINT FOR CEMENT
American Paint & Dry Color Co., 414 Ninth St., San Francisco.
Bay State Brick and Cement Coating, made by Wadsworth, Howland & Co. (Inc.). (See Adv. in this issue for Pacific Coast agents.)
"Biturine," sold by Buturine Co. of America, 24 California St., San Francisco.
Trus-Con Stone Tex., Trussed Concrete Steel Co. (See Adv. for Coast agencies.)
Liquid Stone Paint Co., Hearst Bldg., San Francisco, Los Angeles and San Diego.
Glidden's Liquid Cement, sold on Pacific Coast by Whittier, Coburn Company, San Francisco and Tibbetts-Oldfield Co., Los Angeles.
Concreto Cement Coating, manufactured by the Muralo company. (See color insert for Coast distributors.)
Moller & Schumann Co., Hilo Varnishes, 1022 Mission St., San Francisco.
Samuel Cabot Mfg. Co., Boston, Mass., agencies in San Francisco, Oakland, Los Angeles, Portland, Tacoma and Spokane.

PAINTS, OILS, ETC.
American Paint & Dry Color Co., 414 Ninth St., San Francisco.

PAINTS, OILS, ETC.—Continued.
Concreto Cement Coating, manufactured by the Muralo company. (See color insert for Coast distributors.)
Bass-Heuter Paint Co., Mission, near Fourth St., San Francisco.
Whittier-Coburn Co., Howard and Beale Sts., San Francisco.
"Biturine," sold by Biturine Co. of America, 24 California St., San Francisco.
Heath & Milligan Mfg. Co., 9-15 Fremont St., San Francisco.
Glidden Varnish Co., Cleveland, Ohio, represented by Whittier-Coburn Co., San Francisco and Tibbetts-Oldfield Co., Los Angeles.
Moller & Schumann Co., 1022 Mission St., San Francisco.
Paraffine Paint Co., 38-40 First St., San Francisco.
W. P. Fuller & Co., all principal Coast cities.
R. N. Nason Co., San Francisco.
Standard Varnish Works, 113 Front St., San Francisco.

PAVING BRICK
California Brick Company, Phelan Bldg., San Francisco.

PHOTO ENGRAVING
California Photo Engraving Co., 121 Second St., San Francisco.

PHOTOGRAPHY
R. J. Waters Co., 717 Market St., San Francisco.

PIPE—CORRUGATED INGOT IRON
California Corrugated Culvert Co., Los Angeles and West Berkeley.

PIPE—VITRIFIED SALT GLAZED TERRA COTTA
Gladding, McBean & Co., Crocker Bldg., San Francisco.
Pacific Sewer Pipe Co., I. W. Hellman Bldg., Los Angeles.
Pratt Building Material Co., Hearst Bldg., San Francisco.
Steiger Terra Cotta and Pottery Works, Mills Bldg., San Francisco.

PLASTER CONTRACTORS
A. Knowles, 985 Folsom St., San Francisco.

PLUMBERS' MARBLE HARDWARE
Western Brass Mfg. Co., 217 Tehama St., S. F.

PLUMBING
Boscus Bros., 975 Howard St., San Francisco.
Scott Co., Inc., 243 Minna St., San Francisco.
Peterson-James Co., 710 Larkin St., San Francisco.
Wittman, Lyman & Co., 341 Minna St., San Francisco.
Alex Coleman, 706 Ellis St., San Francisco.

PLUMBING FIXTURES, MATERIALS, ETC.
Crane Co., Second and Brannan Sts., San Francisco.
N. O. Nelson Mfg. Co., 978 Howard St., San Francisco.
California Steam Plumbing Supply Co., 671 Fifth St., San Francisco.
Mark-Lally Co., First and Folsom Sts., San Francisco.
Western States Porcelain Co., San Pablo, Cal.

ARCHITECTS' SPECIFICATION INDEX—*Continued*

PLUMBING FIXTURES, MATERIALS, ETC.—Continued.
- J. L. Mott Iron Works, D. H. Gulick, selling agent, 135 Kearny St., San Francisco.

POTTERY
- Steiger Terra Cotta and Pottery Works, Mills Bldg., San Francisco.

PULLEYS, SHAFTING, GEARS, ETC.
- Meese & Gottfried Co., San Francisco, Seattle, Portland and Los Angeles.

PUMPS
- Chicago Pump Company, 612 Howard street, San Francisco.

REFRIGERATORS
- McCray Refrigerators, sold by Nathan Dohrmann Co., Geary and Stockton Sts., San Francisco.
- Vulcan Iron Works, San Francisco.

REVOLVING DOORS
- American Revolving Door Co., 2514 Monroe St., Chicago, Ill.
- Van Kennel Doors, sold by U. S. Metal Products Co., 525 Market St., San Francisco.

ROAD DRAINS
- California Corrugated Culvert Co., West Berkeley, Cal.

ROLLING DOORS, SHUTTERS, PARTITIONS, ETC.
- Acme rolling partitions, manufactured by Union Blind & Ladder Co., 3535 Peralta St., Oakland.
- Kinnear Steel Rolling Doors and Shutters, Pacific Building Materials Co., 523 Market St., San Francisco.
- Pacific Building Materials Co., 523 Market St., San Francisco .
- C. F. Weber & Co., 365 Market St., San Francisco.
- Union Blind and Ladder Company, manufacturers of the Acme rolling partitions for churches and schools, 3535 Peralta St., Oakland.
- Wilson's Steel Rolling Doors, U. S. Metal Products Co., San Francisco and Los Angeles.

ROOFING AND ROOFING MATERIALS
- Biturine Co. of America, 24 California St., San Francisco.
- Grant Gravel Co., Flat Iron Bldg., San Francisco.
- Fibrestone & Roofing Co., 971 Howard St., San Francisco.
- "Ruberoid," manufactured by Paraffine Paint Co., San Francisco.
- Mackenzie Roof Co., 425 15th St., Oakland
- United Materials Co., Crossley Bldg., San Francisco.

ROOFING TIN
- American Sheet & Tin Plate Co., Pacific Coast representatives, U. S. Steel Products Co., San Francisco, Los Angeles, Portland and Seattle.

RUBBER TILING AND MATTING
- Compressed Air & General Machinery Co., 39 Stevenson St., San Francisco.

SAFES, VAULTS, BANK EQUIPMENT
- M. G. West Co., 353 Market St., San Francisco.

SAFETY TREADS
- American Mason Safety Tread. (See Adv. on page 147 for Coast agents.)
- Universal Safety Tread Co., represented by Pacific Building Materials Co., 523 Market St., San Francisco.

SANDSTONE BRICK
- Sacramento Sandstone Brick Co., Sacramento, Cal.

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ARCHITECTS' SPECIFICATION INDEX—*Continued*

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Ralston Iron Works, Twentieth and Indiana Sts., San Francisco.
U. S. Steel Products Co., Rialto Bldg., San Francisco.
Schreiber & Sons Co., represented by Western Builders Supply Co., S. F.
Vulcan Iron Works, San Francisco.
Western Iron Works, 141 Beale St., San Francisco.
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Liquid Stone Paint Co., Hearst Bldg., San Francisco.
Samuel Cabot Mfg. Co., Boston, Mass., agencies in San Francisco, Oakland, Los Angeles, Portland, Tacoma and Spokane.
The Building Material Co., Inc., 583 Monadnock Bldg., San Francisco.
Wadsworth, Howland & Co., Inc. (See Adv. for Coast agencies.)

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"Satinette," Standard Varnish Works, 113 Front St., San Francisco.
Moller & Schumann Co., Hilo Varnishes, 1022 Mission St., San Francisco.
Trus-Con Sno-wite, manufactured by Trussed Concrete Steel Co. (See Adv. for Coast distributors.

WINDOWS—REVERSIBLE
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U. S. Steel Products Co., Rialto Bldg., San Francisco.

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Fink & Schindler, 218 13th St., San Francisco.
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ARCHITECT C. G. ODGEN

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Contents for July

[Index to Advertisements Page 8]

THE WOOLWORTH BUILDING, NEW YORK
THE TALLEST BUILDING IN THE WORLD
CASS GILBERT, ARCHITECT

Frontispiece
The Architect and Engineer
of California
July, 1914

THE
Architect and Engineer
Of California
Pacific Coast States

Vol. XXXVII. JULY, 1914. No. 3.

Beauty of the American Skyscraper
With Special Reference to the Woolworth Building

By TWELLS BREX, in the London Daily Telegraph

ONE assumes that the chief objection to the skyscraper is not so much against itself as against its incongruity with lowlier neighbors. Perhaps any skyscraper—unless it be such an inspiration as New York's Woolworth Tower—is unlovely if it stands alone in an undergrowth of five-story buildings. But when an old building comes down on the priceless space of Lower Manhattan a mammoth building goes up as a matter of course. The steel and stone giants are no longer nakedly alone. They cluster in kingly groups and line whole streets like halls of the Nibelungs. No one who has seen them—like a serrated coast itself—from his approaching Atlantic liner, wandered under their amazing walls, or traveled by a lift to their aerial summits will call this hyperbolic.

No single unit of man's audacity and skill, the leviathan ship, the Nile dam, the Simplon tunnel, is more triumphantly self-complete and self-justified than that beautiful Woolworth Tower, with its flying buttresses, its gilt-touched roof, its spire of crocketed gold, its white uplift by day, and its sky beacon by night. It captures your imagination when you see it from afar, it draws you again and again while you remain. It is your abiding memory and symbol of New York.

The Woolworth Tower has been likened to a commercial cathedral. I see no irreverence in the comparison, nor any reason—apart from the sheer exigency of having to soar from space—why New York should not exalt, embellish, and worship these arks of the energy, spirit, and rivalry that have made her what she is. Just as Cologne raised of old her then incredible spire to the new impetus of spiritualism, New York has raised this monument to the new world impetus of human efficiency.

The conception of a New York skyscraper is often of a stark rectangular rearing up in unbroken lines, almost showing its geometrical steel ribs under a lean flesh of unrelieved stone. There are enough of such buildings in New York, but they are only the raw beginnings out of which have been evolved the Metropolitan Tower, the astounding massivity of the Plaza Hotel, the giant horseshoe of the new civic buildings, the Bankers' Trust building with its airborne pilasters and pyramidal roof, the Candler building, rocketing above Times Square at night in lines and cornices of fire, the cloud-aspiring Singer building, and—last of all, until the next daring—this Woolworth Tower, the highest inhabited building in the world, seven hundred and eighty feet in all, whose summit I have known literally hidden in October storm-scud.

CLAUS SPRECKELS BUILDING
REID BROS., ARCHITECTS

Until the Hobart building was designed, this was considered the tallest structure in San Francisco.

BUILDING FOR THE HOBART ESTATE
WILLIS POLK & CO., ARCHITECTS

The designer of San Francisco's newest skyscraper says it is taller by twenty feet than the Spreckels building. It has twenty-one stories and measures 348 feet 6 inches from street level to the top of the flag pole.

And they are towns in themselves, these New York office buildings, housing two, five, and ten thousand people under one roof. Their vast height is often based on a whole city block. They have within them the organization of a municipality, their own electric light, water, and power plants, and a fire-fighting equipment that is almost supererogation, because they are as nearly fireproof as the wit of man can devise. In the whole of the Woolworth building, there is no woodwork. The doors and partitions are of steel, terra cotta, and wire glass. The frame of the building is a gigantic and homogeneous steel cage, the beautiful walls and ornaments are laid on as a skin. Beams and ceiling arches are of steel, floors are concrete, stairways are stone or metal. The fiercest blizzard of New York's harsh winter would not shake the skyscraper by a tremor, for it has been built to withstand the impossible pressure of a wind of two hundred and fifty miles an hour.

Whatever you may think of their external artistry you cannot fail to be conquered by the internal complexity, efficiency and completeness of these commercial palaces of New York. It has been truly vaunted that a tenant need not go from under his roof for almost any civilized want. He has, of course, the enviably competent telephone service of New York, and he can mail his letters in a chute on his floor. He has a post and telegraph office, a restaurant, a bank, an insurance office, a safe deposit, and even his own uniformed police. He can visit his physician, lawyer, broker, tailor, tobacconist, barber, and shoeblack. He can buy papers, books, stationery, theater tickets, hosiery, hats, fruit, flowers, and candies without passing his main entrance.

Some of these vast buildings are open day and night, the cost of maintenance alone reaching $100,000 a year, and the one item of water supply $5,000. The Woolworth building has 40 acres of floor space, 3,000 exterior windows, 80,000 electric lights, and 28 lifts. Twenty-four thousand tons of steel went into the construction, 17,000,000 bricks, 87 miles of electric wiring, and 43 miles of piping.

These are but figures, and no figures can so touch the imagination as an ascent to the top of New York's latest and greatest skyscraper. It is infinitely more suggestive than the ascent of the slightly higher Eiffel Tower. The Parisian wonder is an engineering curiosity, a mighty skeleton reared for the sightseer, tenantless except by tourists and meteorologists. This tower of New York holds thousands of citizens who pass their work-a-day hours in all its fifty-five stories—people who sit at their desks and unheed by familiarity the most astonishing city view of the world. The stranger pays fifty cents and steps into the express elevator. Nothing here of the tedium and change of lift of the Eiffel Tower; the flash to the summit takes exactly one minute. It is one of the cheapest and most exhilirating two shillingsworth imaginable. The fifty-five floors fall past you like cards dropping from the hand of a juggler, streaks of alternate light and shade.

And the view from the high-borne eyrie—all the amazing city—the encompassing rivers—the busiest harbor in the world—the Olympic dwarfed to a channel steamer—the narrows beyond—and then the wide roll of the Atlantic—it hangs forever afterwards in the memory like a great picture in a gallery.

* * *

Labor unions are strong in the West and especially strong in a city where, on Hallowe'en, the boys pulled a lot of pickets off the fence belonging to a house in which a union barber lived and made a bonfire of them.

The barber bought some new pickets and nailed them on his fence himself. Whereupon he was promptly fined fifty dollars by the council for doing carpenter work which should have been done by a union carpenter.

The barber thought over this for some time. Then he presented the Carpenters' Union with a bill for thirteen hundred and seventy-five dollars.

"What's this for?" asked the chief of the Carpenters' Union.

"Why," the barber replied, "that's what's due the barbers because the carpenters shave themselves." His fine was remitted.—Saturday Evening Post.

L. C. SMITH BUILDING
Seattle, Washington
Gaggin & Gaggin, Architects
The tallest building on the Pacific Coast

Why The Skyscraper?

Height Restriction Should be Governed by Population and Land Values—The Small City Does Not Require Tall Buildings—Cass Gilbert, Designer of the Famous Woolworth Building, Says:

I do not wish to be the advocate of excessively tall buildings. While the building of one hundred stories or even more is possible, I do not think it desirable for a number of reasons.

In America I think that we have gone to an extreme in the height of our buildings. There are exceptional cases, as in New York, where the excessively high value of land makes tall buildings necessary, but on general principles I am opposed to them.

Excessively tall buildings are a disadvantage because they are likely to produce congestion of traffic on the streets. When the occupants of a 100-story office building come forth at the close of the day's work, streets in the vicinity would inevitably be crowded.

The excessively high building draws business from other properties to the general disadvantage of the city.

By FREDERICK W. JONES

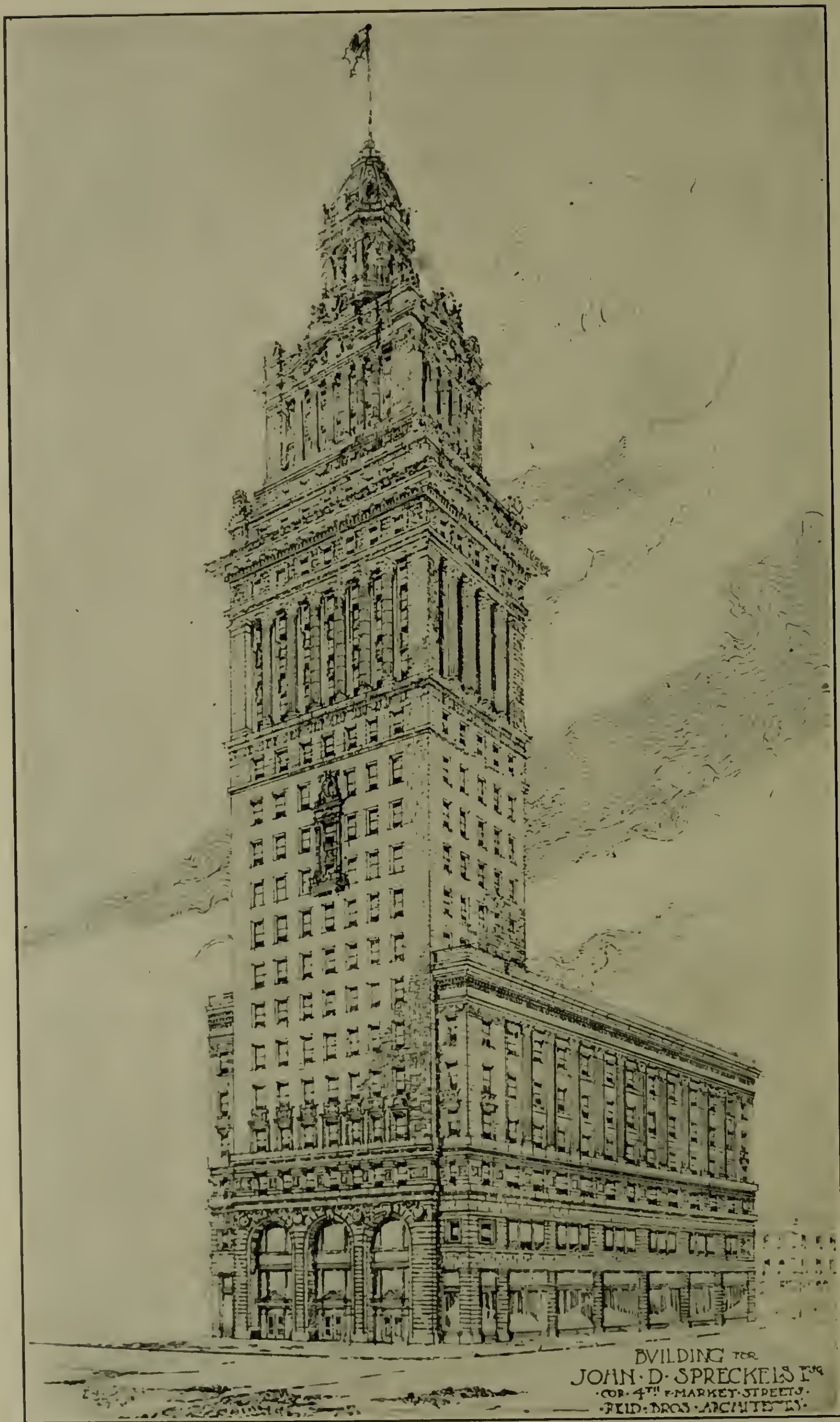
"THE tall building is a positive indication of a city's growth." How often we hear this assertion, but it's not based wholly upon facts. There are exceptions and you will find them not so much in the big cities as in the ambitious towns that want to emulate the larger cities. A six or seven-story building is high enough for the ordinary needs of a city of from 50,000 to 100,000 inhabitants, but if you look around you will find these modest communities erecting ten and even twelve-story hotels and office buildings. I know of one town of 30,000 inhabitants bragging about its skyscrapers, of which it has two—both ten-story bank buildings, and now a third bank wants to outdo the others by erecting the "tallest of them all."

And right here is the real explanation for the skyscraper craze in the small community. A bank will build for the advertising, or a wealthy citizen, who wants his name perpetuated, will spend a small fortune just to gratify his personal vanity.

Los Angeles and Sacramento each have adopted a height limit, and considering the rapid growth of the former city, the restriction would seem to throttle legitimate metropolitan advancement. Los Angeles will soon have reached an end to its downtown business area, and then must surely come a demand for higher structures. Just now the restrictions compel the architect to keep his aerial aspirations inside the twelve-story scope.

Each year since the fire has found San Francisco putting up higher buildings. For a time the Spreckels or Call building enjoyed the distinction of being the highest structure in the city. But now the Hobart building, twenty-two stories, is in line for the honors, and soon the Finkle Arms hotel—a structure 350 feet from curb to roof, will tower above them all.

Seattle lays claim to the tallest skyscraper west of Chicago—the L. C. Smith building of thirty-five stories.



BUILDING FOR JOHN D. SPRECKELS, SAN FRANCISCO
REID BROS., ARCHITECTS

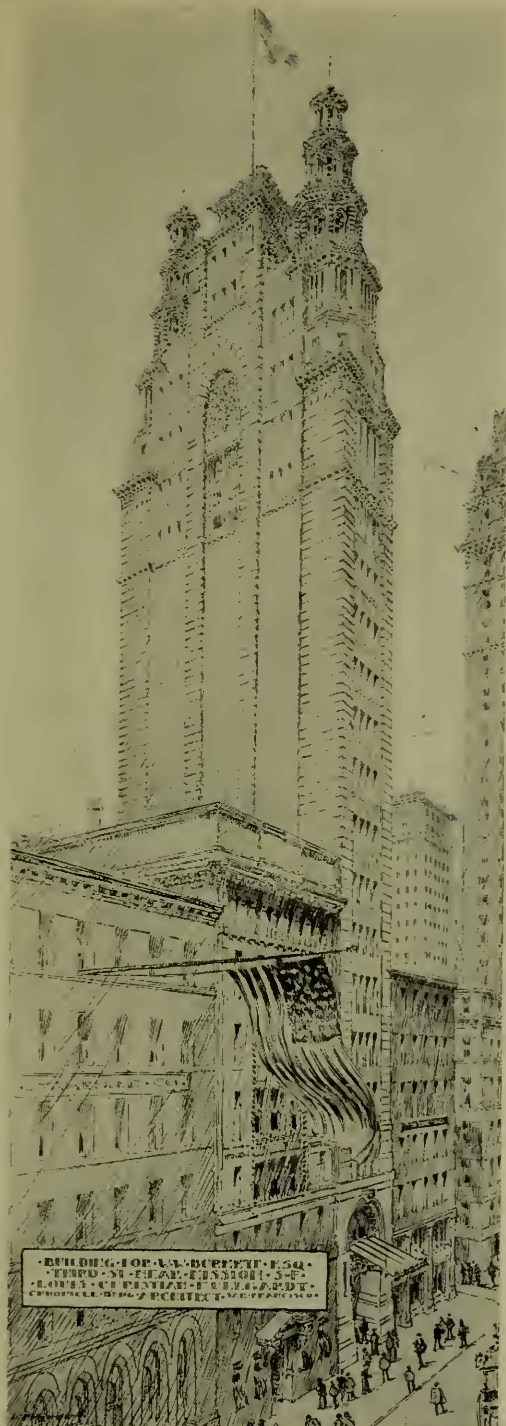
The architects expect to proceed with the construction of this, the greatest of all San Francisco sky-scrapers, within a very short time.

HUMBOLDT BANK BUILDING, SAN FRANCISCO
MEYER & O'BRIEN, ARCHITECTS

For a long time this was the second highest office building in San Francisco. It is one of the best examples of terra cotta work on the Pacific Coast.

FINKLE ARMS HOTEL, SAN FRANCISCO
ROUSSEAU & ROUSSEAU, ARCHITECTS

The design calls for twenty-three stories, and a height of 345 feet from the Stockton street level to the top of the tower.



BUILDING FOR THE BURNETT ESTATE, SAN FRANCISCO
LOUIS C. MULLGARDT, ARCHITECT

An artistic bit of architecture that would add not a little to the beauty of San Francisco's sky-line

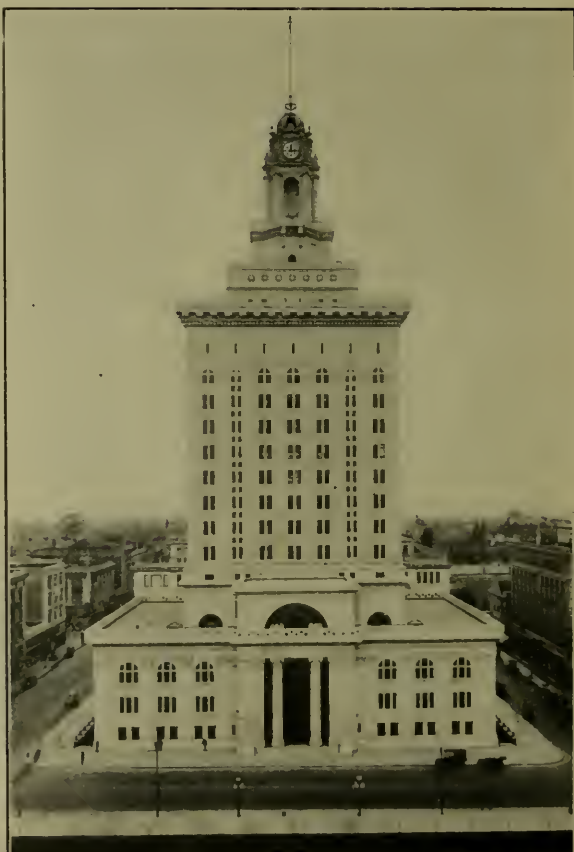
LOS ANGELES INVESTMENT BUILDING
ERNEST McCONNELL, ARCHITECT

The tallest building in the Angel City, being one story higher than the present twelve-story height limit.

THOMPSON BUILDING, OAKLAND
WALTER REED, ARCHITECT

A good example of one of the later types of office building construction.

THE OLD OAKLAND CITY HALL, WITH STEEL FRAME OF NEW BUILDING IN BACKGROUND



THE NEW CITY HALL, OAKLAND
PALMER & HORNBOSTEL, ARCHITECTS
OAKLAND'S TALLEST BUILDING

"FLAT IRON" BUILDING FOR THE FEDERAL REALTY COMPANY, OAKLAND
BENJAMIN GEER McDOUGALL, ARCHITECT

This is one of the most talked-about office buildings in Oakland. The architect has solved very satisfactorily the problem of providing something ornamental for an extremely narrow gore lot.

YEON BUILDING, PORTLAND, OREGON
REID BROS., ARCHITECTS

The tallest building in the Northwest, with one exception—the L. C. Smith building in Seattle, Wash.

We think if there is to be building height restrictions the same should be regulated in accordance with population. For cities under 100,000 it would be a good thing to keep the height down to at least ten stories; for cities of from 250,000 to 500,000 population, the limit might be fifteen stories, with no limitation for cities in excess of a half-million inhabitants. One very strong argument against building skyscrapers in small towns is the fact that the communities are not properly equipped to protect these buildings in case of fire, let alone prevent loss of life should the occupants be cut off in the upper stories. The average city of 25,000 or 30,000 inhabitants is without water tower or aerial ladder, both of which appliances are considered indispensable by a metropolitan community in fighting fire above the fifth or sixth floors.

Congestion of the business section is an argument for tall buildings that cannot be overlooked, especially in cities where land costs money and realty expansion is limited. You cannot change the main artery of a great city any more than you can change the working center of the human body. And if this business center is all built up and you cannot push it farther north, south, east or west, you have but a single alternative left—build higher.

And so it is we have the skyscraper—a noble product of American genius!

While we are on this subject of skyscrapers, it is interesting to note its wonderful development—today a city in itself, one might say without excessive exaggeration. In it are to be found Gog and Magog, doctor, lawyer, merchant, chief, builder, banker, barber and the disciple of the beaux arts.

What one cannot get or do in one of our modern office buildings can hardly be imagined. To be sure, he can't keep chickens or raise turnips, but he can almost build a railroad without leaving the premises. He can buy the right of way, hire counsel to settle adverse claims, get his money from bond brokers and be well started on construction before he has to cross the street or use the telegraph. And if he wants a bungalow and garden on the roof (like Herbert Law contemplates on the top of the Monadnock building) he can have it.

Some of these "cities" are rather exclusive. They have to be. Those which claim to be great "business centers" are loath to harbor doctors and dentists, and so special buildings for men of these professions are being erected.

When a doctor's patient screams in agony, others on his floor or "street" can have no cause for complaint, because who knows but that his own next visitor may howl even louder? When a man boards the elevator with his eye in a sling or the perfume of antiseptic rising strongly, other people on the car have no complaint, because they may be on crutches or have swollen jaws.

And so, even as the building-city is evolving, the era of specialization already begins and we now have a law building, medical building and homes of music. One building is now being erected for the exclusive use of lawyers, so when fair divorcees or victims of the trust's oppression come to seek relief, they may not brush elbows with rising young prima donnas or bebandaged second best heroes of a dance hall melee. Another building for doctors and dentists exclusively will care for the groaning rheumatism sufferer and the agonized man with the hollow molar.

And so, the average mortal, watching the great steel beams dangling, with a man astride, before it settles to place in the giant skeleton of one of the many "cities" now being built, must be imaginative indeed if he can construct a picture of the industry that comes to that quarter acre or half acre when the workmen have left the job and the tenants have moved in. The Biblical truth that "a city builded on a hill cannot be hid" is moderated in these days of skyscrapers where the office building city is the hill itself. For when the incoming traveler is yet afar off, he gazes from his Pullman window upon the glittering peaks of these mighty cliffs where all phases of metropolitan life are now finding centers.

HOTEL FOR J. SOCKOLOV, SAN FRANCISCO
ROUSSEAU & ROUSSEAU, ARCHITECTS
Structural Steel by Central Iron Works

BUILDING FOR THE STOCKTON SAVINGS BANK
L. B. DUTTON, ARCHITECT
STONE & WRIGHT, ASSOCIATE ARCHITECTS

Stockton's tallest building.

The Movement of Tall Buildings

THE recent statement of the Superintendent of Buildings of Chicago that virtually all of the immense buildings and sky-scrapers of the towntown district are out of plumb, calls attention to a peculiarity of tall buildings little realized and still less understood outside of the architectural and engineering professions. The common impression is that all heavy and massive structures are rigid, firm, and immovable; yet, in Chicago, according to the

W. I. HOLLINGSWORTH BUILDING, LOS ANGELES
MORGAN, WALLS & MORGAN, ARCHITECTS
Faced with Los Angeles Pressed Brick Company's Enamel Brick.

Department of Buildings, they have not one but scores of buildings like the leaning tower of Pisa, only they do not lean so much, thirty inches being the most that any of them are out of plumb.

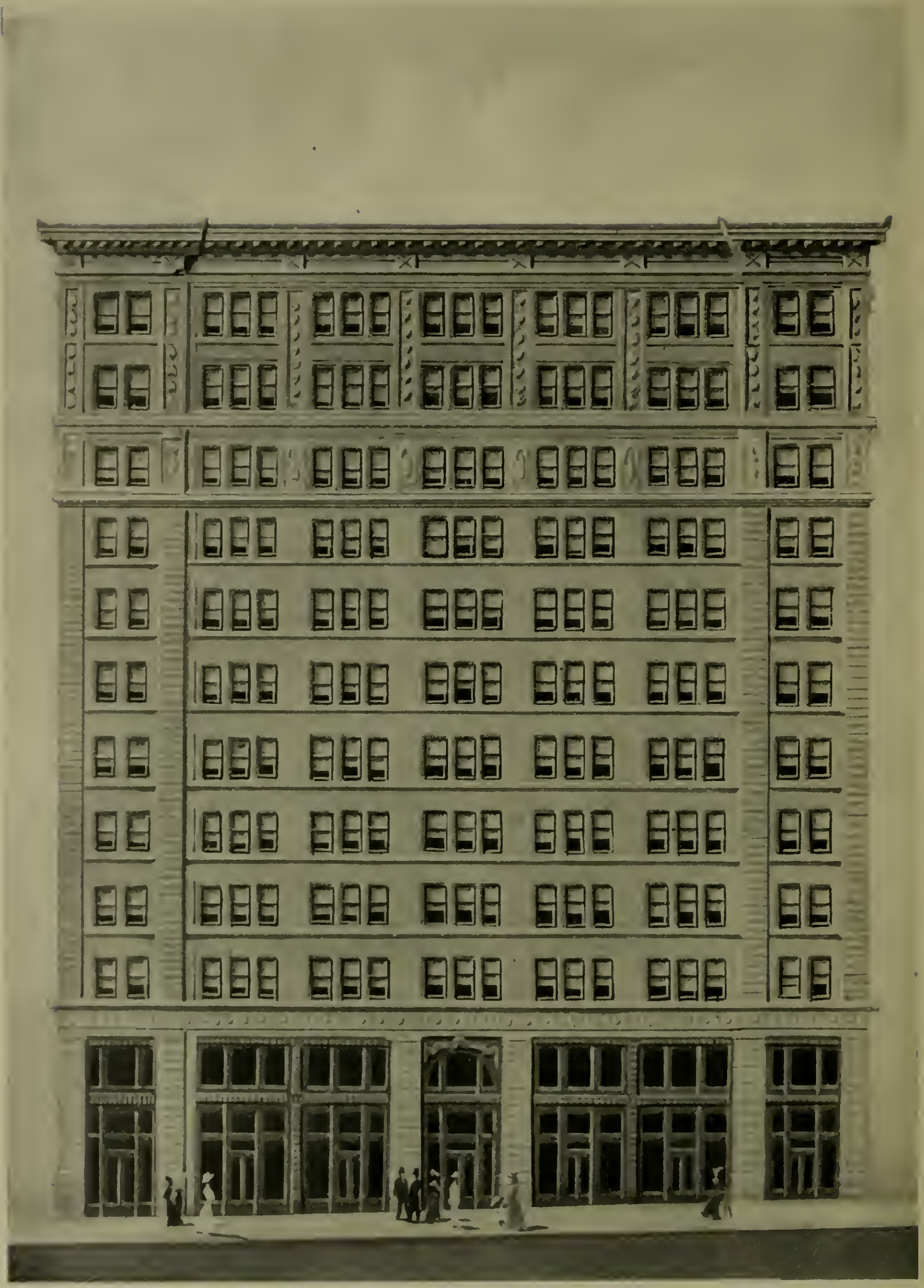
So far from being perfectly firm and rigid, all tall buildings are subject to two distinct movements, and all heavy buildings erected on anything but bed rock have three distinct movements to their credit.

The City of Chicago, built as it is on sub-strata of clay, says Building Progress, furnishes the most interesting study of the movement of buildings, and the greatest number and variety of examples. All of the early sky-scrapers of that city were carried on floating foundations or on piles driven deep into the clay. These buildings without exception settled into the soil due to their weight, the distances they settled varying from three to over five inches. Many of these buildings, notably the Great Northern Hotel are partially carried on

UNION OIL BUILDING LOS ANGELES
Parkinson & Bergstrom, Architects

jacks and periodically levelled up as settlements occur, then, after all subsidence has taken place, and the buildings have finally come to rest, the jacks are removed and the foundation walls filled in with masonry.

That is one of the movements of buildings, then, settlement; but settlement takes place only in those buildings erected on floating foundations. When the footings are extended down to bed rock, as all footings for present day buildings in Chicago are, the amount of settlement that takes place is nil and may be disregarded.



ADAM GRANT BUILDING, SAN FRANCISCO
JOHN GALEN HOWARD, ARCHITECT

One of the tallest buildings of heavy type construction in the wholesale district.

But even buildings with their footings carried to bed rock lean or are racked out of plumb, and the taller the buildings the more they are likely to lean, although the amount they are out of plumb is seldom enough to endanger the structure. Recently the Building Commissioners of Chicago ordered the Unity Building straightened as it was "unsafe but not dangerous," being thirty inches out of plumb. In an interview they said: "It is impossible to prevent the big buildings here from leaning. Some of them are not straight when they are finished, but that does not impair their safety. It is probably safe to

NEW DAVENPORT HOTEL, SPOKANE, WASHINGTON
The First Two Stories of Boise Sandstone.

say that every building in the city leans more or less. If they are on floating foundations they also settle gradually." But there is still another movement of buildings, and the most interesting of them all to consider. According to an exchange, "The Eiffel Tower swings perceptibly in the wind, and even stone shafts like those of the Bunker Hill and Washington monuments move several inches at the top. In these cases the cause of the action is not only the wind, but the heat of the sun. The side that is towards the sun expands during the day more than the side in shadow. An interesting device has been employed to show the movement of the dome of the Capitol at Washington. A wire was hung from the middle of the dome inside the building down to the floor of the rotunda, and on the lower end of the wire was hung a 25-pound plumb bob. In the lower point of the weight was inserted a lead pencil, the point of which just touched the floor. A large sheet of paper was spread out beneath it. As the dome moved, it dragged the pencil over the paper every day. The mark made was in the form of an ellipse six inches long. The dome would start moving in the morning as soon as the rays of the sun began to act upon it; and slowly, as the day advanced, the pencil would be dragged in a curve across the paper until sundown, when a reaction would take place and the pencil would move back again to its starting point. But it would not go back over its own pencil track, for the cool air of night would cause the dome to contract as much on the one side as the sun had made it expand on the other, and so the pencil would form the other half of the ellipse, getting back to the original point all ready to start out again at sunrise."

In the three movements affecting tall and heavy buildings we have, then, particularly in the expansion and contraction movement which is of daily occurrence, and which affect sky-scraper buildings as well as all other tall structures, a condition which must be taken into consideration when planning the buildings. Lines of steam pipes, stacks of drainage pipes, lengths of water pipes, vacuum cleaning pipes, refrigeration system pipes, electric wire conduits and the various networks of tubing which cross and criss cross inside of a building will naturally be more or less affected by the movements of the building; and if long life is expected of these various systems of piping, they must be so installed that they can "give" under the movements of the building without damage to the piping, and sufficient to compensate for the change of position.

Besides pointing out the necessity for flexibility for the piping systems in tall buildings, the movement of buildings shows how desirable it is to have solid foundations the footings of which extend down to bed rock. Floating foundations are all right for some kinds of buildings, but for the sky-scraper type there is nothing so good as the solid rock of old Mother Earth.

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My Hollow Tile House

THE editor of the Kansas City Star writes as follows in the August 1913, number of the "Interlocker":

Did the advantage of living in an ice chest ever appeal to you? Aside from rather cramped quarters, I have often envied the tomato, its ice chest apartment. Who is a tomato, that it should be cool, while I swelter? I ask.

I am answering that question this month by beginning to build a house along what I conceive to be the ice chest idea, the nearly air tight compartment within the outer walls. The reason for this comparison is that the temperature within the ice chest stays for a long time the pitch at which it is put, and advantage is in the extremes of winter or summer.

I am going to build my house of Denison Hollow Tile, made at a plant in Coffeyville, Kansas. This will be faced on the outside with stucco, having the appearance of any stucco-covered house.

The outside walls of the house will be fireproof, dampproof, heatproof, coldproof, windproof, vermin-proof.

They will be built of hollow tile from the bottom of the basement up to the roof, making the basement as warm and as dampproof as any part of the house.

Along with the idea of building this kind of a house, came two surprises. I was at first amazed to think that these advantages, which appeared so apparent to me, had not long ago appeared with equal force to others. So I said, I will be doing some pioneering.

The second surprise came when I found I was not a pioneer at all. I am finding the use of hollow tile for residences to be a practice years old in Europe. Yesterday a man whose younger years were spent in his native Austria was telling me that even at the time he left Europe, many of the better houses in the outlined district of Austrian cities were of hollow tile construction.

That is a condition that should not be. The ocean should not separate us from knowledge. If Europe has long recognized hollow tile as a competitor of wood, brick and stone, we, who build homes in this Central West, should have had the same choice. Great corporations who see millions in the saving of a penny, have the world for its schoolroom, but the individual lacking co-operative facilities learns slowly that which may be much to his benefit, and which may be well known to another people than his immediate neighbors.

At the beginning of my investigation, I was led to believe that the construction I was after was very expensive. I have proven to myself in figures from actual bids on the entire work in the house, that anyone able to have a house built can afford fireproof tile, for the cost is not much more than frame and stucco construction. I have built other houses of the customary material, and have not been satisfied. They have been hot in the summer, and cold in the winter. I wanted a house that would be as pleasant in temperature 110 in the shade as when the thermometer is 20 degrees below zero, either of which is reached sometimes in Kansas City.

For a long time I believed that concrete walls would be the answer, but I discarded this idea after investigation because I believed the construction too heavy for a medium size residence, because the construction does not lend itself readily to proper lines, and for other reasons.

One day I met a man who had been an engineer in many of the countries of Europe. He told me how hollow tile had been used for a long time in government buildings, and higher class residences in Russia, Austria, Italy, and many other countries. He told me also of the rapid spread of this construction in this country.

I had seen the queer-looking blocks being used in walls of office buildings and public garages. I began to watch the construction and ask questions of the men putting up the tile. It was so simple and easy.

I learned the reason for the use of the material.

The hollow tile has been proved to be an absolute non-conductor of heat, cold or dampness. This has been done before proper experts. In a recent hollow tile show in Chicago, it was demonstrated to representatives of a packing company how hollow tile was a good material to use in walls of their refrigerator cooler.

I am satisfied because of the thoroughness of my investigation that these representations are true.

I read in books concerning hollow tile, then I interviewed architects and builders concerning it. After that I went to see a representative of the Denison Clay Company.

They told me of the water test; how water at a tremendous pressure had been held for many hours against a hollow tile wall without dampness penetrating the first hollow of the tile, an intense heat was placed against the same wall, and on the other side there was no change in temperature. I learned the strength of the material and was satisfied.

And the beauty of it all is that the price is within the means of almost anyone who can afford a popular-priced home.

DENMAN SCHOOL BUILDING, SAN FRANCISCO
DESIGNED BY THE CITY ARCHITECTS

DETAIL OF ENTRANCE, DENMAN SCHOOL BUILDING, SAN FRANCISCO

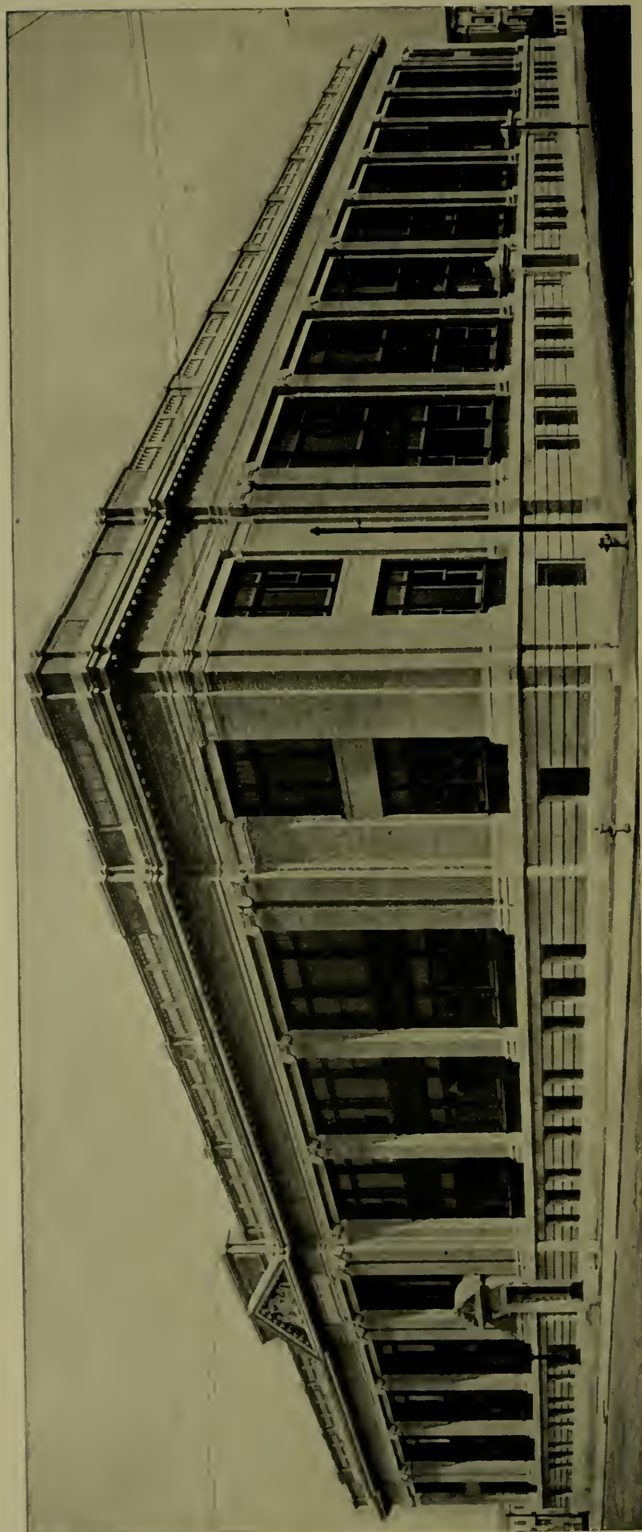
Some Late Examples of Good Design in Architectural Terra Cotta

REFERRING to the new Denman School building, designed by the Department of Architecture of the city of San Francisco, the National Terra Cotta Society, in its June Brochure, prints the following extract of a well-known architectural writer:

"It seems hardly extravagant to characterize the Denman Schoolhouse as one of the finest in the country. Besides being an ideal expression of its plan and material, it is a choice adaptation from a style that prevailed centuries ago, to a requirement that has asserted itself only within the last few years. Nor is it in the least sense a servile adaptation, for the end treatment and much of the detail is refreshingly new.

"By means of well studied brickwork and charmingly executed terra cotta, great interest and dignity have been imparted to the blank walls. Indeed, throughout, all architectural terra cotta embellishment is in excellent taste and true to the spirit of the material. The wealth of refined moulding found in the cornice recalls how the North Italian architects gave infinite variety to the shadows on their beautiful terra cotta cornices. An excellent idea of the delicacy of all the ornamentation is conveyed by a study of the doorway. The modeling is a pleasing improvement over the harsh, crisp style frequently employed.

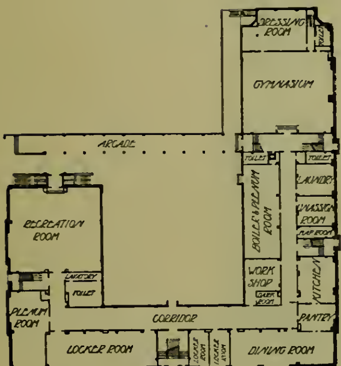
"The interior arrangement can be immediately grasped without the aid of a plan. The doorways, with windows above, at once signify the bisecting corridors that divide each floor into four units of two class rooms each."



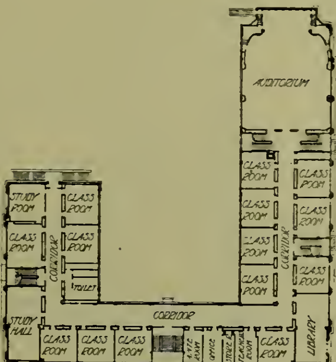
GIRLS' HIGH SCHOOL, SAN FRANCISCO
DESIGNED BY CONSULTING BOARD OF ARCHITECTS

Built of semi-glazed architectural terra cotta and buff-colored brick.

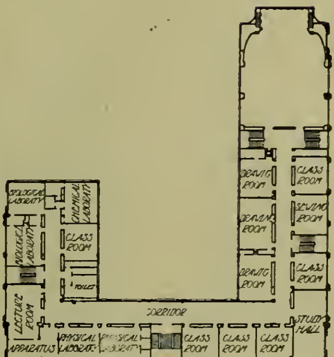
GIRLS' HIGH SCHOOL, SAN FRANCISCO—ENTRANCE DETAIL
DESIGNED BY CONSULTING BOARD OF ARCHITECTS



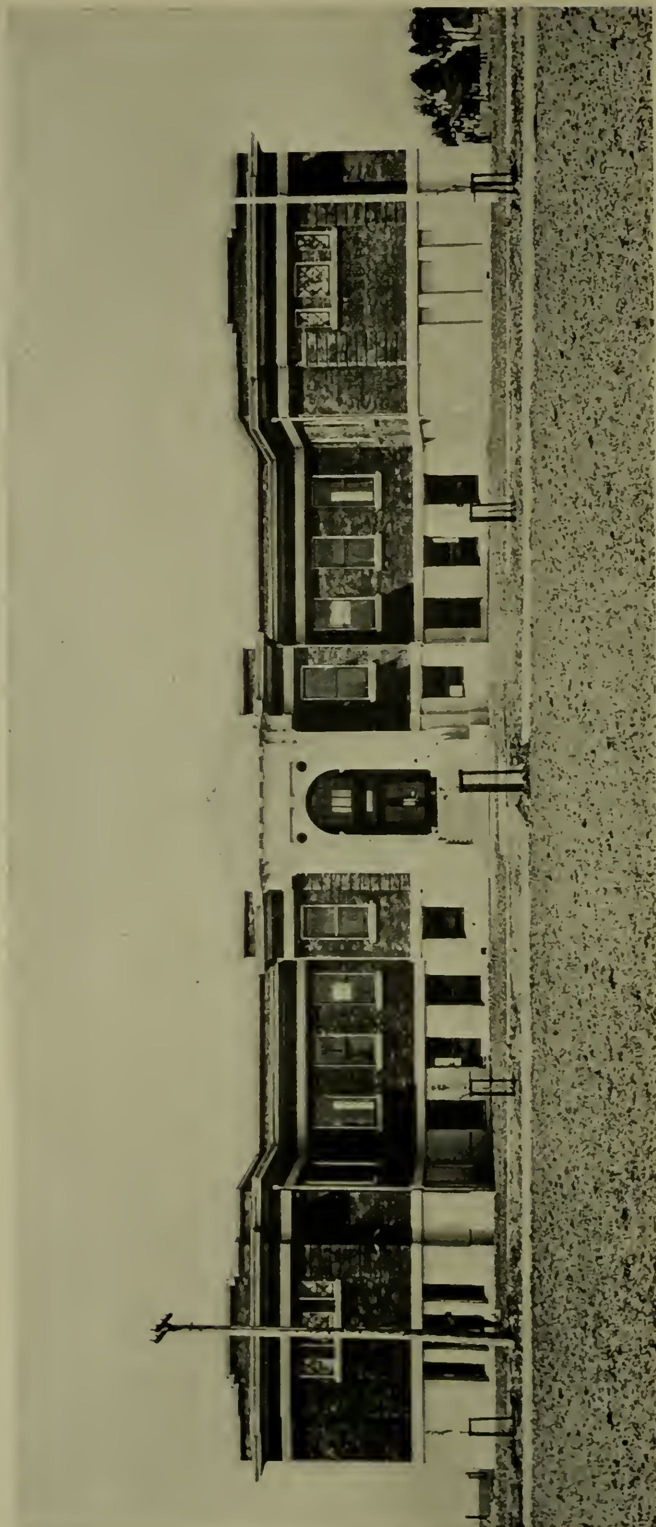
Basement floor plan



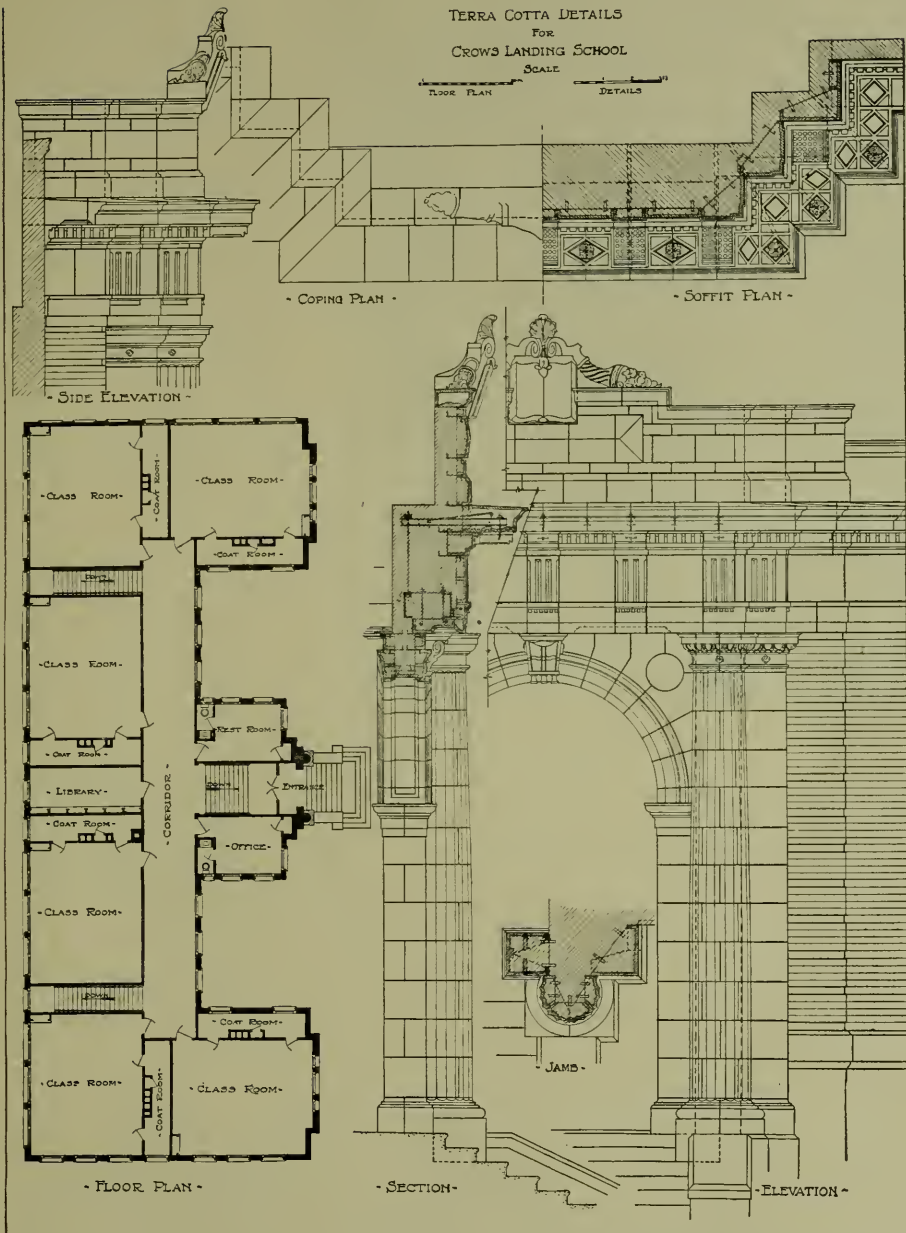
First floor plan



Second floor plan



CROW'S LANDING SCHOOL,
CROW'S LANDING, CALIFORNIA
WILLIAM H. WEEKS, ARCHITECT



CROW'S LANDING SCHOOL
TERRA COTTA DETAILS

ENTRANCE DETAIL
CROW'S LANDING SCHOOL

WILLIAM H. WEEKS, ARCHITECT

The walls are of red pressed brick and most of the light colored trim shown in the illustration is matt enameled architectural terra cotta, having a slight cream tint. The round disks in spandrel over arch are green marble,—verde antique. The small windows in the wing are glazed with richly colored opalescent glass, which lends a touch of color that gives a very pleasing effect. Architectural terra cotta—polychrome—is often employed in façade decoration to obtain similar results.

Architectural Terra Cotta

ALTHOUGH there is no older manufactured material known to man, it is only in comparatively recent years that burned clay, in the perfected form of architectural terra cotta, has come into great prominence as a building material. The favor which it now finds among architects and builders is due in part to certain remarkable qualities which were long latent and undiscovered and which the demands of modern construction have brought to light; and in part to new qualities which have been added as a result of scientific investigation and experimentation with terra cotta in an effort to develop its full possibilities. Because of these unusual natural and acquired qualities and attributes, there is at present available to architects no material which merits more careful attention and consideration than architectural terra cotta. It is without doubt the ideal building material of the twentieth century.

Architectural terra cotta deserves the marked recognition which it is now receiving, first of all, because it is durable. The figurines of Tanagra and the water-jars of Egypt are in practically as good condition today as they were when made, thousands of years ago. Architectural terra cotta never wears out. There is, in fact, nothing about it that can wear out. It is as permanent as earth because it is earth. To the two forces that work most potently for the destruction of a building material, that is, fire and water, architectural terra cotta offers the most stubborn and successful resistance. It is manufactured under a terrific heat, more terrific than that of any conflagration. The appalling disasters at Baltimore and San Francisco proved that those buildings in which the structural materials are protected by architectural terra cotta and brick can most successfully withstand the ravages of fire. By water, the other of the two foes of permanence in a building material, architectural terra cotta is totally unaffected. In the case of many materials, water finds its way through the surface, freezes, causes expansion and ultimate disintegration. In the case of architectural terra cotta, this destructive process cannot even begin, because the first step, the penetration of water beneath the surface, is impossible, inasmuch as architectural terra cotta is impervious to moisture.

Architectural terra cotta is further excellently adapted to modern building construction because it is at once strong and light. Ordinarily, these two qualities are inconsistent: the material that is strong is heavy; and that which is light is weak and of uncertain resistance. The modern skyscraper demands a material so strong that it can be used with safety under the most exacting requirements, and so light that the cost of foundations, superstructure, and installation may be reduced to a minimum. Architectural terra cotta is just such a material, and its use for the entire facing of the largest business buildings in the world is an evidence that wide recognition is being given to its unique qualities.

Every architect today is alive to the demands of beauty and attractiveness. Even in buildings designed for the most utilitarian purposes—in factories, for example—there is a strong demand that the æsthetic sense be satisfied. Architectural terra cotta, because of its infinite possibilities as regards form, may be modeled to express the most delicate beauty and charm. It can be made in many tints and colors and in limitless combinations of colors. And, what is equally important, it *retains* all of its original qualities. Dirt, smoke and soot do not permanently discolor its surface; they do no damage that cannot be easily undone by the application to the terra cotta of ordinary soap and water.

Architectural terra cotta, while it possesses these remarkable qualities, offers unusual opportunity for economy. This material makes it possible for the finest ornament to be used in buildings intended for the most practical purposes, at a most reasonable cost. For years, fine ornament was divorced from modern utilitarian architecture because it could be secured only by the slow process of individual hand carving. By fine ornament is not meant the disgusting amount of cheap, machine-made ornaments that disfigure rather than embellish, but those legitimate forms that have had the endorsement of all ages. When the cost of hand carving became prohibitive, these had to be abandoned. Now by the use of architectural terra cotta,—by making a plaster mold of one piece and pressing many pieces from the same mold,—the sculptor's model for cornice, pediment, or frieze can be duplicated at relatively low cost. This process of repetition is such a decided saving that it makes feasible the employment of the best available talent for the creation of the original model. As a result, the most pleasing effects can be introduced without waste and with the utmost economy.

Consider the practical advantages that result from the use of a material with these extraordinary qualities. Because of its lightness of weight, it is easily and inexpensively handled and put in place; and because of this same lightness, it makes possible a substantial saving in connection with the entire structure. Once placed in position, it is durable for all time. It cannot melt, disintegrate, or decay. It can, moreover, in the first instance, be made unusually attractive and beautiful by the use of a great variety of surface finishes or of one or more colors, and this original beauty is permanently retained. It is fire-proof, waterproof, dirt-proof and time-proof. It is, in short, all that could be demanded by the most exacting and discriminating in the way of an ideal material for use in the buildings of the twentieth century.—National Terra Cotta Society's Brochure.

Los Angeles Woefully Lacking in Beautiful Municipal Buildings*

By ALFRED F. ROSENHEIM, A. I. A.

AS IN every calling so in ours, there are architects, good, bad and indifferent, commercial and others, but a bad architect is about the worst kind of an individual that can be inflicted upon a community, and especially a community that is growing and developing as rapidly as Los Angeles, for his creations are always a blot on the neighborhood in which he happens to be operating, and from which it will suffer until they are removed by some enterprising or disgusted citizen.

Now what have the architects done for Los Angeles?—continually referred to as a "beautiful city," but is it such in fact? A beautiful city is made up primarily of beautiful buildings, of well-paved and well-kept streets, ornamented with shade trees. Can you point to a really beautiful street? Can you point to a really beautiful building? Nearly every building or building project that is published, whether for public, religious, commercial or domestic purposes, is characterized by the local newspapers as the most beautiful of its kind ever erected anywhere. Of course this is absurd. While it is laudable to boost for one's home city, so far as its architecture is concerned there should be better reason for boosting than we have in our case.

Whatever of beauty we can lay claim to, the individual himself is entitled to credit for; it may be found in the construction of his home and the embellishment of its surroundings by means of artistic landscaping and gardening. As a municipality, however, we do not possess today a single building that can be pointed to with pride and admiration either by our own citizens or by the visitor coming within our gates. Have we a city hall, a public library, an art museum, a convention hall, a music hall, a lecture hall worthy the name? With very few exceptions, we have no school that would not disgrace any one of our neighbors within a radius of fifty miles. The present board of education, however, is going to make a decided change in this respect. What have we in the way of boulevards and parks, and where, within the city limits, can you take a friend for a really interesting and enjoyable drive? Where can you place statuary or fountains or a monumental arch, should some public-spirited citizen happen to bequeath or donate money for their construction? It must be evident to you that "public spirit" and "civic pride" are sadly lacking in this community, and it is due mainly to the fact that the authorities are either indifferent or not alive to our needs and that everybody else is too busy chasing the almighty dollar.

The action taken by the city council, about two years ago, regarding the construction of a new city hall on the Temple block site, purchased a year previous to that time, was responsible for the resolution passed by the convention of the Architectural League of the Pacific Coast, held here in April, 1912:

"The Architectural League of the Pacific Coast, in convention assembled, notes with interest the fact that city planning has become a recognized duty of municipal authorities in nearly every important city in this country and abroad; and whereas the city of Los Angeles has within the last decade developed more rapidly than any other city in the world, and is now certain to continue in its growth, so that its destiny as a great and powerful metropolis is assured, and that such future growth would result in the building of a city famous for its beauty if at this time a 'comprehensive general plan' along practical and economical lines could be adopted;

"Therefore, be it resolved, That this league strongly urges upon his honor the Mayor and the City Council the importance of securing such a plan, and that, pending such action, no steps be taken toward the location or construction of a new city hall, a public library, or other public building, park or boulevard."

The societies that have been organized for the purpose of fostering and assisting in beautifying the city in one direction or another receive little encour-

*Abstract of a paper read before the members of the Jorvian Electrical League of Los Angeles.

agement or support; yet they continue to exist in the hope that ultimately, as the public becomes more interested and better educated, through the medium of travel and observation, they will accomplish some genuine good.

In offering an opinion as to the relative merits of general construction in Los Angeles and in the East, I have no hesitancy in saying that we have by no means reached its standard, notwithstanding the statements you frequently see in the papers that the work done here is as good or better than that done elsewhere. It seems to be the sole idea of the capitalist, and of many others who build for revenue, to make the biggest show for the least money, and with little thought as to how well he is building. In other words, they want "quantity" without regard to "quality," and consequently we are not building the city as substantially as we should. In a few notable instances, however, individuals have either set a high standard of their own or permitted their architects to set a standard for them, and in such cases there have really been produced buildings that compare favorably with the best elsewhere and are therefore a lasting credit to the city as well as to their owners.

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Competition Program for Plans of a Neighborhood Center in Chicago

THERE is a growing feeling that our cities are today suffering grave harm from the lack of neighborhood organization and action. The object of this competition is to show the desirability and possibility of developing Chicago, more than is now being done, as a federation of neighborhoods, each having its own well-designed cultural, or business and cultural center. It is not suggested that these centers would or should suffice for all institutional needs of the people, nor that a reversion to village isolation is desirable—even if it were possible. All great cities are, and seem likely to continue, developing their central functions more and more highly. The proportion of a great modern community, however, which actively participates in these functions is not large. The vast majority of the population does and must find its life chiefly within neighborhood limitations, and this life could be greatly aided by a better handling than now obtains of the physical factors upon which that life, in its institutional expression, depends. A thoughtful survey of our cities would probably deepen the feeling that, not only in politics, but in those features which underlie political expression, they lack the healthy and efficient neighborhood life which they should have, due in part, at least, to the lack of strong unifying nuclei of local life, and that actual developments plainly point to the need of such nuclei.

For reasons of community efficiency, as well as for architectural effect, people generally approve of creating carefully planned civic centers, combining with or near the city's chief business activities certain public or semi-public institutions serving the city as a whole. The same reasons make it desirable to have a well-designed grouping also—with or without local business activities, as may seem best—of the similar institutions serving particular localities or neighborhoods in a great city.

Although the following program is drawn with special reference to Chicago, the problem concerns cities generally, both large and small, as well as suburbs, and the competition is desired to be correspondingly inclusive. Plans will accordingly be admissible for a neighborhood center for *any city other than Chicago,* and for main centers of cities and towns not large enough to justify important neighborhood centers. Plans may also deal with actual or assumed conditions, and those of dense or sparse occupation. It is only desired that the description should sufficiently set forth these conditions, so as to show the merits and appropriateness of the plan.

THE PROBLEM

The problem in this competition is based upon the idea (1) that certain institutions, through which urban life expresses itself, tend to associate themselves together, in a small city at a single and central point, and in a large city at various district or neighborhood points also; and (2) that the people of Chicago—as of our cities generally—would be benefited in many direct and indirect ways by a higher development of their neighborhood institutions, and thus of their neighborhood life.

The problem is, accordingly, to produce plans for a typical or ideal instance in Chicago, or, in other cities, of grouped neighborhood institutions.

A solution would involve a decision as to

(1) The sorts and sizes of institutions to be included—and especially whether commercial as well as social,

(2) The size—which would perhaps vary with the density of population—of the district or neighborhood to be served,

(3) The most efficient inter-relationship to be secured among the institutions to be thus associated, and thus the size and shape of the composition,

(4) The proper adjustment of the composition to the general framework of the city, especially to the street system and perhaps other means of communication, and

(5) The landscape and architectural treatment of the composition in its various parts and as a whole.

THE PROGRAM

Preliminary competition open to all.—The competition will be held in two parts, the preliminary and the final. Any individual, group of individuals, firm or combination between any of these, may participate in the preliminary competition.

Jury to select in preliminary competition.—As soon as practicable after the date for the submission of plans in the preliminary competition, a jury of five members, to be chosen by a joint committee of the City Club and the Illinois Chapter of the American Institute of Architects, will select from the plans submitted not less than eight nor more than sixteen which they deem to be the best.

Final competition open to selected number.—The authors of the plans thus selected shall be eligible to participate in the final competition.

Jury award in final competition.—As soon as practicable after the date for submitting plans in the final competition, the jury will award First, Second and Third Honors to the three plans submitted which it deems the best. The jury may also award honors to more plans than three, if in its judgment special circumstances demand such action.

Cash honoraria.—The jury will select the eight plans which it deems the best among those submitted in the final competition, and the sum of $600 will be divided equally among the authors of those eight plans to cover in part the expense of preparing drawings.

Drawings in preliminary competition.

In the preliminary competition, participants will submit only one drawing—a general plan, on the scale of 50 ft. to the inch. If, however, a participant desires to show the geographical relation of his proposed center to its less immediate surroundings or to the whole community, he may for that purpose combine a key plan on a smaller scale with the main plan of the center, or may submit such key plan separately. The drawings may be rendered in monotone wash, and must be suitable for reproduction. The various buildings and other features on the plan should be designated by numerals, which will refer to a key to be placed below the bottom border-line of the drawings in a separate panel. The numerals must be of such a size that when the drawing is reduced for reproduction to 6 inches by 9 inches, or an equivalent area, they will be plainly legible.

A suitable north point, and a graphic scale in solid black-and-white 100-feet divisions, on which the numerals are large enough to be plainly legible when reduced as above specified, must be placed on the plan.

Thesis.

In addition to the plan, each participant shall submit in the preliminary competition a thesis fully describing his scheme and the conditions it is to meet, setting forth its advantages, practical, social, and esthetic. This thesis shall be type-written, and shall not exceed 2,000 words in length.

Drawings in final competition.

In the final competition, participants will submit at least three perspective views of the whole or a part of the buildings and grounds of the proposed composition, at a scale of 1/16 of an inch at the nearest building corner. If one of these perspective views is a bird's-eye view, it may be at a scale of 1/32 of an inch to the foot at the nearest corner, and but one other perspective need be submitted. In preparing the perspective views, the plan submitted in the preliminary competition must be substantially adhered to, and the competitor should retain a copy of his plan for use in preparing the drawings for the final competition. Other drawings in addition to those specified may be submitted in the final competition, if desired, and the rendering of final drawings may be of any desired character. A thesis of any given length may be submitted with the drawings, or not, as desired.

Date and manner of submission of drawings.—The drawings in the preliminary competition are to be delivered at the office of the City Club, 315 Plymouth Court, Chicago, at or before noon of Monday, October 26, 1914, addressed to the "Neighborhood Center Competition," City Club of Chicago. The drawings in the final competition are to be delivered, in like manner, on or before Monday, January 3, 1915.

To each set of drawings there must be attached a plain, opaque, sealed envelope, containing a card bearing the name of the author or authors.

Exhibition and publication of drawings.—The preliminary plans will not be made public until the final plans have been submitted. All the drawings submitted will then be shown in the special neighborhood Center exhibition, to be opened at the City Club, January 9, 1915. The City Club also reserves the right to publish subsequently, in pamphlet or book form, the drawings and theses submitted.

Notice by participants.—All persons or groups of persons desiring to enter the preliminary competition will please notify the Civic Secretary of the City Club at once. All persons giving such notice will be invited to attend a series of meetings at the City Club, the first of which will be held early in June, at which experts on the subject of the competition will speak and matters connected with the competition will be discussed. Written reports of these meetings will be sent to competitors outside of Chicago.

LITERATURE

As a convenience and aid to those who shall take part in the competition, the City Club will place at their disposal in the club library such literature dealing with the subject of Neighborhood Centers as is available, and will send references to this literature to competitors outside of Chicago.

INQUIRIES

Inquiries for further information should be addressed in writing to "Neighborhood Center Competition," City Club, 315 Plymouth Court, Chicago. The answers will be in writing, and will be forwarded, with the questions, to all known competitors.

George E. Hooker, Civic Secretary.

Cheer Up!

By FRANK A. MITCHELL, in Rock Products

I.

What's the use of being blue?
No one's got it in for you.
Why, darn it, man! you're lucky just to be alive and well.
Of course you have your worries,
But they're only little flurries—
Just square your jaw and grit your teeth, forget 'em for a spell.

II.

The world has trouble in it,
You can find it any minute
If you're looking, but the other fellow has it just the same;
So just look your carcass over—
Why, old scout, you're right in clover
If you're present and accounted for and ain't blind, halt or lame.

III.

So take this here prescription,
Never mind my faulty diction,
And keep your features smiling, don't forget that you're a man;
For the world will treat you fairly,
If you'll only meet it squarely—
Take a brace, cheer up your face, and be a courage fan.

He Who Would Be An Architect---Read

By WILLIAM HOLABIRD*

THE field of architecture is not overcrowded. In fact, the contrary obtains. Today the young man who wishes to become an architect has splendid opportunities, far better than those which faced him a decade ago.

To become a successful architect, however, he must qualify in many things. He must have good habits, a steady nerve, be industrious, and have mastered the rudiments of the profession. Above all these, he must have integrity, because he is compelled to handle constantly funds that belong to other people.

In selecting a vocation, he must have a fondness for it. If he chooses a profession for which he has no liking, his success will be greatly handicapped. No man, to my knowledge, ever has attained high honors in a calling for which he has a natural aversion. I think that is one of the great dangers which parents and advisers are too prone to overlook. They indiscriminately choose a young man's business for him and as a consequence, caring little for it, his progress suffers. All sorts and conditions of men are to be found today who complain about the unattractiveness of their calling and who wish they had made a more fitting selection of their life's pursuit.

Of course, to be an architect and a successful one, a young man must be an architect in all that the term implies. He cannot enter the profession half heartedly. He must be enthusiastic and work untiringly; faithfully. I would venture to declare that 80 per cent of the young men following the various professions of today, do their work mechanically and without full knowledge of details. They have not mastered their chosen calling.

The young man who determines upon architecture as a means of earning a livelihood, must be pretty thoroughly educated. He must know mathematics in order to learn construction. He must be able to draw both mechanically and free hand; have a conception of coloring, and be able to do water color and oil work to a minor degree.

It is possible for him to educate himself by working during the day and studying at night. We have had instances of young men entering an architect's office, boarding themselves, and supporting families, and finally saving enough money with which to take a course in European colleges.

Architecture is not difficult to learn if the young man is willing to work and acquire knowledge. He must start at the bottom. There is no short cut to success, and none of the men who have reached the top ever found a quick route. They all succeeded in the same way—by plodding, conscientious effort.

The remuneration received by successful architects is only fair. We have not increased special charges and rates as they should be increased. The architect, however, earns as much, as a general rule, and perhaps a trifle more, than do those who follow similar professions. He gets good fees, of course, but when he has paid his draftsmen and the various kinds of engineers he must employ, the major portion of those fees go to his employees. But they are an independent lot, are these successful architects, who never are out of employment.

I would advise any young man who has a yearning to become an architect to enter the profession without fear of the future. His success will depend upon his ability to grasp the essential and minor details that spell "fitness." He cannot be a shirker. He must stick to his work and study it incessantly. Even the most successful architect does not know it all. New and greater things are being done every day. He must keep abreast of his profession.

*Senior member of architectural firm of Holabird & Roche, Chicago.

Fig. 1.—This new wall construction combines the mechanical advantages of concrete and the insulating properties of hollow tile, with the surface qualities of the best brickwork

Web-Bricks

An Account of a Remarkable Innovation in Wall Building*

By B. J. S. CAHILL, A. I. A.

I.

SOME inventions when once seen, are instantly recognized as absolutely inevitable. The whole mind jumps at them as though they were predestined to be and to flourish from the beginning. Some few weeks ago the writer received by mail an illustrated account of a new type of brick, a compound brick shaped like the section of a "Z" bar. Although occupied with other matters and in no mood to investigate novelties, his eye was arrested by the first illustration which revealed the whole story in a flash. (Fig. 1.) He read the pamphlet through, not so much to learn what it had to say, because he knew it already, but to tab off the various points as they came up. It was not a process of acquiring one by one the advantages of the new form brick, as much as recognizing and making welcome what seemed always to have been necessary, if one could only have thought of it! This quality of instantaneous recognition, and the word is used very advisedly, is surely the best test of the timeliness of any invention which is really destined to be an innovation.

Few things in this material world are so firmly established, so apparently perfected and unchangeable as building bricks. Yet we know that nothing

* Written for the Architect and Engineer of California.

whatever under the sun is absolutely permanent. But as recent years have brought the innovations wrought by structural steel, other changes may well be looked for. Indeed, it is safe to say that the new style brick owes its development to the modern use of steel and concrete, and their combinations one with the other.

Although the new web-brick has other uses to be specified later on, and this includes a brand new system of construction all its own, it is primarily considered here as a wall material to fill in and clothe the frame of a class "A" building, whether of steel or reinforced concrete.

Curtain or filler walls of concrete have the drawbacks of deficient fireproof quality on the outside, and deficient damp-proof quality on the inside. Moreover, the need of wood forms to make them, including the necessary bracing, takes a large amount of space for a long interval of time, much to the embarrassment of all other trades. The material, the labor, and the time to do all this, is a dead loss. When finally poured, a concrete wall cannot be cemented, tiled or finished on the exterior in any way that is satisfactory, permanent, or artistic. A brick veneer applied to a set concrete wall is even more unscientific, besides being false in principle and bad architecture. On the other hand, common brick curtain walls must be unnecessarily thick and heavy. If built in damp climates, with hollow space front or rear, still further waste is necessary, and if built solid there is always the need of furring. Such walls, moreover, cannot be incorporated with the columns between which they are built. Hollow terra cotta tile walls, excepting for inside partitions, lack strength unless faced with brick, into which, unfortunately, they cannot be bonded.

A wall built with the new web-bricks has the following properties. It is:

1. Fireproof on the exterior.
2. Damp-proof on the interior.
3. Perfectly bonded clear through.

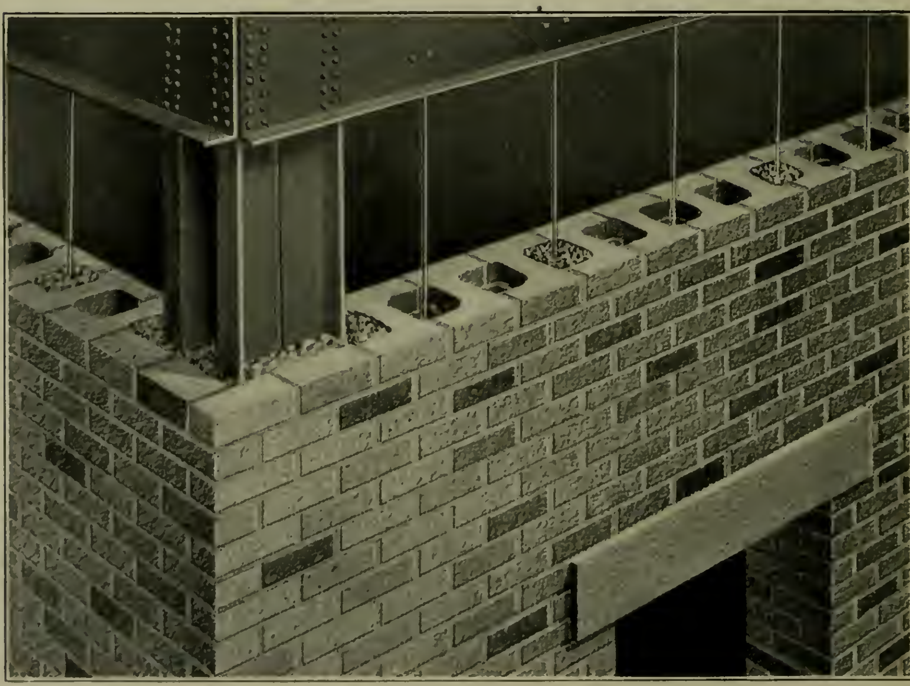
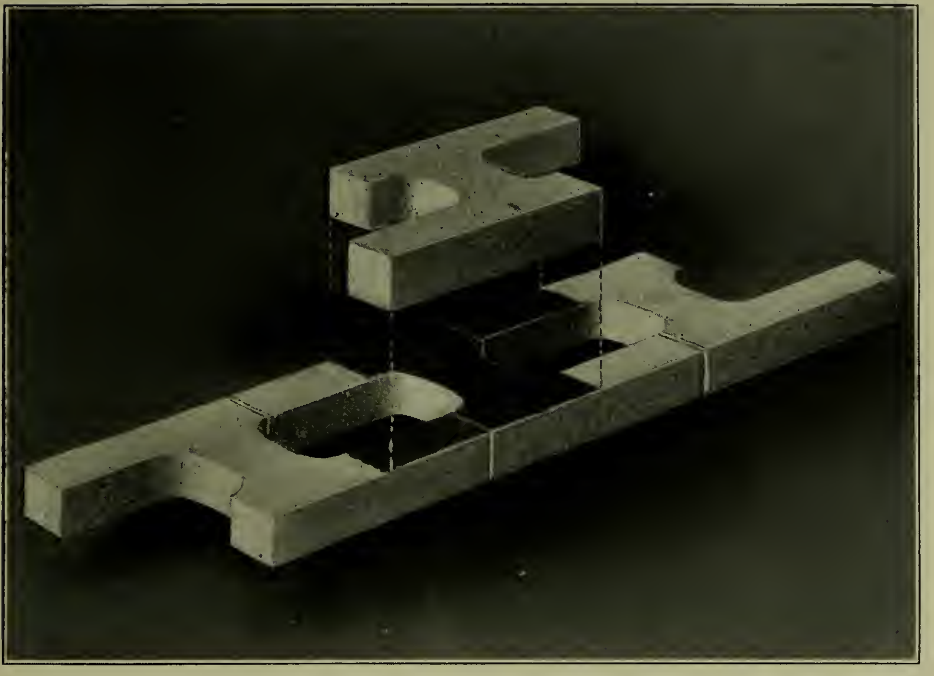


Fig. 6.—As a curtain wall for steel structures, this wall excels. It is light, strong and is proof against fire, heat and moisture. No furring or lathing is necessary.



"Each Thermos brick bonds with three bricks in the alternate course."

4. A permanent form of protection for reinforced concrete, and following upon, and as a part of these basic advantages, a web-brick wall—

5. Dispenses with the need of exterior facing.

6. Does away with the need of interior furring.

7. Does away with the need of forms and bracing.

8. Does away with the need of wiring, metal clips, ties, anchors, and other rustable and flimsy devices so often used to tie an exterior veneer of brick work a concrete wall.

9. Provides at any point throughout its length ready-made vertical cavities, flues, or chases, for ducts, pipes, or conduits.

10. Can be braced by steel rods horizontally to form a trussed wall over a void, or diagonally to resist the racking motion of wind or earthquake as well as vertically in columns, or all three combined.

11. Can be rough on one or both sides for plastering or cementing, with raked joints for key, or the exposed face of each brick, whether inside or out, can be finished in every conceivable style, color, or texture, from the roughest of clinkers, to the smoothest of glazes; or from the palest shades of enamel to the softest tones of tapestry.

12. Finally, a web-brick wall, both inside and out, reveals the honest principles of real brick work with all the varieties of bonds and jointing developed in the burnt clay work of all the famous historic styles of architecture invented in Babylonia, Persia, Holland, Italy, and England, down to the present time.

It is not to be supposed that all of the above properties can be developed or utilized in the same section of wall at the same time, but an amazing number of combinations is possible, as one can gather from a study of the cuts towards the end of the article.

It should also be made clear that the twin brick, the tied brick, the web brick, or by whatever name you choose to call it, can be made either of burnt clay, or of sand and lime under steam pressure, or of the closest concrete aggregate, as may be required.

II.

Since the year 1625 A. D. common bricks have been roughly standardized, the accepted dimensions being 9 x 4½ x 3 inches, which is a ratio of six, three, and two for length, breadth, and height. In up-to-date usage these dimensions have been shaved from the bricks and thrown into the joints. Previous to that time bricks were made in all sizes, and not uncommonly many kinds were used in one wall. I remember standing with a friend and counting nine different sized bricks in a patch of wall in the base of the tower of the church of Saint Sauveur in the old Flemish town of Bruges, where, by the way, can be seen some of the most interesting brick work in the world. But conditions belonging to the romantic age of building are impossible in these industrial times. So in spite of the fascinations of medieval brickwork, uniformity is now for many reasons absolutely necessary.

Having established the dimensions of the brick unit, we next note that like the chemist's conception of an atom, a brick is only effective in relation to other bricks. Thus a simple arrangement of three bricks can be made to express all the principles developed in a brick wall just as effectively as three dozen or three thousand.

For the sake of simplicity let us assume a nine-inch wall. Two bricks laid *en echelon* will represent the stretchers on each face and a third brick laid across them expresses the tie or bond. The rest of the wall, be it of any thickness, size, or shape, is simply a repetition variously modified of the principles here expressed by three bricks touching each other for one-half their length—two bricks in one Horizontal plane running in the same direction of the wall and one Over brick uniting them transversely. If we conceive these bricks as atoms of different chemical elements according to their positions, then this group of three can be compared to what scientists call a molecule. Thus two atoms of hydrogen chemically combined with one atom of oxygen, represents a molecule of water—H_2O. So also two bricks similarly set in a Horizontal plane and one Over brick uniting them form the molecular basis of a wall—H_2O, as it were. This arrangement is expressed graphically by the diagram (Fig. 2).

Now the basic principle of the new web-brick consists in a remarkable modification by which these three atoms or common bricks become still more intimately combined and developed by a series of metamorphoses that can only be compared to the changes of chemistry or the growth of organic and cellular tissues.

First of all the overbrick or header is sunk down or merged, as it were, into the two lower ones. What was before three bricks is now welded into one twin brick with the bulk of two, plus the thickness of the joint originally connecting the lower bricks to half of each other's sides. We have now a twin stretcher brick with an invisible header holding them together at their alternate ends. Such a brick is difficult to take hold of. It is over twice the weight of an ordinary brick and will absorb twice as much water. (Fig. 3.)

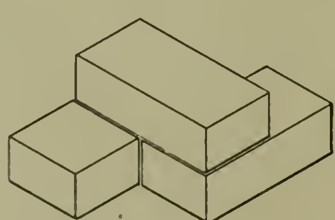


Fig. 2

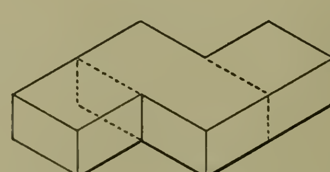


Fig. 3

Now a common brick with a crushing resistance of about a ton to the inch is highly porous. Its constituent particles are not closely packed. Under a microscope its texture would reveal a mass of small cavities. These we shall indicate in plan (Fig. 4) by a number of lines of black to represent the incompressible material of a brick enclosing spots of white to represent the cavities or voids.

Let us take the compound bricks of Fig. 3, and compress them towards the surfaces of the wall so that the cavities are almost entirely squeezed out and the total thickness of the brick units reduced in the process by a third. We now have (Fig. 5) as a result of this compressing process one large *useful* void three inches wide in place of an infinity of small *harmful* voids. In this process we do not forget the original tie-brick which now comes into view as a web uniting the two stretcher bricks. This is compressed also towards its long axis so that the plane of each of its sides is shrunk in from alignment with the ends of the other bricks. We now have a compound webbed "Z"-shaped brick, combining four functions in each unit. It forms (1) an inside stretcher, (2) an outside stretcher, (3) an invisible "header" or inside tie, and (4) an interior cavity. It does the work of three common bricks with the bulk of two and the weight of one, assuming this one to have been saturated in water. Some idea of the

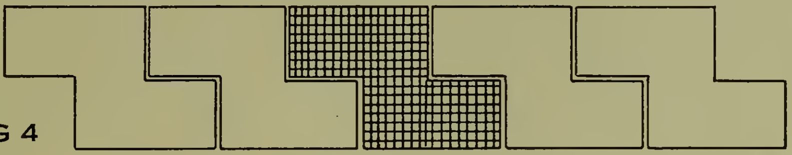


FIG 4

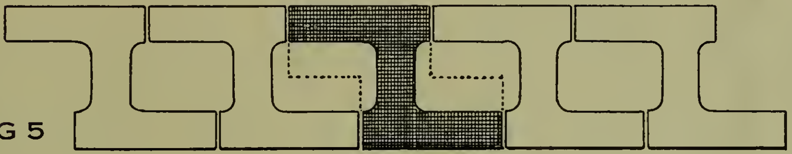


FIG 5

many ways that the new brick can be used will be gathered from the illustrations throughout this article.

Most important inventions are arrived at by a roundabout route.* The genesis of the "Z" brick as sketched above is a scientific short-cut rather than an historical account of its origin. It began in a desire to make a brick for the special purpose of building hollow walls for factories. The first bricks made and used were U-shaped. The final form adopted was not reasoned out, but was the residuum of a series of experiments in brick making and brick setting. No invention that is worked out theoretically on paper has much chance of being valuable until tested by actual use. It was discovered that in laying a web-brick as it was originally shaped, the mason was unable to set the brick on its bed in the wall without using both hands. This defect could be overcome by sliding the web to the center as in the letter "H," but this arrangement would not allow a continuous vertical void and at the same time permit the joints to be broken. The problem was finally solved by shifting the outside bricks to face each other for half their length only. When grasped by the web the stretchers offset in opposite directions exactly balance one another, one web-brick can be laid so as to bond three others and the vertical voids are preserved throughout the entire height of the wall.

It may appear that undue stress has been laid on the abstract qualities of the web brick unit. But this seems of great importance at this stage. We are apt

* The basic patents of this brick begin in 1905.

to forget the enormous amount of mathematical attention bestowed on every detail and curve of structural steel sections now in common use. The absolutely correct section for angles, tees, beams, and channels, once established and standardized, the endless combinations that can be built up from these units is only a matter of time or of the particular needs of each framing problem as it comes up.

I beam
Thermos brick
Z bar

There is an interesting analogy between the new brick form as against the old, with the modern method of steel framing as against older methods of construction. The very shapes of the new web bricks are almost identical with the shapes of rolled steel. Thus we have web bricks like "Ts," "Zs," "Ls," and flats or common fillers.

It has always seemed to the writer that the plain brick wall relying for its value on mere mass and dead weight, was rather an antiquated survival in a modern steel framed structure. Now the evolution of man-made inorganic structures can be profitably compared with the evolution of Nature's organic structures. Progress is marked in both cases by a lessening mass and increasing efficiency. Old Egyptian and Cyclopean remains show that stability was secured by weight and quantity. Later structures show more and more how mere matter in the mass gives way to matter infused with mind, as when the Romans invented the arch and the Franks developed the vault. All along construction becomes more articulated and specialized, more functional and cellular, until at last we arrive at the highest type both of organism and architecture, the vertebrate type, with the thin, hard skeleton protected, covered and invisible.

When Robert Stephenson, the famous engineer, built the celebrated Britannia tubular bridge over the Menai straits to the Isle of Anglesea he revolutionized all our ideas of construction. While nothing seems more obvious to this generation, in those days the novelty was so remarkable that the magazines of the period were never tired of pointing out the ingenuity of the engineers in using tubes of sheet iron instead of solid beams. People used to make after-dinner experiments with straws laid between wine glasses to show how easily lightness could be combined with strength. But Stephenson did no more than Mother Nature does in the stalk of every flower and the quill of every feather. In his iron work he used design in its true sense. He added brains and cut out bulk. This new type of brick, by giving life to "dead" walls, is a distinct advance in construction where at this moment it is most of all needed.

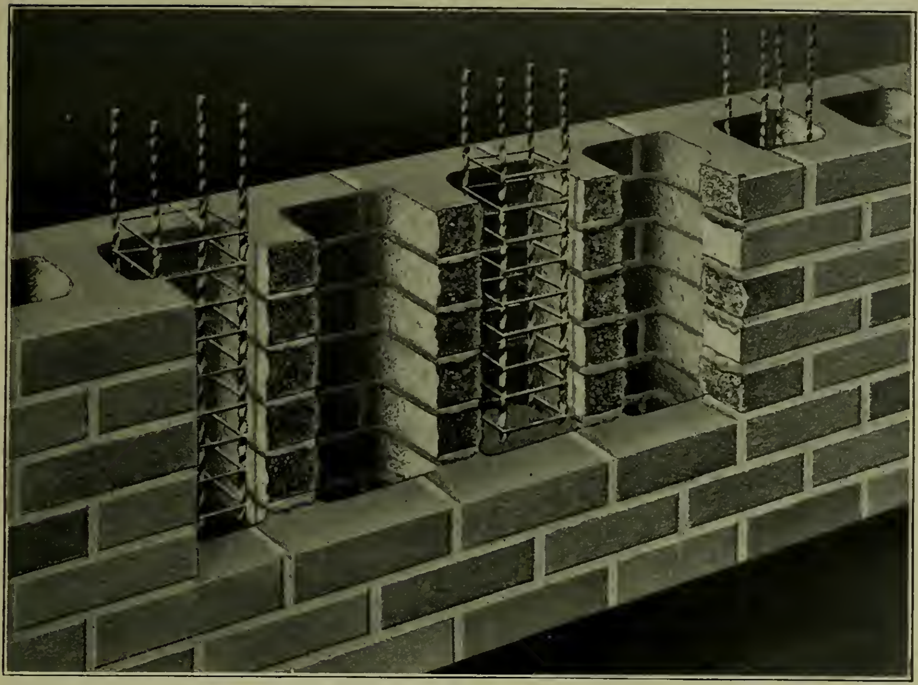


Fig. 7.—Thermos wall cut open to show the vertical air-spaces and columnar reinforcing.

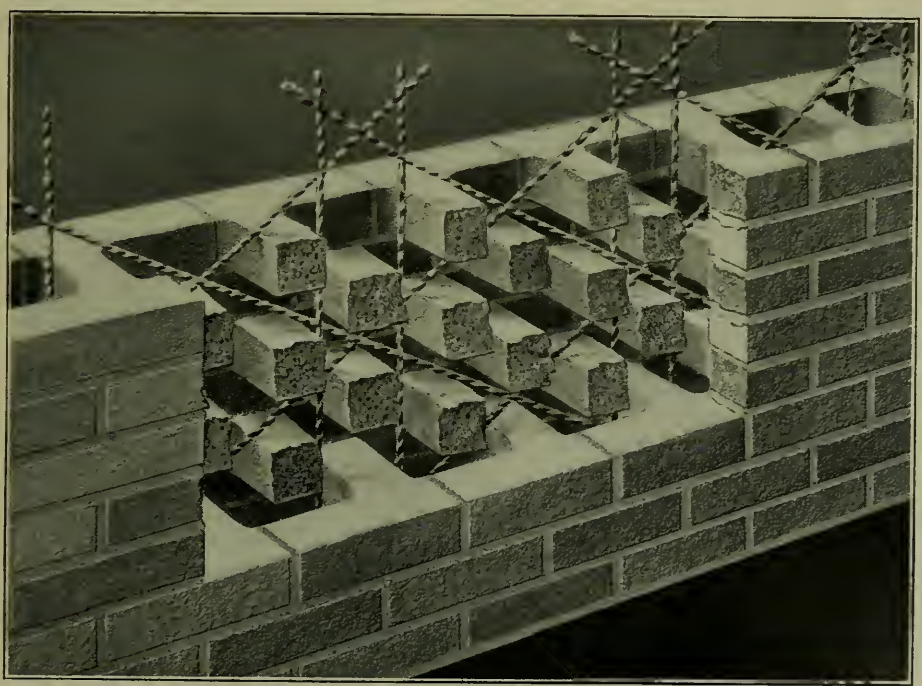


Fig. 8.—Staggered web wall cut open to show continuous air-space and vertical or diagonal reinforcement.

III.

Having briefly summarized the new bricks' usefulness in general and gone into the detail of the brick in particular, it remains to indicate some of the applications of the "Z"-shaped brick that may not occur to the reader offhand.

We spoke of the new brick as a covering for steel columns and a curtain wall all in one. The fact that the web brick is a header with a hooked extension tied onto it makes it very valuable in building round a "Z" bar, a Bethlehem, or any form of built-up column. Web-bricks enclosing wall columns have the advantage of uniting column, concrete curtain wall, and exterior brick finish in a homogeneous "weld" not possible in any other form of construction. See Fig. 6.

Figures 7 and 8 show possibilities along lines of construction that are quite novel, and which will demand from experts new formulae. Although small in cross section at least half the brick shell can be computed as forming an integral part of the column, especially if the brick has a cement basis. The reinforcing columns can be spaced to suit requirements just as the voids can be used where needed. The diagonally open cavity for purposes of isolation suggests many uses, while the same reinforced and filled solid with a good wet mix would combine the maximum advantage of brick and concrete in one perfect wall wherein the Capulets of clay and the Montagues of concrete were at last happily wedded.

Construction on these lines combining the charm and honesty of legitimate brick with the strength of concrete could be used for school houses and homes with the most promising results.

Our school architecture sadly needs to be developed along lines of Tudor or Flemish brickwork. A classic school house nine times out of ten is an uninvit-

Fig. 9.—In a double wall, one row of voids may be reinforced and the other left open for insulation. Excellent for Class "C" structures.

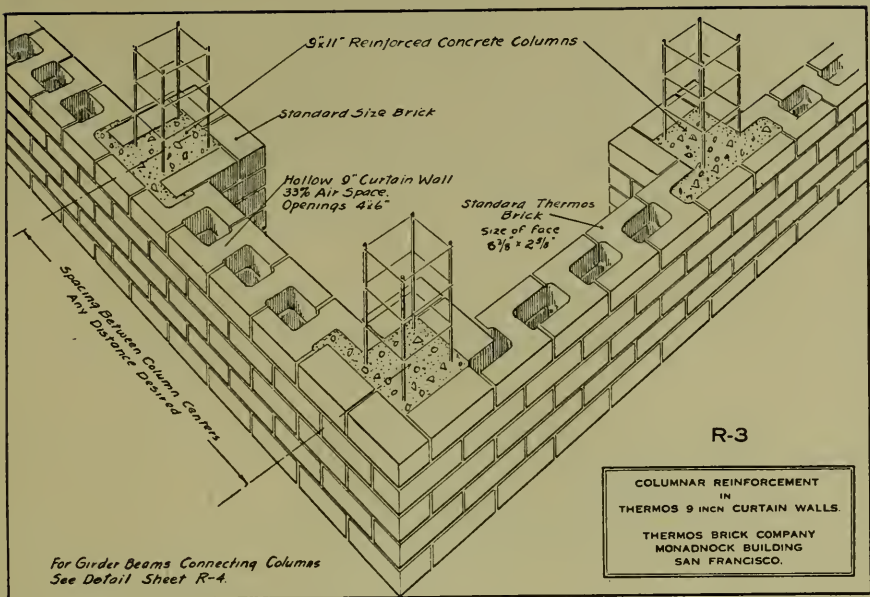


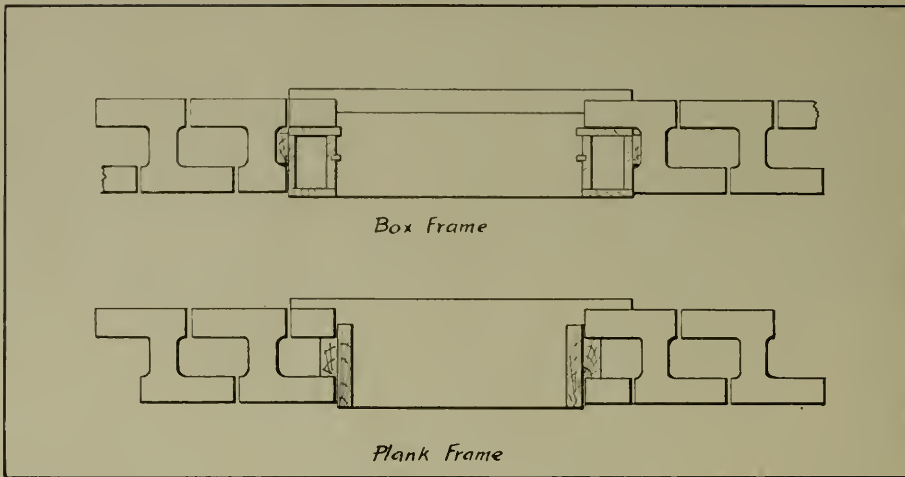
Fig. 10.—Thermos construction "solves one of the hardest problems of the day, which is to supply the forms and the finish for concrete in one simple operation."

ing makeshift. Often enough it is full of promise in the plan, but when the necessary cuts have been made the result in execution looks little better than a warehouse. The structural use of web-bricks with due regard to texture, bond, and jointing, combined with up-to-date use of concrete for bearing parts, yields an ideal solution of the whole problem.

We, who are accustomed to live in frame buildings, the makeshift of the pioneer, have little perception of the fire risks we run. A generation hence the idea will be unthinkable. The notion of a "home" with nothing in it but what can be replaced out of the insurance money is about the surest sign of a raw and crude community that I know of. With thin, light, fireproof and artistic walls made easy by the new form brick, I see far more promise in the line of a small fireproof house worth living in and looking at than in Mr. Edison's much-talked-of proposal.

So far we have shown the web-brick in its smallest dimensions. Figure 9 shows that a double cellular wall with staggered openings elongated by filler bricks has multiplex possibilities for concealing columns, supplying ventilation, and all manner of ducts and conduits. Another form of web-brick yields a 13-inch wall with much larger voids and this brings us to consider the regular construction of reinforced concrete.

Figure 10 shows in a generic way how web bricks combined with common bricks can be built up at once into the "forms" and the finish of any kind or type of building. When the bricks have been set in cement mortar around the reinforcing a perfect "form" is ready for pouring at the full height of one story. The pressure of the wet concrete forces the aggregate into every joint. The adhesion upon the cement setting is perfect and the surrounding wall, which is also the "form" becomes an integral part of the column with its core of reinforcing.



Figs. 11 and 12.—To indicate how simply the new brick adapts itself to door and window openings.

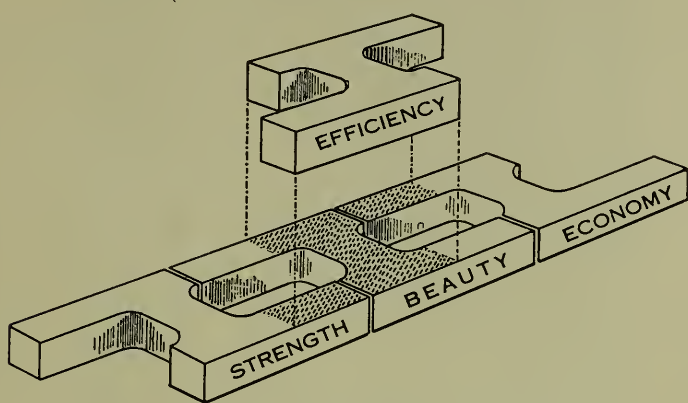
It is unnecessary to show more details except to indicate how simply the new brick adapts itself to door and window openings as shown in figures 11 and 12.

Regarding the question of exterior finish and the use of historic bonds, the new brick lends itself to the possibilities of all those found in old work, including surface patterns and diaper designs of endless variety.

Fig. 13.—"An interesting version of an old well balanced Flemish bond." Can be laid twice as fast as ordinary Flemish walls.

In figure 13 an example is shown of a specially designed brick with a front stretcher webbed to a header of one-third the area. The result is an interesting version of an old, well balanced, Flemish bond. There is no limit to the variations and developments possible in the hands of a designer familiar with the best examples of historical brick work.

To sum up, this new wall construction combines the mechanical advantages of concrete, and the insulating properties of hollow tile, with the surface qualities of the best brickwork. It reconciles the conflicting claims of clay and cement. It is a highly ingenuous and well-developed conception of much more than ordinary scope and flexibility. It saves time, space, labor, and material.



"It saves time, space, labor and material."

It solves one of the hardest problems of the day, which is to supply the "forms" and the finish for concrete in one simple operation. It makes a special appeal to the architect for all these reasons and because it comes just at the time when the true meaning and beauty of brick work is receiving the recognition that is its due. For now more than ever, our most intelligent designers are drawing inspiration from the splendid traditions of England, Italy, and the Netherlands, whose craftsmen of old were masters of tones and textures only possible in the beautiful art of brickwork.

* * *

Ralph Adams Cram Joins Tech Department of Architecture

President Maclaurin, of the Massachusetts Institute of Technology, announces the resignation of Professor James Knox Taylor of the Department of Architecture. Professor Taylor's resignation has been made the occasion of a change of the organization as well as of the personnel of the department. Professor Taylor's place as Senior Professor of Architecture has been filled by the appointment of the distinguished architect, Ralph Adams Cram. Mr. Cram will continue the active practice of his profession and his presence in so important a position on the faculty will ensure that the school is kept in close touch with the problems of the day and the needs of the profession. Professor William H. Lawrence, a graduate of the Institute, who has for many years been Professor of Architectural Engineering in the Department, will assume the position of Chairman of the Department of Architecture and will be responsible for the administrative routine.

ALBERT PISSIS, F. A. I. A.

ALBERT PISSIS, one of the best known architects on the Pacific Coast, died of pneumonia at the St. Francis hotel in San Francisco on the night of July 5th, after an illness of less than a week. His death was a great shock to his friends and associates, he having been at his office but a few days previous. He is survived by a widow and daughter, Miss Ethel Pissis; a sister, Mrs. Eugene Gallois, and two brothers, Eugene and Emile Pissis, all of San Francisco.

Mr. Pissis ranked with the first in his profession. He was probably best known because of his partiality for the classic, a style that he followed almost exclusively, and which is now being adopted by many architects as the most suitable for modern use.

The Emporium and Flood buildings were his two largest commissions. The original Emporium was built some eighteen years ago, and looks today, as far as external appearance is concerned, the same as when first erected. Although the interior was gutted in the big fire, the Market street facade remained intact and is the same now as before the conflagration. It is interesting to note in this connection that after the fire an attempt was made to pull down the front walls, but without success. In designing the Emporium, Mr. Pissis successfully provided ample glass show space, and at the same time preserved the monumental solidity of the facade.

The Flood building, covering practically two 50 vara lots, is the largest office structure in San Francisco. It is built along classical lines. Both the Emporium and the Flood buildings are of stone, with which material Mr. Pissis was probably more familiar than any other California architect, his first experience with it dating back to the construction of the old Hibernia Bank building at Jones and McAllister streets. Here granite was used for the entire building. More recent examples of stone construction are the Mechanics' Institute building on Post street, the Anglo and London Paris National Bank, the Mercantile Trust, and the Antoine Borel bank buildings, all of granite; the Lane Medical Library and the Sherith Israel Synagogue, of sandstone, and numerous smaller structures.

In terra cotta Mr. Pissis designed the White House, which cost close to $1,000,000; the Roos Bros. building and the Bank of Eureka, California.

In residence work Mr. Pissis designed President Wheeler's house at the University of California, Dr. Barkan's house on Laguna street, San Francisco and the Posadas residence in Sacramento street, San Francisco, all three of stone.

While Mr. Pissis participated in a number of competitions, he was not particularly enthusiastic about them, and consented to enter them only when personally requested to do so. He won the Hibernia Bank, Anglo and London Paris bank and Mercantile Trust commissions by competition, and while his plan for the Pacific Union Club was the first choice of the judges, the building as erected is not according to his design.

Mr. Pissis was one of the five architects appointed by the Panama-Pacific Exposition directors to prepare a scheme for the selection of architects to design the principal world's fair buildings. He was also honored by appointment on a commission to report upon the advisability of restoring the old San Francisco City Hall. The commission advocated tearing down the structure, which recommendation was eventually followed. He

ALBERT PISSIS

served as president of San Francisco Chapter of the American Institute of Architects, and was a Fellow of the Institute. He was also a member of the San Francisco Society of Architects, the Bohemian and the Pacific Union clubs.

Mr. Pissis was born in Guaymas, Mexico, in 1852, and was the son of Dr. J. E. Pissis. He was but six years old when his family removed to San Francisco. He studied in the Ecole des Beaux Arts in Paris under Gaudet, and upon his return entered the San Francisco office of William Mooser, Sr.

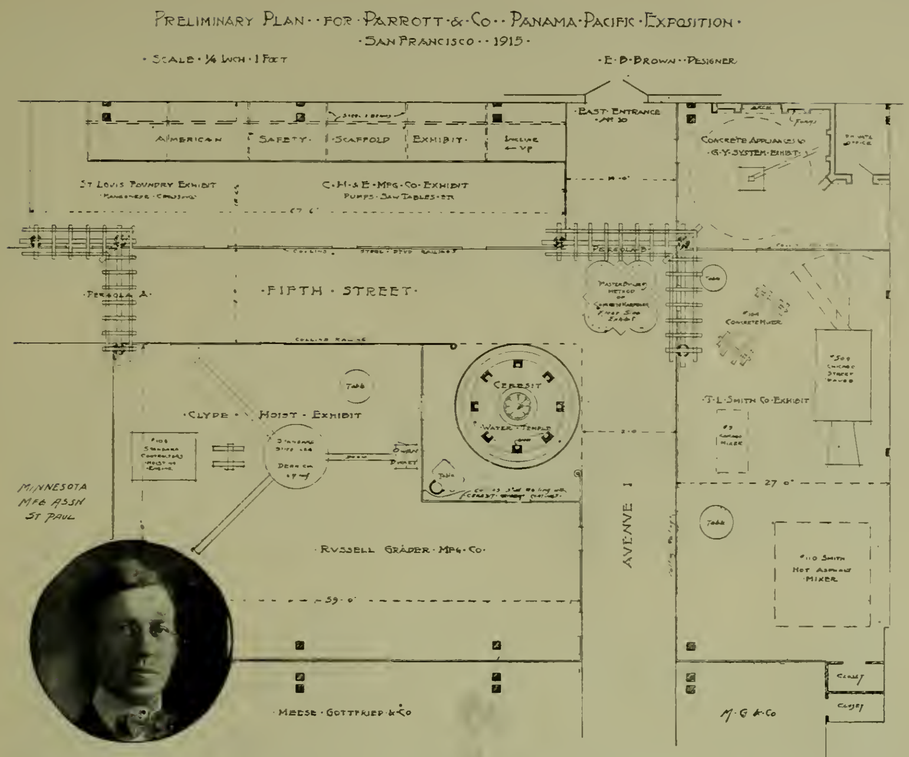
Mr. Pissis commenced the practice of architecture for himself some forty years ago, his first large commission being the brick warehouse, now standing at the foot of Van Ness avenue.

Mr. Pissis was a man of dominating will power; a man whose character and personality were very strongly impressed upon his associates. He was naturally reserved, even with his closest friends, but was frank to express his opinion when occasion demanded, even to the extent of criticising his own work.

Mr. Pissis' success as an architect is attested by the fact that he is reported to have been the wealthiest member of the profession in San Francisco. Just what disposition will be made of his business has not been determined, but for the present the office will be retained in charge of Morris M. Bruce, who was associated with the deceased for more than fifteen years.

PALACE OF HORTICULTURE, PANAMA-PACIFIC INTERNATIONAL EXPOSITION, SAN FRANCISCO
BAKEWELL & BROWN, ARCHITECTS

This is the largest hemi-spherical glass dome existing. It is 186 feet in height and 152 feet in diameter. The diameter of the Pantheon at Rome was 142; that of the Duomo of sta Marie del Fiore at Florence 139; United States capitol, Washington, D. C., 135½; while the famous dome of St. Peter's in Rome is 139 feet in diameter. The Palace of Horticulture itself is 600 feet long and 30) feet wide and in its architecture resembles the famous Mosque of the Sultan Ahmed I.



Contractors' Equipment at the Panama-Pacific Exposition

THE above diagram shows what one enterprising San Francisco contractor's equipment house is going to do at the Panama-Pacific Exposition next year. It is really a remarkable lay-out and one that will probably go on record as without precedent. Eight great enterprises of the East and two from California will join with their San Francisco representatives—Parrott & Co., in making this exhibition possible. Each concern will have enough equipment and machinery on the ground to show just what can be done with their respective lines. A practical demonstration will be given in each case. The space alloted to Parrott & Company will be at the extreme end of the great machinery hall—some 5,500 surface feet. The exhibitors will be as follows:

T. L. Smith Company, Milwaukee, Wis., concrete mixing machinery.
Owen Bucket Company, Cleveland, Ohio, clam shell buckets.
Clyde Iron Works, Duluth, Minn., hoisting engines and derricks.
Ceresit Waterproofing Co., Chicago, Ill., waterproofing compound.
Russell Grader Mfg. Co., Minneapolis, Minn., grading and road machinery.
C. H. & E. Mfg. Company, Milwaukee, Wis., portable saws, pump hoists, etc., and general contractors' equipment.
American Safety Device Co., New York, patented safety scaffolds.
St. Louis Steel Foundry, St. Louis, Mo., manganese track special work.
Concrete Appliances Co., Los Angeles, Cal., patented concrete distributing system.
Collins Studding Co., San Francisco, Cal., interlocking studding and suspended ceilings.

The Concrete Appliances Company will have its towers and gravity system in actual operation, showing just how the concrete is conveyed by gravity from the mixer to the forms.

The Collins Studding Company will show its fireproof metal studding as it is erected for partition work in Class A buildings—a studding that has given splendid results wherever used.

The American Safety Device Company will exhibit its patented safety scaffolds erected just as they were used in the construction of such buildings as the L. C. Smith structure in Seattle and the Hobart building in San Francisco.

A water temple will be featured by the Cement Waterproofing Company. This will be constructed of concrete, eighteen feet high and an accessible drinking fountain will be sure to attract the crowds.

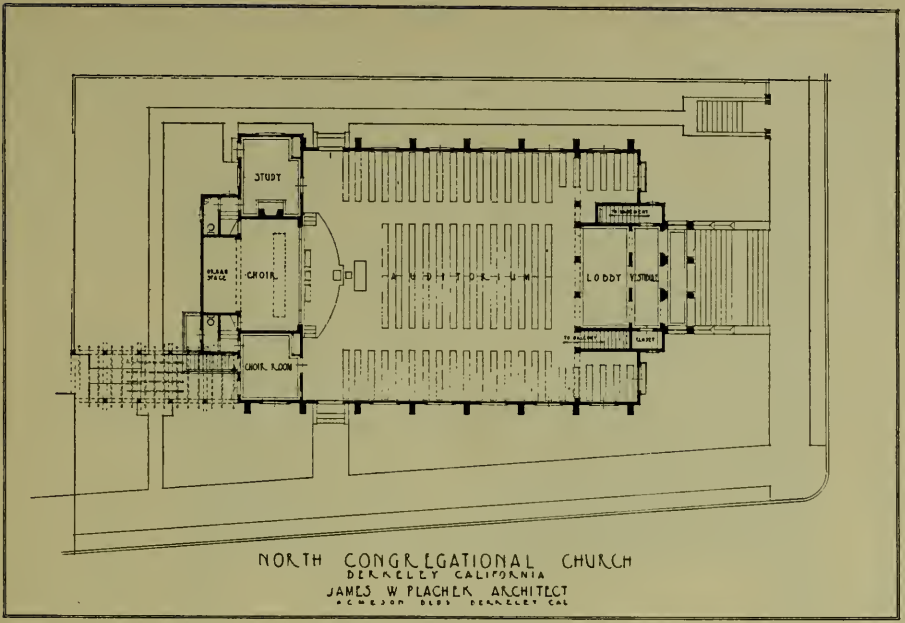
Specially interesting exhibits will be worked out by all the other firms.

It is a matter of considerable interest to draw attention to the wonderful growth of the Parrott contractors' equipment department. In four years the business has been developed from practically nothing to a volume that this year bids fair to exceed the $100,000 mark. The equipment line is in charge of Mr. L. E. Boyle, whose work is highly praised by President R. H. Menzies.

NORTH CONGREGATIONAL CHURCH, BERKELEY, CALIFORNIA
James W. Plachek, Architect

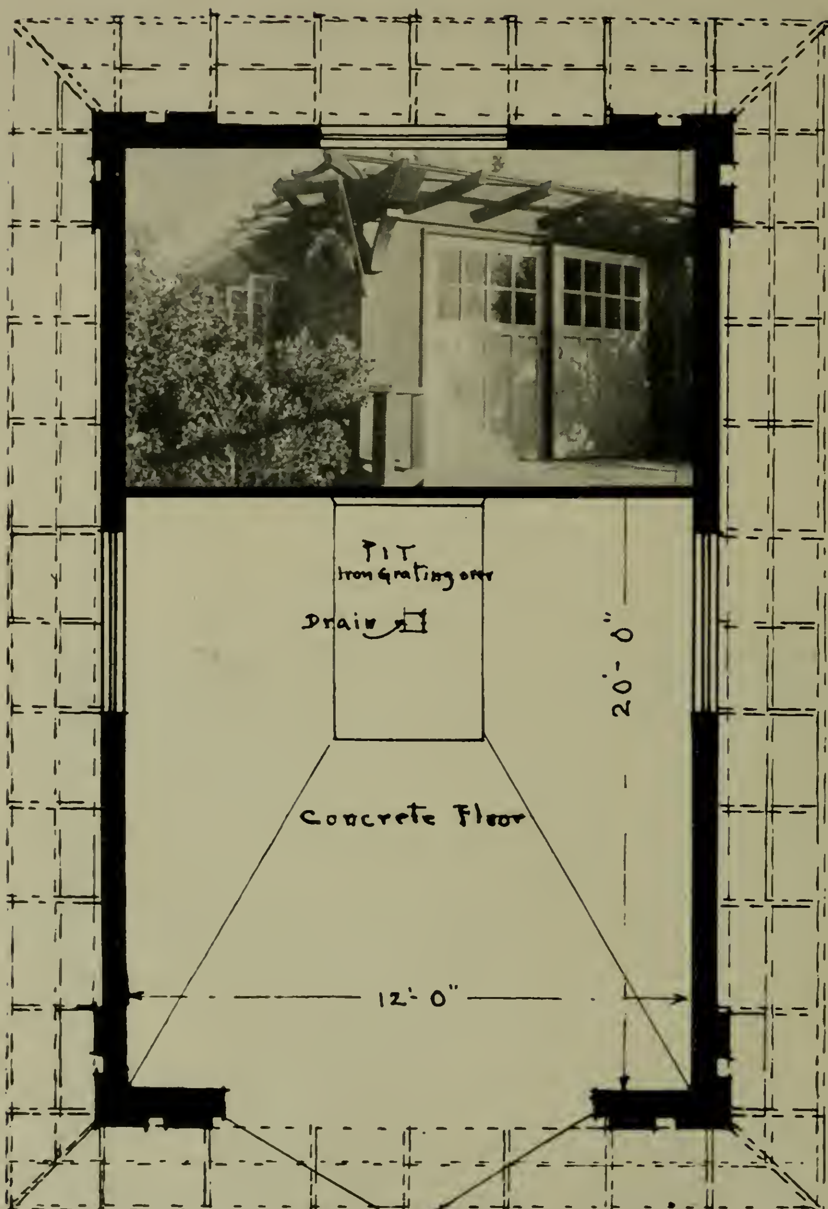
A Church in the Bungalow Style

A RADICAL departure in church architecture has been taken by Architect James W. Plachek of Berkeley in his design of an edifice for the North Congregational church in the University City. The plan is unique in that the architect has endeavored to follow the low, sweeping lines of the bungalow—the predominating type of residence architecture in Berkeley. The church fits in admirably with its surroundings. The exterior is of cement plaster on metal lath, and the interior is finished in redwood and plaster. The auditorium will seat 500 persons. The church cost complete with pews and furnishings $15,000.



PLAN OF AUDITORIUM

INTERIOR NORTH CONGREGATIONAL CHURCH, BERKELEY
James W. Plachek, Architect



GARAGE FOR MR. E. H. MICHAELS, MILL VALLEY
FALCH & KNOLL, ARCHITECTS

First of a number of plans of inexpensive private garages that will appear in this magazine.

An Interesting Oil Burner Contest

ARCHITECT E. C. HEMMINGS of Sacramento, in writing the specifications for the Vocational High School building of Sacramento, specified "Fess System Centrifugal Rotary Crude Oil Burner or Equal" oil burner. It was proposed to install Simplex centrifugal rotary crude oil burners, claiming same to be not only equal, but superior, to the Fess. The Fess people challenged this statement and invited a comparative test, the loser to forfeit $100 to the School Board, and pay all costs of the test. The following agreement was entered into:

E. C. HEMMINGS,
Architect.

SACRAMENTO, 1203 J St., April 17, 1914.

To the High School Board of the Sacramento City High School District:

We hereby agree to make a test of oil burners at the new Vocational High School building. Said tests to be made as follows and as soon as possible:

A committee of three persons to be appointed; one person to be appointed by the president of the Board of Education.

One person by the Fess System Co.

One person by the American Heat & Power Company. These three persons to act as a committee to hold an efficiency test of the oil burners.

Also to test out the general construction of the burners and their parts.

The Fess Company is to make the first test. The American Heat & Power Company is to make the second test.

In making these tests the general construction of the burner and its parts to be taken into consideration, as well as efficiency.

These tests are to be a contest to determine the best oil burner to install in the Vocational High School.

The loser of this contest agrees to pay all expenses of the test

The Fess Burner Co., and the American Heat & Power Co. each agree to deposit a certified check for $100 made out to the order of the Board of Education.

The loser of the contest is to forfeit his check to the Board of Education, to be used by the Board as it may see fit.

(Signed) FESS SYSTEM CO.,
By H. L. Delaney.
AMERICAN HEAT & POWER CO.,
By J. G. Weigand.

Accepted:
HIGH SCHOOL BOARD OF SACRAMENTO CITY HIGH SCHOOL DISTRICT.
By E. C. Hemmings, for E. J. Carraghar, President.

Under this agreement the High School Board appointed Albert Givan, City Engineer of the City of Sacramento; the Fess System Co. selected W. E. Leland, of Leland & Haley, consulting engineers; the American Heat & Power Co. selected W. D. Scovill, heating contractor.

This committee of three each selected an assistant to check the figures on the test.

The boiler used in the tests was an S-36-6 Sectional Ideal American radiator boiler, which has a rating capacity of 2625 sq. ft. steam radiation, installed in the new Vocational high school, Sacramento; said building having an actual steam radiation of about 2100 sq. ft.

We give the reports of W. E. Leland and W. D. Scovill, also that of City Engineer Givan. It is apparent that the engineers appointed by the oil burner companies construed their duty as that of advocates rather than judges, and it was therefore left to City Engineer Givan to assume the responsibility of the real judicial decision.

The following is a summary of the findings of W. E. Leland, appointed by the Fess System Co., to which is appended any exceptions taken by W. D. Scovill, for the American Heat & Power Co.

First—The Fess burner was tested first and was operated all told, including the test, for about three and one-half days. The Simplex burner was tested after the completion of the first test and was operated all told for about nine days. It is to be noted that in the case of the Fess burner the boiler and covering were green and had to be dried out during the preliminary runs and the requirements as to load and operation were not known in advance of the test. In the case of the Simplex burner the covering was all absolutely dry and all the test conditions were known and could be accurately met.

Simplex's exception to above:

> The Simplex Burner, which was regulated entirely by means of the automatic regulating valve, came within 28 sq. ft. of the boiler rating on medium fire, while the minimum fire was adjusted so as to give quite an appreciable range below either the boiler or building rating.
>
> Concerning length of preliminary tests and order of tests: The order of tests had been determined by lot.
>
> The covering of boiler was dry long before the final tests of the Fess burner were made.

Second—The Simplex burner showed soft carbon all around the furnace at the end of the run at average load and a ring of hard carbon one-quarter inch thick had formed around the entire crcumference of the fire box, above the bottom of same.

Simplex's exception to above:

> The Simplex burner did not show "soft carbon all around the furnace" at the end of average load, as stated; a very small amount of carbon was found on circle wall at end of the average run.

Third—During the tests of the Fess burner there was no undue noise, either in the operation of the machine or in the combustion of the oil in the fire box.

In the case of the Simplex burner there was a decided intermittent concussion in the furnace during the test at average load, and this increased to an almost constant roar during the maximum test. During the tests the check draft damper at the rear of the boiler was held in place with a 10-inch Stilson wrench clamped on to the damper catch. It was also noticed that the shaft was not running true.

Simplex's exception to above:

> Regarding noise of combustion, there is very little difference between the Fess and the Simplex burner. A slight rattle developed in the ring oiler of the Simplex motor during the maximum test.
>
> Fess' statement that "it was also noticed that the shaft was not running true" is incorrect. Every Simplex machine is tested several days for alignment and general operation under working conditions before it leaves the factory.

Fourth—At the completion of the set of tests on the Fess burner, the entire machine and burner were dismantled and entirely removed from the boiler in an interval of 17 minutes and within 27 minutes from the time the fire was extinguished at the end of the test. This was done without, in any way, injuring the furnace lining.

This could not be done in the case of the Simplex burner, as it was impossible to remove the head without getting into the furnace, and the gear box could not be removed without entirely destroying the fire brick lining and furnace.

Simplex's exception to above:

> The Simplex burner has *no* head. The burner can be easily dismantled by taking off cup, collar, fan, and fan casings, through the fire box, and it is only necessary to disturb a little of the high heat cement adjoining the collar. The rest of the machine is pulled out through the ash pit door. The fire brick lining of the furnace is not disturbed or injured.

Fifth—An examination of the curves shows that the Fess burner is of larger capacity than the Simplex burner, its point of greatest efficiency being about

17 per cent greater in load than the Simplex burner. It also shows that the efficiency of the Fess burner rises slowly as the load increases and drops off slowly as the load increases beyond the maximum efficiency point of the burner.

Simplex's exception to above:

> While the point of greatest efficiency of the Simplex burner was 17%, or more correctly 19.27% below that of the Fess burner, it must be borne in mind that the efficiency of the Simplex burner was still 1.07% above the boiler rating, or 26.33% above the building rating, against Fess burner, 20.34% above boiler rating, or 50.43% above building rating.

Sixth—In comparing the curves it must not be forgotten that the Fess burner operated free from smoke and carbon and that the Simplex burner showed smoke and decided carbon at its maximum test, indicating that at this point it was considerably above its proper capacity.

Simplex's exception to above:

> The Simplex burner showed a maximum evaporation of 14.315 lbs. at medium fire; 1.07% above boiler rating against Fess 14.186 lbs. at medium fire, 20.34% above boiler rating.

Seventh—In considering the question of stack temperatures, it will be seen that the stack temperature rises proportionately to the increase of load on the boiler and all of the six points plotted are almost exactly on the line of the curve; showing that the stack temperature is a condition determined by the boiler alone and has no relation whatever to these burners.

Simplex's exception to above:

> With reference to stack temperature, the Simplex burner showed a much lower stack temperature at a higher equivalent evaporation, and a somewhat higher room temperature, and therefore higher temperature outside.

To the above report W. E. Leland attaches the following letter from the Fess System Co., also the appended tabular report of findings:

San Francisco, May 19, 1914.

Messrs. Leland & Haley.

Gentlemen:—For your information beg to say that we have installed 906 of our Fess System Rotary Crude Oil Burners on the Pacific Coast, of which 744 are installed in the State of California.

Very truly yours,

Fess System Company,

By Delaney, H. L. (Signed)

TABULAR REPORT OF W. E. LELAND

Rating of boiler, 2625 sq. ft. Low fire—2-hour test.	Fess	Simplex
Total oil used	78 lbs	56
Total water used	113 gals.	76
Temperature of feed	59	66
Temperature of boiler room	78	84
Temperature of stack	490	440
Developed load in square feet	2186	1460
Per cent. of rated load	83	55.5
Equivalent evaporation	14.010	13.034
Carbon in furnace	Trace	None
Smoke at top of stack	None	None
Noise of combustion	None	None
Medium fire—3-hour test.		
Total oil used	167 lbs.	139
Total water used	245 gals.	207
Temperature of feed	59	65
Temperature of boiler room	81	87
Temperature of stack	580	525
Developed load in square feet	3159	2653
Per cent. of rated load	120	101
Equivalent evaporation	14.288	14.316
Carbon in furnace	Trace	Soft and hard
Smoke at top of stack	None	Trace
Noise of combustion	None	Very noticeable

Heavy fire—3-hour test.

Total oil used	184 lbs.	173
Total water used	269 gals.	252
Temperature of feed	60	64
Temperature of boiler room	83	90
Temperature of stack	630	590
Developed load in square feet	3465	3233
Per cent. of rated load	132	123
Equivalent evaporation	14.123	14.017
Carbon in furnace	None	Very bad
Smoke at top of stack	None	Thin blue
Noise of combustion	None	Very heavy
Maximum range of burners in sq. ft.	1279	1773
Maximum range of burners in sq. ft., without smoke or carbon	1279	1193 approx.

The findings of W. D. Scovill, appointed by the American Heat & Power Co., ("Simplex" System) to which are appended any exceptions taken by Mr. Leland, are as follows:

First—That the actual steam radiation of said building is about 2100 sq. ft.

Fess' exception to above:

> The amount of radiation in the building, namely 2100 sq. ft., is immaterial in this connection and has no bearing whatsoever on the tests made or the results thereof. In numerous places throughout this report this fact is referred to and given weight in various ways. All of these references should be disregarded entirely.

Second—That the heating engineers and architect have installed an S-36-6 Sectional American Radiator Co. boiler, which has a rating capacity of 2625 square feet.

Third—That the Fess System Co. designated as best adapted for said boiler, their Fess burner No. 5¾, with a claimed steam rating of automatic adjustment of 2000 to 3000 sq. ft. of radiation.

Fourth—That the eight-hour test held on April 29, 1914, showed that said Fess burner had a capacity adjustment of 2186 to 3465 sq. ft. of radiation by means of hand-controlled valve,—the scope of automatic valve not being shown.

Fess' exception to above:

> In all these paragraphs automatic regulation is claimed. This is not a fact and no automatic control was used whatever in any of the tests and the capacity of each burner was determined by hand and not by means of automatic regulating valve.

Fifth—That the American Heat & Power Co. designated as best adapted to said boiler, their Simplex centrifugal rotary burner No. 7, with a claimed steam rating of possible adjustment of 800 to 6793 sq. ft. of steam radiation.

Fess' exception to above:

> The test showed a rating between 1459 and 3233 sq. ft., the lower limit being nearly 100% above and the higher limit being nearly 50% below the estimated rating. In the case of the Fess burner referred to in Paragraph IV the test showed a range slightly exceeding the stated rating.

Sixth—That the eight-hour test held on May 13, 1914, proved that said Simplex centrifugal rotary burner had a capacity adjustment of 1460 to 3233 sq. ft. of radiation, by means of its automatic regulation valve.

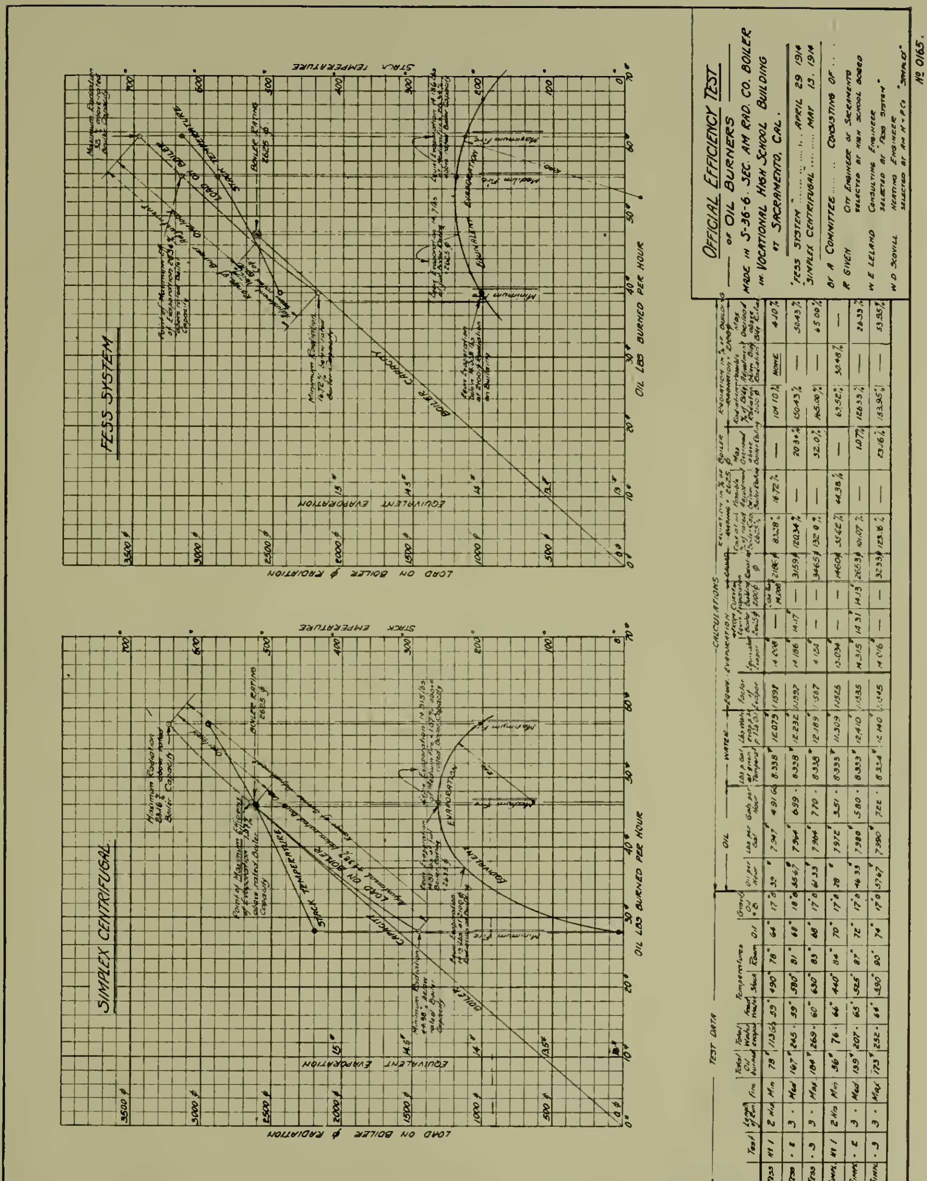
Seventh—That said test showed at minimum fire:

Fess, 14,008 lbs. of water from and at 212 deg. F. per lb. of oil.

Simplex, 13,034 lbs. of water from and at 212 deg. F. per lb. of oil, or an evaporation in favor of the Fess System of .974 lbs. of water from and at 212 deg. F. per lb. of oil. Minimum of Simplex being 726 sq. ft. of radiation below Fess.

Fess' exception to above:

> Paragraph VII—Gives comparative data at the nominal boiler rating of 2625 sq. ft. No tests were made at this load and data in connection with this load is purely theoretical and should have no consideration with the results obtained. Throughout the report this fact is referred to several times and in every case it has no bearing on the matter and should be disregarded.


OFFICIAL EFFICIENCY TEST
OF OIL BURNERS
MADE IN S-36-6 SEC. AM. RAD. CO. BOILER
IN VOCATIONAL HIGH SCHOOL BUILDING
AT SACRAMENTO, CAL.
FESS SYSTEM APRIL 29 1914
SIMPLEX CENTRIFUGAL MAY 13 1914
BY A COMMITTEE CONSISTING OF
R. GIVEN
W. E. LELAND
W. D. SCOVILL
Nº 0165
FESS SYSTEM
SIMPLEX CENTRIFUGAL
OIL LBS BURNED PER HOUR
LOAD ON BOILER # RADIATION
EQUIVALENT EVAPORATION
STACK TEMPERATURE
TEST DATA
CALCULATIONS

Eighth—That said test showed at medium fire:

Fess, 14.186 lbs. of water from and at 212 deg. F. per lb. of oil.
Simplex, 14,315 lbs. of water from and at 212 deg. F. per lb. of oil, or an evaporation in favor of the Simplex of .129 lbs.

Ninth—That said test showed at maximum fire:

Fess, 14.124 lbs. of water from and at 212 deg. F. per lb. of oil.
Simplex, 14.016 lbs. of water from and at 212 deg. F. per lb. of oil, or an evaporation in favor of Fess of .108 lbs.

Tenth—That at full rated capacity of said boiler, viz., 2625 sq. ft., said test showed from curves:

Fess evaporated approximately 14.17 lbs. of water from and at 212 deg. F. per lb. of oil.
Simplex evaporated approximately 14.31 lbs. of water from and at 212 deg. F. per lb. of oil, showing an evaporation in favor of Simplex .14 lbs. of water per lb. of oil.

Eleventh—That said test showed maximum over load on boiler above boiler rating:

Fess, 32%.
Simplex, 23.16%.

Twelfth—That said tests showed adjustment below boiler rating:

Fess, 16.72% (hand valve).
Simplex, 44.38% (through automatic valve).

Fess' exception to above:

> Paragraph XII—The revised figures show an evaporation of .129 in favor of the Simplex burner at the medium fire and not .143, as stated therein.

Thirteenth—That said test showed a wider range of adjustment below rated boiler capacity in favor of Simplex of 27.66%.

Fourteenth—That said test showed Fess burner only reached a minimum of 2186 sq. ft. of radiation, which is above the 2100 sq. ft. of radiation, the actual radiation on building, and Simplex reached a minimum of 1460 sq. ft. of radiation and had a range of adjustment of 30.48% below the actual radiation of building.

Fifteenth—That said test showed a stack temperature in favor of Simplex:

50 deg. cooler on minimum fire.
55 deg. cooler on medium fire.
40 deg. cooler on maximum fire.

Fess' exception to above:

> Paragraph XV—States that the stack temperatures showed in favor of the Simplex System. This is not the case, as the stack temperatures are a boiler function only and have absolutely nothing to do with the burners. Reference to the stack temperature curve and our original report clearly shows this fact.

Sixteenth—That the general construction as to simplicity, durability, power required to operate, and quality of material generally, is all in favor of the Simplex.

Fess' exception to above:

> This statement is far too broad to be given any consideration in this report, and it simply states the writer's private opinion.

REPORT OF CITY ENGINEER ALBERT GIVAN

SACRAMENTO, June 26, 1914.

After carefully going over the reports submitted, I have arrived at the following conclusions:

The two burners tested were of the centrifugal type. As a matter of explanation before proceeding further, I might explain that the reason that centrifugal types of burners are manufactured is primarily on account of their economy of operation, for instance, the operation of steam-driven oil burners which are more readily adapted to ordinary furnaces, require a great deal more power to operate them. In steam plants, this runs from 3½ to 5% of the total boiler capacity. The cost of operating the burners of the centrifugal type, runs from 1½ to 3½%. Therefore in adopting any burner of the centrifugal type, it is necessary to take into consideration economy of operation.

From the evaporating test as shown, the difference in economy of the two plants over the range which they were tested, is very little, but slightly in favor of the Simplex under one load, and slightly in favor of the Fess at another load. It is my understanding that this test was a test for this particular furnace and from the curves as enclosed in a report from the Fess Company, dated May 19, and June 4, 1914, it is shown that the Simplex oil burner has a much wider range in capacity than the Fess oil burner. As a matter of fact, the Fess oil burner tested for this plant, on account of the range in capacity, would not be a desirable installation. In moderate weather we would have a heavy intermittent fire to take care of the building, instead of a constant low fire.

I am submitting reports together with curves handed to me by these people.

As regards the general construction of the machines, they both have very desirable features and there is little choice between them.

The Simplex burner is more compactly and rigidly constructed. The general details of the machines and the quality of material in the two apparatus are very similar.

There is no question but that it requires less power to operate the Simplex oil burner than the Fess oil burner, but as no record was kept of the power used during this test exact figures for comparison cannot be herewith transmitted to you.

A test on this point (in case there is any argument on this phase of the question), should be taken up and settled.

In consideration of the fact that this test was primarily for the installation of an oil burner for this particular furnace, and for this particular high school, I recommend that the Simplex oil burner be installed.

Yours very truly,
ALBERT GIVAN, City Engineer.

The reports of the three experts, together with various tables, charts, etc., were received by the Sacramento Board of Education and referred to the President of the Board for final action.

*
* *

Buildings of the Future to be Made of Glass?

The architecture of the future will be interpreted, not in wood, stone or concrete, but through the medium of glass with the result that the world will be inhabited by a uniformly happy race living under the good influence of light. This is the opinion of the well-known writer, Paul Scheerbart of Berlin, who prophesies as follows:

"The houses will be of glass, with all wood eliminated. The furniture will be of wrought iron, and the framework of the buildings will be of iron, rust-proof, while the walls will be of double glass, to insure warmth, and of many colors, in order to baffle inquisitive persons. The buildings will be heated by electricity and the walls decorated in Tiffany majolica effects. There will be glass garden houses where one may live in the sunshine by day and the starlight by night." Herr Scheerbart draws a fascinating word picture of a city, with stores, churches and public buildings of glass, all brilliantly lighted in many colors. Bruno Tarut, the architect, built a palace along these lines at the Cologne exposition.

Decorative Possibilities of Hand-hammered Bronze and Copper

THE art of hammering images, busts, designs, etc., out of metal, was well known to the Egyptians, Greeks and Romans of classic times, and the work of the old masters of those days, when Repousse Work was considerably used for decorative purposes, is now greatly admired and valued by collectors of antiques, who frequently pay large sums for the more cherished specimens, most of which are now found in the museums of Europe as well as in this country.

Bust of George Washington

Recently there has been an enthusiastic revival of this work and its great value is now fully recognized as an artistic and lasting decoration for the interiors of churches and other public buildings, and the residences and apartments of the most exclusive and wealthy people.

For the interiors of the best clubs nothing could be more appropriate than a hand-hammered bronze or copper bust or bas-relief of its founder or of a design representative of the club which could be placed in a prominent position in the library or reception room.

Copper or bronze ornaments, bric-a-brac, etc., outlast the owner and can be passed along from generation to generation, and for a wedding or anniversary present nothing is more pleasing than a piece of hand-hammered bronze or copper, being especially unique and valuable as every piece represents an original.

The accompanying plates show some of the repousse work executed in the local studios of the San Francisco Metal Stamping & Corrugating Co. These excellent examples give only a faint idea of the possibilities of this class of work for decorative purposes. It is the only studio of its kind in the West, and the work is not surpassed by even the great artists of Paris and Berlin. Mr. Hans Jauchen, former instructor in the Art Metal Department of the University of California, is associated with Mr. Theophile Lahaye in the conduct of the hammered bronze department.

VASE
Hand Hammered in Heavy Copper
Antique Bronze Patina

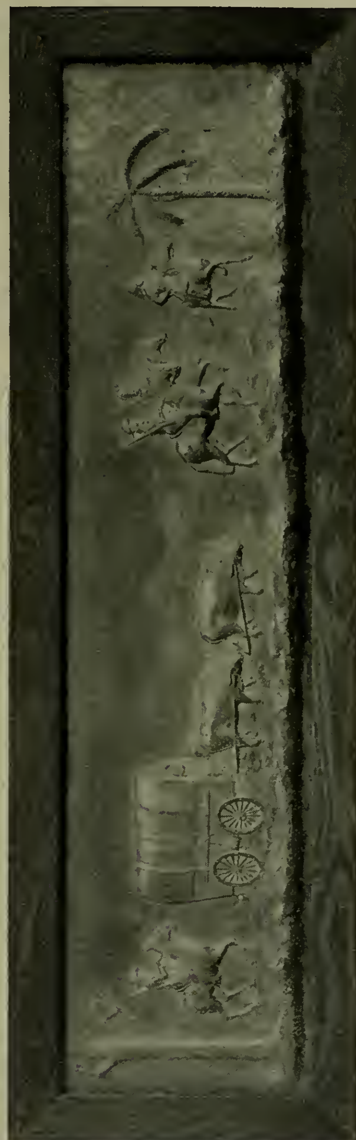
URN
Hand Hammered in Copper
Antique Bronze Patina

URN
Hand Hammered in Copper
Antique Bronze Patina

DOOR
Hand Hammered in Heavy Copper
Dark Brown Patina. From Architect's Design

HIGHLY DECORATED DOOR
Hand Hammered in Heavy Copper
Light Bronze Patina. From Architect's Design

PANEL FOR FIREPLACE (Representing "Columbus Flotilla") Hand Hammered in Bronze. From a Design by Architect Smith O'Brien



PANEL FOR FIREPLACE (Representing "Pioneer Days") Hand Hammered in Heavy Copper. Medium Brown Bronze Patina

THE
Architect and Engineer
OF CALIFORNIA

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SHOULD CONTRACTORS PAY A DEPOSIT FOR USE OF PLANS?

Down in Southern California (in Tulare county, to be explicit) there is a contractor possessed of a very pronounced grouch. His name is Oscar Parlier and he is probably the best known and most reliable builder in that section of the State. His complaint is against the Supervisors and some of the county surveyors whose policy of requiring a cash deposit for the use of plans and specifications when bidding on work, is considered by Mr. Parlier to be entirely uncalled for and little short of "extortion."

To quote the contractor:

I know of two counties that advertised for bids on highway bridges, and when the contractor applied for a set of plans and specifications he was charged $20.00 for the plans. In other words, the contractor is required to pay $20.00 for the privilege of bidding on a public job. Of course the plans are of no use to him unless he gets the job. In fact, he would not be permitted to use the plans on another job if it was his desire to do so.

You may look at this system from any angle and it borders very near to graft. In some cases the Supervisors will tell the contractor that this charge is made in order to pay their county surveyor, as the county does not pay him for his engineering services, and he must be paid by some one.

Now I want to say that any county that is able to build highway bridges by the dozen is able to pay their surveyor for his services instead of resorting to this kind of pettiness.

I will call attention to one recent case in Madera county. The Supervisors called for bids on a number of bridges, and there were 25 contractors from all over the State who applied for plans. Each of these 25 contractors was charged $20.00, with *no refund*, to be allowed to take a set of plans to his office. This would make a total sum of $500.00 which was extracted from the contractors at large, to pay Madera county engineering fees, or pay something else that the contractors should not have to pay.

This thing of charging the contractor for plans is all wrong. It is putting a county's expense where it does not rightfully belong. A contractor has enough risk and expense when he figures a job of this kind without being charged for the chance to figure. One of the answers you could expect to receive from clerk of the Board of Supervisors, if you should dare question their system, would be that there is a set of the plans in the county clerk's office and a contractor can go there and figure them. But this set of plans is merely an excuse, as no contractor is going to make his headquarters in the county clerk's office long enough to figure 8 or 10 sets of bridge plans, and should a contractor attempt such a thing I will venture to say that he would be invited to leave the office after the first day.

Then they might say that a contractor does not have to buy the plans and figure the job if he does not want to. Very true, he does not, but they know he will, so this excuse should not relieve the conscience of an honorable board.

The contractor of today works alone, he has no organization, as he should have, to look to for protection. When his equipment is laying idle and he is in need of work he would pay even more than $20.00 for an opportunity to get a job.

I will venture to say that more money is being lost today in the contracting game than is being made, and this latest system of taking the money away from the contractor before he is awarded the contact is deplorable.

Nine times out of ten a contractor is not awarded a contract until the owners are reasonably sure that he will lose money on the job, or at least not make any money. I say nine out of ten because there are exceptions occasionally.

To require a deposit on plans, guaranteeing their return in good condition on a certain date, is right and proper, provided, of course, the deposit is returned, but it is putting the expense where it does not belong when the contractors are forced to pay something for the drawings and get nothing back when the prints are returned. I do not know whether this kind of graft would come under the jurisdiction of the Railroad Commission or not, but this high-handed extortion should be stopped in some manner.

A STEP FORWARD IN ACOUSTICS

As stated in the June Architect and Engineer, the jury of award of the George Washington Memorial Association has accepted the design of Messrs. Tracy & Swartwout for the proposed new auditorium. The building is to be not only a fitting memorial to the first president and his interest in higher education in America, but also a national headquarters for patriotic, scientific, educational, literary, and similar organizations.

It is interesting to note that with the exception of the Mormon Temple in Salt Lake City, this Washington memorial will be the first large building in which the audience—in this case six thousand—will be seated in accordance with the modern theory of acoustics. To make sure that there would be no "deaf spots" or places where the speaker's voice could not be heard by a large part of the audience, the elliptical plan for the auditorium was adopted. The theory is that there is a line of equal sound extending from the speaker's platform around the room, and that this line is an ellipse. A man sitting in the last row and directly facing the speaker hears just as well as one who sits nearer but off to one side. The ellipse by permitting more people to sit facing the speaker within a given area is therefore regarded as the most economical arrangement. The auditorium will have a flat domed roof constructed of tile especially adapted to absorb sound and will be 270 feet in length by 200 feet in width.

"Safety First" Conference

At the "Safety First" conference recently held in San Francisco, under the auspices of the Industrial Accident Commission of the State of California, resolutions were unanimously adopted requesting Will J. French, the chairman of the meeting, to appoint an advisory committee of thirty to aid the State safety department in its work of preventing industrial deaths and accidents. This committee has been selected in three groups, ten employers, ten employees and ten representing the general public.

The ten employers are:

Mrs. E. L. Baldwin of the Edward L. Baldwin Co., San Francisco; W. R. Scott, vice-president and general manager Southern Pacific Co.; John A. McGregor, president Union Iron Works Co., San Francisco; John A. Britton, vice-president and general manager Pacific Gas & Electric Co., San Francisco; D. B. Farquharson, builder and contractor, San Francisco; James W. Kerr, president Steiger & Kerr, San Francisco; James McNab, president McNab & Smith, San Francisco; W. A. Bissell, president San Francisco-Oakland Terminal Railways, Oakland; Elmer E. Chase, president Canners' League of California, San Jose; J. C. Havely, representative Western Pacific Railway Co., Sacramento.

The ten employees are:

Miss Sarah S. Hagan, past president Garment Workers' Union, San Francisco; D. P. Haggerty, president California State Federation of Labor; Paul Scharrenberg, secretary-treasurer California State Federation of Labor; Andrew J. Gallagher, president San Francisco Labor Council; John A. O'Connell, secretary San Francisco Labor Council; P. H. McCarthy, general president State Building Trades Council; Frank C. MacDonald, first vice-president State Building Trades Council; W. R. King, chairman Brotherhood Locomotive Engineers, Oakland; George A. Batchelor, president Central Labor Council, San Jose; W. J. Leflar, president Building Trades Council, Sacramento.

The ten representatives of the general public are:

Mrs. Ida Finney Mackrille, San Francisco; Senator A. E. Boynton, San Francisco; Jesse W. Lilienthal, San Francisco; Dr. Benjamin Ide Wheeler, president University of California; Dr. John Casper Branner, president Stanford University; John P. Coglan, attorney, San Francisco; Dr. Herbert C. Moffitt, San Francisco; Rev. D. O. Crowley, San Francisco; Rev. Charles F. Aked, San Francisco; Dr. Martin A. Meyer, San Francisco.

Later on a similar committee will be appointed for Southern California.

A Mine at the Panama-Pacific Exposition

At the request of various mine operators and the Exposition officials, the U. S. Bureau of Mines has undertaken to construct, in co-operation with the mining industry and the manufacturers of mining machinery, a mine beneath the floor of the Palace of Mines and Metallurgy at the Panama-Pacific Exposition.

The financial and operative success of the mine is assured through exhibits promised whereby typical metal and coal mining operations will be reproduced by full-size working places in which mining machinery will be installed and operated. The walls of the mine will be covered with either ore or coal typical of the mine illustrated.

With the Architects and Engineers

American Institute of Architects

(ORGANIZED 1857)

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For Three Years—W. R. B. Willcox, Seattle, Wash.; Octavius Morgan, Los Angeles; Walter Cook, New York.

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California State Board of Architecture

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Secretary and Treasurer.Sylvain Schnaittacher
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San Francisco Architectural Club

OFFICERS FOR 1913-14

President ....Geo. E. Greenwood
Vice-President..............Chas. Peter Weeks
Secretary.......................A. L. Williams
Treasurer ....Wm. D. Sherman

Directors

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Los Angeles Architectural Club

President..............Arthur Rolland Kelly
Vice-President...............Harry F. Withey
Secretary-Treasurer .... Henry E. Bean

Chairman Educational Committee

John T. Vawter

Chairman House and Entertainment Committees, Massier of Atelier

Gilbert Stanley Underwood

San Diego Architectural Association

President..........................J. B. Lyman
Vice-President......................F. C. Cressy
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Treasurer.........................G. A. Haussen

Portland Architectural Club

OFFICERS FOR 1913

President.........................Frank Logan
Vice-President.................Jno. M. Hatton
Secretary....................Wm. H. Flanigan
Treasurer..................William P. Dawson

Architectural League of the Pacific Coast

President........Carl F. Gould, Seattle, Wash.
Vice-President.......Myron Hunt, Los Angeles
Secretary.............J. S. Cote, Seattle, Wash.
Treasurer...........W. C. Hays, San Francisco
Next Convention City—Seattle.

Architect for Salinas Theater

William Binder of San Jose has been selected to prepare the plans for a new theater for Brown Bros. at Salinas. The building will be Class "A" and will seat 875 persons. It will be equipped with a large stage with modern scenery, asbestos curtain, heating and ventilating system, etc. The theater has been leased to Berrier & Hanna.

San Francisco Society of Architects

Regular Meetings Second Wednesday of Each Month

PRESIDENT - - - - - JOHN BAKEWELL, JR.
VICE-PRESIDENT - - - - CHARLES PETER WEEKS
SECRETARY AND TREASURER - - - WILLIAM OTIS RAIGUEL
DIRECTORS - - JOHN GALEN HOWARD and LOUIS C. MULLGARDT

COMMITTEES:—

Membership—WM. C. HAYS, FRED'K H. MEYER, and GEO. W. KELHAM.
Architectural Practice—JOHN GALEN HOWARD, CLARENCE R. WARD, and HOUGHTON SAWYER.
Entertainment and Program—LOUIS C. MULLGARDT, CHAS. P. WEEKS, and LOUIS P. HOBART.
Allied Arts—LORING P. RIXFORD, J. HARRY BLOHME, and ALBERT PISSIS.*
Publicity—WM. OTIS RAIGUEL, JOHN J. DONOVAN, and E. COXHEAD.
Education—BERNARD R. MAYBECK, ARTHUR BROWN, JR., and JOHN BAUR.
Competitions—CHAS. P. WEEKS, WM. C. HAYS, and JOHN REID, JR.

* Warren C. Perry has been appointed to succeed Mr. Pissis, deceased.

Oregon Chapter Favors Architects' Signatures on Notable Buildings

The members of the Oregon chapter of the American Institute of Architects have agreed informally to follow the plan of placing their names on buildings of which they are particularly proud. This plan has been recommended by officers of the parent institute and is being endorsed by the officers of the organization all over the country.

Often the public accepts a building without ever stopping to ask who contributed the design, the whole product being regarded as the work of associates. By placing picturesque or sober signatures on noteworthy buildings in the form of brass nameplates, the architects believe honor will be paid where it is earned and that an abnormal incentive will be given painstaking effort.

Shea & Lofquist Busy

Architects Shea & Lofquist of San Francisco have let a contract to Andrew Lynch to superintend the reconstruction of St. Patrick's Church on Mission street, between Third and Fourth streets, San Francisco. A steel frame is being put in and the entire interior will be altered. The main edifice will have a height of eighty feet. It is proposed also to reconstruct the bell tower, and chimes for same have already been ordered. The same architects have completed plans for a $40,000 edifice for the Star of the Sea Church in the Richmond district. Plans are well along for a chapel for St. Patrick's Seminary at Menlo Park.

Architect Morgan Returns

Architect Octavius Morgan, senior member of the firm of Morgan, Walls & Morgan of Los Angeles, after a most delightful trip abroad, has returned home with a wealth of information, and some interesting observations which will appear in a future number of this magazine.

Mr. Morgan was away nearly six months, during which time he visited not only his old home in England, but also all the principal cities of nearly every country of the Old World. Like all true Angelenos, Mr. Morgan is glad to be back to the city in which he has lived nearly fifty years. During his short stay away Mr. Morgan marvelled at the rapid growth and advancement Los Angeles has made in the past half year.

$250,000 Apartment House

Architect J. W. Miller of San Francisco is completing plans for a splendid apartment house to be erected for a client of A. H. Rich & Co., on Ellis street, near Taylor, San Francisco. The estimated cost is $250,000. The building will occupy a 50 vara lot and will contain a total of two hundred rooms, arranged into apartments of one, two and three rooms each. Construction will be either brick walls and concrete floors or concrete walls and floors and brick facing. The building will be equipped with electric passenger elevators, dumb waiters, steam heat with oil burner, hot water, refrigerators, vacuum cleaning, telephone exchange, tile bathrooms, etc.

A Concrete "Movie" City

Architects S. Tilden Norton and Frederick H. Wallis, 604 Title Insurance building, Los Angeles, Cal., have been commissioned to prepare plans for a large group of buildings to be erected for the Universal Film Company on the large tract of land recently purchased beyond Cahuenga Pass and between the Lankershim and Burbank roads. A reinforced concrete wall 18 feet in height will be constructed along the property line where it adjoins the public highways. The buildings will consist of the administration building, projecting theater, restaurant to seat 500, planing mill, carpenter shop, 300 dressing rooms, several stages, one of which will be 600 feet long, emergency hospital, property rooms, scene painting building, laboratory, power plant, etc. The buildings will be designed in the Mission style and the construction will be of reinforced concrete with tile and composition roofs. The buildings will constitute a small city and the cost is estimated at $1,000,000.

Annual Meeting

The San Francisco Society of Architects held its second annual meeting on June 10th, at the Hotel Bellevue. A vote of thanks was given the outgoing board of officers, whose work in behalf of the society was conscientious and painstaking. An entire new board of officers was elected, as follows: President, John Bakewell, Jr.; vice-president, Charles Peter Weeks; secretary and treasurer, William Otis Raiguel; directors, John G. Howard and Louis C. Mullgardt. New committees were named by the president, and these appear on page 115 of this issue.

New President for Washington Chapter

Owing to prolonged absence in San Francisco, where he is connected with the architectural department of the Panama-Pacific International Exposition, Charles H. Alden has resigned as president of the Washington State Chapter, and James Stephen has been appointed by the council to serve for the remainder of the term.

World's Largest Flag Pole

The largest flag pole in the world has been placed on the grounds of the Panama-Pacific International Exposition on the site of the Oregon building. The pole was shaped from a single fir tree given by the citizens of Astoria, Oregon. It is 230 feet long and more than five feet across the butt. It carries a flag 46 feet long.

School Building for Berkeley

Dr. Adelaide Smith, of 2237 Piedmont, Berkeley, principal of the Wellesley School for Girls in the College town, states that a $60,000 school building will be erected on the school's property in North Berkeley. No architect has been employed as yet.

$3,000,000 for Los Angeles Schools

The Los Angeles board of education has adopted, as its policy for the expenditure of the bond money recently voted for the erection of new school buildings, practically the same plan as that followed several years ago under a previous bond issue. About seventy-six new buildings are to be erected at an estimated cost of $2,531,000. The cost of the alterations and additions to be made to existing buildings will bring the total up to approximately $3,000,000.

The board of education will appoint architects outright to prepare plans and specifications for the greater number of the new buildings. All of the alterations and additions and a few of the new buildings will be designed by the architectural department of the board of education which is to be established in charge of a competent architect. The supervision of all construction work and the architectural department will be under Adam H. Daum, who has been elected business manager of the board of education.

Work in Architect's Office

Architect Frederick D. Boese of San Francisco has prepared plans for a handsome two-story residence to be erected on Francisco street, San Francisco, for George A. Clough of the Hibernia Bank building.

Architect J. W. Dolliver of San Francisco has let a contract to Robt. Trost for $60,000 to build the first of a group of eight buildings for the St. Francis Orphanage at Watsonville. It will be a dormitory of frame construction with cement plaster exterior. Other buildings will be figured as soon as plans are finished.

Architects Cunningham & Politeo of San Francisco have prepared plans for a Class A dancing pavilion to be erected at the corner of Eddy and Jones streets, San Francisco, for Walter E. Dean. The building will be devoted exclusively to the terpsichorian art and will cost $75,000.

Hippodrome to Be Built

Sidney Graumann, of the Imperial Theater, San Francisco, is authority for the statement that the proposed Hippodrome for San Francisco will surely be built. He states that work will start inside of ninety days and that the project will cost close to $750,000. The seating capacity will be 4,000, and the location will be on Market street above Sixth street. The name of the architect is not made public.

Auburn School Building

Architect W. H. Weeks, 75 Post street, San Francisco, has been commissioned to prepare plans for a two-story Class C schoolhouse at Auburn to cost $50,000. There will be eight class rooms and an assembly hall. Construction will be either brick or concrete.

Architectural Clubs' Membership Transfer System

Headquarters: San Francisco Architectural Club, 126 Post street, San Francisco, Cal.

The Membership Transfer System wishes to report that favorable answers have been received from clubs throughout the country, following which a letter was sent to each club outlining our plan and asking for approval of same.

To date six clubs (Portland, Ore.; St. Louis, Mo.; Washington, D. C.; Chicago, Ill.; Cleveland, O.; and San Francisco, Cal.), have accepted our plan, to-wit:

"Former members of clubs registered in the Architectural Club Transfer System, upon presenting their applications, accompanied by their first quarterly (or as required by various club laws) dues and a certificate from the secretary of said club, stating their initiation fee is paid and that applicant is in good standing, may be admitted to this club without payment of the initiation fee; provided, that should the initiation fee of said club be less than that of this club, he shall pay the difference," thus becoming recognized members of the System.

The organizers of the System are gratified at the interest shown by the various clubs, which indicates the immediate success of the plan. It is hoped that the other clubs will eventually realize its advantages and become members.

It is interesting to note that the San Francisco Architectural Club has already received Mr. Wm. K. Dunnavant, a member from the St. Louis Architectural Club. Aside from the transfer of members, it is our idea that hospitality be extended to any member of the System traveling about the country.

A list of the clubs registered will be published quarterly, and other matters of interest as well, will be noted.

The Membership Transfer System will be pleased to hear from, or give information to, any clubs desiring to affiliate with the System.

New Architects

The California State Board of Architecture (Southern Division) has granted certificates for the practice of architecture to the following applicants: Harold E. Cross, 1027 Valencia street; Peter K. Schabarum, 1927 South Union avenue, and Stiles O. Clements, 1620 Shatto street, all of Los Angeles.

Brick Building

Architect A. Reif, 404 Higgins building, Los Angeles, has prepared plans for a three-story brick store and hotel building at 966 South San Pedro street for Robert G. Seiler. It will be 42 x 122 feet and contain two stores on the ground floor and fifty rooms and four bathrooms on the two upper floors.

Personal

Edward G. Garden and Alfred Kuhn announce the formation of a partnership for the general practice of architecture under the name and general style of Garden & Kuhn, architects, with offices at 545-6 Phelan building, San Francisco. Mr. Kuhn has been a resident of San Francisco since 1906 and was previously associated with Mr. Garden's office in St. Louis. He is a certificated architect for the State of California.

Architect Hubert C. Frohman of Frohman & Martin, Pasadena, has left for a tour of Europe, where he will devote five or six months to pleasure and to study of church architecture of the larger cities. He will spend much time studying the old church structures and parish houses of England, and of Old English architecture in general.

Architect William A. Newman is enjoying his summer outing motoring in the Yosemite Valley. His family accompanied him.

Architect Frederick H. Meyer of San Francisco spent his vacation at his country home at Dutch Flat, in Nevada county, Cal.

Ferry Post Office Building

Jerome Newman, chief engineer of the Board of State Harbor Commissioners, has prepared plans for the new postoffice building to be built on the bulkhead at Mission street, San Francisco. The plans call for a one-story reinforced concrete building, 200 feet in width, with an elevation of two stories on the west side, which will face the street. The total floor area will cover an acre.

New Parks for Sacramento

The city of Sacramento has engaged Dr. John Nolen, landscape architect of Boston, to prepare plans for the beautification of the municipal parks. Dr. Nolen has submitted preliminary sketches for a system of parks that will add materially to the beauty of the Capitol City.

To Enlarge Marine Barracks

A recommendation has been sent to Washington for the construction of additional buildings to house the Marine Brigade at Mare Island Navy Yard. The buildings planned are eight in number and each will accommodate 400 men.

May Build Summer Resort

It is announced that A. P. Leighton, representative of an Eastern syndicate of capitalists, has decided to establish a summer resort at Blairsden, Plumas county, California. The plan is to build a large hotel and a number of log houses.

Hanford Postoffice Contract

Frank Gallagher of San Francisco has been awarded the contract for the erection of the new Federal building at Hanford at \$52,990 for limestone facing, and \$52,790 for sandstone facing.

Scientific Illumination—the Indirect System

By W. N. GOLDSCHMIDT

Authorities have long agreed that a well diffused lighting system is the best method of artificial illumination. Our everyday experience teaches us that when we read out of doors we seek involuntarily the shade of a tree. When the sun shines too directly upon our desks at which we are working, unconsciously we draw the shade. To secure the most normal condition in interior illumination, we cannot go far wrong if we follow nature's instincts.

The nearest approximation of the North light, skylight, daylight effect is certainly obtained by a well planned indirect lighting system. For here we have the perfect diffusion, uniform distribution, absence of glare and specular reflection and intensity required for the given work.

The first indirect lighting installations in Europe had their origin in an attempt to copy nature so as to secure the best possible diffusion and most uniform distribution of light. Dr. Eduard Schmitt of the Polytechnik of Darmstadt in his "Fortschritte auf dem Gebiete der Architektur" supplementing his former work, "Handbuch der Architektur," gives a very detailed description of the first attempts at indirect lighting in Europe.

In 1881, Jasper used indirect lighting at the Electrical Exposition at Paris, using arc lamps with tin polished reflectors. Schlenk made fairly good installations in the "Technologisches Museum" at the "Anatomie" in Vienna, Austria. From "Mittheilungen des Technologisches Gewerbe Museums," Erismann describes the model lighting of a school room at the Jubilee Exposition in Moscow, Russia, on which Boubnoff made a photometric test. Here petroleum lamps with incandescent mantles were used. F. Renk used Butzkes gas burners in an indirect fixture to light the rooms of the "Hygienisches Institut" of the University of Halle a/d Saale, Germany.

Even with this unsatisfactory material, fair results as to absence of glare and good distribution were obtained. The intrinsic brightness of the light sources were, however, too low, or they flickered; their reflectors were inefficient and their apparatus crude.

It remained for America, after the advent of the Tungsten lamp, to produce durable reflectors of high efficiency with spirally corrugated surfaces to diffuse the light. Proper shapes, which in conjunction with the various standard lamps were built on the basis of the law that the angle of incidence of a ray of light equals the angle of reflection. According to this law, appliances were also evolved which permitted the variation of the distance between the light source and the secondary reflector, the ceiling, so as to waste by wall absorption the minimum amount of light flux.

Aside from the physical properties of light, its intelligent direction depends largely upon physiological, psychological and esthetic factors. The structure and capacity of the human eye is a most important factor. The iris is a natural eye shutter which controls the expansion and contraction of the pupil according to the capacity of the eye.

A fatiguing factor of most systems of illumination is the necessity of gauging the opening of the pupil so that the retina is protected from too much light flux, and the sensitiveness of the nerve endings retained. For, if the light sources are of high brilliancy, the iris is severely taxed because of the necessity of continuous opening and closing as the eye shifts the direction of its gaze from the bright to the less bright areas. The more nearly uniform and diffuse the illumination is, the less the iris must readjust itself, and hence the less the fatigue.

A high degree of diffusion results in the elimination of sharp shadows and reduction of specular reflection from glossy surfaces. Since the ceiling is the real working source of light, and since it affords the most nearly completely diffused illumination practicable at the present time, specular reflection is practically absent.

Barrows tells us that the maximum intensity of light in the direct line of vision which the eye can endure without annoyance and possible harm, is about four or five foot-candles per square inch. A brightness above this value should be surrounded with diffusing material of such size and attractiveness as to present an intensity not greater than above stated.

The Teco room of the Radisson Hotel of Minneapolis, Minnesota, has no protruding ceiling fixtures. The 150-watt lamps at the corner of each bay are entirely concealed in large blue-bells made of Teco tiles, attached to the square pillars with the opening about six feet from the ceiling. The walls are entirely lined with Teco tiles showing unique views of various portions of the United States. At the expenditure of about 1½ watts per square foot, an intensity of four foot-candles is obtained.

The South Shore Country Club ballroom has been named by many the best lighted interior in the country. The fixtures are made of composition with opened grill work bottom lined with silk, each bowl containing twenty-one 100-watt lamps, each in an individual diffusing reflector. The translucency is obtained mainly by the reflected light from the ceiling. The color scheme in this ballroom is American Beauty red and old ivory. The resulting intensity of this interior is a trifle over two and a half foot-candles.

These examples of correct lighting emphasize the fact that a scientific solution of the problem of appropriate and adequate illumination is at hand.

The Society for Electrical Development

The Society for Electrical Development held its second annual meeing at the Bellevue-Stratford Hotel, Philadelphia, Pa., in June. Mr. J. M. Wakeman, general manager of the society, reported that the funds necessary to begin active work had been pledged and that the best men available to carry it on had been secured. This work has been divided into sections as follows: Field co-operation, new development work, commercial-exchange bureau, and editorial and advertising. The activities of the society are well under way, directed by the following staff:

Mr. George Barton Muldaur, M. E., is in charge of the work of the first section and Mr. Robert N. Lee has been engaged to assist him. Mr. Muldaur will travel about the country forming co-operative leagues for more intensive local development of the industry, aiding architects and builders to arrange for complete electric service instead of lighting alone, bringing textbooks and lecture courses up-to-date, etc. Mr. John P. Mallett, E. E., will investigate the present uses of electricity in the various industries and report how these applications can be extended. Mr. Theodore Dwight, who is in charge of the commercial-exchange bureau, will secure and index information regarding the uses of electricity. This information will be at the service of the members of the society. The news and advertising department is in charge of Mr. H. C. Spaulding. Mr. L. G. Harkness-Smith has been placed in charge of a department which will aim to illustrate by means of motion pictures the uses of electricity in the home, mill, factory and farm.

Mr. Wakeman further reported that the society membership consisted of 298 central stations, 185 manufacturers, 272 jobbers and dealers, 588 contractors and 23 miscellaneous industries. He said that the society was still desirious of increasing its membership in order that the development work may be made more extensive.

At the meeting of the board of directors which followed, this resolution was unanimously adopted: "The society's efforts shall be devoted to developing the use of electrical energy by the general public, thus increasing the market of all engaged in the industry, leaving the question of defining the channels through which, and methods by which, the present and increased market shall be reached, to experience and local co-operation."

Thanks for the Boost!

A man whom we had never met before came into the office the other day, and said:

"I want to advertise in the Architect and Engineer. Your competitor has called upon me several times, but he spent so much time belittling your publication that I decided that if it merited so much discussion it must have some influence, so I'm going to advertise with you instead of with him."

Splendid Contract for California Granite Company

The California Granite Company, which owns one of the finest granite quarries in the West, has been awarded the contract for supplying all the face granite for the exterior of the new Municipal Auditorium in Oakland, from plans by Architect J. J. Donovan. The contract price is $71,857. The second lowest bid was submitted by the Raymond Granite Company for $75,500.

State Highway Man's Song

Graft and the world grafts with you
Probe and you probe alone.
For the sad old world has need of more coin,
But has virtue enough of its own.

—N. Y. Press.

The Editor's Mail

Questions on Any Branch of the Building Industry Will Be Answered Here

Something About Veneered Doors

CHICO, CAL., May 27, 1914.

EDITOR THE ARCHITECT & ENGINEER,
San Francisco, Cal.

Gentlemen:—Would you kindly let me know whether or not doors manufactured in accordance with the following specifications:

Four doors—making the double doors at the two principal entrances—shall be built up of pine in the most substantial manner, and veneered on both sides and exposed edges with the best quality quartered oak and finshed two inches thick,

would prove satisfactory for outside doors for a southern exposure, without any protection by porch, Marquise or awning. The only protection from the elements is their being recessed back from the face of brick wall about six inches.

Your opinion on this subject would be very much appreciated, as I am desirous of getting any information which will make building construction more certain.

Thanking you in advance for any advice you may choose to give, I am,

Yours very truly,
F. D. ROBBINS.

Mr. F. D. Robbins,
Chico, Cal.

Dear Sir:—We are in receipt of your inquiry of the 7th ult., asking our opinion on the use of veneered doors, especially "flush" veneered doors, in exterior positions on buildings.

Your question is an important one—also one that is of interest to all builders and makers of doors. Our own opinion may not be the opinion of all, but we think the whole matter of stability depends on the quality of manufacture and materials used. Any veneered door, whether "flush" or otherwise, has to be glued, and glue and any kind of moisture are bitter enemies, and the result of their getting together is obvious. If the door is built of absolutely dry materials, both of the core and the veneer, and the workmanship is correct and not slighted, and the door after being hung and fitted into position is made absolutely impervious to moisture, there is no good theoretical reason why the door should not stand in any position where a wood door is intended to be used.

If exposed as you mention, built of oak, we are firmly of the opinion that the veneered door is superior to one with solid rails and stiles, especially if the core is built up or dovetailed stip as is the present method in the best door factories. This opinion would also apply to any other hardwood door.

In regard to the matter of keeping out the moisture, the present-day manufacturers of varnishes have been able to produce a product that will withstand moisture fully as efficiently as will lead and oil paints. We refer to the grades of varnish known as "spar" or marine varnish. After your door is fully protected and beautified by this method, then if the door is a much used opening, the varnish itself must be protected from bruises, etc., and for a public building this is best done by a brass kick plate covering the entire base of the door to a variable height of from twelve to twenty-four inches. A defect in a coat of varnish would let moisture at the wood as quickly as a crack in a concrete wall would cause similar trouble.

Do not neglect, in painting or varnishing the door, to as fully treat and protect the entire edges, especially the *bottom* of the door, as here is where the trouble commences. Many times after the building is completed it becomes necessary to trim off the bottom of the door on account of settlement or other reasons, and then the wood is left entirely unprotected and an otherwise fine door soon becomes an eyesore and a nuisance. A well-built door is a really fine piece of cabinet work and should be treated and considered as such. Doors usually get the worst treatment of any part of a building.—THE EDITOR.

New Chief for Inspection Department

TO THE EDITOR:—There seems to be considerable controversy in the daily press in regard to the appointment of a head to the Department of Electricity, San Francisco, and it would seem that this appointment would interest San Francisco architects in as much as the inspection of electrical construction in buildings is carried on by this department.

Mayor Rolph asked for the resignation of the former head of this department and it is required of the Joint Board of Police and Fire Commissioners to select a successor. Mr. Max Kuhl, a member of the commission, was requested to make a selection from the many applicants, and when the name of his choice was placed before the Joint Board the only vote he received was Mr. Kuhl's, the balance of the members voting for another applicant. Mr. Kuhl then offered his resignation from the Board, stating that the proceedings savored too much of old-time politics.

As the final appointment is up to the Mayor, it is hoped that he will favor a candidate who has the technical training and practical experience necessary for this important position. FAIR PLAY.

Since the above was written J. M. Barry of Portland has been elected head of the department of electricity, and has already assumed his duties. By the action of the Board of Supervisors in relaxing the residential qualification in his favor, it made his election possible, and at a joint session of the Fire and Police Commissions he was duly elected to the position.

This was a personal victory for Commissioner Max Kuhl, who resigned as the chairman of the Board of Electricity because, after he had been commissioned to secure a man for the position and he had induced Barry to accept the job, a majority of the commissioners voted for M. J. Sullivan.

Government Buildings to Be Standardized

As a part of a comparative scheme for practical standardization of federal buildings the country over, the Public Buildings Commission, in a report presented to Congress recently, recommended the creation of a federal bureau to absorb the supervising architect's office of the Treasury Department. The proposed bureau would include a board of estimates and property.

The report stated that there was approximately $45,000,000 of public building work to be placed under construction by the Treasury Department; that in the past twelve years $163,085,431 had been authorized for public building sites and construction, and that during the past three years the average expenditure for construction of buildings, maintenance, operation and all other expenses had been $20,000,000 a year. The committee recommends:

Organization of a federal bureau of public buildings, headed by a commissioner at a salary of $8,000 a year, to be aided by technical experts of the supervising architect's office.

Practical standardization of buildings, establishment of groups of states in which similar conditions exist, classification of cities where buildings should be erected and use of type sets of plans and specifications to be used solely for postoffices in the same class or group; adoption of a less costly but durable, simple and architecturally desirable construction to permit of economical operation and maintenance. No buildings to be authorized where postoffice receipts are less than $10,000 a year.

The Quantity Survey Company, Inc.

On account of the widespread interest in the subject of quantity surveying, many architects will doubtless be interested to know that the Quantity Survey Company, Inc., with offices at 30 East 42d street, New York City, has recently been formed to carry on the work of quantity surveying.

This company, according to a recent statement, is prepared to make lists of quantities which it guarantees to be correct, within a small percentage, backing up the guarantee with an acceptable surety bond.

Further details may be had by addressing the company direct.

San Francisco Needs More Water

City Engineer O'Shaughnessy has prepared plans for the immediate relief of the Sunset and Richmond Districts—the growing residence sections of San Francisco—which are considerably handicapped for want of sufficient water supply.

The city owns a number of school and fire lots in the Richmond and Sunset Districts which will not be needed for a number of years to come. By boring wells on some of these lots (preferably those located in uninhabited portions of the districts), installing temporary pumping plants in connection therewith, securing reservoir sites and constructing reservoirs or tanks thereon, laying pipe lines through which water may be pumped from the wells into the reservoirs and laying distribution mains, the city will be able to furnish an adequate water supply in these districts, thus making them available for residence purposes, and building up a business, which, when the Hetch Hetchy water supply system is completed, will increase the revenue derived from the sale of water.

The Board of Public Works will shortly authorize the letting of contracts for boring and testing wells in locations to be determined by the City Engineer.

The estimated cost of constructing the above distribution system is $1,000,000. The cost of boring and testing wells will probably not exceed $25,000.

Noted Architect Marvels at Fair Progress

Henry Bacon, architect of the Court of Four Seasons, and designer of the Lincoln Memorial in Washington, after a visit to the Panama-Pacific Exposition grounds a few weeks ago, wrote a letter to a friend as follows:

I regret that I have not the time to adequately express my satisfaction with the creation now going on at Harbor View. Where nothing but water and mud flats existed two years ago there is today a noble building site for a project rapidly approaching completion—a project which, in my opinion, will have no rival, owing to the natural advantages of this site and the scheme of its plan—in any future exposition unless it be built on the same site.

Here, for the first time, a large group of exhibit buildings has been designed as one unit, insuring a grandeur befitting the site and a satisfaction to the spectator, who will generally see at each vista the work of one designer only. Yet, owing to the scheme of courts as designed, each vista will harmonize with every other view of the exposition.

This result has been achieved by the united and concerted efforts of the architects of the several buildings and courts, who were unanimous in approving the adopted scheme. Their efforts have been upheld and enlarged by the work of the sculptors and painters and the able forces under the direction of Mr. Kelham, chief of architecture.

Mr. Guerin, chief of color and decoration, has shown his skill in handling so large a subject as the color work of the exposition, and, though his work is not completed, it has sufficiently advanced to warrant a verdict of great success. The same can be said of the sculpture under the direction of Messrs. Bitter and Calder, and the horticultural work by John McLaren.

MODEL OF THE NEW SAN FRANCISCO CITY HALL
Crane plumbing will be installed by Alex. Coleman

Crane Co.'s New San Francisco and Oakland Display Rooms

CRANE CO., the widely known plumbing supply house, is in line with the progressive element, having just completed at its San Francisco factory one of the finest fixture rooms on the Pacific Coast. The Crane Co. is now fully equipped to demonstrate advantageously to architects and builders its splendid line of plumbing goods, and this, too, at the least inconvenience, not only in San Francisco, but in Oakland and Los Angeles. While the company has gone to considerable expense in fitting up show rooms in these three cities, it believes that the enterprise will be appreciated by those who wish to examine their fixtures before specifying or using them. Every fixture on display is under water, so that a practical demonstration may be had in all cases. The company's automobiles are at the command of the architect who may bring his client with him in case the latter desires to select his equipment after a personal examination. And after all, how much more satisfactory this is than picking out your goods by catalogue.

Perfect taste has been displayed in arranging the San Francisco show room, which is on the second floor front of the big factory and office building at Second and Brannan streets. Well lighted by the fashionable indirect system, with white sanitary walls and mosaic tile floors, one may easily imagine himself in his private bath ready for a plunge in the tub, or a refreshing needle or shower bath. A number of private bath rooms have been fitted up just off the main show room and in these compartments you will find every type of fixture and convenience that modern sanitary engineers have devised, from glass towel rack to expensive porcelain tub.

The Crane Co., with its forty-three branches scattered throughout the United States, buys, of course, in wholesale quantities, and for this reason, if for no other, it is able to give the consumer the best that the market provides for the least money. Many of the goods carried by the Crane Co. are manufactured according to their own design and patents. The company is disposed to eliminate the cheaper lines almost entirely, as the demand nowadays, in nine cases out of ten, is for high grade goods—goods that will stand the wear. All the bath tubs are of solid porcelain or enamel iron, while the lavatories run entirely in vitreous china. The new bowls are equipped with Crane's sanitary waste and overflow contrivance. More than seventeen different types of closets are on display.

The Crane Co., through its aggressive sales department, has signed up not a few important contracts of late, probably the largest being the fixtures for the new San Francisco city hall, which calls for more than $30,000 worth of material. This contract was placed through Alex. Coleman, who is to do all the plumbing work in the big municipal building. Another contract of some importance is the addition to the Union Square hotel in San Francisco, from plans by Architects McDonald & McDonald. There will be more than one hundred baths in this addition.

CRANE CO. FIXTURE ROOM, SAN FRANCISCO

VIEW OF THE CRANE SHOW ROOMS IN OAKLAND

Reinforced Concrete Trestle the Big Engineering Feat of New State Highway

THE California State Highway Commission is taking bids for the construction of a reinforced concrete highway trestle across the Yolo-By-Pass, just west of Sacramento. The reason for building this immense trestle is to guard against possible flood waters along the route of the new State highway, the commission seeking to profit by the experience of the Southern Pacific Railroad Company, which adopted the trestle plan after passing through several disastrous flood seasons.

The proposed new trestle is 13,851 feet long, starting from the West Sacramento levee at its east end, and a temporary timber trestle extends 2,318 feet farther west, apparently with the intention of filling in this section later with earth or other material.

Four concrete piles are to be driven for each bent, two vertical and two other piles on a batter of 1 in 8, as shown in the sectional drawing. The piles are made of 1:2:4 concrete, 14 inches square at top, with ⅞-inch round rods in the four corners, wound with No. 6 black wire wound spirally with pitch varying from 1 inch at top to 5 inches for all but the upper 2 feet length. The lower 5 feet of each pile is tapered to 6 inches square at the bottom and the corners are chamfered for 25 feet down from the top.

The piles are driven by a 3,000-pound steam hammer by the Engineering News formula, and are estimated to average about 32 feet long in place.

The piles are allowed to harden for at least thirty days before driving. Concrete caps are cast in place on top of the piles, being in form and dimensions shown on the drawings, viz.: 23 feet long, 2 feet wide, 16 inches deep at ends and 18 inches deep at center. Special forms of caps are provided at expansion joints and lamp-post locations.

The concrete floor units are inverted trough sections as shown in the drawings, the forms of the three intermediate units being slightly different from the two outer units, which carry the wheel guard and railing. The slabs of the floor units are 18 feet 10½ inches long, the outer units 4 feet 10 inches wide and the intermediate units 4 feet 6 inches wide, thickness 6 inches. The long sides of the channels are 10 inches thick at the bottom and 11 inches at the top, and 12 inches deep, making the total depth of the floor members 18 inches. The ends or short sides of the channels are 8 to 12 inches thick at bottom and 3 inches thick at top. These floor units are cast in the yard and hardened at least 30 days before placing.

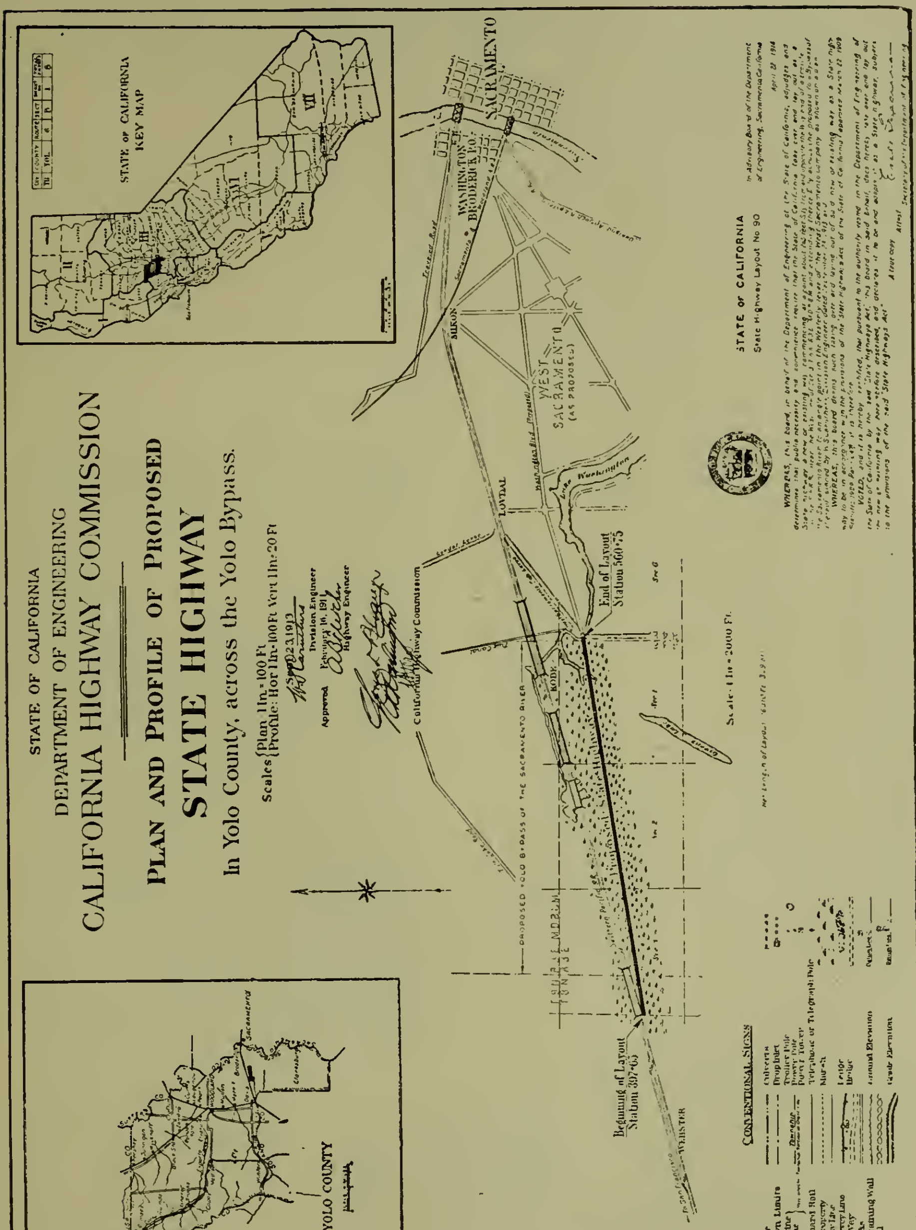
The floor units are tied together by bolts and dowels, with special connections at expansion joints, there being a ½-inch expansion joint at every third bent.

The caps and floor units are fully reinforced with ½-inch and ¾-inch rods, stirrups, ties and spacers.

On the outer edges of the outer floor units the wheel guards or curbs are cast in place, doweled into the floor unit, and carrying the pipe rail fastened also by dowels. The curb is 15 inches high and about 12 inches thick, and is relieved by arch-like openings, each 2 feet 2 inches span by 8-inch rise with 12-inch bearing between.

When the concrete floor system is completely set and dry its surface is coated with an asphaltic paint binder applied with broom to give a thin, uniform, black, glossy film, hardening in two hours. On this film, as soon as hardened, an asphaltic wearing surface is laid which averages 1½ inches thick after compression. This wearing surface is made of 7½ to 10 per cent bitumen, 8 to 17 per cent stone dust and the remainder broken stone or gravel and sand held by a 200-mesh sieve and passing a No. 2 sieve, in specified proportions of various sizes.

The grade of the trestle is level from end to end. The extra 2-inch depth of the caps of the pile bents at the center of the roadway is all thrown into the top, so that there is almost a 2-inch crown to the roadway in its 21 feet of width, enough to drain the roadway, the water running out through the openings in the wheel guard or curb above described.


STATE OF CALIFORNIA
DEPARTMENT OF ENGINEERING
CALIFORNIA HIGHWAY COMMISSION
PLAN AND PROFILE OF PROPOSED
STATE HIGHWAY
In Yolo County, across the Yolo Bypass.
STATE OF CALIFORNIA KEY MAP
YOLO COUNTY
SACRAMENTO
WEST SACRAMENTO (AS PROPOSED)
LOVDAL
SILKON
KODE
CONVENTIONAL SIGNS
STATE OF CALIFORNIA
State Highway Layout No 90

A Group of Monumental Buildings

Plans for the proposed $500,000 experiment station of the United States Bureau of Mines to be located in Pittsburgh, Pa., have been approved by the commission appointed by Congress for that purpose. The Federal Government now owns the property upon which will be erected a group of buildings, especially designed and adapted for the carrying on of the mine safety work and other investigations in which the Bureau of Mines is interested.

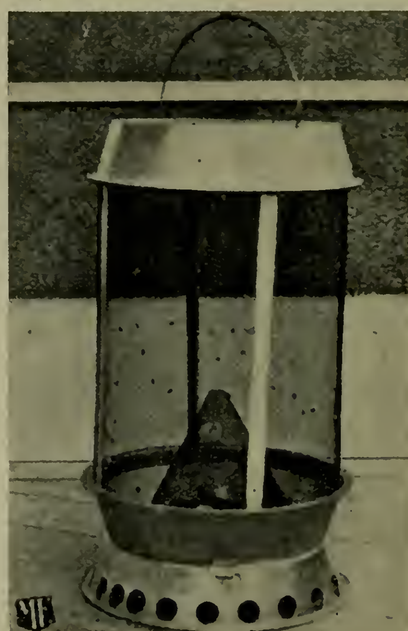
The buildings which will constitute the experiment station of the bureau will form a part of a most remarkable and unusual group of monumental edifices devoted to educational purposes. On one side the bureau's buildings will face the great group of structures of the Carnegie School of Technology. On another side is the Carnegie Institute, in which are the art gallery, museum and library. Nearby is the imposing pile of buildings of the University of Pittsburg. Other nearby building are the Memorial Hall, Pittsburgh Athletic and University Clubs and the Hotel Schenley.

A Municipal Fly Trap

THE city of Redlands, California, employs a man [A. E. Chapman] whose sole duty it is to look after municipal fly traps which are placed on the sidewalks in the down-town section at the expense of the merchants. This man baits and empties the traps daily.

The traps are made on the multiple cone plan and in different sizes, although the character of the type is uniform. For the first three weeks after these were all in place Mr. Chapman caught fifty gallons of flies in the traps, which he estimates to be equal to 3,750,000 flies. It is claimed these traps have kept the business houses almost entirely free from flies. Each day the traps on the streets are baited with material which will attract the flies, first being emptied of those which had been collected during the previous day. The flies thus collected are burned.

In Sacramento the Board of Health is offering a cent a hundred for flies caught and turned in to the Health Inspector.



(From Municipal Engineering)

California State Highway Notes

The first arrest for inflicting willful damage on the new State Highway has been made in Fresno, and the case is now pending in the courts of that county. Clarence Boling of Fresno was arrested while driving a combined harvester along the State Highway south of Herndon. He was requested to drive along the side of the highway and off the pavement by Division Engineer Woodson and refused. The large cleats on the harvester wheels inflicted considerable damage, and a complaint was sworn to by the division engineer.

Harvesters, well drilling and other heavy traction rigs with cleats or rough studded tires have also been driven on the State Highway in Madera and Santa Clara counties, and near Los Angeles a disc harrow, or some other implement with a sharp edge, was driven on the pavement.

This question is being taken up by the Highway Commission throughout the State, and owners of traction engines are asked to use care in helping to protect the paved sections of the State Highway. The Attorney General has given the opinion that the State has full power to protect the road and when the damage is wanton or wilfully made, it is the intention of the Highway Commission to ask for a prosecution.

It is possible to do more than one thousand dollars damage to a paved road in twenty minutes time with engines or other implements or vehicles not intended for use on road pavements. It is not the intention of the Commission to interfere with heavy traffic which does not injure the highway.

Brick Highways

Cuyahoga county, Ohio, will add sixty miles of rural brick road to its 400 miles of similar pavement, according to the 1914 road improvement plans announced by County Engineer Stinchcomb, thus strengthening its distinction of being the best paved rural district of any similar area in the world.

A minimum width of sixteen feet has been adopted for roads to be laid during the coming summer and the entire expenditure, including fills, bridges, etc., will be somewhat in excess of $900,000.

The adaptability of brick to rural roads was first proved in Cuyahoga county and the policy of building for permanence was adopted even before automobile traffic drove other localities to copy similar construction. Cuyahoga county has expended more than eight million dollars in this type of road and the repair bills have amounted to practically nothing.

By the Way

Some Industrial Information Worth the While

This story and a half bungalow has cement plaster exterior on Bishopric sheathing.

Substitute for Metal Lath and Grooved Boards

A SUBSTITUTE for metal lath and grooved redwood boards for exterior plaster work has been found in Bishopric wall board and sheathing, which is now being placed upon the San Francisco market by I. E. Thayer & Co., of 110 Market street. The architect and builder and the owner, too, for that matter, have been having some trying experiences with the various so-called practical methods for holding cement plaster. They have tried grooved boards with disastrous results and even metal lath has given a lot of trouble.

Almost everything within reason is claimed for the Bishopric wall board and sheathing, and those who have tried the material speak strongly in its favor, and that should go a long way to promote a healthy demand for the product. For bungalow and residence work the sheathing is having a tremendous call.

It is claimed that with Bishopric wall board as a substitute for lath and plaster, and Bishopric sheathing combined with cement (or weatherboarding), building construction is simplified, expense is minimized and protection is amplified. Durability is guaranteed. According to the manufacturers there is nothing in Bishopric wall board or sheathing to wear out. Here is one of many letters that have come unsolicited to the manufacturers:

This photo shows the Transport dock at Fort Mason, where M. Fisher is building a large reinforced concrete warehouse for Uncle Sam.

U. S. GOVERNMENT TRANSPORT DOCK AND WAREHOUSE

The **Pratt Building Material Company (C. F. Pratt, President) is delivering 2000 yards of Rio Vista River sand by boat to this job**, not only for the superstructure, but also for the concrete piles driven by the MacArthur Concrete Pile & Foundation Co. See the **Pratt Building Material Co., Hearst Building, for sand, rock and gravel.**

THE MASTIC WALL BOARD & ROOFING MFG. CO., Ltd.
Cincinnati, Ohio.

GENTLEMEN:—We used Bishopric Sheathing Board on the outside of house at Pinewood Park, Long Island. The board was put on in June, and stucco was not put on until July and August. It was waterproofed.

It has been exposed to temperatures ranging from two degrees below zero, wind, rain and snow to the hottest weather in July and August, and it is in the same condition now as last fall.

I am convinced that it is far superior to metal lath for stucco work. Am using it on the outside of an expensive little bungalow in place of metal lath, for the simple reason that I consider it superior in many respects. On this bungalow, the board was put on in November. I shall not stucco until spring.

Notwithstanding the severe winter, this board looks just the same as when we put it on. I shall probably stucco in March.

Yours truly,
F. A. DALTON, President,
Babylon Shore-of-Bay Land Company,
No. 1265 Broadway, New York.

You don't have to wait for "building weather" when you use Bishopric wall board. It goes on dry.

With hammer and nails any workman can apply Bishopric wall board.

There is no delay because plasterers are not available.

It can be applied in half the time required for lath and plaster. This means a saving of fifty per cent in labor.

An ordinary lather can finish a wall with it in less time than he can put on laths for plaster.

As soon as it is on, the wall or ceiling is ready for immediate decoration. There is no waiting until it sets or dries.

The paper, paint or burlap goes right on.

A single sheet of Bishopric asphalt mastic wall board is 4 x 4 feet square. It comes from the factory accurately cut to 4 x 4-foot size, and is all ready to nail on the studding of your building. Anybody who can drive nails can put it on. Bishopric wall board never warps—never twists out of shape. It stays flat as long as the wall stands. A wall board without laths is a makeshift—not even a good imitation of Bishopric, which is specified by owners and architects everywhere.

The Bishopric combination of asphalt mastic with laths and cardboard is covered by letters patented in the United States, Canada, England, Germany and France. There are about twenty-six laths to the sheet of Bishopric wall board, the laths being about ¾-inch apart. The thickness of the whole is three-eighths inch. Here are some of the winning points claimed for Bishopric sheathing:

1. Bishopric sheathing makes a more solid and substantial wall than lumber; therefore, develops greater wind strength. There are no gaping joints; no widening cracks due to shrinkage; no knot holes. It is like a solid board.

2. The asphalt mastic in Bishopric sheathing is a non-conductor; is proof against heat and cold; keeps the building cooler in summer and warmer in winter.

3. The body of Bishopric sheathing being asphalt mastic, moisture cannot penetrate it. The wall, therefore, is proof against dampness.

4. Bishopric sheathing is proof against vermin, weevils, etc. The pests can not bore through the tough, gummy asphalt mastic.

5. In applying weatherboards over the laths, dead air space is left between the laths, forming splendid insulation.

6. One wagon load of Bishopric sheathing covers an area from six to ten times as great as one load of lumber—a tremendous saving in hauling. Five thousand feet can be hauled in an ordinary wagon.

7. The cost of applying ordinary wood sheathing is from $5 to $10 per 1,000 feet, whereas the cost of applying Bishopric sheathing is but $2.50 per 1,000 feet—a saving of about 75 per cent. Furthermore, 1,000 square feet of wood sheathing covers but 750 feet of surface, 20 per cent less being due to tongue and groove. In Bishopric sheathing 1,000 square feet covers 1,000 feet of space.

8. Bishopric sheathing does away with the expense of building paper and cost of its application.

9. In applying ordinary lumber, heavier scaffolding, more tools and greater scaffold floor-space are required. In applying Bishopric sheathing, one man drives a few nails in each sheet; a common laborer or boy can finish the nailing.

10. Bishopric sheathing insures comfort during the construction of the building. As soon as the building is closed in with Bishopric sheathing, the men may work in comfort on the inside during bad weather, finishing the outside on suitable days. This insures continuous work, without loss of time, enabling the contractor to hold his men and complete the work in the least possible time, which is far better than allowing his men to get away from him during a suspension of work due to disagreeable weather.

Safety Tread for School Buildings

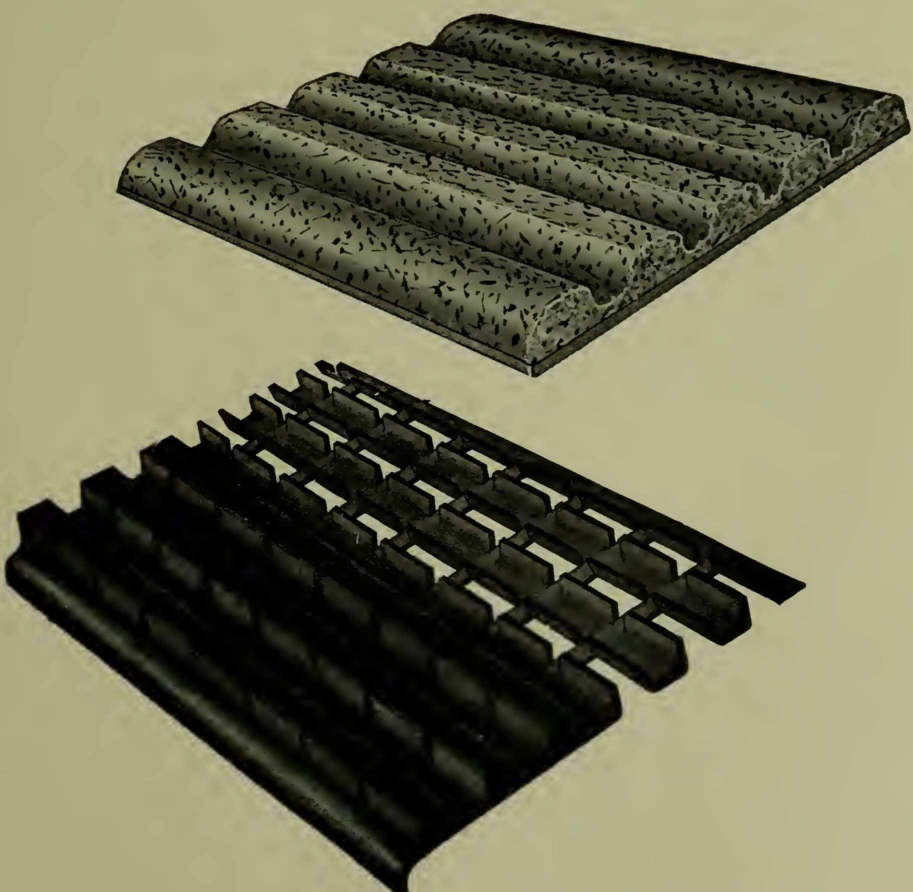
The Universal Safety Tread has recently been installed in the Madison and Garfield school buildings in San Francisco, and according to reports are giving splendid satisfaction. These treads are also in use throughout the Soldiers' Home in Los Angeles. Speaking of the advantages of the Universal Tread for school houses, an official of the company is quoted as saying:

The protection of children from accidents in school houses is exceedingly important, and nothing is more dangerous than slippery stairs.

Such protection can be gotten and accidents prevented by the use of a safety tread which not only prevents slipping, but acts, also, as a protection to the stair itself from wearing out, whether the stair be made of wood or concrete. On iron stairs, such protection is very necessary, as they rapidly become slippery, and, unless protected in some way, many accidents are the result.

The Universal Safety Tread is designed especially to meet these wants. It is essentially a non-slipping tread and remains so until entirely worn out. It is very durable, and its life, under such conditions as school house work, is of many years' duration.

The tread is constructed of a heavy metal base-plate, combined with a lead filling which renders it absolutely non-slipping. The metals are so proportioned that the wear is uniform, and by



UNIVERSAL SAFETY TREAD, SHOWING CORRUGATED ANTI-SLIP TREAD

A TYPICAL SCHOOL STAIRWAY EQUIPPED WITH UNIVERSAL SAFETY TREADS

its unique construction it presents a continuous, non-slipping wearing surface of lead.

We have many hundreds of schools throughout the country equipped with our safety tread, including, besides San Francisco, all the schools in Providence, some twenty in Cleveland, several in Chicago, Toledo, Philadelphia, New York, Boston, and a very large number of parochial schools all over the country.

According to its manufacturers, the following are a few of the reasons why the Universal safety tread should be specified:

Because it is essentially a non-slipping safety tread until it is entirely worn out.

Because it is so constructed that the filling or non-slipping part of the tread is always exposed to the foot and remains exposed while the tread lasts.

Because it is more reliable and durable than any tread on the market and costs no more.

Because it can be made in one piece, with or without nosing, up to twelve inches, thus insuring greater economy in installation.

The Universal safety tread is constructed of a heavy steel or brass baseplate, in which openings are punched to receive the filling, which is firmly clinched on the bottom of the baseplate.

By this construction a continuous, non-slipping wearing surface is presented until the tread is worn out, while the hard steel teeth insure great durability.

The baseplate can be extended to form a nosing of any depth or curve required.

Parochial School and Hospital

Tentative plans are being made for a parochial school and hospital building to be erected in Hanford. It will be known as the Dominican Sisters' Hospital and School.

When in Doubt

as to what
to do,

Don't Do it

but just drop a line to the nearest office and get the advice of

Experts-

people who have spent over thirty years in the manufacture of

ELEVATING, CONVEYING, SCREENING and MECHANICAL POWER TRANSMITTING MACHINERY

and who can offer a piece of machinery exactly suited to the requirements of the case.

SEND FOR CATALOG

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660 Mission St.
SAN FRANCISCO

SEATTLE	PORTLAND	VANCOUVER, B. C.	LOS ANGELES
558 First Ave. South	67 Front St.	Pacific Building	130 N. Los Angeles St.

Some New Books

The Swiss Chalet Book—By Wm. S. B. Dana. This new book tells the story of the Chalet in Switzerland, its history, evolution and construction. It is replete with illustrations, numerous diagrams, sections and plans. It tells the reader of the use that has been made of the chalet forms in California, and contains most attractive pictures. 150 pages, 250 illustrations and figures; net $2.50.

Colonial Architecture—Fifty Salem Doorways—By Frank Cousins, Introduction by Glenn Brown. This is the cream of a collection of photographs which Mr. Cousins has been selling individually to the best architects in the country for years. They show the finest types of Colonial architecture, and are the real sources of the best style that we have. Many of the doorways illustrated in these beautiful photographs are no longer in existence so that it is only in this form that they may be studied. Fifty plates in Portfolio; price, $5.00 net.

The Principles of Architectural Design—By Percy L. Marks, Architect, author of "Principles of Planning." Contents: Part I—Exterior design. Treating on various principles, expression, scale and economy, roofs, sections and modifications of plan, proportion, balance, symmetry, unity, variety, contrast, etc.; perspective effects, chiaroscuro, projection, surface decoration, fenestration and portalage, utilitarian features, symbolic art, miscellaneous remarks. Part II—Interior design. General scope, the interest of the individual, unity, contrast, appropriateness, the value of light, proportion, scale, balance, symmetry and picturesqueness, use and abuse of ornament, treatment of walls, ceilings, floors, decoration and color effects, staircases, general features and the effect of shams. One 8vo. volume; 266 pages; cloth, $4.50.

The William T. Comstock Co., Publishers, 23 Warren street, New York.

Koa or Hawaiian Mahogany Store Fixtures

One of the most beautiful jobs in the way of store fixtures in San Francisco is the one recently finished by Sam Levi of the S. Levi Fixture Shop in the bakery and confectionery store of Ruffieux & Company on Powell street. The decided and variegated figure of Koa makes it especially adaptable for this work and any lover of woods misses a treat if he does not investigate this piece of work.

Bank Fixtures

Architect D. Gunning, 1664 West 24th street, Los Angeles, has plans and specifications for the furniture and fixtures to be installed for the First National Bank at Riverbank, California. The work will be of oak, marble and bronze.

MR. T. P. JARVIS

Jarvis Oil Burner Company in Larger Quarters

The T. P. Jarvis Crude Oil Burner Company of San Francisco is now manufacturing, in addition to a varied line of oil burners, ice-making and refrigerating equipment and compressed air cleaners. Mr. Jarvis is one of the veteran oil burner experts in California, and he has probably done as much, if not more, to place the oil burning business in its present state of perfection, than any other one man on the Coast. Himself an experienced mechanic, it has been the policy of his company to build its entire equipment in its own shop, instead of assembling parts purchased in the East.

"We make everything but the motors, and it's only a question of time before we will be manufacturing them," said Mr. Jarvis.

The burners are made for most every possible use, such as hot water systems, hot air furnaces, ranges, light pressure steam boilers, bake ovens, etc. The plant is at 275 Connecticut street, near Eighteenth, San Francisco, and recently has been doubled in size in order to take care of the increased volume of business. The addition of ice-making and vacuum cleaner equipments have also necessitated the building of larger quarters. The improvements have just recently been completed, giving more shop room, as well as increased office and drafting room facilities and a special department for the ice machines. A picture of the remodeled plant will be shown in the August Architect and Engineer.

The latter are of the portable type and provide for cooling the refrigerator and making the ice at one and the same time. A photograph of a machine is shown herein. The equipment does not require any previous knowledge to operate. The expense of ice refrigeration does not appear in the cost of ice. There is no inconvenience and uncertainty of getting the ice to the refrigerator, and an even temperature can be maintained in the refrigerator at all times. The equipment is made in a dozen sizes from ⅛-ton capacity for residence work to the double compressor type of 20 tons capacity for hotels and apartment houses.

Some refrigerator installations include the following:

Bohemian Club, Olympic Club, Cliff House, Sutter Hotel, Mary Elizabeth Inn, Editorial Cafe, Crystal Cafeteria, Plymouth Cafeteria, Hof Brau Cafe, Boos Bros. Cafeteria and Hiedleberg Inn Cafe, all in San Francisco; Forum Cafe, California Door Company, Cox Meat Market, Oakland; Shirley and Bazos, Los Gatos; Safton and Bheldon, Gilroy; O'Connell Bros., San Jose; New Montgomery Hotel, San Jose, etc.

The Jarvis Company points with considerable pride to the fact that it has recently been awarded the largest contract of the year by the United States Government, the order being for an oil burning equipment, pipe lines, tanks, etc., at Fort Scott and which will cost $14,000. Other oil burning contracts include the Marconi wireless plants at Bolinas Bay and Marchall's (12 complete plants), the State Armory at Mission and Fourteenth streets, San Francisco, the Braemar and Bryn-Mar Apartments, Mary Elizabeth Inn, Roberts, Burnett and Nottingham Apartments, San Francisco, and school buildings at Fairfield, Orland and Eureka, Cal.

The present working force of the Jarvis Company numbers 30 mechanics besides the office and sales staff. Ira Hodes of 2001 Alliston Way, Berkeley, represents the company in Alameda county. The aim of the company and one of the secrets of its success is to give its customers service and to this end a special corps of experts is employed day and night.

THE JARVIS COMBINATION REFRIGERATOR AND ICE MACHINE

Standard Electric Time System Installed

The Los Angeles Examiner building is equipped with a complete electric time system made by the Standard Electric Time Company of San Francisco. This system was chosen as the outcome of separate experiences in the various Hearst buildings throughout the country, a different clock service having been installed in each. It is said that the Standard system has been found by the chief engineers of the Hearst buildings to have given absolute satisfaction.

The Los Angeles Examiner building cost (not including plant) $500,000 and is the largest building in the world devoted to the publication of a newspaper. It is equipped with the most modern newspaper plant obtainable.

Removal Notice

G. H. Freear, Pacific Coast manager for David E. Kennedy, Inc., whose offices have been located in the subway of the Sharon building, has moved up stairs in the same structure, rooms 223 and 224. Mr. Freear is a hustler and has done good work in making the "Nonpareil" cork tiling favorably known in building circles on the Pacific Coast.

A New Cork Tiling

"Armstrong's Linotile" is the name of the new cork tiling just placed on the market by the Armstrong Cork & Insulation Co. of Pittsburgh, Pa. It is claimed that it is a resilient, non-slippery, noiseless, sanitary flooring, which is distinctively artistic in appearance and particularly adapted for lobbies, lodge rooms, art galleries, elevators, kitchens, steamer cabins, etc. It is made in eleven colors and can be installed on any smooth base. The California office is in the Sharon building, San Francisco. M. V. Van Vleet, manager.

In New Quarters

The United Materials Company, representing the Los Angeles Pressed Brick Company and several other splendid lines, have removed their offices from the Balboa building to 5 Crossley building, corner Jessie and New Montgomery streets, San Francisco. A fine display room has been fitted up and patrons are always welcome.

For Cleaning Stonework

Frequent inquiries are made of this magazine for methods of cleaning stone. The use of acids is generally to be deprecated, because they tend to injure the texture of the stone. The following suggestions are given by an English paper: "Equal parts of muriatic acid and water will remove spots of mortar on brick or stonework, but it is not the right material for cleaning stone that is begrimed from smoke and dirt. To accomplish this, apply to the surface, with a long-handled fibre brush, a strong solution of caustic solution of pearlash. Let it remain on for about fifteen minutes, then wash several times with clear water, using a stiff brush or broom for the purpose. If this is not effective enough, scrub the stone with a stiff fibre brush, using soft soap and concentrated lye and sand, allowing this to remain on the stone until nearly dry, then rinse with clear water, using a brush to remove cleansing material. Protect the hands with rubber gloves."—Stone.

Baystate Brick and Cement Coating

The concrete contractor who has had difficulty in waterproofing his buildings will no doubt appreciate the merits of Bay State Brick & Cement Coating as manufactured by Wadsworth-Howland & Company, 82-83 Washington street, Boston, Mass., and described in their Booklet 10. The volume contains a great many photographic reproductions of buildings in which this waterproofing has been used, together with a long list of buildings in practically every State in the Union. It also contains a color card showing the various colors that the coating is made in. The object of Bay State Brick & Cement Coating is to decorate and protect concrete, cement, stucco and brick surfaces. It overcomes the dull, monotonous color of ordinary Portland cement, and prevents such surfaces from showing any spots, blotches, discoloration or dampness after a storm. By filling all of the pores in the surface, it prevents air cracks and other disfigurations. When metal or redwood lath are used with stucco, this compound prevents any moisture getting to the lath and so prevents the deterioration of it or discoloration of the exterior. By excluding dampness, it preserves all of the building materials, as well as insures a dry inside wall. Bay State Brick & Cement Coating can be used not only on the exterior but on the interior, where it gives the soft, velvety effects of water color. It is unaffected by dampness, and is said to have greater durability than any other of the products used for this purpose. The surface can be washed without injury. It is one of the few compounds which bears the label of the National Board of Fire Underwriters, and when used on wood tends to lessen the fire risk. Nason & Co., San Francisco, are the distributors.

California Third in Portland Cement

California was third in the production of Portland cement among the States, its output being 6,159,182 barrels. Pennsylvania led, with Indiana second.

Something About the Chicago Pump Company's Wonderful Bilge Pump

WOULD you lubricate the bearings of your automobile with dirty, gritty water? In all probabilities, you would select a good grade of grease or oil. Why not then select a bilge pump in which the lubricant is oil.

An automatic electric bilge pump that depends on the water it pumps to lubricate its bearings, is not satisfactory, never has been and never can be for the following reasons:

1. Under normal conditions water lubricated bearings are worn rapidly by the sand, grit and other foreign substances, which bilge or seepage water invariably contains; as the bearings wear, the impeller gradually drops out of position until it rubs on the casing; the grind and rub thus occasioned, overloads the motor, causing it to spark at the commutator and become hot, besides which it uses a far greater amount of electricity thereby increasing the power bill.

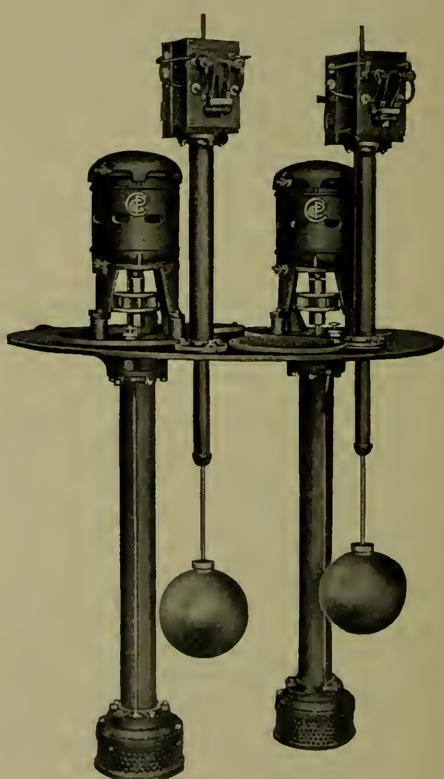
2. In new buildings particularly, the pump basin, gradually fills with sand, mud and sediment, clogging the intake, preventing the water from entering the pump. Unless this condition is overcome immediately, the basin fills with water, in so doing it raises the float that governs the automatic switch, closing it, starting the motor which runs continuously. What is the result? No water enters the pump to lubricate the lower guide and thrust bearings. They become hot, expand and stick, this overloads the motor and causes it to burn out.

The above statement is made with full knowledge of the fact that the majority of bilge pumps at present on the market are constructed for water lubrication.

The accompanying illustration, however, is of a bilge pump manufactured by the Chicago Pump Company, 901 W. Lake street., Chicago, Ill. After years of experimenting and constant study, they are able to place on the market a bilge pump, which is the acme of perfection. They have eliminated all unnecessary, complicated and intricate parts.

This bilge pump is built simply, durably and compactly as a unit—all working parts are visible and of easy access, which means there is no necessity for climbing down into the basin to do adjusting, oiling or repairing. Their designer had in mind when designing this pump, the particular idea of keeping all parts that could possibly need attention, above the floor line. Architects and engineers consider this a very esteemable feature.

Following are a few of the improvements with which the Chicago Pump



Company's Type A. E. 52 bilge pumps are equipped:

1. All the bearings are lubricated with grease.

2. Intermediate guide bearings are used to guide the shaft and prevent vibration.

3. A self-aligning ball thrust bearing in a housing filled with grease, located

on the floor plate of pump carries the weight of the impeller, shaft and coupling.

4. A flexible coupling of the pin and endless belt type makes assembling easy and allows a maximum flexibility.

5. The discharge is directly above the center of pump, insuring steady running, owing to the pressure being applied directly downward.

6. A steel tube surrounds the shaft and bearings, protecting them from grit and dirt in the water.

7. All parts that require adjusting, oiling or attention of any kind are above floor line.

8. Strainer of large area is placed around intake of pump, protecting it from injury by foreign substances.

You can, therefore, see that in this outfit you may be sure of receiving the best material to be obtained, built by skilled workmen and embodying the latest improvements. The truth of the matter is—the Chicago Pump Company has spared neither time nor money in their determination to attain perfection for their Type A. E. 52 bilge pump.

For full information regarding these bilge pumps, write to the Chicago Pump Company, 901 W. Lake street, Chicago, or to the Pacific Coast agent Telephone Electric Equipment Company, 612 Howard street, San Francisco.

Big Dry Dock Assured

The construction of a $2,500,000 drydock at Hunters' Point, San Francisco, by the Union Iron Works is assured by a vote of 137 to 93 in the House of Representatives, ratifying the provision providing for the local drydock in the naval appropriation bill.

This means that San Francisco will within two months see under construction the largest drydock in the world.

It means that within two years the largest liners afloat mav be sent to the Pacific Coast with the assurance of being cared for.

Uncle Sam may send his newest and largest dreadnaughts to the Pacific, and the gigantic drydock will be ready to receive the fighting machines when cleaning and repairing are necessary.

The increase in the facilities of the local shipyard will make way for the employment of more men, and the present daily payroll of $7,000 will soon total in excess of $10,000.

Before the work of construction can commence it will be necessary to secure from the Navy Department an official approval of the plans and specifications, which have been ready for some time.

These plans have already been approved by Charles M. Schwab, president of the Bethlehem Steel Corporation, holding company of the local plant, and the government's approval will follow within two months.

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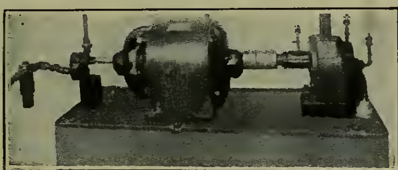

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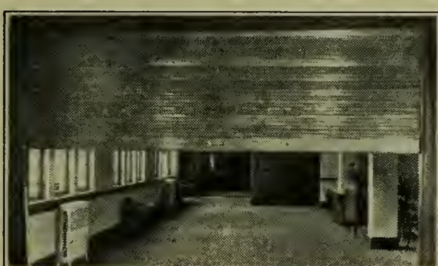

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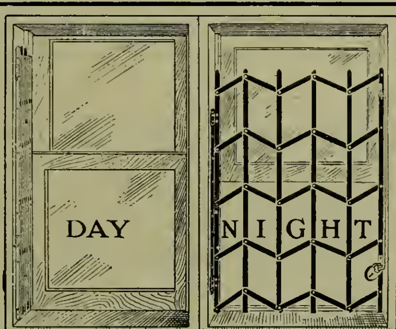

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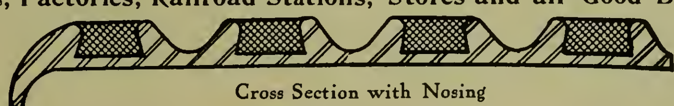

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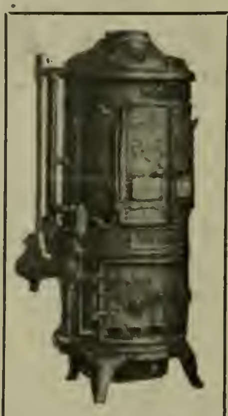

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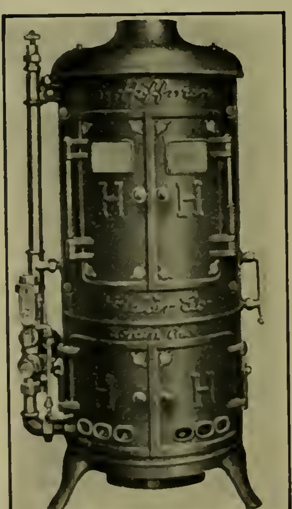

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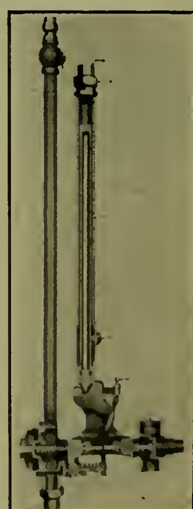

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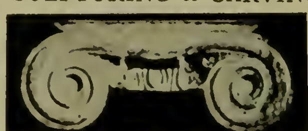

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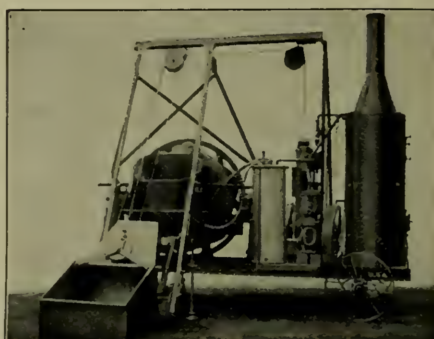

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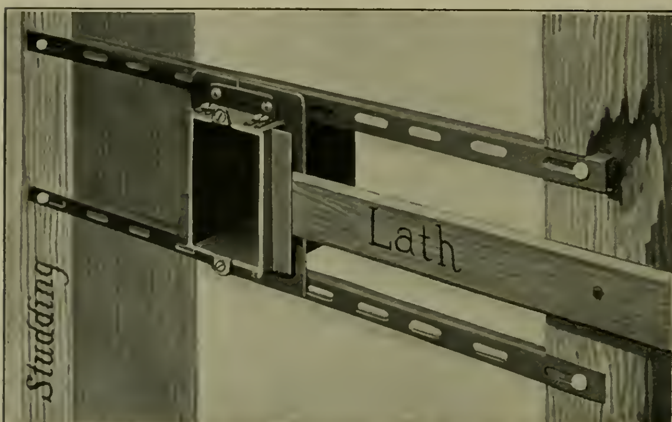

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SAN FRANCISCO, CAL. June 17,1914.

The Thermos Brick Company,
Monadnock Building.
San Francisco,Cal.

Gentlemen:

Your Thermos system of construction has been carefully examined by more than twenty members of our Association, and it has been approved by all.

It is their unanimous judgment that Thermos Brick Construction is simple, practical, and well suited to the requirements of San Francisco. They substantiate your claim that Thermos Construction combines the strength of reinforced concrete and the fireproof qualities of hollow tile, with the beauty of good brickwork.

They are also impressed with the facility with which reinforced columns can be built in brick walls without the use of wooden forms and it is their opinion that your system extends the use of brick so as to bring reinforced construction within the scope of the brickmason.

The Masons and Builders Association welcomes any practical form of construction such as the Thermos System, that will result in durable, artistic, fireproof buildings. They will give you whatever assistance they can in becoming established in San Francisco, and they wish you every success.

Yours very truly,

MASONS and BUILDERS ASSOCIATION.

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Secretary.

J A JOHNSON, President
CHAS NOONAN
Fin Sect'y -Business Agent

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OFFICE OF

San Francisco Bricklayers' International Union
No. 7 of California
Building Trades Temple, 14th and Guerrero Streets
Telephone Market 1316

San Francisco, Cal July 8th, 1914

The Thermos Brick Company,
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The bricklayers of this city, constituting Bricklayers Union #7 of California, and comprising over 500 members, have investigated your system of construction from the standpoint of the bricklayer.

The various points that have direct bearing upon the workman, such as the shape, the weight, the ease of laying, etc., were considered, both at your demonstration before our members, and also by a committee specially appointed for the purpose. As a result of their investigations, the Union in council, has resolved to extend its approval to your product and it herewith receives official endorsement.

You may rest assured that the bricklayers of this City will do all they can to help extend the use of any practical improvement that has the intrinsic merit of Thermos Brick. It is the consensus of opinion that Thermos Construction by increasing the efficiency of the bricklayer and extending the scope of his work, will substantially increase the use of brick as a building material.

Yours very truly,

BRICKLAYERS UNION No.7 of CALIFORNIA.

Chas Noonan

Financial Sect'y.- Business Agent.

Read architect Cahill's article "Web Bricks" on page 83 of this magazine, then **come and see our unique exhibit.**

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