THE ARCHITECT AND ENGINEER OF CALIFORNIA

SOME SCHOOL HOUSES BY STONE & WRIGHT

JULY MCMXV

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Architects' Specification Index

(For Index to Advertisements, see next page)

An Index to the Advertisements

ARCHITECTS' SPECIFICATION INDEX—*Continued*

CEMENT EXTERIOR WATERPROOF COATING —Continued.

Imperial Waterproofing, manufactured by Imperial Co., 183 Stevenson St., San Francisco.
Trus-Con Par-Seal, made by Trussed Concrete Steel Co., Youngstown, O.
Paraffine Paint Co., 34 First St., San Francisco.

CEMENT EXTERIOR FINISH

Bay State Brick and Cement Coating, made by Wadsworth, Howland & Co. (See list of Distributing Agents on page 30.)

Glidden's Liquid Cement and Liquid Cement Enamel, sold on Pacific Coast by Whittier, Coburn Company, San Francisco, and California Glass & Paint Company, Los Angeles.

Medusa White Portland Cement, California Agents, the Building Material Co., Inc., 587 Monadnock Bldg., San Francisco.

Concrete Cement Coating, manufactured by the Muralo Company, 540 Valencia St., San Francisco.

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 30.)

Fuller's Concrete Floor Enamel, made by W. P. Fuller & Co., San Francisco.

Glidden's Concrete Floor Dressing, sold on Pacific Coast by Whittier, Coburn Company, San Francisco, and California Glass & Paint Company, Los Angeles.

CEMENT TESTS—CHEMICAL ENGINEERS

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

CHURCH INTERIORS

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

CHUTES—GRAVITY SPIRAL

Insley Gravity System for pouring concrete, represented by Garfield Myers, Hearst Bldg., San Francisco.

COLD STORAGE PLANTS

Vulcan Iron Works, San Francisco.
T. P. Jarvis Crude Oil Burning Co., 275 Connecticut St., San Francisco.

CLOCKS—TOWER

Decker Electrical Construction Co., 111 New Montgomery St., San Francisco.

COMPOSITION FLOORING

Fibrestone & Roofing Co., 971 Howard St., San Francisco.

COMPRESSED AIR CLEANERS

The B. & W. Stationary Vacuum Cleaner, sold by Arthur T. Riggs, 510 Claus Spreckels Bldg., San Francisco.

Excello Stationary Vacuum Cleaner, F. W. Schaer Co., Pacific Coast Agts., Santa Maria Bldg., San Francisco.

Invincible Vacuum Cleaner, sold by R. W. Foyle, 149 New Montgomery St., San Francisco.

Tuec., mfrd. by United Electric Company, Coast Branch, General Contractors' Association, San Francisco.

CONCRETE CONSTRUCTION

American Concrete Co., Humboldt Bank Bldg., San Francisco.
Clinton Fireproofing Co., Mutual Bank Bldg., San Francisco.
Foster, Vogt Co., Sharon Bldg., San Francisco.
P. A. Palmer, Monadnock Bldg., San Francisco.
International Concrete Construction Company, West Berkeley, Cal.

CONCRETE GRAVITY CHUTE

Insley Mfg. Co., represented by Garfield Myers, Hearst Bldg., San Francisco.

CONCRETE MACHINERY

Garfield Myers, factory representative of Insley Manufacturing Company, and Marsh-Capron Company, Hearst Bldg., San Francisco.

CONCRETE MIXERS

Austin Improved Cube Mixer. Factory branch. 473-485 Sixth St., San Francisco.
Foote Mixers sold by Edw. R. Bacon, 40 Natoma St., San Francisco.

CONCRETE PILES

McArthur Concrete Pile Company, Chronicle Building, San Francisco.

CONCRETE REINFORCEMENT

United States Steel Products Co., San Francisco, Los Angeles, Portland and Seattle.
Clinton Welded Reinforcing System. L. A. Norris, 140 Townsend St., San Francisco.
"Kahn System," see advertisement on page 31, this issue.
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.
Pacific Coast Steel Company, Rialto Bldg., San Francisco, and Union Oil Bldg., Los Angeles.

CONCRETE SURFACING

"Concreta" sold by W. P. Fuller & Co., San Francisco.
Wadsworth, Howland & Co.'s Bay State Brick and Cement Coating, sold by Jas. Hambly Co., Pacific Bldg., San Francisco and Los Angeles.
Glidden Liquid Cement, manufactured by Glidden Varnish Co., Whittier, Coburn Co., San Francisco, and California Glass & Paint Company, Los Angeles.

ARCHITECTS' SPECIFICATION INDEX—*Continued*

CONTRACTORS, GENERAL
- American Concrete Co., Humboldt Bank Bldg., San Francisco.
- Marius F. Bos, New Call Bldg., San Francisco.
- Dunnavant-Oakley Co., 1430 Powell St., San Francisco.
- Geo. W. Boxton & Son, Hearst Bldg., San Francisco.
- Collman & Collman, 526 Sharon Bldg., San Francisco.
- Construction & Engineering Co., 1047 Folsom St., San Francisco.
- M. Fisher, California-Pacific Bldg., San Francisco.
- Foster, Vogt Co., Sharon Bldg., San Francisco.
- Gaspard & Hammond, Sharon Bldg., San Francisco. (See card above.)
- Howard S. Williams, Hearst Bldg., San Francisco.
- Harvey A. Klyce, Sheldon Bldg., San Francisco.
- Lange & Bergstrom, Sharon Bldg., San Francisco.
- A. H. Leaf Co., New Call Bldg., San Francisco.
- Lester Stock, 12 Geary St., San Francisco.
- McLaren & Peterson, Sharon Bldg., San Francisco.
- R. W. Moller, 185 Stevenson St., San Francisco.
- John Monk, 216 Sharon Bldg., San Francisco.
- Monson Bros., 1907 Bryant St., San Francisco.
- Burt T. Owsley, 311 Sharon Bldg., San Francisco.
- Robert Trost, 26th and Folsom Sts., San Francisco.
- Western Building & Engineering Co., 455 Phelan Bldg., San Francisco.
- Williams Bros. & Henderson, Holbrook Bldg., San Francisco.

CORK FLOORING
- "Linotile," manufactured by Armstrong Cork & Insulation Company. M. C. Van Fleet, agt., 120 Jessie St., San Francisco.

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

CORNER BEAD
- Capitol Sheet Metal Works, 1827 Market St,, San Francisco.
- United States Metal Products Co., 525 Market St., San Francisco.; 750 Keller St., San Francisco.

CRUSHED ROCK
- Grant Gravel Co., Flat Iron Bldg., San Francisco.
- Niles Rock, sold by California Building Material Company, new Call Bldg., San Francisco.
- Niles Sand, Gravel & Rock Co., Mutual Bank Bldg., San Francisco.
- Pratt Building Material Co., Hearst Bldg., San Francisco.

DAMP-PROOFING COMPOUND
- Glidden's Liquid Rubber, sold on Pacific Coast by Whittier, Coburn Company, San Francisco, and California Glass & Paint Company, Los Angeles.
- Armorite Damp Resisting Paint, made by W. P. Fuller & Co., San Francisco.

DAMP-PROOFING COMPOUND—Continued.
- Imperial Co., 183 Stevenson St., 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.
- 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.

DRINKING FOUNTAINS
- Haws Sanitary Fountain, 1808 Harmon St., Berkeley, and C. F. Weber & Co., San Francisco and Los Angeles.
- N. O. Nelson Mfg. Co., 978 Howard St., San Francisco.
- Crane Company, San Francisco, Oakland, and Los Angeles.
- J. B. Clow & Son, Hearst Bldg., San Francisco.
- Pacific Porcelain Ware Co., 67 New Montgomery St., San Francisco.

DUMB WAITERS
- Spencer Elevator Company, 173 Beale St., San Francisco.
- Burdett-Rowntree Mfg. Co., Underwood Bldg., San Francisco.

ELECTRICAL CONTRACTORS
- Butte Engineering Co., 683 Howard St., San Francisco.
- Boynton Electric Co., 504 Rialto Bldg., San Francisco.
- Central Electric Co., 618 Mission St., San Francisco.
- Pacific Fire Extinguisher Co., 507 Montgomery St., San Francisco.
- H. S. Tittle, 245 Minna St., San Francisco.
- Standard Electrical Construction Company, 60 Natoma St., San Francisco.

ELECTRICAL ENGINEERS
- Chas. T. Phillips, Pacific Bldg., 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.
- Pacific Gurney Elevator Co., 186 Fifth St., San Francisco.
- B. C. Van Emon Elevator Co., 235 First St., San Francisco.

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

ARCHITECTS' SPECIFICATION INDEX—*Continued*

ELEVATOR ENCLOSURES
J. G. Braun, 615-621 S. Paulina St., Chicago, Ill.

ENGINEERS
W. W. Breite, Clunie Bldg., San Francisco.
Chas. T. Phillips, Pacific Bldg., San Francisco.
Hunter & Hudson, Rialto Bldg., San Francisco.

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

EXCAVATING CONTRACTORS
Pacific Excavator Company, Builders' Exchange, Oakland.

FIRE EXIT DEVICES
Russell & Erwin Mfg. Co., Commercial Bldg., San Francisco.

FIRE ESCAPES
Burnett Iron Works, Fresno, Cal.
Pacific Structural Iron Works, Structural Iron and Steel, Fire Escapes, etc. Phone Market 1374; Home J. 3435. 370-84 Tenth St., San Francisco.
Palm Iron & Bridge Works, Sacramento.
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.

FIREPROOFING AND PARTITIONS
Gladding, McBean & Co., Crocker Bldg., San Francisco.
Los Angeles Pressed Brick Co., Frost Bldg., Los Angeles.

FIREPROOF PAINT
Glidden Products, sold by Whittier-Coburn Co., San Francisco, and California Glass & Paint Company, Los Angeles.

FIXTURES—BANK, OFFICE, STORE, ETC.
A. H. Andrews, 728 Mission St., San Francisco.
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.

FLAG POLES—TACKLE, ETC.
Pacific Foundry Company, Harrison and 18th Sts., San Francisco.
Bolander & Hallawell, 270 First St., San Francisco.

FLAG POLE TOPS
Bolander & Hallawell, 270 First St., San Francisco.

FLOOR VARNISH
Bass-Hueter and San Francisco Pioneer Varnish Works, 816 Mission St., San Francisco.
Fifteen for Floors, made by W. P. Fuller & Co., San Francisco.
Standard Varnish Works, Chicago, New York and San Francisco.

FLOOR VARNISH—Continued.
Glidden Products, sold by Whittier-Coburn Co., San Francisco, and California Glass & Paint Company, Los Angeles.

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

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

GAS FURNACES
Cole Gas Furnace, Fisher & Klauser, distributors, Lick Bldg., San Francisco, 1764 Broadway, Oakland.

GARAGE EQUIPMENT
Bowser Gasoline Tanks and Outfit, Bowser & Co., 612 Howard St., San Francisco.

GARDEN FURNITURE
G. Tomagnini & Co., 219 Tenth St., San Francisco.
O. S. Sarsi, 123 Oak St., San Francisco.

GAS GENERATORS
Utility Gas Generator Co., 340 Sansome St., San Francisco.

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

GRADING CONTRACTORS
Pacific Excavator Company, Builders' Exchange, Oakland.

GRANITE
California Granite Co., Sharon Bldg., San Francisco.
Raymond Granite Co., Division and Potrero Sts., San Francisco.

GRAVEL, SAND AND CRUSHED ROCK
California Building Material Co., new Call Bldg., San Francisco.
Del Monte White Sand, sold by Pacific Improvement Co., Crocker Bldg., San Francisco.
Pratt Building Material Co., Hearst Bldg., San Francisco.
Grant Gravel Co., Flatiron Bldg., San Francisco.
Niles Sand, Gravel & Rock Co., Mutual Savings Bank Bldg., 704 Market St., San Francisco.

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

HARDWARE
Corbin Hardware sold by Baker & Hamilton, San Francisco and Los Angeles.
Russwin Hardware, Joost Bros., San Francisco.
Pacific Hardware & Steel Company, representing Lockwood Hardware Co., San Francisco.
Sargent's Hardware, sold by Bennett Bros., 514 Market St., San Francisco.
Russell & Erwin Manufacturing Co., Commercial Bldg., San Francisco.

ARCHITECTS' SPECIFICATION INDEX—*Continued*

HARDWOOD FLOORING
- Parrott & Co., 320 California St., San Francisco
- White Bros., Cor. Fifth and Brannan Sts., San Francisco.
- Strable Manufacturing Company, Oakland, California.

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.
- Strable Manufacturing Company, Oakland, California. (See advertisement above.)

HEATERS—AUTOMATIC
- Pittsburg Water Heater Co., 237 Powell St., San Francisco.
- Hoffman Heater Company, 397 Sutter St., San Francisco.

HEATING AND VENTILATING
- American Heat & Power Co., Oakland, Cal.
- Fess System Co., 220 Natoma St., San Francisco.
- Mangrum & Otter, Inc., 507 Mission St., San Francisco.
- Charles T. Phillips, Pacific Building, 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., 730 Larkin St., San Francisco.

HEAT REGULATION
- G. E. Witt Company, Inc., 850 Howard St., San Francisco.
- Johnson Service Company, 149 Fifth St., San Francisco.

HOLLOW BLOCKS
- Denison Hollow Interlocking Blocks, 310 Ochsner Bldg., Sacramento, and Chamber of Commerce Bldg., Portland.

INGOT IRON
- "Armco" brand, manufactured by American Rolling Mill Company, Middletown, Ohio.

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

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

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

LIME
- 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.
- E. K. Wood Lumber Company, East Oakland, California.
- Pacific Manufacturing Company, San Francisco, Oakland and Santa Clara.
- Tilden Lumber Company, foot of Unversity Ave., Berkeley, Cal.

MILL WORK
- Dudfield Lumber Co., Palo Alto, Cal.
- Pacific Manufacturing Company, San Francisco, Oakland and Santa Clara.

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
- G. Tomagnini & Co., 219 Tenth St., San Francisco.
- Sculptor's Workshop. (See adv., page 134.)

METAL AND STEEL LATH
- "Steelcrete" Expanded Metal Lath, sold by Holloway Expanded Metal Company, Second and Federal Sts., San Francisco.
- L. A. Norris & Co., 140 Townsend St., San Francisco.

METAL CEILINGS
- San Francisco Metal Stamping & Corrugating Co., 2269 Folsom St., San Francisco.

METAL DOORS AND WINDOWS
- U. S. Metal Products Co., 525 Market St., San Francisco.
- Dahlstrom Metallic Door Co., Western office, with M. G. West Co., 353 Market St., San Francisco.
- Capitol Sheet Metal Works, 1927 Market St., San Francisco; 117 Franklin St., Oakland.

METAL FURNITURE
- M. G. West Co., 353 Market St., San Francisco.
- Capitol Sheet Metal Works, San Francisco and Oakland.
- A. H. Andrews Co., 728 Mission St., San Francisco.

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

OIL BURNERS
- S. T. Johnson Co., 1337 Mission St., San Francisco.
- American Standard Oil Burner Co., Seventh and Cedar Sts., Oakland.

ARCHITECTS' SPECIFICATION INDEX—*Continued*

OIL BURNERS—Continued
- W. S. Ray Manufacturing Company, 218 Market St., San Francisco.
- Fess System Co., 220 Natoma St., San Francisco.
- T. P. Jarvis Crude Oil Burner Co., 275 Connecticut St., San Francisco.
- Rotary Oil Burner Company, 159 Twelfth St., Oakland.
- G. E. Witt Oil Burner Company, 850 Howard St., San Francisco.

ORNAMENTAL IRON AND BRONZE
- Brode Iron Works, 31-37 Hawthorne St., San Francisco.
- Burnett Iron Works, Fresno.
- Palm Iron & Bridge Works, Sacramento.
- 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.

PAINT FOR CEMENT
- Bay State Brick and Cement Coating, made by Wadsworth, Howland & Co. (Inc.). (See Adv. in this issue for Pacific Coast agents.)
- Fuller's Concreta for Cement, made by W. P. Fuller & Co., San Francisco.
- Glidden's Liquid Cement, sold on Pacific Coast by Whittier, Coburn Company, San Francisco.
- Trus-Con Stone Tex., Trussed Concrete Steel Co. (See Adv. for Coast agencies.)
- Concreto Cement Coating, manufactured by the Muralo Company, 540 Valencia St., San Francisco.
- Samuel Cabot Mfg. Co., Boston, Mass., agencies in San Francisco, Oakland, Los Angeles, Portland, Tacoma and Spokane.

PAINT FOR STEEL STRUCTURES, BRIDGES, ETC.
- Glidden's Acid Proof Coating, sold on Pacific Coast by Whittier, Coburn Company, San Francisco.
- Trus-Con Bar-Ox, Trussed Concrete Steel Co. (See Adv. for Coast agencies.)
- Paraffine Paint Co., 34 First St., San Francisco.
- Premier Graphite Paint and Pioneer Brand Red Lead, made by W. P. Fuller & Co., San Francisco.

PAINTS, OILS, ETC.
- Bass-Hueter Paint Co., Mission, near Fourth St., San Francisco.
- Glidden Varnish Co., Cleveland, Ohio, represented by Whittier-Coburn Co., San Francisco, and California Glass & Paint Company, Los Angeles.
- W. P. Fuller & Co., all principal Coast cities.
- "Biturine," sold by Biturine Co. of America, 24 California St., San Francisco.
- Standard Varnish Works, 113 Front St., San Francisco.

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

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

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.
- C. C. Morehouse, Crocker Bldg., San Francisco.
- J. J. Connolly & Son, Builders' Exchange, San Francisco.
- Herman Bosch, 2054 Market St., San Francisco.

PLUMBING
- Scott Co., Inc., 243 Minna St., San Francisco.
- Petersen-James Co., 730 Larkin St., San Francisco.
- Wittman, Lyman & Co., 341 Minna St., San Francisco.
- Alex Coleman, 706 Ellis St., San Francisco.

PLUMBING FIXTURES, MATERIALS, ETC.
- J. B. Clow & Son, Hearst Bldg., San Francisco.
- 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.
- Glauber Brass Manufacturing Company, 1107 Mission St., San Francisco.
- Miller-Enwright Company, Sacramento, Cal.
- J. L. Mott Iron Works, D. H. Gulick, selling agent, 135 Kearny St., San Francisco.
- Pacific Sanitary Manufacturing Co., 67 New Montgomery St., San Francisco.
- Western States Porcelain Co., San Pablo, Cal.

POTTERY
- Steiger Terra Cotta and Pottery Works, Mills Bldg., San Francisco.

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.

REVERSIBLE WINDOWS
- Hauser Reversible Window Company, Balboa Bldg., San Francisco.

REVOLVING DOORS
- Van Kennel Doors, sold by U. S. Metal Products Co., 525 Market St., San Francisco.

ROCK BREAKING MACHINERY
- Vulcan Iron Works, Francisco and Kearny Sts., San Francisco.

ARCHITECTS' SPECIFICATION INDEX—*Continued*

ROLLING DOORS, SHUTTERS, PARTITIONS, ETC.
- Pacific Building Materials Co., 523 Market St., San Francisco.
- C. F. Weber & Co., 365 Market St., San Francisco.
- Kinnear Steel Rolling Doors, W. W. Thurston, agent, Rialto Bldg., San Francisco.
- Wilson's Steel Rolling Doors, U. S. Metal Products Co., San Francisco and Los Angeles.

ROOFING AND ROOFING MATERIALS
- Grant Gravel Co., Flat Iron Bldg., San Francisco.
- Fibrestone & Roofing Co., 971 Howard St., San Francisco.
- National Roofing Company, Plaza Bldg., Oakland.
- "Malthoid" and "Ruberoid," manufactured by Paraffine Paint Co., San Francisco.
- Mackenzie Roof Co., 425 15th St., Oakland.
- United Materials Co., Crossley Bldg., San Francisco.

ROOFING TIN
- Meurer Bros., A. H. MacDonald, agent, 630 Third St., San Francisco.

SAFES, VAULTS, BANK EQUIPMENT
- M. G. West Co., 353 Market St., San Francisco.

SANITARY DRINKING FOUNTAINS
- N. O. Nelson Mfg. Co., 978 Howard St., San Francisco.
- Haws' Sanitary Drinking Faucet Co., 1808 Harmon St., Berkeley.
- J. B. Clow & Son., Hearst Bldg., San Francisco.

SANITARY BATH FIXTURE
- "Boudoir" bath tub, mfrd. by Improved Sanitary Fixture Co., 411 S. Los Angeles St., Los Angeles. Sold by all plumbing houses.

SANITARY KITCHEN SINK
- Improved Sanitary Fixture Company, 411 S. Los Angeles St., Los Angeles.

SASH CORD
- Samson Cordage Works, manufacturers of Solid Braided Cords and Cotton Twines, 88 Broad St., Boston, Mass.

SCENIC PAINTING—DROP CURTAINS, ETC.
- The Edwin H. Flagg Scenic Co., 1638 Long Beach Ave., Los Angeles.

SCHOOL FURNITURE AND SUPPLIES
- C. F. Weber & Co., 365 Market St., San Francisco; 512 S. Broadway, Los Angeles.
- A. H. Andrews & Co., 728 Mission St., San Francisco.
- Whitaker & Ray-Wiggin Company, 776 Mission St., San Francisco.

SEWAGE EJECTORS
- Chicago Pump Co., represented by Telephone Electric Equipment Co., 612 Howard street, San Francisco.

SHEATHING AND SOUND DEADENING
- Samuel Cabot Mfg. Co., Boston, Mass., agencies in San Francisco, Oakland, Los Angeles, Portland, Tacoma and Spokane.
- Paraffine Paint Co., 34 First St., San Francisco.

SHEET METAL WORK, SKYLIGHTS, ETC.
- Capitol Sheet Metal Works, 1927 Market St., San Francisco.
- U. S. Metal Products Co., 525 Market St., San Francisco.

SHINGLE STAINS
- Cabot's Creosote Stains, sold by Waterhouse & Price, San Francisco, Los Angeles and Portland.
- Fuller's Pioneer Shingle Stains, made by W. P. Fuller & Co., San Francisco.

SLATE ROOFING
- Fiberstone & Roofing Co., 971 Howard St., San Francisco.

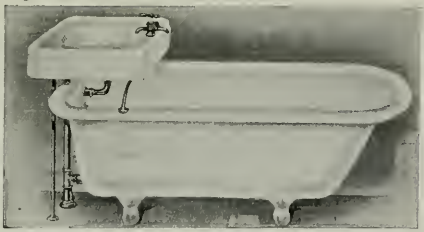
STEEL AND IRON—STRUCTURAL
- Burnett Iron Works, Fresno, Cal.
- Central Iron Works, 621 Florida St., San Francisco.
- Dyer Bros., 17th and Kansas Sts., San Francisco.
- Brode Iron Works, 31 Hawthorne St., San Francisco.
- Judson Manufacturing Co., 819 Folsom St., San Francisco.
- Mortenson Construction Co., 19th and Indiana Sts., San Francisco.
- J. L. Mott Iron Works, D. H. Gulick, agents, 135 Kearny St., San Francisco.
- Pacific Rolling Mills, 17th and Mississippi Sts., San Francisco.
- Pacific Structural Iron Works, Structural Iron and Steel, Fire Escapes, etc. Phone Market 1374; Home, J. 3435, 370-84 Tenth St., San Francisco.
- Palm Iron & Bridge Works, Sacramento.
- 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.
- Woods & Huddart, 444 Market St., San Francisco.

STEEL PRESERVATIVES
- Wadsworth, Howland & Co., Boston Mass. (See Adv. for Coast agencies.)
- Paraffine Paint Co., 34 First St., San Francisco.

STEEL BARS FOR CONCRETE
- Kahn and Rib Bars, made by Trussed Concrete Steel Co. (See Adv. for Coast agencies.)
- Woods & Huddart, 444 Market St., San Francisco.
- Pacific Coast Steel Co., Rialto Bldg., San Francisco, and Union Oil Company, Los Angeles.

STEEL MOULDINGS FOR STORE FRONTS
- J. G. Braun, 615-621 S. Paulina St., Chicago, Ill.

STEEL FIREPROOF WINDOWS
- United States Metal Products Co., San Francisco and Los Angeles.



"THE BOUDOIR"

(REG. TRADE MARK)

Pats. Dec. 1913, Jan. 1915

The astonishing convenience and increased comfort afforded by "The Boudoir" bath fixture over the old style fixtures have been proven, and users everywhere are making the facts known. Repeat orders are multiplying sales rapidly.

TEN GOOD REASONS:

LARGER LAVATORY—Used from either side or end.
ONE FAUCET—Supplies either fixture.
EXTRA SANITARY—Arrangement of wastepipes.
EASIER AND SAFER—Support in getting in or out of tub.
WATER SUPPLY—Operated near bather.
SHOWER, SHAMPOO—Refresh with clean water, warm or cold over head and body.
SAVES ALL—cost of pipes, fittings and labor required for separate lavatory.
BETTER ARRANGEMENT—Large lavatory accessible, instead of small one in corner.
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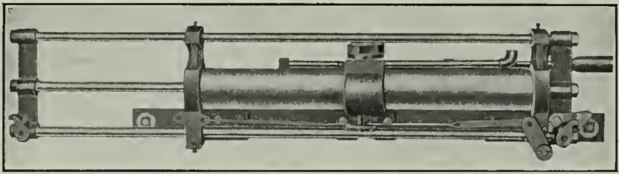

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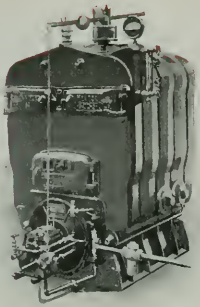

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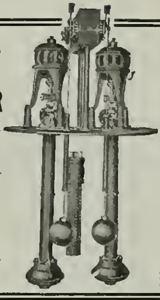

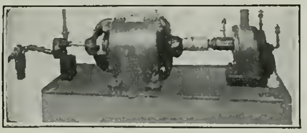

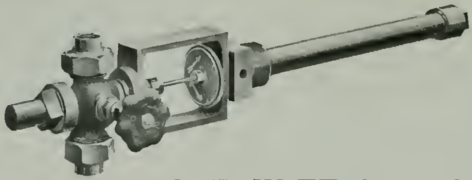

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Contents for July

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Frontispiece
The Architect and Engineer
of California
July, 1915

UNITED STATES TREASURY BUILDING, SAN FRANCISCO
J. MILTON DYER, ARCHITECT

THE

Architect and Engineer

Of California

Vol. XLII JULY, 1915 No. 1.

United States Treasury Building, San Francisco

By WILLIAM ARTHUR NEWMAN, Architect.

THE latest and a most welcome addition to the architecture of San Francisco is the United States Treasury building at the corner of Sansome and Pine streets, now practically completed, requiring only the finishing of a portion of the second story to make it an accomplished whole.

In appraising the esthetic value of the building we have been keenly interested in the architect's solution of the problem—a solution so in keeping with the best traditions, and in their application to our own peculiar conditions,—and in the results tested by such unerring standards as charm, character, scale and sincerity of purpose, rather than undeveloped novelty or originality.

Progress has, indeed, been made since the building of the treasuries of Minyas, King of Orchomenos, and that at Atreus, the most ancient of buildings in Greece, mentioned by Pausanias.

The new Treasury, designed in the Doric order, almost devoid of ornamentation, appeals by its beauty, its restraint, in the admirable expression of its function, and adaptation to the needs of the Government.

It is apparent the architect brought to his work a sympathetic feeling for masses and proportions, as well as in the choice of materials, their suitability and fitness.

The granite walls, portico and entablature give a feeling of strength and stability, severely pure in outline.

In the interior the calm poise and quiet dignity outside is further emphasized as varied marbles, bronzes, hardwoods, glass and polished steel have been so blended as to form a harmonious unit, in the mellow light filtering through a glazed ceiling.

An important center of interest in a treasury or banking institution is, quite naturally, the place where the treasure is guarded. The new vaults compare very favorably with the finest examples in the world. It is quite probable in the course of events that many hundreds of millions will be placed here for safekeeping. These vaults were designed by the office of the Supervising Architect of the Treasury in Washington. The main vault lies directly under the central portion of the first floor and is forty by eighty feet and ten feet in height. This is constructed of reinforced concrete with heavy steel rails and fine electric wires crossed and recrossed, embedded in the concrete. Should the wires be disturbed an alarm is sounded. An inner heavy steel lining gives added protection. This vault is divided into many steel compartments which may be separately locked and sealed.

The daily money vault on the first floor is likewise designed, and has an area of about 700 square feet.

The vault doors reveal the highest product of modern inventive genius and of the makers' art, weighing many tons, yet so nicely balanced and pivoted, that

Photos by R. J. Waters

PORTION OF COLONNADE, U. S. TREASURY BUILDING, SAN FRANCISCO
J. MILTON DYER, ARCHITECT

PORTICO, U. S. TREASURY BUILDING, SAN FRANCISCO
J. MILTON DYER, ARCHITECT

BANKING ROOM, U. S. TREASURY BUILDING, SAN FRANCISCO
J. Milton Dyer, Architect

they move easily at the touch. When once locked, however, they cannot be opened without operating the intricate mechanism which guards the entrance. A movable platform in front of the doors must first be sunk in a pit below the floor to allow space for the doors to swing open, after the combinations are correctly operated and the time locks permit.

The building contains two stories and basement. It is of Class A construction, 80′ x 128′, fireproof throughout, with steel frame and concrete pile foundation. Granite walls, bronze window frames and grilles, marble and cork floors, marble and oak wainscoting, with vaults, heating plant and fixtures. The cost complete is approximately 80c. per cubic foot.

Provision is made for the Treasury officials in the first story. The Federal Reserve Bank also has the use of a portion of the vaults, and offices are being fitted up in the second story for the Surveyor-General.

The Treasury in San Francisco has a history dating from 1853, when the Federal government purchased a small lot on Commercial street, 40′ x 60′, for $240,000 and later added 20 feet additional, and a building which was subsequently torn down. A four-story structure was rebuilt in 1877 at a cost of $107,000; gutted by fire in 1906 and reconstructed as a one-story structure, used by the Treasury up to the present time.

Due to the lack of accommodation for storing the large amounts of gold and silver coin and bullion in San Francisco, it has heretofore been necessary to keep hundreds of millions of dollars in the vaults of the Mint, which would naturally be better safeguarded in a treasury, the function of a mint being more that of manufacturer than banker.

It is noted that the contract drawings for the new Custom House show accommodations for the Sub-Treasury, as it is officially known. Later it was decided to care for this branch of the service in a separate building, and consequently after a bill was introduced in the U. S. Senate in 1906, Joseph W. Roberts, Supervising Superintendent of U. S. Public Buildings, was requested to examine available sites in this city and recommend the most suitable. A year later through the energy and efforts of Thos. Magee & Sons the transfer of the present site was effected, at a most reasonable price to the Government.

A competition was then instituted by the Secretary of the Treasury for the selection of an architect, in which a number of local architects participated. An account of the competition was published in the issue of this magazine for June, 1911. The design of J. Milton Dyer, of Cleveland, Ohio, was chosen and he was appointed architect. Mr. Dyer, although young in years, had earned quite a reputation in his own state, where he had designed among other prominent buildings, the City Hall and First National Bank of Cleveland.

A delay occurred after the plans had been approved, caused by the failure of Congress to make provision for carrying on the work, but due to untiring efforts of Congressman Julius Kahn, the necessary appropriations were secured and proposals invited.

The general contract for construction of the building fell to Grant Fee, who merited the confidence imposed upon him, under the able supervision of Supervising Superintendent Roberts. Mr. Dyer was represented at the building from time to time by Messrs. Bakewell & Brown, San Francisco architects, who had participated in the competition.

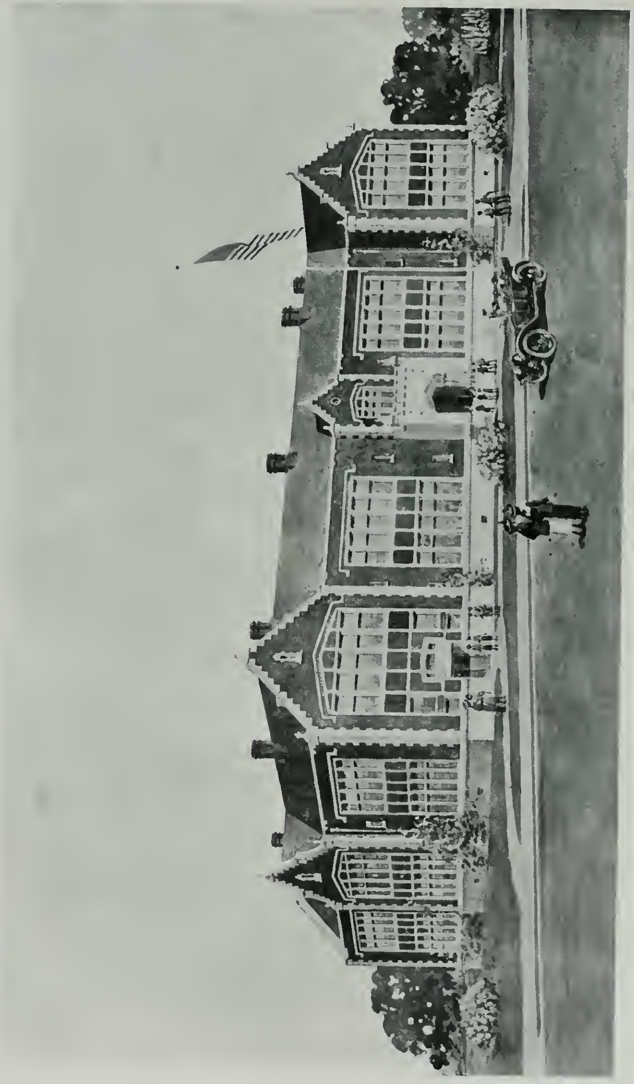
A lasting impression gained by a visit to this building is not only the general atmosphere and spirit of harmony and good taste, but a source of satisfaction and feeling of pride in this latest achievement of local builders and their workmen, who produce such satisfactory results, and who can safely be entrusted again.

*
* *

Causes of Concrete Road Failures

OPERATIVE causes actually found to account for the poor results sometimes observed in concrete road construction are listed as below in a pamphlet, "Concrete Pavements in Western Washington," recently published by Reitze, Storey & Duffy, Inc., of Seattle, Wash. They are all traceable to mistakes in judgment, to ignorance, and to lack of study of the correct methods to be followed.

1. No rolling of subgrades, even on fills up to 20 ft. in depth.
2. No wetting of subgrade immediately preceding placing of concrete on the hottest of days.
3. The use of unseparated and unwashed aggregates, more commonly called "pit-run" material, used in proportion of the sum of two aggregates when separated.
4. The most careless handling and protection of the aggregates until such time as they are mixed with the cement; "I have seen aggregates piled alongside the road, so dust-covered and so thoroughly mixed with dirt from teams driving over them that at first glance one would think these piles of aggregate were simply dirt excavated from the subgrade."
5. Dirty and unclean water used.
6. The concrete poorly and carelessly mixed, handled, and placed.
7. The concrete burned and dried too quickly by reason of no covering and lack of wetting down and keeping wet after placing.



ELDORADO GRAMMAR SCHOOL, STOCKTON
STONE & WRIGHT, ARCHITECTS

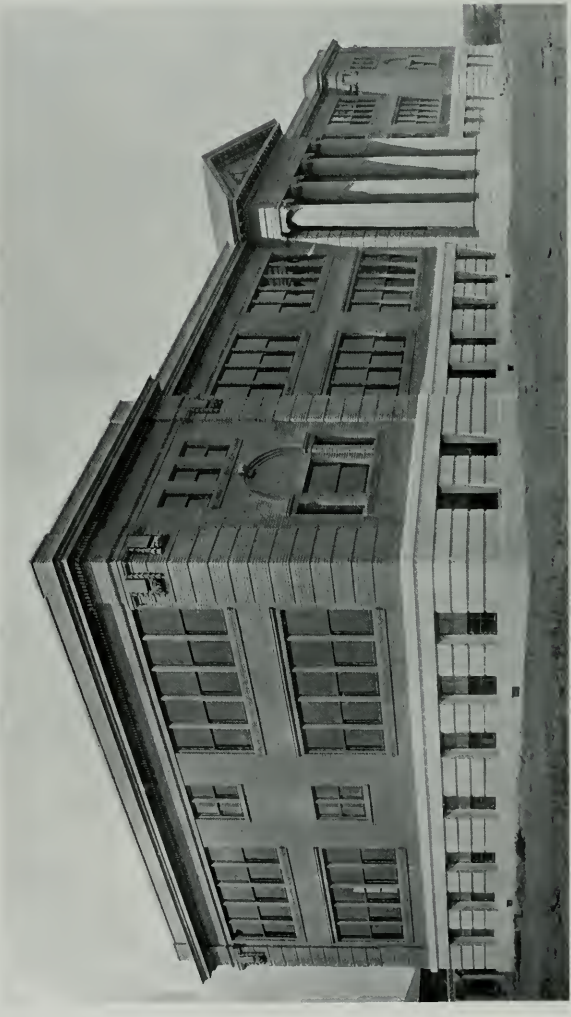
NORTH STOCKTON GRAMMAR SCHOOL
Stone & Wright, Architects

Recent School Buildings Designed by Stone & Wright

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

AS we have said before in these pages, California stands very high in the number and excellence of her public school buildings. Full efficiency in schools, as in manufacturing or warfare, is largely a matter of perpetual innovation and change. As soon as any community has planned and constructed a perfect system of up-to-date schoolhouses, it must begin to prepare for re-casting the whole on new lines! And just as a manufacturing plant or a navy is effective in direct proportion to the newness of its machinery and ships, so is any community rich in schooling facilities in proportion that it has the energy to destroy what is obsolete and the means to replace it with what is new and better. Our habit of constructing schools of wood and replacing them with brick or concrete has helped make familiar to us the habit of rebuilding. Perhaps earthquakes added force to the habit, too. These facts and the great wealth of the coast states, combined with the prevalence of a shifting population, all elements giving great capacity for innovation, abundantly account for California's excellent public schools.

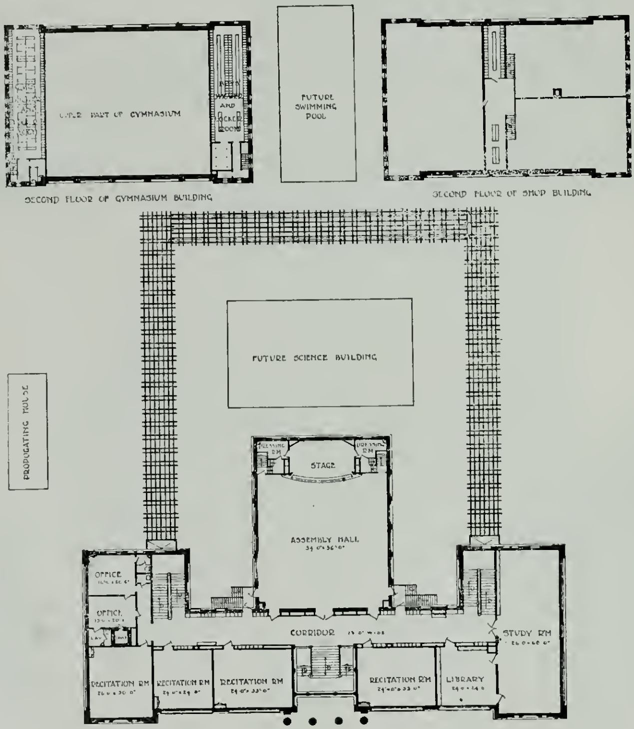
Some of us may deplore this capacity for innovation, may even call it restlessness and a failing rather than a virtue. As a matter of fact this mania for renewing everything is part of one of the most important trends of our times, part of a movement so widespread and so immense that it cannot be seen by us until it has receded far enough in history to come within the right perspective. But some of its details can be noted. In the past of our race great stress was laid on solidity, strength and permanence. In politics, architecture and even dress we strove for qualities that would wear and last a long time. But now we are changing all that, realizing as never before in the world that nothing is fixed, settled or permanent or ever can be. Perhaps one can grasp this new attitude by considering one item alone—the last of the three mentioned. Dr. Woods Hutchinson has recently pointed out the real value of shifting fashions. Fashion, as followed by the women of the world, may seem to many of us a gigantic graft to force the sale of dry goods. No doubt it is. But the doctor points out that nothing more salutary for the hygiene of the race could be imagined than the continual discarding of worn clothing for new garment. Then, again, the very flimsiness and "wear out" quality of all modern apparel as compared to the apparel of the past, far from being a sign of a degenerate age or evidence of the craftiness of manufacturers, is in reality a positive bene-



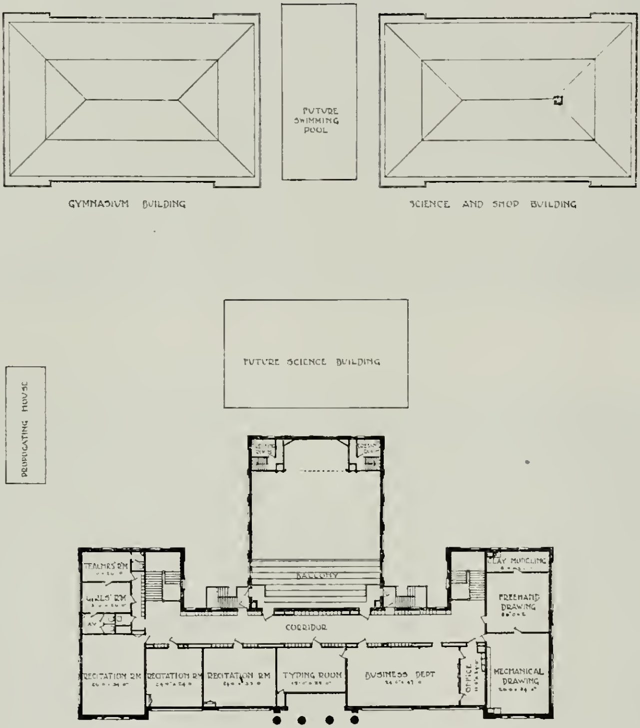
ACADEMIC BUILDING, LODI HIGH SCHOOL GROUP
STONE & WRIGHT, ARCHITECTS

LODI HIGH SCHOOL GROUP
Stone & Wright, Architects

PERGOLA CONNECTING LODI HIGH SCHOOL GROUP
Stone & Wright, Architects

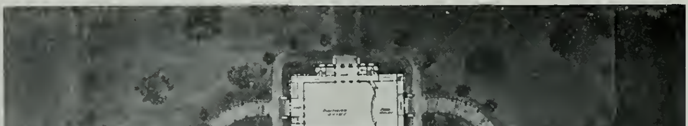


LODI HIGH SCHOOL—FIRST FLOOR PLAN
STONE & WRIGHT, ARCHITECTS



LODI HIGH SCHOOL—SECOND FLOOR PLAN
STONE & WRIGHT, ARCHITECTS

LAFAYETTE GRAMMAR SCHOOL, STOCKTON
Stone & Wright, Architects



PLOT PLAN, HIGH SCHOOL GROUP, STOCKTON
Stone & Wright, Architects

faction and with our present-day knowledge of the prevalence of germs it does not require expert wisdom to realize how much wholesomer it must be to wear many suits of cheap clothes rather than few suits of durable ones. And so with our school buildings and indeed all that go with them—books, furniture and equipment. An old musty building has the same kind of loathsome qualities as the clothing of a tramp. Its walls and floors are saturated with the exuviæ of its occupants. Worm-eaten, dirt-begrimed desks, thumbed-over, greasy text-books, and fly-blown, dusty maps have unquestionably worked untold havoc in the health of generations of children. The tendency to rebuild schools, to re-write text-books, to furnish new desks and to replace wall maps is in every way sound and commendable. In fact the extra expense involved in all these changes could be defended on hygienic grounds alone. When we consider, then, the scientific grounds for new and better methods of planning, advances in lighting and ventilating, improved desks, easier text-books and clearer maps, it becomes plain that the highest efficiency in public school education can only be effected by a constant quest for improvements and unflagging zeal in realizing them. This task devolves on school departments, superintendents, teachers and the public. But without the architects to co-operate with these, little advance could be made. And this brings us to consider some of the recent work of a firm of architects who have realized this modern demand in school housing with notable success.

* * * * *

The firm of Stone & Wright, architects, established in Stockton and Oakland, have designed the schools herein illustrated; some of which are now under construction.

The senior member of this firm, Mr. Louis S. Stone, is a well-known veteran in the specialty of schoolhouse architecture. Mr. Stone's almost exclusive activity in school work is in a sense hereditary. The big "Dudley C. Stone" schoolhouse on Haight street, near the Park, will serve to remind San Franciscans of the old-time teacher, one of the best known in California, and the father of Louis Stone, the architect.

Many years ago Mr. Stone made a reputation for himself in his design for the Oakland High school, the largest and most up-to-date schoolhouse at that time on the Pacific Coast. Mr. Stone has planned many schoolhouses up and down the coast since but it might be well to refer to this building for a moment as a sort of landmark or standard in judging of the more recent achievements of his firm. Mention has been made of the tendency in older work toward massiveness and permanence. The idea embodied in this now almost obsolete type of building was to group as many class rooms as possible around a central hall arranged in the form of the letter "E." This system was piled up four or five stories and crowned with a big assembly hall under the central roof, with laboratories and workshops on either side. The squareness and compactness of this lay-out was more in keeping with the congestion of an inside city lot than the ample acreage of the average school block. Moreover, in the large rectangular scheme with the corridors between rows of class rooms it is plain that these must flank the four cardinal points, a condition which necessitates inferior lighting for at least half of them. For whether a school is built on the fog-cooled coast and needs sunlight, or in the sunny San Joaquin and needs shade, it is obvious that class rooms must not be lighted south and west in the same district where east and north exposures are more desirable. There are other disadvantages attached to the large block buildings as against the small unit or group-of-buildings system. The former demands an excess of corridors and stairs and is far less easy to ventilate than the more articulated buildings. These latter again can be built piecemeal, one wing or pavilion being tacked on to

GRANT SCHOOL, RICHMOND, CALIFORNIA
STONE & WRIGHT, ARCHITECTS

HOMESTEAD SCHOOL, SAN MATEO, CALIFORNIA
STONE & WRIGHT, ARCHITECTS

JEFFERSON SCHOOL, STOCKTON, CALIFORNIA
STONE & WRIGHT, ARCHITECTS

GROUND PLAN, WEBER GRAMMAR SCHOOL, STOCKTON

WEBER GRAMMAR SCHOOL, STOCKTON
Stone & Wright, Architects

REMODELED JACKSON GRAMMAR SCHOOL, STOCKTON
Stone & Wright, Architects

JACKSON SCHOOL, BEFORE "TREATMENT"

REMODELED WASHINGTON GRAMMAR SCHOOL, STOCKTON
Stone & Wright, Architects

WASHINGTON SCHOOL BEFORE "TREATMENT"

DESIGN FOR A SCHOOL HOUSE
STOVE & WRIGHT, ARCHITECTS

LINCOLN SCHOOL, RICHMOND
Stone & Wright, Architects

CORNING HIGH SCHOOL, CORNING, CALIFORNIA
Stone & Wright, Architects

another when required. Construction for low, rambling buildings is lighter and simpler; and facilities for escape in case of fire, earthquake or panic far more easily attained than in a big block building.

A good example of the extensive type of planning is illustrated in the Lodi Union High school. Some features recall the earlier type in the main academic block, but it will be noted that the main corridor with stairs on a return at each end is planned on outside and not on inside lines. Thus is achieved better light and natural ventilation, and the recitation, drawing, and study rooms flank on the two desirable points of the compass only. The outbuildings, consisting of one-story-and-a-half pavilions, are devoted to a complete gymnasium on one side and a science and manual training group combined, on the other. These two groups are connected by long and ample pergolas which in due time will yield shaded out-door communication in a climate where shade and air are emphatically needed. Provision is made for other science buildings and a swimming pool. When gardens are planted and the trees have grown the attractions of this group's exterior will vie in interest with the lay-out and equipment of its interior.

The Stockton High school is of added interest because it shows a growth from one system to the other. The original high school was built some years ago and contained in one intensive block all the elements of a high school then needed. The extensive group planned by Stone & Wright will cover an area more than three times that occupied by the original building, which now becomes one flanking block out of a group of five separate buildings. The architects have shown marked ingenuity in handling this problem. It is nearly always difficult to know what to do with an old building in any comprehensive enlargement scheme. There is something ill-mannered in completely ignoring the work of a predecessor. The original Stockton High school was of no particular style, though it was under the influence of the old rock-faced school that followed upon Richardson's work. Although this sort of thing is extinct as the dodo, this whole block has been practically duplicated for reasons of sentiment and for the sake of harmony. The two big masses have then been connected by a low colonnade linking together two intermediate pavilions devoted to manual training and a gymnasium, respectively. On the open axis dividing these four buildings which occupy the whole space between Vine and North streets will be built a large auditorium. The ends of this building are to be connected with the two main blocks by quadrant pergolas, thus tying the whole scheme together with a complete system of covered "circulation." The whole group suggests a miniature university in its completeness and spacious setting.

In contrast to this ambitious plan are shown other enlargement schemes whereby the original buildings have been most ingeniously stripped of their amorphous protuberances so dear to the bucolic designer of a past decade and dressed over in the modish manner here seen in the views of the Jackson and Washington Grammar schools in Stockton. The exteriors have been handled with remarkable breadth and with results of quite unusual interest.

Another Stockton Grammar school deserves special notice. Long before Mr. Ittner of St. Louis was heard of we have advocated the Tudor Gothic as a most appropriate style for our common schools. The grouped mullioned windows and a certain honesty of material incompatible with classic design, where funds are limited, commends this style to all those who realize the value of early impressions on the growing youth of this or any other land. The Eldorado school is a happy example of this style. We suggest in passing that too much formality does not suit this style, which is rather a difficult rule to live up to when most of our schools are laid out on lines of rigid symmetry and our designers have the bilateral habit so rooted in their systems. Also we would sug-

ST. AGNES COLLEGE, STOCKTON, CALIFORNIA
Stone & Wright, Architects

ENTRANCE, ST. AGNES COLLEGE, STOCKTON

CHARLES BELDING BUILDING, STOCKTON

LYRIC THEATER, STOCKTON, CALIFORNIA
Stone & Wright, Architects

COMMERCIAL & SAVINGS BANK BUILDING, STOCKTON
L. B. DUTTON, ARCHITECT
STONE & WRIGHT, ASSOCIATE ARCHITECTS

gest the use of plenty of plain red brick, supplemented with the liberal planting of ivy and Virginia creeper. The prejudice against greenery on a building is one of the silliest obsessions of country superintendents that we know of.

Less attractive on the exterior, though of interest in another way, is the Lincoln school at Richmond, where all class rooms flank the light on two sides only. To this end corridors run along the building line and serve the class rooms from the same side in each wing, in violation of the usual plan-symmetry, but in the service of common sense and right lighting.

A similar disposition obtains in the very dignified and cleanly designed new Jefferson school built at Stockton. Here all class rooms are lighted from one side. The lower story on the central façade being given over to a large assembly room, entered on the side of the building and other offices. The upper floor (reached by inclined planes) it is true, has coupled windows on the undesirable front, but the real lighting is done from the roof with saw-tooth skylights. This innovation in one or two-story buildings has proved of great value, and the firm of Stone & Wright has made novel and interesting uses of this form of lighting in schools in Richmond and San Mateo. These schools have several features worthy of note, because they both exemplify tendencies first mentioned above towards the unit system, uniform lighting, flexibility of plan and cheapness of construction.

These schools are both one story high and entirely without corridors, hallways, basements or attics. The class rooms are connected by covered courts or porches open to the air on the side and serving as play grounds in wet weather.

The floors are laid directly over the ground and trussed roofs span the walls, which are built of sheathed studding with half brick facing all the way up and over the plate. The brick work is plastered all over.

The central pavilions contain the assembly halls, which are supplemented with mezzanines for offices and small basements for heating and fresh air plants. These halls can be connected with the school or separated for civic gatherings, at will.

On these general lines it has been found possible to achieve wonderful results with a minimum of outlay. The Grant school in Richmond in pale cement with a touch of colored tiling in the frieze and ample window boxes of flaming geraniums fulfills all the requirements of a thoroughly up-to-date school, and it is not too permanent to be superseded by something better when something better shall have been thought of.

The Homestead school in San Mateo, built amid the verdure and sleek lawns of a wealthy suburb, fits the landscape to perfection.

To summarize, one can see that in the few schools briefly described are embodied the latest ideas in planning. These consist, in the main of the group system for high schools the use of inclined planes for stairs, the substitution of pergolas and porches for inside corridors, uniform scientific lighting, economy of construction and charm of exterior. All these and other innovations added to the stock knowledge of the subject gives one the impression that these plans express what is best in school planning down to the very last minute.

* * *

An Omission

Mr. Wilkerson, the architect, had been invited down to the Clarks to display the plans of Clark's new house to some guests.

"Here is the front elevation," explained the architect, as he laid the plans on the library table for the inspection of the visitors, "with the outside window and the circular gallery; this is the east elevation, showing the tower."

After various comments had been made by the guests, little Arthur, aged seven, who was enormously interested in the new house, cried:

"And where are the two mortgages father said he was going to put on?"

Color in Architecture at the Panama-Pacific Exposition

By WM. L. WOOLLETT, in The Architectural Record.

EXPOSITION architecture would not ordinarily be considered, on account of its evanescent character, a proper subject or example for elucidating principles of architecture. Exposition architecture, as we commonly know it, in the ultimate, must appear to be unreal. It is palpably a colossal Dream City, and must be appraised in terms peculiar to itself. And yet in the realization of such a dream the æsthetic point of view should be somewhat similar to that obtaining in architecture under normal conditions. The architectural scheme, even of an exposition, requires conformity to recognized standards within certain limits; i.e., the peg of reason on which we hang the emotional appeal, the form and structure or implied structure of an exposition building, bears a similar relation to the color scheme as in ordinary conditions. In the instance of the Panama-Pacific International Exposition, at San Francisco, the element of color is so pronounced a feature, and the use of color has been hailed with so much of popular acclaim, that there appears to be here a special opportunity to learn something of the meaning of "Color in Architecture."

In the panorama of this exposition we may in our imagination see in sumptuous array of color, vast bundles of oriental stuffs, vistas of palaces and temples and arcaded halls, and the garden of Babylon and visions of Atlanta come true near the cobalt waters of the Pacific. We may sprinkle this oriental melee of color with the gems of the Indus, whilst the galleys of victorious fleets laden with captured splendors vie with each other for landing space at the steps of the Great Water Gate. Or we may in cold analysis ask of our reason, why this? or why that? and in the process lose perhaps some of the wild joy of abandonment.

Viewed as a serious attempt to do something beautiful, this work, in order to lay claim to excellence, must qualify not only in its color appeal but in form and abstract values as well.

The essence of a work of art, according to common consent, resides in an expression of personality. Without the individual spark there is no such thing as art. Two men cannot paint a portrait, write a poem or symphony, or produce a piece of architecture. Accordingly Jules Guerin, greatest of our architectural colorists, was intrusted with the commission of advising the Board of Architects of the Panama-Pacific International Exposition, in order that the whole scheme might be the harmonious expression of one personality in color.

In a critical view of a work of this sort it is desirable to bear in mind that it is easier to criticise than to create—and easier to improve than to improvise. However, the work of these builders of the exposition, who have been pioneers in many respects, seems to emphasize that such a work is more easily created in parts by a group of artists than it can be made satisfactory as a whole to a single critic. And it remains to be proven that this assemblage of beautiful bits of architecture, bound together in a harmony of color, is necessarily a work of art.

The general color of the exposition is exotic, Eastern. A great emotional poem in color reverberates and pulses for our delectation under the lazy blue of the sky and beside the rippling blue of the waters. From masses of warm walls of Travertine and the warmer tones in the roof areas, opalescent, greenish domes lift their curves of scintillant light into the heaven of California days. Jeweled towers vie with the stars and the sheen of the ocean, and at the first sight of the spectacle the heart and mind are tingled into expectancy. Clothed in a vast mantle of soft grey colors, refulgent with unseen lights, blooms a vista of color gardens. Like a spirited horse tethered, the mind strains to be off on the wings of exploration of this panoply of light. Here the radiance of a cashmere shawl greets the eye, there the soft tone of the Ottoman's saddle bag, then the dominant note of some old Sienna rug, or the gleam of a Saracen blade. A thousand minor notes of the dominant color scores greet the eye. A vast pulsing mosaic of color, a palette of unrivaled beauty, stirs and for a moment enslaves the imagination. And then, after the first hush of expectancy, of exultant emotion tricked into an overwhelming impulse through the magic of color, comes analysis.

To the searcher for abstract beauty, to him who comes with the mind of the Occident as well as with the soul of the Orient, the Exposition City has told its best in the first "mad moment" of beauty. Here the story ends. A tragedy apparently; but no, I say "ends" with a purpose, for in thus speaking broadly we free ourselves to pass to detailed analysis of a very interesting architectural situation, having in unqualified terms given honor where honor is unquestionably due.

In a work of this magnitude there are, of course, two points of view: One, the consideration of ensemble, of mass, and the like, and the other, consideration of details.

In matters of detail the use of colored pigments is probably the most noteworthy phase of the architectural scheme. Everything which the eye rests upon, whether of wood, iron or plaster, has been painted. The dominant note is the walls of imitation Travertine stone, which is in reality colored plaster with a special texture.

In the handling of architectural detail, in the doorways, sculptured groups, and other details which are best examined near at hand, there are gems of architectural beauty and harmonious color. The portals of Faville, for instance, foiled by the studied calm of cliff-like walls, are rich beyond comparison, mellow to the point of antique delight and juicy with time-worn color, a dream for the artist's fancy. However, taken in conjunction with the masses of the buildings of which they form a part, and viewed from a point where the ensemble is possible, these spots of transcendent interest are reduced to smudges of color. Because the architecture was composed aside from the colorist's conception, these gems of ornament have lost, to a degree at least, their capacity to convey the true subtlety of the artist's thought. The application of pigment has softened and detracted from the values. Frequently there remains little of thought directing quality. However, there is as a residue a delightful texture, a rug like quality, if you please, due to the juxtaposition of a variety of nicely balanced color values. But the structure, the static quality, the thought directing element, all these have been depleted or have disappeared in a subdued pastel sketch effect. Viewed as specimens of detailed decoration near at hand they are poems of ornament.

A consequence of this loss of thought-directing detail is an absence of scale. You feel that you are looking at one of Jules Guerin's prints; whether a real live water color drawing or a reprint—one ponders.

The Tower of Jewels is a most interesting example of this submerging of the architectural interest in color dominance. Here a superb pile of richly formed, elegantly proportioned masses has been denuded of its original vitality. The various and strongly colored parts have become detached, and sense of unity is gone, and as a result the composition is without appeal as to its colossal size. In the Tower of Jewels the details, such as the eagles, equestrian statues, etc., have been reduced by an all-over coat of color to mere lumps whose form and character lines are so unannounced that there is nothing by which the mind can gauge the quality or estimate the relation to the whole. One intuitively feels that the designer had his matter well in hand, that he knew where his chief darks should come. There is an intrinsic fine balance and lilt and lift to the composition as a whole, due to the nice distribution of values. The applied pigment has readjusted and misplaced the original color values so that the real "kick," as determined in the designing architect's mind, is gone. The color "kick" has resulted in making this feature heavy as a mass, whereas its place in the composition demanded lightness, effervescence, billowing, fluffy, cloudlike, puffy exuberance, a gathering together into one giant "parfait" of all the lightness and daintiness of the McKim court. In the soffit of the big coffered arch the coloring of the panels has flattened the effect and turned the magnificent Travertine stone into paper. The red-colored coffered ceiling gives a chalk-like effect to the stunning murals which flame with wonderful color when seen without the accompaniment of "architectural" paint. The sense of reality, of permanence and stability, is preserved in the lower part of the tower. The treatment of the main cornice of this portion is a dream of color and in no way detracts from the stone effect evidently desired.

The Court of the Sun, Moon and Stars, by McKim, Mead and White, a composition of which the Tower of Jewels forms the crowning member, is the architectural *piece de resistance* of the exposition. This magnificent architectural spectacle, composed with delicate fancy and rich accompaniment of conventional ornament and bas relief, has been but slightly jarred from its original supine calm. The deterrent color notes and groups of too assertive statuary can hardly be said to mar the effect as a whole. The stirring groups of statuary which surmount the main architectural features, and which are supposed to announce themselves as the concentrated essence of the thought as proclaimed in the court as a whole, have been colored a light brown. This simply has the effect of relieving the pedestals of their weight. One wonders, how far back? It is quite theatrical, this shifting of "scenes," of planes.

The floor of the court is "furnished" with statues and fountains, whose bulbous forms by their proboscis-like effrontery push to insignificance the gentle grace of the inclosing colonnades. These sweeping colonnades, like a picket fence, inclose great colossal, recumbent figures which oppose their giant limbs athwart each vista of the eye, and shrivel to an inglorious dissonance that which would otherwise be an architectural symphony. The interest originally attaching to the elegantly modeled frieze has, through the use of a delightful color magic, shifted to the cornices and openings. The color detail one must pronounce as being at once elegant, naive, and satisfying. The pristine glories of classic lines and classic figures which, in fine repose, are set to enrich and enliven the friezes, are dulled by comparison with the yellow statues, nearby, which, like giant incrustations, flatten themselves against the walls. Painted pilasters skip up and down the dignity of Travertine stone piers.

The glorious sculptured group by Isidore Konti about the pedestal of the great column on the axis of the court is stolen from the view by a "smashing" bit of colored kiosk-like band stand, which, like an applewoman on Broadway, unprofitably obstructs the traffic of the eye.

No greater Roman holiday was ever made than this. Shades of Stanford White stalk nightly in this wonder place, where the gemmed star maidens look down on dusky sisters clothed in Oriental sepia. The dead spleen of Vitruvius should gather grit to see so lordly a scheme go through the color pots. Yellow domes atop these classic piles proclaim against the cerulean blue in unmistakable pæan, "Who did this thing?" Undoubtedly a paint pot flew into the sky.

And yet the color glories of the whole proclaim a pace so spent for beauty that one halts to ponder. "If this could have been done at its best, it would have outdone itself and placed a ban on future accomplishment."

In pleasing contrast to the evident loss of scale and force in the supposedly crowning feature of the architectural composition is Mullgardt's superb court—the Court of Creation. This work was originally intended for a riot of color. The application of pigment has been eliminated. The result is that the work of the artist is left in its unrivaled beauty. This court is a true dream in exposition architecture. The detail counts for all that it may; the architect's thoughts as expressed in mass, line, detail, announce themselves in unmistakable terms, unfoiled by deterrent color.

In any architectural composition there must be some reposeful element, some undetermined zone of emotion from which the thought-directing element must spring or be evolved. The unbroken wall surfaces, whose texture and substance are left to the imagination, carry in forceful, purposeful manner their just weight in the composition.

In the court of Mullgardt the pure undivided over-grey of walls and ornament alike holds in solution the dominant thought. A delicate tracery of detail, which by its disposition and its charm of form leads the imagination on, is pregnant with the abstract thought in the artist's mind. This court, of all the work in the exposition, expresses most definitely perhaps the untrammeled vital spark of originality. In the modeling of the architectural ornament one intuitively feels the influence of the architect's master hand. The sculpture, however, particularly the main tower groups, lacks contact with the architecture. This sculpture is less colorful, less dynamic than the architectural ornament. It also lacks subtlety, fineness and refinement, and fails decidedly to express the same suppressed electric grotesque quality which is announced with such good effect in some of the less important groups. The sculpture, though plainly less vocal than the architecture, is decidedly interesting, well composed and powerful. It might well be deemed a crime to mention this lack of correspondence, for there is evident sincerity of effort and a much greater correspondence than we find in many works of greater prominence. The lack of a certain kindred spirit, which only a Mullgardt sculptor could evolve, is hardly a reasonable lament.

The central fountain by Aiken in this court is well worth while, considered by itself, being rich in imagery and beautifully composed, but too large in scale and in mass for its place in the composition. Its effect is to dwarf the court as a whole. Only when this note is out of the line of vision does the full beauty of the place appear.

The wall decorations by Brangwyn at the ends of the corridors are masterpieces of wall decoration, fit counterpart of this gloriously vivid individual work. The color of these grows like burning coals. They serve to vivify the idea that from subterranean fires where colors leap and play; from the earth and air and sky and sea where eternal forces are locked in titanic struggle to be free, the Court of the Universe comes forth to greet the eye in a festoon of tempered, controlled, vitriolic lava, formed and fashioned into a bit of architecture lurid with a soul's delight in creation.

The superb handling of the murals in Mullgardt's court suggests a word in general as to the relation of murals to this matter of "Color of Architecture." A mural painting should be what the term implies—"on the wall." As in the work of Puvis de Cravannes, one should feel more of wall than of color, more of structure behind than of forms represented. In the color scheme of the whole a mural may or may not count as a dominant note, but at all times should be subservient to the wall feeling and in harmony with the general color scheme. In Brangwyn's painting one could consciously feel a desire to know the jointing of the stone work in the wall, in spite of the rich tonal effects, so flat, so secondary is the plane or perspective element.

The mural decorations of the exposition are in the main alive and graceful, teeming with rich imagery and full of clear color. But in the color scheme they count merely as jewels, resplendent with color, like ripening fruit; they are not (with exceptions of course) murals, on walls; they are merely bits of bright color, little elfinlike butterfly bits of color in a pageantry of blatant color which asserts itself in blobs and chunks. For in this color composition huge areas, heavy with color and in values which dominate, stride like giants beside the sea and throw themselves into the air. Dank with the stress of the painter's palette an mellow with the age that obliterates even a semblance of the thought behind the forms, this blazing beauty of color is rampant, a carnival of the "Painted Desert," a morass of voluptuous symphonies of color, the expression of a mind drunk with color. What a powerful pile this would be were there an architecture to hold it, bind it together, hammer it down, "put it over."

However we may be impressed with the effect of color in architecture, it still remains that architecture is fundamentally a structural vehicle. The color element as an emotional impulse must be subservient to the thought directing element as expressed in the architectural form. Where the color element is powerful, the form element must be still more powerful, else we have as in the characteristic work of the futurist, dominant emotional impressions, unknowable efflorescence in color.

Taken as a whole the exposition must be deemed an expression in color, without adequate architectural accompaniment. The details of beauty which crowd upon the eye at each step do not affect the general value of this statement.

As an instance of a happy detail we note the Horticultural Building. This work of Bakewell & Brown's is a *tour de force* in exposition architecture. It is without exception the most electric, the most expressive, effervescent playful bit of joyous architecture. In the main it expresses, in its color, a most wonderful and delightful restrained exuberance, and the atmospheric quality is charming; but the color imposed has in places converted the detail to a lavalike deposit of unmeaning forms. The choice detail—the fanciful lines, the luxurious efflorescence, particularly of the lower portions—is swallowed up in the pastel vapors of a too dominant color fancy. In this building the dominant note is the great glass areas, which reflect in opalescent bluish tones the prevailing moods of the day and night. The architectural forms are handled with a suggestion of the jeweler's art. The construction and the setting of the various parts in adequate structural relation are graceful and free. Here the structural aesthetic values of architecture are rightly subservient to purely decorative features, the structure being implied. Yet so cleverly is the whole conceived in the spirit of glass and iron and ornamental paste that the mind is satisfied, while the emotional appeal is more than satisfactory—it is a joy. Viewed from the portals of Bacon's court, this building is a jewel of jewels, the quintessence of voluptuous, sumptuous, contained joy.

The primary relations of structural aesthetics, even in exposition architecture, are dominant factors. A more or less close following of reasonable structural values is necessary. As an illustration of misapplication of values, we note the great even-toned greenish domes, which are a dominant minor chord in the scheme. These domes top perforated drums whose wall surfaces are treated with color in a broken design. Here we have a case of syncopation in values. The even color of the dome suggests a monolithic construction; the drums, broken up by bands of scintillant mosaic color areas, suggest a wall of a purely decorative character. To have preserved the effect of solidity of the wall and broken the roof, would have been a way of handling the situation more in accord with the common understanding of the likely structural condition. Or if the solid character of the dome was an important note to be preserved, why support it on a member which by its treatment suggests a more transient type of construction? Under the present arrangement we see the strong shadows of the perforations entirely surrounded with opalescent color conditions, resulting thus in an unexplained structure. The effect is of spots of dark hanging unsupported in the air; the color values of walls and dome being commensurate with the sky values.

Turning to more prosaic details, one's eye lifts to wide expanses of livid ornament, suspended like giant tapestries before the walls of towers which flank the Court of Flowers. Here we confess ourselves ignorant of the meaning, and our powers grow faint before the wizardry, the "wine of wizardry," of the painter's palette. Here it is difficult to arrive at the point of view of the colorist. A few questions will elucidate. Why, for instance, has color been applied on stone, on exterior wall surfaces, particularly in the diaper pattern, in a way that suggests oilcloth or a brick texture? Great expense and care and skill have been exercised in imitating a stone texture; and are these not stone forms which are employed in adjacent ornament? Why have these suggested surfaces of stone been destroyed as such by coloring of supposedly stone details? Why has the illusion of stone, of permanency, of stability, been frustrated? Is it more important that a composition be colored than that it be true to itself?

A natural sequence of thought in architectural composition demands that the voids find expression in terms corresponding to the wall structure. When this is not done a manifest confusion in the abstract idea results. Why are the ornamental openings colored so that they suggest beautiful masses of terra cotta or brick or plaster, and the wall areas next treated to suggest Travertine stone?

The value of a wall surface, either expressed in flat unbroken areas or in its extreme phase of fenestration, a colonnade, must ultimately reside in static qualities, its capacity to carry. Why paint a stone wall pink? Are there any pink, real pink, face-powder pink, stone walls anywhere? And, if there are, do we need them here?

Whatever of decoration in color is used on a wall, the quality of stability and permanence should manifestly not be abased. And the detail in color should synchronize in character with the supposed wall material. A stenciled decoration on a plaster wall which has the texture and color of stone, and is supposed to look like stone, should be stenciled, if at all, to recall some sort of stone decoration, and not in imitation of the texture of a brick wall or of a plastered surface.

A wall is primarily the reposeful element in an architectural composition. When a decorative effect is desired in a wall, the wall surfaces should still indicate more of repose than the local decoration of the voids. A highly decorated wall surface having a high key of color value must fail in its structural value as a wall, i. e., a carrying member, unless it is subservient to still more colorful active interest producing elements at the openings. The openings should be accented with ornament, powerful, impelling, thought-directing, of sufficient force to dominate the color condition in the wall.

Because the architecture of the exposition has been designed by men for the most part necessarily without the superlative color sense of a Guerin, the architectural forms express less of activity and power than the color phase. In general, the main architectural lines of the buildings and the minor forms and the details have, through the juxtaposition of the color of applied pigments, dwindled, shrunken and become enfeebled by the contrasts thus imposed upon them. The abstract message of the architecture is submerged in the emotional power of the color values with which they are surfeited.

This brings us to the idea of the true relation of color to architecture. Color in architecture is not the end; it is the beginning of an architectural composition. Color is the reservoir, the ocean, the garden, from which must spring the bud and flower of the architect's thought; just as in literature the thought is more important than the verbiage with which the thought is clothed; as in music the theme is more important than the rendering of the tone values; and as in sculpture the abstract quality is more important than the vehicle.

Color in architecture signifies not so much the covering of architectural forms with pigment, or the use of highly colored materials, as it means that fine adjustment of shade and shadow which suggests color. To him who is sensitive to color a work of architecture is an arrangement of color values under any circumstances.

Comparative views of the buildings taken when they were in the Travertine stone and afterward, when ornamented with color, are, of course, only suggestions of the true condition. However, they serve to show that the application of pigments which darken the general effect tend to destroy the direction and force of architectural detail. It would, therefore, appear that the colorist should be the architect, or *vice versa*, in order that the color values should be nicely adjusted to the architectural forms.

Paul Bartlett, the sculptor, once said in one of his classes, "A great artist could make a thing of beauty of an elephant, even though he had never seen an elephant and knew nothing of its anatomy," illustrating that the poise and swing of line, the balance and power of composition, were æsthetic powers within the scope of the sculptor and superior as elements of expression to mere details of fact in anatomy. And undoubtedly a master in color, such as this magnificent spectacle proves Guerin to be, may have the power to compose a wonderful composition in color, using as his canvas the buildings and entourage of an international exposition, without a specific knowledge of architecture. But are we not entitled to expect more than a color composition, just as in an equestrian statue we expect the saddle girths to be in place, no matter what the charm of rendering otherwise? In short, we should expect to find not only color in all its glories, but an unrivaled display of fine æsthetic value of line and form as well. And we are justified in looking for a harmony of these various elements, which, combined, constitute the art of architecture. That we do not find this balance is explained only by the fact that no one personality was available who combined all the qualities of an architect.

In the results before our eyes not a single titanic form announces itself, not a line in electric, elastic vehemence cleaves the sky without deterrent color accompaniment. No profile as such feels its way into the mind as a line of beauty, no group of statuary pulls itself into volcanic activity to acclaim its sculptured message—all is under the exotic pall of color. The charmed curves of Corinthian capital and the stately fluted columns stand rank on rank, flattened like colored paper strips set against other colored paper backgrounds.

There are exceptions to this general sacrifice of architecture on the altar of color. In the Court of Seasons whilst looking out toward the sea between Bacon's titan columns, which in solemn grandeur proclaim the dignity and beneficence of nature's bounty, one notes the lilt and lift of the graceful statue of Miss Longman in splendid joyous abandon—a bit of beautiful line in silhouette against the sky. The contrast of this statue with the vistas of advancing ranks of the columns on either side is altogether fine. Here is a picture of classic repose, undefiled by more gorgeous counterpart than that given by earth and sky and sea. This Court of the Seasons, its pavements unbroken save by the level waters of a green bordered pool, stands alone as being free from unsympathetic treatments of its garden areas. Except for the great central apsidal feature on the main axis, which protrudes a foreign note where Faville's door and apse form the enclosing feature of the great central arch, the court stands complete as its architect conceived it. Here the Travertine stone dominates the color scheme. Occasionally where color has been applied, as on the ornamental wreaths, giving an effect of stencil or intaglio, the values of the architect have been frustrated. The sculptured groups of this court are in harmony with the solid dignity of the architectural forms. Many will feel that this court is more nearly a complete expression of mature classical thought and feeling than anything in the exposition. Certainly it has repose and dignity, and great charm—beautiful proportions and the absence of unfriendly color dominance.

One other line of pure delight there is which, like the statue in Bacon's Court, must live in the memory. It is the entasis of the columns in the colonnaded porches of the Pensylvania building. We met this line just after passing through the fiery furnace of color which encompasses the Art Palace. We had just said "good bye" to the lovely Greek ladies, who turn classic backs upon our upturned faces, and to the cool, refreshing, satisfying walls of the California building, when looking past the elegant refinement and opulence of New York, we met some old friends—Independence Hall, the New Jersey building, and the State House of Boston, and others. Greetings, ye gentle reminders of the Colonial age! The fine grace of these simple lines, these forms unafraid to dare the blue of Western skies in the garb of ancient renown, greets our eyes now surfeited with color. Like a sweet message of ancestral days these delightfully frank architectural fragments bring a realization of our real self. These declare our time and temperament; these, our race and religion, our birthright, and perhaps our future. The exotic fulminate of riotous Roman architecture and "Cairo" coloring possess us no more. We pass as in a dream into the calm realization of the old gold dome of the Boston State House, and we ask the question, Is it the ideals of Patrick Henry and of Hamilton and of the Adams family and of Franklin, or is it the lure of the Occident, the voluptuary, the sensualist, the occultist, and the seers and precepts of the East—the "line" or the "color"—which holds us truest to our ideals? Go and sit beside the fires of Brangwyn's pictures amid the calm of Creation's Court, and think a while, then out by the sea, alone beside these landmarks of your ancient home. The tides that wash on the Pacific shores wet now the feet of the Pilgrims' sons. Are the eyes of these sons lifted to the prismatic colors of the Orient or are they stayed by the subtle beauties of restraint? Or do we look for a future day when into the old shall have been breathed the breath of the new, when Eastern fires shall have been tempered, when these exotic flashings of emotional energy shall have been curbed by the steeled minds of the West, and chilled into finely wrought expressions of a superman.

Return again to the Court of Creation and there you will see more nearly than elsewhere in this forest of pageantry a realization of a dream come true—Brangwyn's pictures and Mullgardt's court. Here, a true blending of Eastern spirit with Western restraint, of Southern color with Northern lights, a medley vocal with the churning together of rival races, of strident woes, a light from the burning torch of progress.

For this alone the entire effort of the exposition is worth while, for this work signals a spiritual growth, an aspirational force, a capacity for expression in the abstract.

Of the work of Jules Guerin it may truly be said that, whilst his work has been Goliath-like in that he has brought the temples of beauty down about our heads, he has nevertheless given the world the greatest demonstration of the uses of color in exposition architecture with which our time has been favored. All the compliment which word could convey for the boldness and sincerity and harmony of his work is due.

The structural æsthetics of color, still veiled and sphinx-like, awaits the advent of architects who are colorists. Stanford White thought in color, by the way, and his work is the proof.

However immaterial and irrelevant criticism of a work so generally lovely may appear, we are bound to recognize in each advance step in art a stepping stone to something greater. This work in color at the exposition seems to presage not only a wider appreciation of color in its application to architectural problems, but a demand on the part of the public for a more precise knowledge of the use of color by architects.

The day is not far distant, we feel, when the architect shall be required to know not only the law of the forms which he employs, but the law of color harmony as well, when, like Michael Angelo, he shall be required to wield the brush and the sculptor's chisel as well as the builder's square.

The preparation of the drawings, specifications and contract papers needed for separate trade contracts is arduous in direct proportion to the number of subdivisions. They have to define clearly not only just what work is to be included in each, but also just how the work of the other trades will affect each one. The contractors must know at the time they put in their bids just what to count on from their associates on the job by way of help or hindrance to their own work. For instance, if the plumbers are not told in their specifications that the cutting of masonry, iron, wood or plaster work necessary to the proper running of their pipes is to be done for them by the masons, iron-workers, carpenters and plasterers, they will include in their bids a sum to cover the cost of such cutting, and the owner would be paying for it twice, since each of those trades will be called upon in their own specifications to "do all cutting," etc.

So the specification-writer's task is proportionately more complicated. So is the draftsman's. And so, of course, is the bookkeeper's, whose records show the state of each contractor's account, the extras, credits and payments. When there are fifty accounts connected with one building operation, in place of one, the clerical labor involved is greatly increased; in fact, the importance of accurate business procedure by the architect is apparent.

The pitfalls and labyrinths of misunderstandings into which we may be led through verbal modifications of written contracts, or discrepancies between drawings and specifications, or other vaguenesses, have to be even more carefully avoided when a "general contractor" is not employed. For one of the functions of the latter is to fill up the holes and bridge over the gaps in his contract. These holes and gaps always exist, though their number and size vary according to the thoroughness with which the architect prepares his drawings and specifications, as well as the contract clauses themselves. Among the latter is usually inserted that one which calls upon the contractor to "do any and all other work not shown on or described in plans and specifications, but necessary to complete," etc.

The actual value of this clause depends largely on the good nature of the contractor, as its legal worth is nil. If your "general contractor" is making a good profit out of the work, he will not be averse to filling in gaps and holes out of his own pocket, with a lively sense of favors to come by thus impressing the owner with his liberality. Most contractors figure at the outset on doing this, and their bid for the work is made just so much larger by providing for it.

Under the separate contract system, it is possible to keep a much more accurate account of the building's progress and the proper times and amounts for the payments due the contractors. One reason why contractors like it is that their payments are made to them direct, on the certificate of the architect, whereas when a "general contractor" is in charge, his sub-contractor's work is paid for by him out of the payments made him by the owner. An unfair contractor (there are such persons) is thus given the opportunity to be unfair to his "subs" by holding back their money on some pretext. So the trade contractors welcome dealing directly with the owners, for they know that their payments will be prompt, and at the same time the architect's control is the more effective, for the argument of a withheld certificate is always potent in hastening the carrying out of his directions.

The taking of a large number of estimates by trades, which is so important a feature, develops a fact of much significance, but to which little attention is usually paid. This is, the wide difference in the amounts submitted, though the bids are of course all based on exactly the same data of drawings and specifications. Those differences are found to be greater in some trades than in others, but the fact that they *are* found, and almost invariably run a wide gamut of change, is one of the strongest arguments in the trade-contract method's favor.

Various legitimate causes create these differences. One bidder bids low because he is doing other work in the neighborhood of the proposed "job" and counts on consequent economies accruing from that fact. Another counts on certain money-saving methods of which he believes himself master, either in fabricating or erecting material, or both. Still another contractor bids low through a mistake on the part of his estimating clerk in taking off the quantities or adding up the figures. Some contractors are careless enough to entrust this important duty to inexperienced or incompetent hands. A well-known granite firm recently faced, and accepted a loss of many thousand dollars because it found itself saddled with a contract for stone which the firm's estimating clerk had figured for on the assumption that the architect's drawings were at quarter-inch scale. The drawings were really at eighth-inch scale, and were so marked.

Another case is that of the contractor who, when work is slack, is willing to undertake it at little or no profit to himself in order to keep his men employed. But from whatever cause they are traced, the diversity in the estimates received is nearly always surprising, and emphasizes the importance of taking as many bids as possible in each line, as well as in as many lines as practicable. It often happens that of half-a-dozen estimates taken in a certain trade, the lowest is one hundred per cent less than the highest.

It is hardly necessary to add that a building built under the trade-contract system will be better built than one done under a general contract, for the greater amount of time and attention it demands from the architect is bound to bring this about.

* * *

Not Foreman on that Job

The new foreman was a hustler. Nothing escaped his eagle eye, and whenever he saw a workman suffering from a tired feeling he quickly woke him up.

So when he discovered a bricklayer snatching a quiet pipe behind a wheelbarrow his wrath arose mightily.

"What do you think you're paid for? Get on with your job, if you don't want to get fired pretty sharp."

"All right, boss," rejoined the workman. "Keep your 'air on. Rome wasn't built in a day, you know."

"That may be," rejoined the hustler, "but I wasn't foreman of that job."

Decorative Value of Tile Flooring

By A. B. LE BOUTILLIER.

TILE floors have a practical value; they also have great decorative value, and it is with the latter that we are at present concerned. Owing to the peculiar limitations of the material and the methods of manufacture, tiles are necessarily small units. To cover a large surface with these units, obviously requires numerous joints. Therefore, the joints, as well as the tiles, should be given importance in the design. From a designer's point of view, the limitations of a material are its greatest asset, each material requiring its own peculiar treatment.

Not many years ago, all the tiles that were available for floors were of the machine-made variety, so perfect in workmanship that they could be laid in a floor with joints of a hair's breadth. These tiles were made in a variety of shapes and colors, but it was useless to lay out a pattern in one color, because the pattern of the joints could not be discovered without close inspection. If pattern was to count, it was necessary to use color, and the effect was generally hard, dry, and uninteresting. Conditions have since changed and we have come to realize the value of the joints. It is seldom necessary to lay a floor of plain tiles with joints less than one-quarter of an inch in width. Whether these joints are left the natural color of cement, or are colored, they will always count in the design, and the slight unevenness of the tiles themselves will give a texture that is not as hard and uninteresting as the floors of mechanical perfection.

The character of the building and the location of furniture and rugs affect the design of the floor. If the floor is in an important room of a monumental building and is free from large pieces of furniture, it may well be treated so as to be in accord with the architectural treatment of the walls, but if there is to be much furniture and many rugs on the floor it is better treated as a whole. This is a point that is often lost sight of in railway waiting rooms and restaurants.

Church floors afford as great an opportunity for tile work as the windows do for stained glass. Much could be said on this subject alone, but it is sufficient here to make the following observation: The nave aisles should be simple, the choir somewhat more elaborate, and the sanctuary very rich in pattern, symbols and color. In short, the elaboration increases as the altar is approached.

It is not necessary to use large tiles in a large room to get scale, as the tiles can be arranged so that the unit is composed of several small tiles, and the scale of the pattern increased or reduced.

It is not essential that all the tiles laid in a floor come from one factory. Herein has the tile setter great advantage, especially in colored tiles. In the matter of shapes and designs, clay is so easily moulded that there is almost no limit to the variety that the smallest factory can produce. It is in the matter of glazes and quality that makers differ.

There are many patterns that have been common property ever since the beginning of tile making, and are to be found, with slight variations, in many tile manufacturers' lists. New designs can be readily produced and old ones revived; the process is simply a model in clay or wax, from which a plaster mould is made, then the clay pressed in by hand, removed from the mould, dried and baked; a simple primitive process, to which tiles owe much of their charm. The difficulties are in composition of the clay and glazes; these, of course, it is assumed, have been overcome by the manufacturer.

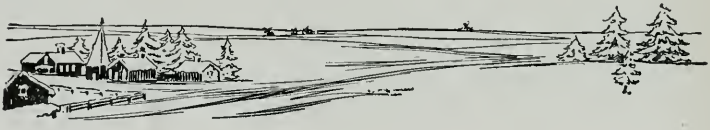
The ideal method of designing a floor is to arrange a general scheme and then lay out the details on the job, changing and rearranging details as occasion arises. This, of course, requires an artist as a workman—and there are such—or constant supervision. This is not always possible, but when it is done, the result is spontaneous, and free from the mechanical look that might come from a hard and fast plan laid out on the drawing board.

By the use of color in pattern, and pattern in individual tiles, there is almost no limit to the richness and elaboration possible for tile floors, but on the other hand, it is also possible to make an interesting floor of plain tiles in one color by taking advantage of the joints.

* * *

The Federal Architect's Office

THE resignation of Oscar Wenderoth, Supervising Architect of the Treasury, recently announced, gives to the government an opportunity for the urged reconstruction of that office upon broader and more efficient lines. Pending definite legislation (as suggested by the Logue bill, or through any other approved plan), it is necessary that a move toward efficient supervision of the office be made. This should incorporate those advanced features that many advisory suggestions have contained toward the promotion of a higher character in design and the lessening of expensive routine in execution. The Treasury Department is on the right track in its wish to secure efficiency and economy in its architectural department. Its apparent fault has been in a false idea that this can be reached by saving the expense of high architectural services. The administration of James Knox Taylor gave the department efficient management even though that epoch was not distinguished by design that reached far beyond the commonplace, except in those executed through competition between architects in private practice. This administrative ability should be equalled or advanced in the choice of a future head to the government's department of buildings for government use. That department may not need a designer of ability to control its destinies, but it does need an architect who is a master of design and at the same time an engineer and constructor of the first class. He should have a practical knowledge of government needs in the planning of buildings and the selection of, with adaptability to, site. An architect of high attainments may not be needed in an executive capacity, but the supervising of the design and construction of those buildings that are so intimately connected with the business and social life of the people does need a man of calibre to perform the work of his office with intelligence and discrimination. Such an architect it is difficult to obtain. Those whose names stand highest for professional achievement are too busy with their own affairs and eager for its emoluments to leave a private practice that satisfies for one in which there is small monetary reward and little distinction. But such an architect should, and doubtless can, be found among those who have devoted their professional lives to its varied problems rather than to the accumulation of large practices. Such a head to the architectural department of the government would satisfy the demands of the people of the United States; and it is that public that is most concerned in both the cost and quality of government buildings of which the Supervising Architect's office is the source.—Western Architect.



What Ails the Contractors—Sometimes

By CHARLES E. WHITE, JR.

IN a small town near Boston a bootblack has made a fortune by his wit in discovering the importance of something that everybody wants, but only a comparatively few really have to give—good service.

Joe began some years ago with a one-chair outfit on a cheap wooden platform located not far from the intersection of two of the principal streets. The chair, facing east, was very uncomfortable in the glare of the hot morning sun and the boy quickly found out he could get no customers before afternoon, so he secured from a local clothing house a big cotton umbrella, which in lieu of a cash payment was lettered with a clothing "ad." This made his chair as comfortable in the morning as in the afternoon.

At first Joe found it pretty hard sledding. There was a good deal of competition and no particular reason why people should patronize him any more than any other bootblack—and there wasn't business enough in those days to go 'round. In his struggle to get trade, the first thought that occurred to him was this:—how could he hope to entice business away from the other fellows unless he had more to give customers than they had? So he scratched his head and pondered, and as Nature had given him a larger amount of brains than less astute boys and the scratching process acted like a tonic he quickly decided that every five-cent shine at his stand should be superior to a shine at any other stand.

Here our young philosopher had struck a great truth—one that he speedily tried out by putting a little more gilt edge on his work. When a customer walked up to be shined, Joe jumped around as though he was glad. He had a pleasant grin. He gave a great shine, deftly and promptly, ending up by carefully painting the edge of the shoes (a thing that had not been customary heretofore). Each customer, when he walked away, somehow felt that this was the best shine for the money he had ever received. Thus a constantly increasing trade was built up.

Next, permission was bought and paid for to build a little coop in a small space left between two buildings. Here Joe put in three chairs and hired an assistant. Prosperity began to strike in. Before long his chairs were full most of the time and in rush hours there was even a waiting list. This last bothered Joe at first, for he found he was losing considerable custom when the chairs were full and customers, refusing to wait, walked away to another stand. But our young proprietor figured it wouldn't pay to build a larger space and hire more help, just to take care of the peak of the load in rush hours, so he hit upon another scheme. A settee and chairs were placed under an awning nearby, with morning papers attached for a coaxer. It worked; most of his customers were now content to wait when the chairs were full.

The business grew and grew. Joe's little stand has expanded into half-a-dozen good-sized shops with marble walls, mahogany chairs and brass trimmings. Every once in a while our friend planks down a bunch of money for which he receives in exchange title deeds to a choice plot of real estate. He holds office in the City Council and there are rumors that he is to run for mayor next year.

Is there any chance in this career? A little, perhaps, but hardly enough to call it "luck." Joe's whole business was built on service, and there isn't any better way in the world to build business—nor any surer.

If contractors who seem to be losing ground would learn this little fact—"service starts success," they would lay for themselves a foundation on which they could really build a big business. If they could only be brought to realize that there is no other way! You can't build business with bad service.

In a certain fireproof house under construction, the architect forgot to show chases for pipes on his plans. Suddenly, when the building was up story-high, it occurred to him. Out he rushed to the job and found that the masons had put in a few chases anyway, as the foreman said, "just for luck." Was that architect pleased? Well, I should say—and the mason contractor had a great "entree" in that office forever after, for his service was right.

It isn't enough for the boss, alone, to take care of service, either. Every man on the job should be required to do likewise, for you must remember that the architect bumps up against the mechanics more than he does the boss, and gains his ideas of the efficiency of the boss by the service of the men. Every architect loves to see the ideas of his brain worked out on the job with extreme care, and he greatly appreciates all efforts of the men in this direction.

Plenty of contractors think they do give good service—and perhaps they do, but many forget that the other fellow may be giving better service than they are. In such a case it is not enough to give good service. It is necessary to give better service. If you want to see your business grow—as it should, a little more each year—you must give wonderful service,—service that is heaped up so high that it fills the measure and slops over on all sides. This kind of service isn't wasted—and, strange to say, it costs but little more than common, ordinary service with which we are most familiar.

A few years ago a wood-working mill in Chicago started its first plant in a particularly bad period when general business was considerably depressed. But the manager had the wise idea that the way to succeed is to go out and get business, and then take good care of the work. He got a few window frames to build at a low price, picked out some extra good stock and went to it. When they were done, instead of arriving on the job th the edges of the mouldings ragged from tool "burrs," they were smooth, because a mill-hand had gone all over them with sandpaper. A nicer, cleaner-looking lot of frames you never saw,—almost too good to paint. "Who did that work?" asked the architect, "that's as dandy a lot of frames as ever I saw."

Well, the contractor immediately let his interior millwork to the same concern, and a pretty load of trim it proved to be—every piece of stock fine and clear, and every moulding clean-cut and slick as though it was cast in metal. It cost a little more to make, probably, but not much; simply more caution on the part of the men.

Now this mill has one of the largest wood-working plants in the state—and it is well equipped, too, with a blower system to chute chips and shavings from the machines right into the furnaces—which is one of the ways up-to-date mills keep their work up to the right mark. I know architects who will not allow contractors to sublet woodwork to any other mill but this one—and you know what that means—good prices and plenty of work the year round for this mill.

If there is one thing that annoys an architect more than anything else it is poor service from a contractor. An architect might stand for "sassy" foremen or general cussedness in a contractor—if only the service is good; if only the contractor tackles his job promptly, handles it efficiently, and gets it through somewhere near on time. No contractor should expect an architect to spend all his time on the job teaching careless men how to do their work.

Sometimes service means nothing more than a smile, or the running of an errand to two,—or going out of one's way to do the architect a good turn or save him a little trouble. Many a repeat order from architects comes in this way. Said one to me recently, "I know a job where a new plastering contractor worked into the good graces of the architect in the following manner:—the architect had some trouble with the mason contractor about testing a fireproof floor which the contractor was perfectly willing to test, but, somehow, never seemed to get to. The plasterer noticed how things were going, so (his sacks of ready-mixed material being delivered on the job about that time), he caused a bunch of them to be piled in the center of a floor panel. When the architect happened around a little later, here was a test for him with no further trouble, for the sacks weighed a hundred apiece and he figured that the floor was supporting a load greater even than was necessary.

This service proposition has become so vital a thing to most architects (and so many contractors fall down on it), that when a new contractor (straying into an office) bids on a job, gets it and then carries out his work really pleasantly and efficiently he (the architect) often feels like taking him right into the family. Contractors not so particular about service would be surprised if they knew how many times their bids are thrown out solely because the architect dreads doing business with them knowing how greatly his cares will be increased running the job. Often the trouble lies with the office force neglecting to keep in touch with the architect, making it impossible to handle complaints promptly.

"Swenson did several jobs for me every year until recently," said an architect the other day, "but I can't do business with him any more."

"Cheap skate?" I inquired.

"Not at all. On the contrary, he's a mighty square fellow, but it takes too much of my time pushing the job. He's so careless in his business methods, that he's always leaving out something in his bid and then shedding tears afterwards. Several times I have gone to the owner and begged him to pay up when I knew Swenson had made an error in his bid and was losing money, but you know I can't stand for that very often."

"When I go on the job," continued the architect, "Swenson meets me and takes my instructions most good-naturedly,—then promptly forgets all about them. He doesn't perfectly instruct his foreman, and I have to climb all over the building at every visit to make sure something is not forgotten. Swenson is an example," he went on, "of a great many contractors—men who are entirely honest and likable, but so careless in the way they handle their business that they cause almost as much trouble on the job as a cheap skate. A little better organization would prevent much of this annoyance, and the contractor might make more money because he would not suffer for so many mistakes."

In Chicago, a well-known brick concern has made a great hit with architects by a very simple little stunt. A bricklayer is kept "on demand" at one of the yards to show customers how the various kinds of brick look laid up in different joints, a convenience greatly appreciated in these days of new ideas in brickwork. Any contractor can take a lesson from this,—little improvements in service helpful to the harassed architect will certainly put any contractor on the map, and increased business is bound to be the result.

An Architectural Competition Arranged by a Contractor

THE following notice with accompanying program for an architectural competition, was sent to a number of San Francisco and Oakland architects by P. J. Walker, a San Francisco contractor. How near this program complies with the rules of the American Institute of Architects, the reader himself may determine:—

Several architects who have solicited the architectural work in connection with the Stockton Savings Bank have been so insistent in their request that no architect be selected for this work without their having been given an opportunity to submit sketches for the proposed new building, that the owners have requested us to offer every one who has applied for this work an opportunity to submit sketches in a *sort* of competition.

You are therefore invited to submit a floor plan and two street elevations, together with whatever other drawings, including proposed bank interior, that you may care to submit for the following described building: One-story bank building situated on a lot having a frontage of 50 feet on Main street and 100 feet on Sutter street, being the southeast corner of the intersection of these two streets, in the city of Stockton.

For your guidance it is suggested that at the present time the bank feels that it will not require more than one-half of the floor space on the first floor for bank use, which use will require a public space, sufficient room for two bank officers, two double cages and three single cages, a private sound-proof office for conferences and vault space must be provided, and the bank arrangement so designed as to admit of expansion from time to time. It would be desirable to have the vaults arranged so that it might be possible to separate the commercial and savings departments of the bank. even to the extent of having separate entrances if necessary. The savings department at this time would not require more than one single cage. The vault should also be arranged with a view to making access possible after banking hours without passing through the banking room proper. This might be accomplished through the separate entrance suggested for savings.

Space not devoted to the bank is to be arranged for most advantageous renting and to this end it is suggested that Main street offers the best rental per front foot. It is imperative, however, that the main entrance to the bank be on this street. The bank officials contemplate requiring the entire floor space of this building for banking purposes. Owing to the high water level at times, it is proposed to have basement only under the building proper and to a depth of 6′ 6″ in the clear. In addition to this basement a small area way should be provided to extend to the curb line, having sidewalk doors that will permit their use for service purpose to the basement.

The bank officers are undetermined as to the character of material to be used on the exterior and are open for suggestions on this point. They insist, however, that the cost of the completed structure shall not exceed $75,000.

Your drawings are to be sent to the Stockton Savings Bank on or before noon Monday, June 28th. The Board of Directors will privately make an inspection and will ask such of the competition as it chooses to interview, to appear before it at a date to be set, at which time detailed explanation may be made of the scheme contemplated. The decision as to who shall be engaged is to rest entirely with the Board of Directors.

The successful architect will be called upon to furnish completed plans and specifications, details for all of the work in the building, and will be required to superintend all of the modeling and pass upon the same, as well as to direct the decorating. Aside from this, the duties of taking bids, awarding contracts and superintending the work, will be performed by the writers [the P. J. Walker Co.]. The fee to be allowed for these services is to be three and one-half (3½) per cent of the cost of the building.

HALE BROS.' DEPARTMENT STORE BUILDING, SAN FRANCISCO
Reid Bros., Architects

Store Windows Entirely Free of Columns

By N. E. DAWSON *

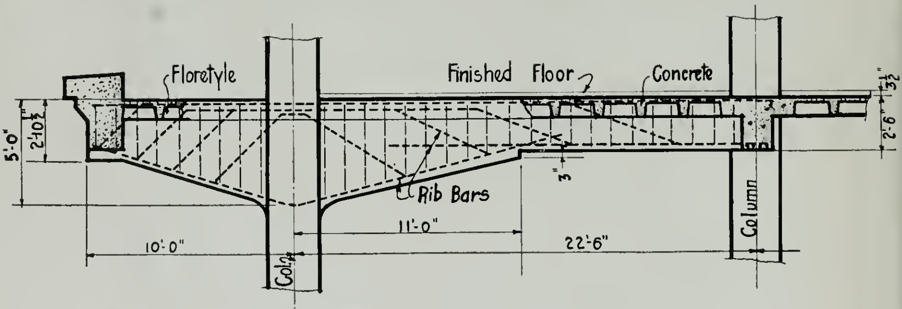
A STORE front with show windows entirely free of columns and an unbroken line of plate glass for display along the street,—this is the ideal towards which store managers and architects have been striving. Columns have usually been thought necessary in store fronts although efforts have been made to minimize them, by surrounding them with plate mirrors throughout their height.

In Hale Brothers' Department store in San Francisco, the problem has been completely solved, by the entire elimination of columns in the store front. Throughout the full width of the building there is one continuous expanse of plate glass, with only the narrow division bars between the windows. Fig. 1 shows the unobstructed window display, a feature of large monetary value to the owner of a department store.

This result was accomplished by a unique structural design. In this building the front row of columns is located 10 ft. back from the outside of the building. At every floor level there is a substantial cantilever extending out to the front wall to carry this wall and the floor loads in the front part of the building. In this way the entire front of the building is kept clear of columns for any height desired. In Hale Brothers' Department store the plate glass extends the full two stories of height on the street fronts. The attractiveness of the design, and the cantilever above the show windows are shown in Fig. 2. There is not a single obstruction from view and the window dresser is able to carry out his ideas without fear of a particular effect being spoiled, by large obstructing columns. This is particularly noticeable at the time of this writing, when spring and summer fashions are on display and the sidewalks crowded with interested shoppers.

* Illustrations by courtesy of Modern Building.

Fig. I UNOBSTRUCTED WIDOW DISPLAY IN HALE BROS.' DEPARTMENT STORE, SAN FRANCISCO



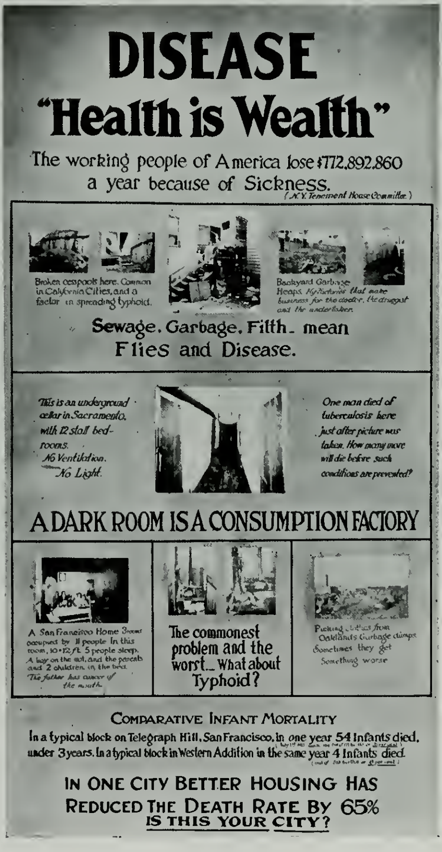
METHOD OF FLOOR AND COLUMN CONSTRUCTION IN HALE BROS.' DEPARTMENT STORE

Fig. II—SHOWING CANTILEVER CONSTRUCTION, HALE BROS.' DEPARTMENT STORE

Hale Brothers' Department store is 165 feet by 175 feet in plan, six stories and basement in height. The entire structure is of reinforced concrete, including columns, girders, floors, walls, pilasters, ornamental work, etc. The Kahn system of reinforced concrete is used throughout. The floors consist of long span, Floretyle construction with Hy-Rib ceilings and reinforcement of Kahn bars.

An important advantage of Floretyle construction is exemplified in this building in the installation of the sprinkler system. The piping for the sprinkler system is all concealed in the hollow spaces of Floretyle, which are closed on under side by attaching metal lath. Nothing appears below the plastered ceiling except the sprinkler heads at regular intervals. Compare this with the unsightly appearance of the piping required for a sprinkler system as it appears in most buildings.

Messrs. Reid Brothers were the architects of the building. Record time was made in the construction. From date of starting to wreck the old building on the site until the store was opened, covered a period of only six months and fifteen days.



One of the thirty-six panels in the Better Housing Exhibit prepared for the Commission of Immigration and Housing of California by Lewis P. Hobart and Charles H. Cheney.

City Planning and Housing

Edited by CHARLES HENRY CHENEY

Why Bad Housing Costs and Better Housing Pays

From a report on "Better Housing in California" by LEWIS P. HOBART and CHAS. H. CHENEY, to the Commission of Immigration and Housing of California, 1915.

II. What Bad Housing Costs *

"HEALTH is wealth," yet the New York Tenement House Committee found that because of sickness, the working people of America annually lose $772,892,860.

A great portion of this loss, which also entails waste and loss to the employers of these workers, is directly due to bad housing conditions. We know that a dark room is a consumption factory, yet there is no law in this state preventing the building of lodging houses or hotels in any city today, with 100 or more dark rooms.

Bad toilets, broken and neglected, or used by too many families, improperly ventilated, form another common problem and perhaps the worst. Typhoid and other diseases are still traceable to these conditions, largely because there is no inspection in most cities, of buildings after they are erected. Outside of Los Angeles there appears to be practically no "maintenance" inspection. Eastern housing commissions find this most essential.

The comparative infant mortality of congested areas shows the cost in another way.**

In the city of Liverpool the death rate in a badly congested district was actually reduced 65 per cent by tearing out the rotten old houses and rebuilding on the same site enough buildings to house the same number of people.

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* "The existence and progress of a republic depend upon the intelligence of the inhabitants. The greatest enemy of popular education is the slum. Its influence tends away from everything that makes for good citizenship. State aid for workingmen's homes is not only the use of money for the important work of promoting the general welfare by bettering social conditions; it is bound up and goes along with that activity for which this Commonwealth has stood pre-eminent,—the education of the people. The home environment is even more important than that of the school, as the State would no more be conferring a favor on the parent or a personal benefit on the child by insuring it a wholesome home than by insuring it a common-school education. In either case the State is safe-guarding its own future and promoting the general welfare."—From 1st Ann. Rep. of Mass. Homestead Comm., 1913, pages 48 and 49.

** Lack of milk, as in Massachusetts and other states, seems not to be much of a factor in infantile mortality in California. Though there has been a numerical increase in the number of dairy cows in California, the increase has not kept pace with that in population. Conditions in this respect, however, are as yet satisfactory, for there are over 200 cows to every 1000 persons.

There is a marked divergence in the infant mortality rates for different cities, with uniformly high rates for certain ones, especially Fresno, Sacramento, San Bernardino, San Jose and San Francisco, over the whole period covered. This prevailingly high rate points to the presence of certain fixed causes in those cities.

The following facts stand out:—

(1) Infantile mortality in California is higher than that in many of the countries in the list. Great improvement is possible.

(2) The rate of Letchworth, the English garden city, is very far below that of even the lowest of California cities. The relation of sanitary housing conditions and infantile mortality, and prospect of improvement in California cities is evident.

California's annual death rate is fairly low as compared with that of other countries. The newness of the country and the large immigration of young men and men in the prime of life is probably the cause of this lower death rate.

The greatly increased infant mortality and death rate as well as disease in congested districts shows that it would pay the community to guide building development and these people to better homes in new areas with restricted density of building.

Crime.—Does the criminal class come from sunny homes with plenty of play space? In Oakland, in one year, there were forty-two cases of juvenile delinquency in the small congested West Oakland district, where most of the bad housing exists. In the same time there were only five cases in the great residence district northeast of Lake Merritt.

In Philadelphia 90 per cent of the juvenile court cases came from bad environment.

Bad housing manufactures crime.

Where do the children grow, is the vital question for the future generation. It is for this reason that recreation centers and playgrounds for children have been given so much attention in the past few years. Where do the children play, is the first question that occurs to one examining the over-congested lots in San Francisco and other cities.

It is well established that congestion means more criminals. Is it not cheaper in the end to provide good housing with play space? The children of today will be the citizens of tomorrow.

Fire Horrors.—Every family in a city is entitled to reasonable safety from death by fire, and yet the fire marshals in our cities are continually protesting against wooden buildings improperly protected. The Tenement House Law has certain fire protections regulating new buildings, yet the flats alongside of them need not have those protections, because there is no state law for flats.

Four people were killed and ten injured in the St. Nicholas apartment house fire in 1913. The only fire escape was over the boiler room where the fire started. How many tenements are there in every city with such arrangements? Every time a thing like this happens the community get a "black eye." It costs not only in human lives, but in dollars and cents.

Good housing would permit no such fire horrors.

Alleys and House Courts.—While alleys are a seeming convenience to some cities, in nearly every city in this country they have sooner or later proved a menace to public health and safety. Lot owners, as property increases in value, will put small houses or convert old barns and garages on the alleys into living quarters, which are seldom if ever kept in decent repair. They only help to more seriously demoralize those who cannot help themselves and have to live in such places. Either cities must pass ordinances to keep the alley as a back door entrance only, or widen the alleys into real streets.

House courts are a new California problem—three or more individual houses on a single lot, with a common central yard. There are over 1500 registered house courts of three or more houses each in Los Angeles today.*

House courts have a distinct advantage over tenements, because they provide a separate entity or house for each family. Good house courts should be encouraged in place of tenements, but there are some bad house courts built, particularly in Southern California, which must be regulated.

California cities must be alert to this new problem.

What It Cost British Cities.—In England slums and tenement districts in many cities became such a serious menace to public health, that the cities for the public good bought the property, in order to tear down and destroy these infected rookeries and re-house in a safe way the people of the districts. In the past few years the principal cities of England have had to spend huge sums in

* From the records of the Los Angeles Housing Commission.

such work.* This should be an object lesson to all American cities. If California communities will plan now to prevent housing evils it will not be necessary to have to expend these sums. Preventive measures are always cheaper, and a little forethought can accomplish a great deal.

* * * *

Should Legislation Always Precede City Planning?

THOMAS ADAMS' article in the May number of The American City Magazine outlining the four stages of procedure in city planning, in which he points out that little can be accomplished that is definite unless we have enabling legislation, has called forth much interesting comment from city planners of the United States and Canada.

While a checking up of the elaborate plans and reports of many cities in this country undoubtedly shows very little of actual accomplishment for the reason that Mr. Adams states—the plans being gotten up by committees with little direct connection to the city government—the many estimable efforts in the past ten years have undoubtedly been of great educational value and seem to have convinced Americans generally that city planning is a most necessary part of proper civic advancement.

However, as Mr. Adams also points out, we are now beyond the point of merely talking about it, and are ready to begin real work. The Burnham-Bennett plans for San Francisco in 1905-6, the Charles Mulford Robinson plans and reports for Los Angeles, Oakland, Santa Barbara and several other cities, and many other estimable plans and reports have come to very little in California, chiefly because it was nobody's business in the city government to follow them up. They may be found filed away in the Public Library or inaccessible in the archives of some city hall or club. Most of the plans seem also to have been largely designed from the esthetic standpoint only and hence not to have appealed sufficiently to the practical business men who, after all, generally direct our city governments.

The California Conference on City Planning has first taken up this matter of obtaining the proper legal authority for city planning and is inclined to agree with Mr. Adams that little will be accomplished without such authority. The new California law for the creation of city planning commissions in all cities provides the first step in establishing in each city a permanent official body to make and receive plans with authority to check up every act of the municipal government that may or may not be in accordance with the best future growth. Many such commissions are now in process of formation in both the large and small cities of the state. Their work for the first year or so will be largely a matter of collecting data—making civic surveys, industrial surveys, housing surveys, and of finding

* English cities have spent from public funds in the rebuilding of slum sections:

Cities			Amounts
London (Lon. Co. Co. Rep. 1912)		Spent	$9,471,935
Liverpool (Munic. Yearbook 1911)		"	4,903,690
Leeds	"	"	2,500,000
Salford	"	"	1,409,635
Greenock	"	"	1,385,000
Wolverhampton	"	"	1,159,740
Edinburgh	"	"	1,005,810
Sheffield	"	"	755,895
Manchester	"	"	740,895
Swansea	"	"	642,700
Belfast	"	"	168,500
Plymouth	"	"	107,927

These huge sums were spent for lack of planning ahead to prevent bad conditions. By planning now California cities can largely avoid such a tax.

BIRD'S-EYE VIEW, WEST SACRAMENTO, CALIFORNIA
LEWIS P. HOBART and CHAS. H. CHENEY, ARCHITECTS

out all the facts about their parks, schools, railroads and particularly city finances. Only when this data is complete will they be ready to make a definite city plan and submit it to the city for ratification.

Pennsylvania and other states have already passed laws such as they have in Germany, providing that after a city plan for the future is once adopted, showing new highways, streets, parks and other improvements to be made by the city by condemnation or otherwise within the next generation, no private owner building within the mapped areas of the proposed streets or improvements shown on the city plan may receive compensation for them from the city later when these areas are condemned. California cities will probably want to go to the Legislature of 1917 with such a law and other laws for the protection and enforcement of the city plan.

The following are two interesting letters, from The American City of June, in regard to Mr. Adams' article:

To the Editor of The American City:

Thomas Adams never fails to be interesting and stimulating when he writes on town planning. Both these qualities characterize in marked degree the brief article which he contributed to your May number.

To his four stages of procedure I take no exception as an ideal program. I think, in fact, we should all feel indebted to him for calling attention so forcibly to what the ideal program is. But in a democracy it is not always practical thus to obtain, in advance of the interest of the people, legislation that would be so desirable. We cannot enact laws and afterwards get the people interested. We must, very often, arouse public interest, and create public demand before a legislature will give powers and delegate authority.

Toward the creation of this public interest and demand, especially with reference to financial measures, the very preparation of plans may contribute much. A group of citizens who have been unmoved by appeals for the endorsement of measures designed to facilitate the finacing of some plan that is yet to be made, may become eagerly enthusiastic in behalf of a concrete scheme definitely presented. Through the necessity of adopting such an order of procedure, some plans, or parts of plans, may, as Mr. Adams says be sometimes blocked; but with the broadening powers of our cities, it is doubtful if many plans fail on that account.

It should be noted, also, that the volume of town planning legislation has been growing very rapidly of late on this side of the ocean. That fact narrows to a steadily decreasing group the number of cases to which, legislative authority being still lacking, Mr. Adams' discussion alone applies.

Such cases are coming more and more to represent only the unimaginative and conservative community which must first "be shown." For the more alert in the citizenship of such communities to postpone the securing of any plans until they had been given legislative authority to carry them out, might mean delays indefinite and most disastrous.

CHARLES MULFORD ROBINSON.

Rochester, N. Y., May 10, 1915.

To the Editor of The American City:

I think Mr. Adams is mistaken in his conclusions regarding the procedure in city planning in a democratic country, as concerns legislation.

I believe it necessary first of all to present to the public in comprehensible form, and in such a way as to arouse interest, the things that it is desirable to have carried out.

E. H. BENNETT.

Chicago, May 11, 1915.

* * * *

The Seventh National Conference on City Planning at Detroit

THE Seventh National Conference on City Planning, held at Detroit, June 7-9, marks a notable advance in city planning in this country, writes John Backus Williams. The first conference was held in 1909. At that time there was only one permanent city planning commission in this country—that at Hartford, Conn., appointed in 1907; now there are over a hundred.

In the period preceding the first conference, city planning was governed almost entirely by esthetic considerations; much of its inspiration, coming from the World's Fair at Chicago in 1893. That was the period of projects for magnificent civic centers. The conference of 1909, and all subsequent conferences, have been devoted almost entirely to the economic and social aspects of city planning; and our legislation and achievement, and the public sentiment back of them, are now to such an extent practical that the phrase "city beautiful" once a popular summary of all that city planning stood for, is now no longer descriptive or accurate. But at the session just held at Detroit, the conference, believing in the importance of due attention being given to the appearance of our cities, and feeling that the conference had been neglecting these considerations, and that the public was in danger of forgetting them, devoted one of its eight sessions to civic design.

Most essential to the progress of any cause in a democracy is public education. At the first city planning conference in 1909, the suggestion was made that city planning exhibits were perhaps the most effective method of stimulating public interest. The first exhibition in this country that could claim to be at all comprehensive was held at Philadelphia, in connection with the city planning conference in 1911. Since then there has been the New York city exhibit in 1913, much of which was later shown in many cities as a traveling exhibition by the American City Bureau and has journeyed as far as Chile.

Nor is the city planning exhibition the only line of educational progress in this period. In 1909, Harvard established a course in city planning, and several colleges have since followed suit. Chicago is teaching city planning in its public schools. Nor should I fail to add, continues Mr. Williams, that a meeting of delegates from twelve national organizations—including real estate, building, fire prevention, engineering and civic associations—was held on the second day of the Detroit conference to form a league to promote public information on the subject of city planning.

How much of the credit for all of this progress is due to the National Conference on City Planning is of small consequence. It is, however, important to recognize the fact that the conference during its seven years of existence has been active and efficient in this notable progress of city planning in this country along right lines.

The Michigan State Housing Institute, in order to take advantage of the sessions of the city planning conference, and of the services of some of the speakers at that conference, held a meeting on the day following. Delegates, not only from Detroit, but from a number of Michigan cities were present and took part in the discussions.—The Survey.

* * * *

A Warning for Would-Be City Planners

Architects and engineers prone to try their hand at city planning will find food for thought in Mr. George Burnap's article on Park Design and City Planning in The American City Magazine for June. Landscape architecture is undoubtedly as highly a specialized province as that of architecture or civil engineering and the following taken from this article seems timely:

In view of the importance park design bears to city building, and in order to put the subject in concrete form for the consideration of city officials, the following recommendations are submitted:

First: That the park development be regarded not as incidental to, but commensurate with, city planning. Although fundamentally park design is but a part of city planning and should be subordinate to it, actual practice shows the two to be mutually dependent. City planning projects are rarely inaugurated until a certain degree of interest has been aroused by means of park work. Cities or towns having acquired a taste for parks, frequently in the desire for additional parks, find themselves launched on a campaign for city planning—a reasonable sequence. It is proper, therefore, inasmuch as proposed city projects are the result of a previously existing appreciation of parks, that this initial means of instilling interest should be fostered. In a campaign for city development or city beautification, a certain generous per cent of the fund raised for that purpose should be devoted to the development of already existing and proposed parks, with the intent of making some immediate display as a means of encouragement. A few parks completed, which may be pointed out as the first result of the city planning campaigns will serve as a powerful aid in soliciting further contributions to the cause. Instead of expending all available moneys for the staking out of the main lines of the new city plan, it will often be found to be more prudent, even if somewhat more expensive in the long run, to devote a portion of the moneys to some development which may be enjoyed by the present generation; and the parks are usually one feature which may be commenced in accordance with the lines of the "big scheme" which will aid and not jeopardize its final accomplishment. A simultaneous advancement of city planning and park building is recommended.

The Type of Expert Service Needed

The second recommendation is that adequate attention be given to the designing of parks. The reports of civic experts and civic advisers usually are concerned with the very broad aspect of the locating of parks, and their recommendations are general ones relating to the acquisition of sites. When the estimable advice of the expert has been followed and the several potential park tracts have been purchased in accordance with a mapped-out plan of the future park system, the city administrators find themselves in a quandary as to the next step, and often discover that what appeared to be a very comprehensive report, and even one of much detail, was in reality merely a point de depart.

The large number of ably prepared city planning reports enthusiastically published by various cities within the last few years and immediately allowed to fall into the limbo of supposedly impracticable projects, have brought home to the city planning experts the futility of too general recommendations; and we find many of them today including quite definitely drawn park plans as a part of their recommendations. Such well-meant effort on the part of others than competent landscape designers is questionable, however; for, although many civic experts have had sufficient academic training in design to enable them to prepare park plans, after a fashion, those who are not architects would never acquiesce in the comparable task of submitting detailed designs for the buildings about proposed civic centers. Exactly as the landscape architect, though capable in a general way of advising civic boards on the design of their city, cannot rate with the civic expert who by special training and research has fitted himself to undertake such work, the civic advisor should not expect to undertake actual park design without training in the subject.

Architects, likewise, who may have been successful in general civic architecture, and have achieved some special distinction in the composition of civic groups, frequently set themselves up as city planners. Cities should hesitate in accepting their advice on problems of park design except in its architectural aspect. A reputable architect appreciates that his point of view is prone to be disproportionately architectural, and hesitates to prepare park plans without the association of a competent landscape designer; and the architect who poses as capable in all lines is usually a Jack-of-all-trades, capable in none. Due to the unexpectedness with which the demand for civic planning has come upon America, a temporary lack of special trained men has occurred, with the result that candidates from all the allied professions have aspired to present themselves as qualified for the remodeling of the city. And we read in a recent book: "To secure the best results in city planning, a competent civil engineer should be placed in charge of the work and be given sufficient time to make a thorough study of the city and its needs from an expert point of view. He should evolve plans which will meet its requirements and enable it to develop along the best lines."

In the confusion of the present moment, therefore, when men of all professions, including occasional nurserymen, are presenting themselves as civic experts capable of designing or re-designing entire cities, the parks which are the forerunners and forecasters of city design are apt to fall a prey to the first man "on the job." It behooves the cities, therefore, to guard against incompetence in this respect, for a park thus designed is worse than one not designed at all; a design executed, no matter how execrable it may be, is rarely changed. The second recommendation, therefore, is that parks shall be considered as demanding attention beyond that accorded them in civic expert reports, but on the other hand shall be protected against the many incompetents desiring the opportunity of "developing" them.

The World's Costliest Apartments

IT is a well known fact that fabulous sums are annually paid as rental for fashionable apartments in some of the large cities of the country, San Francisco not excepted. One which is said to have fixed the high water mark in rentals occupies an entire floor in a 12-story building at the corner of Fifth avenue and 81st street, New York city. Some may ask what should make an apartment worth a rental of $25 000 a year, and in reply it can be said that for one thing the building in question is located on the most costly land available for such houses and the other reason is that it contains every known device to render life safe and comfortable. The site of this building contains 12,800 square feet and the land is worth something like $100 a square foot, the property representing an investment of over $3,000,000, which, divided among the twelve floors, means $250,000 a floor.

For the purpose of showing the general arrangement of the rooms in this high rental apartment a typical floor plan is shown. A few moments' study will show what a labyrinth of rooms there is and what an army of servants is necessary to look after the needs of a private household occupying a single floor. It will be seen that there are two passenger elevators to serve the tenants and these are a solid case of metal lined with French walnut, exquisite in grain and finish.

Stepping from the elevator one finds himself in an outer corridor or hall, from which he enters a vestibule with floor of marble but walls paneled to the ceiling with English oak treated in such a way as to give a subtle blending of green and gray and brown. Beyond the vestibule is a conservatory 15 x 34 feet, windows along one side admitting light from the central court, which is 32 feet square and faced entirely with mat-glazed tiles to increase the reflection of light. At the front of the house are living room, dining room and billiard room with fireplaces in the first and last named.

Perfection of detail is one of the big items in boosting the rent of this apartment. For example, every bit of hardware was gold plated before it was put in place, and this was done for a double purpose. Gold does not tarnish and the fixtures will not, therefore, need to be polished but simply to be wiped with a dry soft cloth. This prevents the marring or discoloring of the wood in which the fixture is set. For the side lights in many of the rooms the brackets are of solid brass, gold plated. In the dining room they are silver plated on white metal. All radiators are concealed inside the paneled sections below the windows, the heat escaping through grated openings. Outside the paneling there is a little button at the end of a tiny brass handle not more than an inch long. This turns in a circle from one to another of four diminutive brass knobs no larger than shoe buttons. This little brass handle makes it possible to regulate the valve which admits steam to the radiator so that one can have four different amounts of heat.

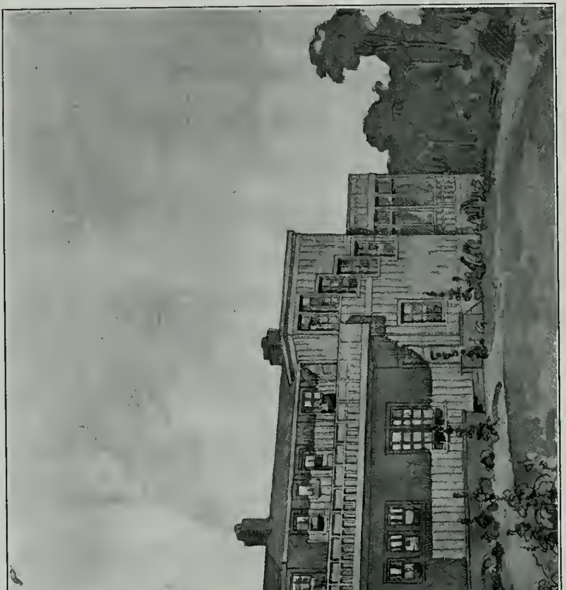
The casement window above the radiator is another feature. In the wooden frame next to the casing there is a gold plated lever. When the lever is turned upward the entire window moves up an inch, which brings it clear of the window sill. The usual knobs, also gold plated, are then turned and the casement opens quite according to the poetic tradition.

The dining room, measuring about 20 x 28 feet, is a perfect example of the Seventeenth century Adam rooms. The walls are solid paneled with five ply veneer wood to prevent warping or splitting. The walls are covered

FLOOR PLAN OF THE WORLD'S COSTLIEST APARTMENT HOUSE

with nine coats of paint as carefully as the work of finishing an automobile body is done. There are three tones used to differentiate the various moldings and panels. The broad surfaces are in the palest of French grays, some of the moldings are white and the rest are just off the white. The mantel is of white marble, clouded with gray, and the lighting fixtures are silver plated.

From a private hall leading from the vestibule one enters the sleeping rooms on the 81st street side. Most of these have private baths; all of them have closets, and in the wall of each closet is built a jewel safe with the usual combination lock for safeguarding the family jewels.

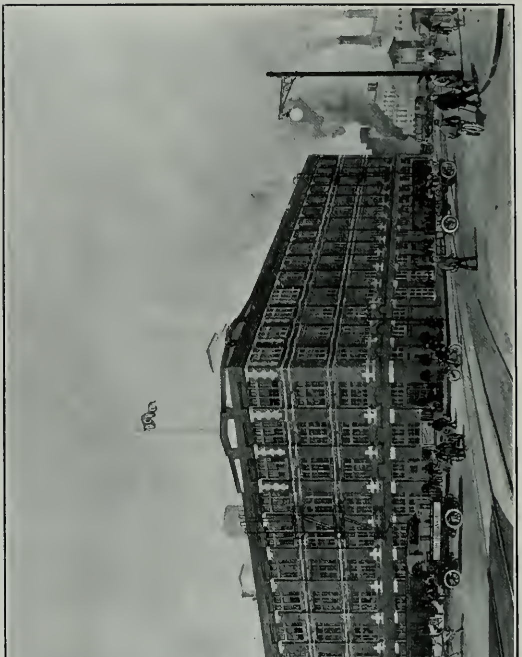


HOUSE FOR DR. MALCOLM GODDARD
IRVING F. MORROW, ARCHITECT

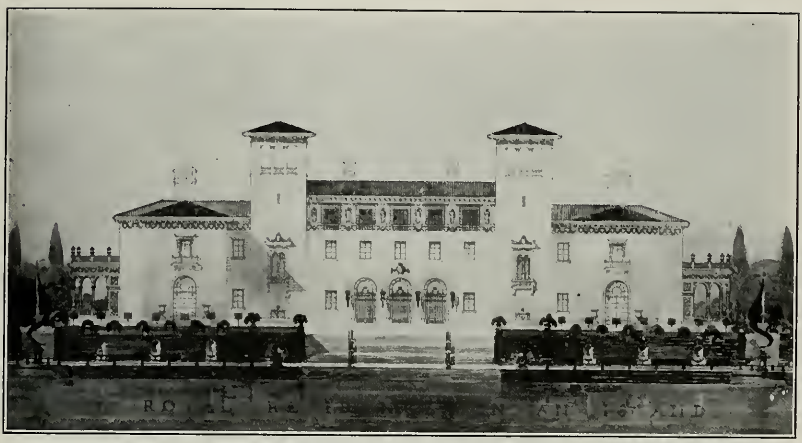
A Few Selections

From the

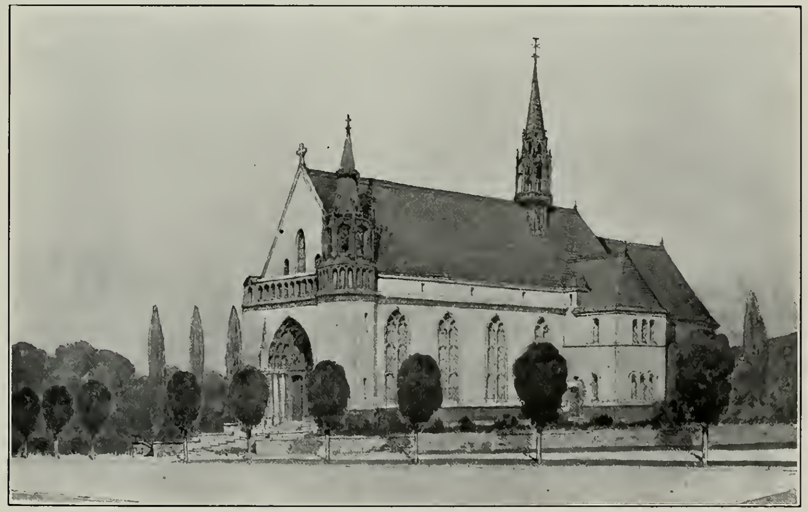
San Francisco Achitectural Club's 1915 Year Book



BUILDING FOR DUNHAM, CARRIGAN & HAYDEN
LEO J. DEVLIN, ARCHITECT



A ROYAL RESIDENCE ON AN ISLAND
A. J. Loubet, Atelier, University of California



STUDY FOR A CHURCH, SAN FRANCISCO
Lewis P. Hobart, Architect

BOARDMAN RESIDENCE, OAKLAND
WILLIAM KNOWLES, ARCHITECT

RESIDENCE FOR CHARLES TEMPLETON CROCKER
Willis Polk & Co., Architects

RESIDENCE APARTMENTS, SAN FRANCISCO
W. G. Hind, Architect

William Robert Ware, Organizer of First American School of Architecture

By A. D. F. HAMLIN, Columbia University

TO Prof. William Robert Ware, who died at his home in Milton, Mass., on Wednesday, June 9th, in his eighty-fourth year, the profession of architecture in the United States owes an incalculable debt, which those who have grown gray in the practice appreciate as the younger generation of architects cannot. For the older men among us have memories reaching back to a time when our art and our profession were struggling for public recognition under conditions inconceivable to our younger colleagues; and we know how fundamental and how far-reaching in its influence was the part played by Professor Ware in lifting architecture out of the slough and setting it upon the road of intellectual and artistic progress.

He was the organizer of the first American school of architecture—that of the Massachusetts Institute of Technology in 1866—and later of the school of Columbia University (1881), and was for thirty-nine years the most conspicuous and widely known of all educators in this field. He was one of the first and most persistent agitators for the reform of architectural competitions, and conducted, or was adviser for, a greater number of these than any other architect, especially during the period 1880-1900. In these labors he contributed not only to the reform of the procedure and conduct of competitions, but also to the education of architects and public alike in those ethical-professional principles the disregard of which has given rise to so many notorious scandals. On one or two occasions his open-hearted trust in the fundamental honesty of mankind was imposed upon, to his infinite surprise and grief; but in general he was eminently successful, and it is safe to say that it was he who laid the foundations on which the American Institute of Architects has built up its efficient regulation of competition-practice. Called upon repeatedly as consultant in important architectural enterprises, he always exerted his influence for the support and enhancement of the highest standards, while his extensive correspondence with an extraordinarily wide circle of acquaintances among architects provided another channel, invisible to the public, for the exertion and extension of this influence. Professor Ware was one of the earliest members of the Institute of Architects, which he joined as Associate in 1859, becoming a Fellow in 1864, and through this connection, as well as through the two schools of which he was the organizer and head, he came to know nearly every noted architect in the country.

In the actual work of architectural design and practice, his contribution was secondary to his educational and personal activities; one instinctively thinks first, in this field, of such names as Richard M. Hunt, H. H. Richardson, and Charles F. McKim, who exerted a tremendous influence on the progress of architectural design in America directly through their works and offices. Most of Professor Ware's work as a designer, in partnership with the late Henry Van Brunt, was done between 1865 and 1880, before the modern movement in American architecture was fully under way. It was as an educator that his greatest work was accomplished. To him, more than to any other man, are due the form and direction which the professional training of architects has taken in this country. This is not to disparage the labors and influence of other great teachers and agencies; but Professor Ware was the pioneer, and first at the great school in Boston from 1866 to 1880, and then at Columbia from 1881 to 1903, he organized schools, framed curricula, and formulated principles and ideals which, in whole or in part, in essence or in detail, have afforded models which nearly all other American schools have been glad to follow.

In all these labors he stood always for the highest standards of liberal education, believing that the architect should be trained to think as well as to draw, to design with the mind as well as with eye and hand, to have ideas as well as express them; to be acquainted with the great monuments, ideals, and men of the past and the forces and movements which produced them, as well as with the latest products of the Ecole des Beaux-Arts. He was a sturdy believer in American architecture as destined to stand on its own feet and follow its own path, assimilating without servile imitation what was best in modern European ideas, as well as in the great historic past of the art. He himself represented the fine flower of New England culture; he was the son of a distinguished Unitarian divine, was educated at Harvard (College and Lawrence Scientific School), studied his profession under Richard M. Hunt, travelled extensively, was long a member and the active secretary of the Archæological Institute of America, was an omnivorous reader, and an intellectual inspiration to all who came in contact with him.

To the great host of his former pupils and associates Professor Ware's memory will undoubtedly be chiefly precious by reason of this broadly sympathetic personality. He was less a pedagogue than an inspirer of men. His lectures were often rambling and discursive; they were never reduced to writing and followed no carefully prepared syllabus. But they were full of suggestion, mind-openers, breaking windows, as it were, in the walls of his subject, through which the student glimpsed other and wider fields of knowledge. Philosophy, ethics, religion, literature, history, educational theory, in these and many other subjects he awakened new interest, and many a student has him to thank for revealing a world about him to whose beauty and majesty he would otherwise have been blind while treading the humdrum path of professional routine.

Professor Ware was never married. The great stores of affection of his tender and unselfish heart found their outlet in friendships of a peculiarly warm and devoted character, not only with men of his own generation, but also with young men, whether his pupils or junior associates, to whom he was a father, a brother, a counsellor, a comforter, and a welcome companion. To all this host his death has come as a personal affliction, an irreparable loss. It is not likely that there will ever arise another to occupy a position precisely like his, to do a work like his, or to leave behind him in the profession a memory so fragrant, or the record of a life and career endeared to so many as the record and memory of this strong but most gentle, pure, and lovable personality.

Will High European Taxes Drive Money and Men to America?

THE per capita debt of European nations was already vastly greater than that of America before the war. Europe's public debt at the close of the war will be the most colossal in the history of nations. The effect of the consequent high taxes upon industries has been much discussed, but we have seen no mention of one result that seems inevitable. We refer to the immigration of workmen as well as capital from Europe to America after the war.

Almost every European nation collects a very large part of its revenue by taxation of incomes. The tax falls heavily upon "unfunded" as well as upon "funded" incomes, upon the small as well as upon the large. Whether an income be from an investment or from a wage, a substantial part of it goes to the government. Hence the European worker, as well as the European capitalist, now faces a situation of the gravest economic aspect.

Many financial experts have been astonished because European investors have not hastened to sell their American securities. It was fear of such "liquidation" that led the New York Stock Exchange to close its doors eight months ago, and the same fear led also to the adoption of a "minimum price schedule" when the exchange opened again in December. The other day the restriction as to "minimums" was removed without causing the slightest flurry. It now seems that the fears of American stock brokers and bankers were without foundation.

Instead of seeking to withdraw capital from investment in America there is reason for a flow of investment capital to America. The pressure that will first cause this flow will be the greatly increased taxes resulting from the war.

Where money goes there go men, but even if money does not go in advance of men, still men will leave Europe in greater numbers than ever before. America has always been the land of promise, the world's El Dorado. When, in addition to this lure, there comes before European workmen a full realization that the tax gatherer is about to reduce his already meager wage, can it be doubted that America will look more attractive than ever? May we not anticipate an exodus from the old countries such as has never been witnessed before?

Let us consider another factor that will have its influence in causing the exodus. If that shoestring of land between North and South America had been broken by nature a thousand years ago, instead of by man a few months ago, the Pacific Coast of this continent would probably have been as densely settled as the Atlantic Coast now is. Indeed, there are reasons for thinking that New York might have been located at the Golden Gate or on Puget Sound. Climatically the Pacific Coast is more attractive than the Atlantic. Of natural resources there is wealth enough on the Pacific to support fiftyfold the present population.

The coal of the Atlantic seaboard finds its equal in the fuel oil and waterpower of the Pacific. In fact, the latent power in the snow summits of the Sierras and the Cascades is vastly greater than that in all the "fossil sunshine" of Pennsylvania. An acre of bean land in Los Angeles County sells for $1,000, and the price it brings is only the capitalized annual income from several crops of beans. Citrus lands at $5,000 an acre make it evident that the Golden State holds its title, not merely because of its baptismal name of '49.

In seeking to find some fault with the natural resources of the Pacific, a New Yorker remarked to his Seattle cousin:

"But you have no lobsters indigenous to your coast."

"We have Dungeness crabs, however, that make a taste for lobsters seem like the perverted appetite of a Digger Indian for clay."—Engineering-Contracting.

Value to Architect and Contractor of a Good Bank Connection

TO those engaged in the building trades, whether as architect, contractor, sub-contractor or material man, there is no more valuable aid in business than a good bank connection.

The popular impression of a banker is that he sits behind his desk and figures how much he can safely charge for loans, and is often likened to the spider lying in wait for the unwary fly. In the days of the usurers this might have been true. The modern banker is entirely different both in his private and public life. He is the business counsellor of his community, ready and willing at all times to extend a helping hand to those who are trying to help themselves, bearing in mind, however, that he is the trustee of the money entrusted to his care. His assistance, therefore, must be compatible with safety. In dealing with men, he becomes a good judge of human nature. The loans he makes might, to some, seem risky, whereas with his knowledge of the honesty and ability of the man to whom the loan is made, it is often safer than many that have collateral behind them.

The man in the building trades who establishes a reputation with his banker for promptness and integrity, not only secures credit, but character and moral backing that will bring him business, and plenty of it. For this reason it is wise for the contractor to go to the banker for financial assistance rather than to allow the material man to advance him money, or extend credit under terms that will tie the contractor, hand and foot and prevent his buying where he could do so more advantageously.

The establishment of a good bank connection, the prompt payment of obligations, not only insures independence in buying but also opens up an avenue for extended credit for larger undertakings because the bank has confidence in the ability of the contractor to carry through the project. A bank connection of this character gives the man in the building trades a standing in his community no other agency can procure for him. His bank is a ready reference at all times, and the man who deals squarely with his bank and with the public will find that he is not only trusted, but he is sought for by those who wish to build because they know they will get what they pay for. This reputation not only helps a man in business, but extends to his family, the members of which are respected because of the good reputation of the head of the house. It can be seen that the business man who forms a good bank connection, no matter how small his account may be, is building for himself better than he knows. Once started on this right road a man having any self-respect will keep it, thus justifying the faith placed in him by his banker and his friends.

For these reasons, says a writer in the Contractor and Builder, one of the fundamental factors of success in business is the establishment, on right lines, of a good bank connection. Some may say: "Oh my business is too small; my account would not amount to anything." That is erroneous. If a man opens a checking account he has receipts for all the payments he makes. He will be careful to maintain a balance, no matter how small, and will, therefore, be economical whereas he might otherwise be improvident. Besides his balance he will find at the bank sympathetic interest in his business and invaluable assistance when the time comes to need it. The banks of to-day are the backbones of business. Through their judicious handling of money the community they serve prospers and goes ahead instead of retrograding or standing still. They are the clearing houses for legitimate energy and those who manage them have a full realization of their responsibility.

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A COMPETITION WITHOUT SANCTION OF THE A. I. A.

There has been much adverse comment among the architects of San Francisco and Oakland regarding a so-called competition recently conducted by a well-known San Francisco contractor. A program, or an apology for one, was sent out to a few favorites and they were asked to submit a design for a bank building to be erected in the city of Stockton, at a cost not to exceed $75,000. The bank people were to comprise the jury of award. The rules of the American Institute of Architects, it seems, were lamentably disregarded. At the first glance it is difficult to conceive how an architect of standing in the profession could enter a contest under such conditions. We are pleased to know, however, that not all the architects who were invited to enter this competition availed themselves of the opportunity. On the contrary, some of them promptly and vigorously entered their protest. The matter was reported to the San Francisco Chapter of the American Institute of Architects, and it is expected that this body will take proper action.

According to the standard form of competitions adopted by the American Institute and by which members are supposed to be governed, whenever a competition is held, the names of the competitors must be given; there must be a professional adviser; there must be a jury report; all drawings must be submitted anonymously; communications must be provided for; the cost and cubage must be stated; there must be a limit to the number of drawings; the architect's compensation should be based upon full commission of 6 per cent. These are a few of the conditions made mandatory by the Institute in the conduct of competitions. But none of them appear to have been satisfactorily incorporated in the program.

An architect, who is familiar with the conditions, offers this helpful comment, which the profession may well take to heart:

"Stockton has in the last few years had some notoriously unfortunate experiences with a certain type of fly-by-night architects.

"In the case referred to above, after the decision had been reached to erect a building, there was an unseemly scramble among a number of architects who hounded the bank directors until they agreed to give all a hearing.

"The directors then decided to employ a certain contractor upon the cost-plus-a-percentage basis, including superintendence, and announced a date for receiving sketches of those who had applied for this privilege; the payments to the architect chosen to be in accordance with the charges of the Institute, with a minor modification.

"The trouble lies in the willingness of architects to submit sketches free, and it never will be remedied until this point is firmly settled.

"For years committees in the Chapter have reported on the evils of 'free sketches,' but so far no action has resulted.

"If the members of the Chapter will agree among themselves to stop it, the profession will reach a higher plane in the community."

PROPER HOUSING A NATIONAL MOVEMENT

While the larger cities move more slowly or not at all, those of smaller population but with more youthful enthusiasm, are taking up many movements that make for right living. The people of Texas are in earnest in their consideration of the housing problem in the cities and on the farms of the state. Those of Michigan are pointing with pride to Grand Rapids with its absence of a "slum district," and a national movement seems to be well under way among the people generally to establish those conditions that will reduce disease, immorality and degeneracy to a minimum. This movement extends from the crowded slums of cities to the small village and the farm. Some states, like Minnesota, make it a part of its constructive program to make farm life more attractive by supplying ideal plans for farm buildings and their surroundings. The backyards of the village cottage is no longer a depository for old cans and other rubbish. This leads to a desire for better design and arrangement in houses, the planting of trees, the improvement of roads. Western Architect thinks that whatever the pessimist may say, the entire trend of American life today is upward in movement toward a more healthful manner of living.

MODERN BUILDING DETAILS

What the present-day architect, engineer and builder have to contend with in their respective pursuits is clearly outlined in an analysis of the materials entering into the construction of a modern office building made recently by a technical writer. Using the Singer building of New York as an illustration, he made the following comparisons:

In this building there are 136 miles of piping of various kinds; enough electric wiring (3,425 miles) to reach across the sea to the top of the Eiffel tower in Paris; steel enough to reach to Buenos Aires (7,100 miles) if made into three-quarter cable, or to build 125 Mogul locomotives, and 101 tons of sheet copper, nearly five acres in extent.

The Singer building, not the largest by many, has over eight acres of terra cotta floor, and contains bricks enough (5,033,800) to pave a footpath twelve inches wide from New York to Boston. There are 13.3 miles of picture mouldings, and 47 miles of moulding on doors, windows, etc. The mortar in the masonry 14 inches wide and one inch thick (5,541 tons) would build a cement path from New York to Washington. The paint used on and in the structure (197 tons) would cover a six-foot board fence extending from New York to Springfield, Massachusetts.

There is enough glass in the building (85,203 square feet) to make a show window six feet high on Broadway from Liberty street to Thirty-fourth street. Nearly six acres of metal laths support the plaster, and are, in turn, held firm by 50 miles of angle iron with 130 miles of wire and 110,000 bolts.

Lamps to the extent of 278,000 candle power are installed in the building and the boilers of the power plant generate yearly 150,000,000 pounds of steam by boiling 18,000,000 gallons of water with 8,000 tons of coal. The elevator cars travel yearly a distance equal to four times the circumference of the earth.

With the Architects and Engineers

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(ORGANIZED 1857)

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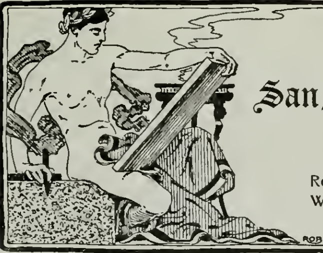
Medals for Polk and Bennett

Recognition of their services in laying out the ground plan by which the Panama-Pacific exposition palaces became a superb architectural unit, has been extended by the directorate of the enterprise to Willis Polk of San Francisco and Edward H. Bennett of Chicago. Silver medals are the tokens given the two architects.



San Francisco Society of Architects

Regular Meetings Second Wednesday of Each Month

President	Frederick H. Meyer
Vice-President	Charles Peter Weeks
Secretary and Treasurer	J. Harry Blohme
Directors	John Bakewell, Jr. and Herman Barth

Another Oakland Theatre

Architects Cunningham & Politeo of San Francisco, are preparing plans for a Class "A" theatre to be erected on the southwest corner of Eleventh and Franklin streets, Oakland, for the James Moffitt Estate Company. It will be the largest and most modern moving picture theatre on the Pacific Coast, having a seating capacity of 4,000 persons. There will be but one balcony, which will be reached by an incline passageway, instead of the customary stairway. Construction will be entirely of concrete and steel, and a feature will be the lighting equipment, the indirect system being used both inside and out. The facade of the building will be illuminated in much the same manner as the Exposition buildings. The estimated cost is $175,000.

Architects Move

Francis W. Reid, architect, has removed from Concord to 1725 Sixth avenue, Oakland, where he will be pleased to receive catalogues and other trade literature from architect and engineer advertisers.

A. W. Burgren has temporarily moved his office from the Holbrook building, San Francisco, to his residence address at 30 Woodland avenue, San Francisco.

Architect D. J. Patterson has moved his offices from the Mechanics Institute building to rooms 501-502 Maskey building, San Francisco.

W. H. Toepke Busy

William H. Toepke, of Havens & Toepke, Maskey building, San Francisco, has recently let a contract for the construction of a three-story and basement apartment house on Seventeenth street, for J. C. Bernal. There will be twelve apartments, the estimated cost being $14,000. Mr. Toepke has also prepared plans for a one-story reinforced concrete garage at Powell and Union streets, San Francisco.

Personal

John T. Vawter, architect of Los Angeles, is visiting relatives in Indiana. He plans to engage in special study and research work at the University of Illinois.

Albert R. Walker and J. J. Backus, city building superintendent, were nominated and endorsed by the Southern California Chapter for Fellows in the American Institute of Architects. This action was taken at a special meeting of Southern California Chapter.

Architects Joseph Bell DeRemer and Henry H. Hewitt announce that they have formed a partnership for the practice of architecture. They occupy the present offices of Mr. DeRemer, 624 Title Insurance building, Los Angeles. Mr. DeRemer is from Grand Forks, N. D. Mr. Hewitt practiced in the East and for some time was associated with Oliver P. Dennis. The firm of Dennis & Hewitt has been dissolved.

Addition to Palace Hotel

Architect George W. Kelham, San Francisco, is preparing plans for a seven-story Class "A" addition to the Palace Hotel. There will be 300 rooms. The original plans of the Palace were prepared by Architects Trowbridge & Livingston, and Mr. Kelham was in charge of construction. The addition now to be built was part of the first scheme. The foundations and first story only were built.

A. I. A. Convention in October

The American Institute of Architects has decided to hold its next convention on the Pacific Coast—in October—and sessions will be held both in San Francisco and Los Angeles. Entertainment committees have been appointed by both the San Francisco and Southern California chapters.

Engineering Contractors Hold Anniversary Meeting

Pacific Coast Society of Engineering Contractors held its first anniversary meeting and banquet at Hollenbeck Cafe the latter part of June. Representatives of about forty firms engaged in highway, street, bridge and other branches of engineering contracting were represented, together with the following guests: Road Commissioner Frank H. Joyner, Los Angeles county; S. H. Finley, chief engineer of the Orange County highway commission; Geo. M. Pearson, chief engineer of the Riverside highway commission, and Shirley Bright, Jr., chief engineer of the San Bernardino county highway commission. State highway engineers, who were invited, were unable to attend.

Architect of Alameda Hospital

Editor The Architect and Engineer:—

In the article on page 69 of the June issue of your magazine, you credit me with having designed, among other hospitals, the Alameda hospital. This is an error. When you mention the Alameda hospital, the reader must infer reference to the Alameda Hospital and Infirmary now in course of construction, and designed by Mr. Chas. P. Weeks and not by myself, although I took part in the competition for the same.

I will appreciate it if you will kindly make this correction in the next issue of your magazine.

Yours very truly,
HERMANN BARTH.

[We were under the impression that Mr. Barth had designed a private hospital in the city of Alameda and our reference was to same. We were fully aware of the fact that Mr. Weeks is the architect of the County Infirmary buildings and there was no intention on our part to make it appear that the group was designed by Mr. Barth.—Ed.]

Factory Buildings

Engineer Pierre Zucco, San Francisco, has prepared plans for a group of reinforced concrete factory buildings for the Marchant Calculating Machine Company. They will be erected on the company's property at Emeryville, Oakland. The main building will be 350 feet long and 45 feet wide.

No Change in State Hotel Law

Among the bills passed by the last California State legislature but which the governor failed to sign and through this "pocket veto" prevented from becoming a law was Senate Bill 442 amending the lodging house law of 1913. Hence the old law is still in effect.

House for Sidney B. Newsom

Architect Sidney B. Newsom has prepared plans for a $10,000 residence for himself to be erected in Crocker Highlands, Oakland. Mr. Newsom also has plans under way for a fine country home to be erected for a client near Napa.

Stockton Architects Busy

Architect Ralph P. Morrell of Stockton has completed plans for a bungalow type fire house for the city of Stockton. He has also made plans and a contract has been let for a District School to cost $4,500.

Plans have been drawn and a contract let for a $3,500 school in the Golden West District, from plans by Architects Young & Jeffery of Stockton.

Architectural Designer Franklyn E. Warner, who was formerly in the office of Stone & Wright, Stockton, is preparing plans for a two-story Class "C" store and club building, to be erected in Stockton for Peter Jordan, of the Dodge Sweeney Company, Oakland. The building will cost $20,000.

Architect Losekann of Stockton has completed plans for a warehouse for the Pacific Tannery, and he has also made plans for several pretentious residences, one for Sheriff W. H. Ricks, another for Dr. S. H. Hall, and a third for Patrick Tobin.

San Jose Building is Active

Despite the business depression there is quite a little building going on in San Jose and Santa Clara county. The new Y. W. C. A. building, designed by Julia Morgan, is well under way. Plans have been completed and a contract let for the new fireproof factory of the Bean Spray Pump Company. Wm. Binder is the architect. Preliminary plans are being drawn by Architect W. J. Wythe of Oakland for a new library building for the College of the Pacific to replace the old building recently destroyed by fire.

Architect Frank D. Wolfe has completed plans and a contract has been let for a one-story Mission style schoolhouse at Newark to cost $15,000. Plans have also been drawn for a Frank Lloyd Wright bungalow at San Rafael for C. B. Marston, a bungalow in San Jose for Dr. R. J. Smith, a family apartment house in San Jose for May D. Ward, and a reinforced concrete stable for prize live stock for M. J. Macomber, at Paicenos, near Hollister.

$100,000 Apartment House

Architect C. H. Skidmore, San Francisco, has prepared plans for a six-story steel frame Class "C" apartment house to be erected on O'Farrell street, near Larkin, San Francisco, for Dr. C. F. Buckley. Building will be equipped with all the accessories to be found in the most up-to-date apartment houses in the East. Estimated cost is $100,000.

San Josean to Build in San Francisco

Mrs. A. J. Auzerais, San Jose, will build a $15,000 home on Pacific avenue, San Francisco, from plans by Architects Bakewell & Brown.

Class Room Building for University of California

Victor Henderson, secretary to President Wheeler, of the University of California, has announced that bids for the construction of one unit in the additions to the plans for a "greater university" will be advertised for shortly. This will be a class room hall 200 x 200 feet square, to be known as the Benjamin Ide Wheeler hall. The building will cost $800,000 and will be devoted to class rooms. It will have space for 3,500 students and will include an auditorium in the center which will seat 1,000 persons.

An addition to the library at a cost of $400,000 is also planned. This structure will raise the capacity of the library to 1,000,000 books. It will also include another reading room nearly as large as the reading room in the present library structure, which is the largest in the United States with the exception of the municipal library of New York City.

The first of a group of chemical buildings will be the third structure to be erected at a cost of $250,000. It will form a nucleus of a group of chemistry buildings called for on the Hearst plans for the architectural extension of the university.

The fourth structure, to cost $350,000, will be the second unit of the agricultural group, which will be erected north and west of the present building.

John G. Howard is the University architect.

Much State Work Ahead

More public work will be done in California during the coming biennial period than ever before in the history of the state.

The state engineering department has several million dollars to spend and the state highway commission has $4,500,000 yet to spend of the $18,000,000 issue voted to build a 3000-mile system of state highways in California. There are over $15,000,000 in bonds for capitol extensions, San Francisco harbor improvement and University of California development. Taking all into consideration there is between $25,000,000 and $30,000,000 to be expended during 1915 and 1916 in public improvements.

The state engineering department will have its busiest biennial term. Among the public structures to be erected under its supervision will be: $50,000 women's building in the state fair grounds, $25,000 armory in Stockton, $150,000 state hospital in Norwalk, southern California; the Fresno and Humboldt state normal school buildings, to cost approximately $250,000.

At San Quentin and Folsom improvements running into the thousands are to be made, also at the Whittier and Ione industrial schools, and about $60,000 on the Ventura School for girls. Additions and improvements are to be made to all the state hospitals, and extended improvements are contemplated at the eight state normal schools.

New York Now Requires Registration of Architects

New York State has adopted a law requiring the registration of architects. The object of the bill is given as an expression of a desire to raise the standard qualifications for practicing architecture without interfering with the rights of those who are now practicing and without interfering with contractors or others who may wish to make their own drawings without the assistance of an architect.

The Board of Examiners will be appointed by the Regents of the State University. Dr. J. H. Finley, formerly head of the College of the City of New York, is president of the board. In a letter which D. Everett Waid, as chairman of the architects' joint committee, addressed to President Finley under date of May 19th, thanking him for his interest and co-operation, it is said:

> I feel sure that the law cannot be used for ulterior purposes. Some of the builders felt that the architects were trying to legislate business into their own hands. I believe that the building laws should be sufficiently stringent to place the responsibility of safe design and safe construction where it belongs, namely, upon him who undertakes to design and construct, whether he be a contractor, engineer, or architect. This law certainly is not intended to force anyone to patronize an architect.

Oakland Architectural Firm Busy

One of the busiest architectural firms in Oakland is Richardson & Burrell, with offices in the Albany building. The senior member of the firm is C. E. Richardson, formerly with McKim, Mead & White of New York, later with Bliss & Faville of San Francisco, and for the past three years a member of the architectural department of the Panama-Pacific Exposition. Clay N. Burrell is the junior member of the firm, and has been practicing in Oakland for a number of years. This firm has over $250,000 worth of new work under construction and on the boards, including an apartment house for Hubert Hinkel and Edward Sommarstrom, to be erected on Alice street, near Fourteenth, Oakland at a cost of $80,000; an apartment and store building at Telegraph avenue and Twenty-third street for Dr. F. Friedman; four-story brick apartment for J. Meyer, and a four-story apartment house of 160 rooms to be built on Harrison street, Oakland, at a cost of $100,000.

Personal

Almeric Coxhead, of the firm of Coxhead & Coxhead, architects, San Francisco, is visiting Southern California. At present he is staying at Long Beach. Mr. Coxhead at one time maintained an office in Los Angeles.

$120,000 Bascule Bridge

The San Francisco Board of Public Works has let contracts for a bascule bridge to cost in the neighborhood of $120,000. The bridge will be a double track, pony truss, highway Strauss trunnion bascule with a 40-ft. clear roadway and two 6-ft. sidewalks. The length of the moving leaf will be 94 feet, and it will be carried on trunnions resting on trunnion bearings supported on structural steel posts.

This leaf will be counterbalanced by a reinforced concrete counterweight, pin connected to the tail ends of the bascule trusses, and maintained in a vertical position during the operation of the bridge by means of structural steel links. The operating machinery will consist of two trains of gears operated by two motors. The equipment will include an operating pinion which engages cast steel racks bolted to the tail ends of the trusses.

The improvement also requires the removal of all piles, fenders, foundations, masonry and steel superstructure of the present Fourth street draw bridge, and the construction of a new reinforced concrete substructure, supported on concrete cylinders. In addition there will be a section of sea wall supported on piles and a paved reinforced concrete dock approach supported on reinforced concrete piles.

Four Million Dollars for Viaducts

Concerted effort is being made by the various departments of the Los Angeles city government towards the early starting of work on the construction of six viaducts across the railroad tracks and yards and Los Angeles river. Preliminary plans and estimates prepared by the board of public utilities have been submitted to the council. They call for six viaducts, at Main street, First street, Macy street, Fourth street, Seventh and Ninth streets, with a total length of 35,500 feet. These structures are estimated to cost $4,260,000. It has been suggested that the city purchase the steel at wholesale, use cement manufactured at the city-county Monolith plant, and broken stone from the county crushing plant, letting contracts for the work of erection only.

Paving Brick Men to Convene

The Board of Directors of the National Paving Brick Manufacturers' Association at their quarterly meeting held in Cleveland May 27th, affirmed arrangements tentatively made for holding its annual meeting October 11-12, at Dayton, Ohio. During this week will be held the annual meeting of the American Society of Municipal Improvements.

OBITUARY

Augustus B. Higginson

Augustus B. Higginson, an architect of Santa Barbara, where he had practiced for ten years after retiring from his large business in Chicago, died at his home on Channel Drive, at Montecito, a Santa Barbara residence suburb, on June 17th. Mr. Higginson was born at Stockbridge, Mass., in 1866. He was a graduate of Harvard University in the class of 1889, and was a Beaux Arts student from 1894-96. Many of the notable residences at Montecito were designed by him.

Death of a Noted Architect

Jeremiah O'Rourke, head of the architectural firm of J. O'Rourke & Sons, and supervising architect of the Treasury Department at Washington under President Cleveland, as well as designer of numerous public buildings, died recently at his home in Newark, N. J., at the age of eighty-three years. He went to Newark from Ireland in 1850, at which time it was the custom of carpenters and builders to prepare their own plans for buildings and to execute them. In 1893 he was appointed supervising architect for the Treasury Department and supervised the building of post offices in Washington, Buffalo and Kansas City and the Appraisers' stores building in New York City.

Death of Miss A. P. Schenck, Architect

Miss Anna Pendleton Schenck, a partner of the firm of Schenck & Mead, said to be the first firm of women architects established in New York City, died recently in a New York hospital. She was among the first women to receive diplomas at the Columbia University and she studied architecture in New York and Paris. With Miss Marcia Mead she, in March, 1914, established the firm of Schenck & Mead, of 105 West Fortieth street. The two women were successful from the start, specializing in the drawing of plans for private homes, model tenements, and even communities. In the issue of The Architect and Engineer for April announcement was made of the award to this firm of first prize, offered by the City Club of Chicago, for the best architectural plans for a "neighborhood center." A section of the Bronx was selected as the base of their plans.

On Pleasure Trip

Architect S. Tilden Norton of Los Angeles, accompanied by his wife, daughter and parents, are in the East on a three months' pleasure tour. The return trip will be via the Canadian Pacific route. A visit to the Exposition at San Francisco will also be made.

Withholding Trade Information

(From the Builders' Guide, Philadelphia.)

We want to say a word about the architect who refuses information about his work to the trade press. Why a man who is drawing plans for a building should seek to conceal for whom he is doing this or decline to give out details regarding the work the publication of which are entirely proper and regular, we have never been able to understand. The structural trade press of today is a tremendous lever for the advancement professionally of the architect and his calling. A sense of grateful recognition of the good being wrought in his behalf by the trade press should, in our judgment, prompt the architect to the fullest and freest co-operation with the men who are working to gain honor and public esteem for his profession. The Guide is just a little pleased that the Ohio Architect, Engineer and Builder has introduced this particular subject. It is an occasional experience of our own to have details withheld, the publication of which could involve no disagreeable consequences to anyone concerned. And by way of aggravating the irritation incident to occasions of the kind it is not wholly uncommon to have precisely the information we are asked not to use appear in the daily newspaper a day or two later. Fortunately, the practice here, as in Cleveland, is one that is confined to a few firms. The great majority of the architects are as ready to give us the information we ask as we are to seek it.

San Francisco's Harbor

San Francisco Bay is the largest landlocked harbor in the world.

San Francisco has a water frontage on the bay of ten miles.

There are thirty-four completed piers and three contemplated, ranging in length from 600 to 1,000 feet and from 100 to 200 feet wide.

The bay covers an area of over 420 square miles and has a shore line, exclusive of navigable inlets, of 100 miles.

Total completed sea wall is 18,690 feet long, total berth space of all piers 48,728 lineal feet. The dock area of all piers is 3,471,697 square feet.

The San Francisco side of San Francisco Bay is the deep water and sheltered side of the bay, from where all deep water vessels dock and sail.

Alternate Proposals

The "alternate proposal" has come to be quite a wonderful thing. In some of the public work that has recently gone ahead, so many alternates have been included in the way contractors were asked to figure that the gamble in bidding is much increased.

That it pays to figure the alternates as intelligently and carefully as the main proposal, is indicated every once in a while by someone landing a job on an alternate who would not have done so otherwise. A difference of twelve dollars in an $80,000 contract was overcome this week by the school board deciding to avail itself of an alternate and the bidder whose main proposal at first indicated that he was low, lost out.

Los Angeles Builders Exchange

The annual election of the officers and directors of the Builders Exchange of Los Angeles was held the latter part of May, with the following results:

President, John H. Bean, re-elected for the third term.

First vice-president, P. J. Bolin, re-elected.

Second vice-president, S. L. Weaver.

Third vice-president, M. A. Berne.

Treasurer, John Griffin, re-elected.

Directors, J. Burstein, J. H. Judy, W. E. Stradley. L. B. Webster and E. Wayman, for terms of two years; the hold-overs are A. J. Crawford, William McArthur, J. J. O'Conner, W. R. Simons and C. V. Fowler.

The exchange continues in healthy, active condition and is adding new members. The membership now is about two hundred and fifty.

Topographic Map of San Francisco

The Department of the Interior, United States Geological Survey, Washington, D. C., has gotten out a valuable topographic map of San Francisco and vicinity. The map can be purchased from the Geological Survey at Washington. It is also on sale by several of the principal San Francisco stationers and instrument makers, such as George E. Butler, Isaac Upham & Co., and Louis Weule Company. It is up to date and complete in every detail.

The "Den" Defined in Verse

What is a den?
A den is when
The broken chairs,
The rugs with tears,
The pictures cracked,
The table hacked,
The tickless clock,
Desk that won't lock
Are gathered in a heap by Ma
And put into a room for Pa.
—The National Builder.

Gossip—That was Tom Jenkins, th' rich old bachelor up on th' west hill. They tell me he's goin' to build a new house.

Milliner (aged fifty)—Is he?

Gossip—Yes. He has asked for proposals.

Milliner—Wh-what's his address?—Cleveland Plain Dealer.

Heating and Lighting

Plumbing and Electrical Work

Common Sense Versus Custom

(A Discourse on School Plumbing)

By CHARLES F. DENCKLAU

IN this age there seems to be an incentive, especially in schools, to eliminate custom, and this applies, not only to the methods of learning, but to every branch of teaching from the kindergarten up. Architects and engineers, as a rule, are broad enough to give consideration to new ideas and modern methods. We might add, conservatively speaking, that plumbing and ventilating have been given even greater consideration than all other mechanical professions as applied to school building.

In the modern schools of today, plumbing is the essential factor. In our big cities, for example, New York and Boston, they equip schools in certain districts with every known fixture that is helpful to the encouragement of bodily cleanliness among the students. The equipment, and especially the toilet rooms, are mechanically perfect. In some instances it is compulsory for the children to be clean, to the extent, if necessary, of unceremonious scrubbing by attendants who are provided for such emergencies. In other words, if a scholar is dirty, he is sent by the teacher to the lavatory room either to take a shower or bath, as necessity decrees. In some of the schools nurseries are provided with competent attendants to administer the required treatment. Then, too, there are swimming pools, so that those living in the poorer districts may, student and parent alike, during certain hours, enjoy the privileges they could not otherwise have.

These are all steps in the right direction, and no doubt are responsible to a very great extent, for the decreasing outbreaks of disease, and a better physical and moral condition in the school children. It further adds much towards the education of the parents at home, who have not had the opportunities of learning and understanding how essential it is for them to be clean.

Today is not the day of price with the progressive architect, engineer or school commissioner, except in rare instances.

CRANE FIXTURE IN STOCKTON SCHOOLS

Quality with them is the predominating factor, as it should be, but as in other instances, there are exceptions to the rule. The plumbing is side-tracked in order to either further some personal interest, or save money for an elaborate exterior architectural display. Very often architects, engineers and school commissioners are hampered in their endeavors by selfish interests of the party politic, which in the end reverts to an injustice to them, taxpayers, teachers and students alike. There are also some, but very few, architects and engineers whose self-importance and narrowness of mind are responsible for some of the prevailing antiquated equipments. It is interesting to note, however, that the latter are gradually diminishing. It is also strikingly interesting to note that the schools in the smaller cities are often equipped with the most modern sanitary appliances. Those responsible for this condition are so because of their readiness to

PHOTOGRAPH OF TOILET INSTALLATION IN STOCKTON SCHOOLS

listen to reason and the importance of such things that have a fundamental bearing on the elevation of the child or student. This is true, not only as it pertains to their comforts at school, but the moral teaching that is brought to bear through them in the home, by their proper enlightenment during their attendance in the schools. Especially would this apply to their earlier years.

Has it ever occurred to you why your children are seemingly careless at home, namely: in not flushing the closet bowl after using it, and has it ever occurred to you, Mr. Architect and Mr. Engineer, that when you encourage the use of self-acting closet appliances you are indirectly responsible for an unsanitary condition and menace in many a home? You are sowing the seeds of habit.

The time was, years and years ago, when most homes could not afford modern plumbing. Consequently, the first thought was to protect conditions in the schools—to guard against the possibility that those unaccustomed to these modern methods might not leave the toilet room in an unsanitary condition, through negligence on the part of the user in not flushing the closet bowl. Today all homes in cities are equipped with modern plumbing, and the conditions for which the automatic latrene or seat action automatic water closets were indispensable, are changed. In the writer's judgment, to continue installing these seat action closets in schools in cities, is a mistake, and especially would this apply to the kindergartens and all grade school installations. The writer takes this stand after very careful research throughout the United States and Canada, and he is convinced from data obtained to continue doing so cannot help but encourage carelessness at home on the part of the child. This is because of their accustomed use of seat action closets in the schools, which require no thought on the part of the user, and the flushing devices they are accustomed to using in their homes which do require thought to put in action. Bear in mind that from the time a child begins to attend school, the greater part of his life is spent in the school room and its environs.

The school, being a house of learning, does it not seem to you that no better place could be found for the edification of children in the matter of cleanliness as well as the "three R's"? It would seem, from the progress other cities have made in this particular throughout the country, where none have gone back to the old method, that there must be merit in the new. When this question was drawn to the attention of Messrs. Wright & Stone, architects of Stockton, who have been instrumental in raising the standard of school buildings in Stockton and other cities, they not only became enthusiastic with the idea of dispensing with the seat action closet entirely, but they were insistent upon investigating very fully the various closet combinations. Especially were they interested in those operated by the flushing devices, hand operated, i. e.: when the water is not the factor to operate the valve, and a closet bowl that would contain a broad surface and depth of seal, that could be guaranteed by the manufacturers to be held under any and all conditions. Their decision and recommendation was in favor of the Crane Co. Expedio combination, fitted with the Boston hand operated flushing valve. This combination is of the wall type pattern, and in the Lincoln and other schools they were installed at various heights from the floor, so as to make them convenient for use by students of all ages. These closet bowls, like all others of the Crane Co. make, are made of the best vitreous china. Some of those installed were with the raised flushing lip, and others with the extended. In each instance, however, they were furnished with the raised rear vent, containing 10½ square inches of area. The flushing rim is so designed that with each operation of the flushing valve, the vent area of the closet bowl is automatically cleansed. While these closet bowls appear to be hung on the wall, in reality there is no connection between them and the wall, as the weight is taken up entirely by means of the special Crane adjustable cast iron flange. These flanges can be fitted to any Durham drainage fitting, thereby materially simplifying the roughing in, and reducing the cost of installation. A better understanding of this construction can be had by referring to the photograph included in this article. These wall closets make an ideal installation for schools and public buildings.

The advantageous points of these closets are too numerous to mention. The most important are: First, they are free from the floor. Second, there is no chance of leakage between the bowl and the drainage connection, without its being seen at once. Third, there are no putty connections, because the joint between the bowl and drainage connection is made of an asbestos ring gasket treated with graphite, made secure by three stay bolts, which are fastened into the iron flange. Stoppages in a bowl of this sort are almost impossible, because the water area in the bowl is round, and direct to the drain, and is sufficiently large to admit a 2½-inch ball, while the outlet drainage connection is 4 inches. You can readily see by this that anything passing through the bowl can never cause a stoppage in the drain.

The Boston Flushing Valve with which these closets are equipped is far more efficient than any tank or water by-pass valve, especially the push button or swivel handle, can be. . . . The user can always have the closet bowl under control with the Boston Flushing Valve, either with exposed or concealed installation. This cannot be said even of the high or low pressure tank. This is a point far reaching, *and architects and engineers would do well to investigate its value.*

The advantages of a first-class flushing like the Boston valve over a tank are many. First, there is water at hand at all times, and the force of the water insures a more positive flush, entirely effacing foul surfaces. Second, no matter what the pressure may be, the water surfaces for which the bowl is designed, can be maintained. Third, the adjustment is simple, and does not require an expert to manipulate. Fourth, it is not easily put out of commission, and will stand hard usage. Fifth, it is operated by air, and will work under any pressure from 10 pounds up. Sixth, sediment and alkali are no terrors to this valve.

Humidity in Gas-Heated Rooms

In the combustion of gas, the hydrogen, either free, or as a hydrocarbon, combines with the oxygen of the air, to form water. With the average manufactured gas, the quantity of water thus formed amounts to about forty pounds for each thousand cubic feet of gas burned. As a result, if the products of combustion are cooled below 212 degrees Fahr. the moisture will be perceptible, and may even become a source of annoyance. This may explain the humidity often noticeable in rooms where the gas burners are not flue-connected.

This formation of water vapor occurs whenever gas is burned regardless of the kind of burner used, and precautions should be taken either to keep the products at a temperature above the condensing point, or to provide means for disposing of the condensed water whenever gas is burned in such a quantity that the condensation may prove an annoyance. When gas room-heaters are used as auxiliaries to other sources of heat, and burned for short periods, the water vapor formed is not generally sufficient to cause annoyance to the occupants of the room.

Electric Heating of Buildings

In Stockholm, Sweden, the electric heating of rooms by the hot-water system has been established, and it is said to have proved very satisfactory. In the top story of a building is a heat-insulated water tank of 100 to 300 gallons capacity, with electric heating devices for the water. During the night the water is heated, for the price of current is less at such hours, and in some cases extra low night rates prevail. An automatic device switches off the current in the morning and throws on an electric motor pump. This sets up circulation of hot water in the radiators throughout the building. In the evening the pump is switched off and the current sent to the heater tank. A heat storage tank of 125 gallons, using 4 kilowatts and ten hours charging at night, will take in heat enough to suffice for radiators in four or five rooms. With a 350-gallon tank and 6 to 8 kilowatts, eight rooms can be heated. The system is automatic in action, and not liable to get out of order.

Heating and Ventilating Engineers

The summer meeting of the American Society of Heating and Ventilating Engineers will be held in San Francisco September 16th to 18th. These dates are just prior to the meetings of the International Engineering Congress, which will be held in the same city September 20th to 25th. The meeting of the International Congress and the attractions of the Panama-Pacific Exposition were a potent factor in the choice of the California metropolis.

State, County and Municipal Engineering
Good Roads—Water—Sewers—Bridges—Fire Protection

More About the Jitney Bus in California*

By W. CLAYTON.

TIME alone will show whether the jitney bus is permanent. In the first place the jitney bus, in a large measure, is due to poor business, hard times and the impossibility of men obtaining work of any kind. Many of these men already owned small autos and went into the jitney business to make a living. Others had saved enough money to enable them to buy an automobile and went into the jitney bus business because no other work was to be obtained. If the jitney men were to make a careful survey of the results of their autobus operation, they would see that they are making no money at all; that the depreciation of the autos eats up all the profits and more. But for the present they are doing something for themselves and their families—their time is occupied and the nickels they take in enables them to eat at the expense of their autobus. Their motto is, "Sufficient for the day is the evil thereof." They cannot make enough money to write off the depreciation of the jitney, and the capital invested in it will ultimately be wiped out except in a very few cases where conditions are unusually favorable and always continue to be favorable. Even in these cases the net return is a bare living for long hours of labor. In many cases the jitney man does not supply the capital. It is furnished by others, as for example:

A man, his wife and child come out and settle in San Diego. Hard times come along. He writes back to relatives and speaks of the difficulty of making a living. His relatives are fairly well fixed; that is to say, they have some money saved. The relative in the case may be a father, mother, brother, sister or cousin. Finally a letter comes in which the man says that if they will send him $250 he can make a first payment on an automobile and go into the jitney bus business; that everybody is making a good living at it and that some take in as much as $15 per day. He states that he can pay all his expenses, and send back some money every month to pay off the principal and interest. Now you know that would appeal to most people. You can readily see that the father or mother or other interested relative, or even an intimate friend, would send on this money. The money may never be paid back. In most cases it will not. In time the automobile is worn out and gone, but in the meantime a service has been performed. The man has been able to make a living for his wife and child. This kind of argument begs the question: Isn't it a good thing, then? A man, his wife and child have been provided with a living. The answer to this is that our company has let out hundreds of track employees, whom we cannot keep on our construction pay rolls because we cannot make any further investment. These men, their wives and children are starving, or nearly so. Los Angeles street railways have discharged three or four hundred car men for lack of patronage. Our company will necessarily have to follow suit very shortly. Where then is the gain for all the people of the state? We permit the jitney to run unregulated to help men out of work so they can eat, and the jitney in turn promptly drives other men out of steady employment and deprives them of food for themselves and their families.

As long as we have hard times, we certainly are going to have the jitney bus, if not regulated, until it becomes so unprofitable that a man cannot make "eats" out of it. There will always be new ones, however, coming in to take the place of those who drop out. Nothing cures but experience. Some father or mother or brother or sister, or other relative, will finance the game for the new comer, until such time as the country is so prosperous no man will think it worth his while to run a jitney. I am satisfied the jitney bus cannot pay except under highly favorable conditions, such as very short runs on paved streets, the auto being filled both ways every time.

Now the jitney bus does a great injury to the street car company, because the cream of the receipts go to the jitney. If it is not regulated, it will eventually destroy the street car business. It will reflect so seriously upon the sale of street

* This summary of the jitney bus situation in the West is taken from a letter to Mr. Stephen E. Kieffer, chairman of the Oakland Chamber of Commerce, in response to a request for facts. Mr. Clayton is vice-president and managing director of the San Diego Electric Railway Company.

railway securities, the public will no longer consider them as a satisfactory investment. This will make it impossible for improvements to be made, or extensions to be added, and the service will be gradually cut down to save expense until the street car will be next to a detriment rather than an advantage to a city. And the more cars that go out of service, the more jitneys will come in. In the meantime, the jitney bus will not improve the transportation situation. The jitney bus will not make long runs. It will only take the short ones, as there is no profit in running long distances over unpaved streets into outside districts. It is only the short runs that enable the jitney to make a bare living. In time it will kill off the street car business, because the street cars cannot operate to the outside districts if they get no short haul passengers. Unless the people put the nickels into the street cars, they cannot get service out of them. The street car companies can only give the amount of service the people pay for.

The jitney bus has, of course, some troubles of its own. You can climb on a street car even if it is crowded—you get on somehow. But when you have only jitney bus operation, limited to a legal load because it is dangerous to stand up and if the auto is overloaded it is apt to break down and kill its passengers, its troubles will commence.

In our city it would require thirteen jitneys to carry the seating capacity of one of our street cars. We operate one hundred cars daily. So it would take a flock of jitneys to handle the business. The jitney starting out on its run will fill and the passenger living about in the middle of the run will be unable to get on. Ten, fifteen or even twenty busses may go by, before he is able to get in one.

If he has his wife or family with him, he will have to wait until a bus comes along with sufficient vacant seats, or he will have to let his wife or his family go in separate machines from the one he boards. Under the present form of unregulated jitney bus operation, his wife or daughter may have the choice of sitting in the lap of a drunken man or having a Chinese sit in her lap. Once aboard the jitney you have little choice as to what is done in the matter.

For a street car, if a seat is to be provided for every passenger in the rush hours, it will cost more than five cents for car fare. In fact, about the only way to give everybody a seat going home at night is to raise the fare from five cents to somewhere between five and ten cents, or put in the zone system, carrying pasengers for the short haul for four or five cents and charging those on the long rides up to ten cents.

Everybody knows this kind of thing would not meet with the approval of the American people. Then we are told by a large number of people that the remedy is in municipal ownership. Those who believe in this remedy should go up to San Francisco and ride on the municipally-owned Geary street line during the rush hours. Their cars are just as crowded in the rush hours as they are in any other city. If this condition can be corrected, why isn't it done by the municipally-owned railroad in San Francisco—the street railway owned by the people? When you get down to facts (and you seldom do) in the municipally owned railroad, you will learn that a seat for every passenger is too expensive for a municipal ownership road; that the same disabilities that exist in a privately owned line have to be met in a municipally owned road. The only way to get the sort of service wanted is to pay more money for it. There is nothing municipal ownership can do that cannot be duplicated by private ownership, and in ninety-nine cases out of one hundred, private ownership does more for a community than municipal ownership ever can or will do, and it does one thing that municipal ownership does not do—that is, it pays taxes. When you get municipal ownership of public utilities, the people will have to pay all the taxes now paid by the street railways (some millions of dollars), because a municipally owned railroad does not pay taxes on its railway, or any other municipally owned property.

Speaking of crowded street cars, it is curious that the little Ford can be seen every day with people sitting in the laps of others who are absolute strangers, without complaint. Some stand on the unsteady running boards, a dangerous position, knowing if they are thrown off they have no redress, because the jitney cannot be successfully sued for damages, as it offers no financial responsibility and has no property to attach. The more they are crowded, the greater the danger, the better satisfied the jitney passengers seem to be. And to think that after all the reform legislation we have had looking to the protection of the young girls of America from the wiles of the villain, or the white slaver, with the police lady at all the 5c. and 10c. dance halls for the protection of young girls, the trapping and punishing of the ogling cigar store masher by the alluring police lady in gay raiment and silk stockings—notwithstanding all this our young girls (and some older ones) are riding in jitneys sitting in the laps of men to whom they are total strangers.

The jitney bus has not given and will not give complete service to all parts of the city for the full length of the franchise and transfers where necessary for a single fare of 5 cents from 6:00 a. m. until midnight or later. No transfers is a great detriment to the working man whose home is a fixed point, but whose work place often changes from week to week, especially in the building trades. This means a 10c. fare instead of 5c. on the street car with a transfer. So far the jitney has failed to give the same service on wet days as on pleasant days. It also fails to give the same service at night in proportion to its day service. At night the service of the jitney bus is negligible. There are a few in the early hours and fewer still or none at all at the late hours. Moreover, the jitney will never run between fixed terminals and give a regular service, because it cannot be effectively controlled other than by such police regulation that of itself could not be made efficient save at an expense that is prohibitive.

No matter what may be ordained by ordinance or legislative action, the jitney bus in the personal ownership of an individual cannot be regulated to give either complete or regular service. If the owner of the bus has a cold and stays home, what process of regulation will force him to hire a man to run his personally owned jitney? If it rains and he says wet weather brings on rheumatic pains and he stays home, what steps can be taken by law, or any other course, to make him give the public a regular, dependable service? If he decides he is not making money, by what means can he be forced to continue to give his portion of a regular, dependable service? There is no possibility of devising any regulation that can compel the independent owner and operator of a jitney bus to do anything more than he desires or is willing to do.

To Prevent Checking in Cement Stucco Work

A plastering contractor who has had difficulty in preventing checking in the surface of exterior cement stucco work, propounds this query: "What is the reason for checking in exterior cement plastering and is there any way to prevent it?"

The tendency of the plasterer is to prepare too rich a mixture, in order to secure an easy-working mortar. The richer the mixture the greater is the tendency for the surface to check. Medusa cement should be mixed in the following proportions: 1 part cement to 2 parts sand, to which should be added 25 per cent of hydrated lime to the quantity of cement employed. The hydrated lime serves not only to make a lean mixture more easily worked with the trowel, but waterproofs the finished work as well. For plastering over brick

UNITED STATES TREASURY BUILDING, SAN FRANCISCO
J. Milton Dyer, Architect
Tin Roof and Puttyless Skylight by Percy Sheet Metal Works, Inc., San Francisco
(See article on pages 38-43.)

an even leaner mixture is recommended —1 part cement to 2½ parts sand. The only way to repair a badly checked piece of work is to go over it with another coat of neat cement. Of course too rapid drying out will also cause checking or even large cracks in the plastering, as it will in interior work, and keeping the work well wet down on a hot day or while a strong wind is blowing is necessary.

To Avoid Leaks in Radiators

At a recent consultation between an architect, owner, and building manager, at which plans for a new building were discussed, the building manager, in suggesting the heating equipment, made this interesting statement, says the Heating and Ventilating Magazine:

> Before the radiators are installed in any building that I have anything to do with, I take pains to shut off a certain form of tenant kickery, by a little extra investment. I insist that each radiator be connected with a high pressure hose, and water be run through it with the sections upside down for five minutes. Then I have the radiator connected with a 30-pound compressed air pipe, and the air is forced through until a fine piece of muslin placed at the outlet pipe fails to catch any sand particles. It is a possible residue core sand that I am after. If this is allowed to remain in the pipe the grain gets down into the valve seat, and in a very short time I have my tenants about my ears, complaining of leaky radiators. The danger of a leak starting in a radiator at night, and doing a great deal of damage to floors and ceilings is abated at the very start, and the extra cost of this precaution while the building is going up pays me handsomely, for I seldom have a report of a leak from my tenants.

Convicts to Build California Roads

Governor Johnson has signed the Meek convict labor bill, permitting prisoners of the State penitentiaries to build State highways. A statement was issued by the Governor in which he said that apprehension that free labor will be affected is groundless.

C. F. Stern, Highway Commissioner, original advocate of the bill, plans to take personal charge of the convicts and live with them in the mountains, where they will be put to work running highways into hitherto inaccessible parts of the State. It is planned to gradually work out an honor system. Faithful work will be rewarded by reductions of prison terms.

Concrete Being Used to Fool the Kaiser's Submarines

Of the new uses of concrete there seems to be no end and the latest is in connection with a dummy war fleet which is reported to have sailed to block the Kiel canal and prevent the German vessels from getting out. It is needless to say that this war strategy could not have been brought to a successful conclusion unless cement were used to fill the holds of the vessels and thus lower them in the water. The plan as described was to take a number of old steamships, bought from the merchant service, including ships like the Campania, Oruba and Orotave, which have been fitted with dummy funnels, wooden turrets and guns and their holds filled with cement to lower them in the water. This will make them torpedo proof, it is explained, because, owing to the hardness of the cement, a torpedo exploding would only rip off a plate or two in the hull. An outside belting of cement has been added to the hulls of these dummy warships, to protect the engines and boilers. The report of a battle between a German torpedo and a dummy ship loaded and belted with concrete is yet to be made but the result will be awaited with interest.

Life of Stone Buildings

An estimate of the physical depreciation of buildings if kept in repair, was made recently by a committee of the New York Real Estate board. These figures show that the annual depreciation of cheap frame tenements was from 5 to 10 per cent; ordinary residences, frame, 2 to 3 per cent; cheap brick tenements and office buildings, 2 to 3 per cent; cheap brick or stone residences, 1 to 2 per cent; better class frame residences, 1 to 2 per cent; better class of brick or stone residences, 1 to 1½ per cent, and good brick and stone office buildings, 1 per cent.

The Laurel Furniture in the California Building

Thousands of visitors have admired the beautiful furniture in the reception hall of the California building at the Panama-Pacific International Exposition, which was presented by Mrs. Phoebe A. Hearst. In order to conform with its beautiful setting and to be appropriate to the California building, this furniture is made from California laurel. Laurel is a very beautiful native hardwood which was formerly used to a great extent for furniture, billiard tables, and cafe fixtures, but for a number of years has been superseded by the vogue of mahogany and oak.

The pieces which excite the most attention are the four serving tables and settees which surround the large magnificently carved table in the center. This center piece is twelve feet square and the entire set is done in the antique finish which finds so much favor at the present time.

California laurel is a wood which has not, for a long time, received its just due as a cabinet wood. Being a native product, its price is much less than imported and eastern hardwoods and its hardness and beauty of grain are equal and in most cases superior to any of the other fine woods.

To one interested in fine furniture or hardwoods, the Women's Reception Hall in the California building is well worth a visit.

Beautiful Lighting Installation in Stockton Schools

In the Lincoln and new Weber schools, pleasing lighting systems have been installed by the Home Electric Company, 312 N. California street, Stockton, Cal. In these two buildings, just completed from plans by Stone & Wright, architects, the Home Electric Company introduced for the first time the exquisite Ironwood Blossom design in the new Coral White glass, which gives a restful glow of pure white soft light.

This firm also has the contract for the lighting fixtures for the new Jefferson and El Dorado schools at Stockton, all being illustrated in this issue in connection with the work of Stone & Wright, the Stockton architects.

Electrical Company Branches Out

The General Electrical Construction Company, which has executed some of the largest wiring contracts in San Francisco and vicinity during the past six years, has outgrown the old quarters at 223 Minna street, and moved to a more central location, with facilities for carrying on a retail business, in the building at O'Farrell and Mason streets. The company will in future carry a complete line of electrical devices and wiring stock, and besides a general contracting business will undertake to supply the retail trade.

During the past six years the management has wired such well-known buildings as the Coliseum, Olympic Club, City and County jail, Lowell High school, Masonic temple, State armory, London and Liverpool Insurance building, Phelan Estate building, officers' quarters at Mare Island, new gymnasium at Stanford University, Appleton theatre, Watsonville, and the Merced hotel. All the lighting of the Civic Center Plaza was contracted for by the General Electrical Construction Company, and the beautiful Fireman's Fund Insurance building on California street was wired by them.

The officers of the General Electrical Construction Company are George A. Sittman, president and manager; George F. Belden, vice-president, and J. H. Belden, secretary and treasurer.

A Book of Schoolhouses Sound Proofed With Cabot's Quilt

An interesting booklet entitled "School Houses" is among the recent trade publications issued by Samuel Cabot, Inc. It features some thirty modern school buildings of the country, including several on the Pacific Coast, which have been sound-proofed with Cabot's Deadening "Quilt." It also contains a treatise on schoolhouse acoustics and architectural drawings showing ceiling, floor and partition construction.

Following is an extract from the book on "Schoolhouse Acoustics":

Next to light and ventilation, the most important item in schoolhouse construction is sound-proof floors and partitions. It is a part of the problem of acoustics which presents itself in two phases, namely, the conveyance of sound and its confinement within its own sphere of usefulness. The first phase has received far more attention than the last, but educators have finally awakened to the fact that the latter is of much greater practical importance. In these days of numerous courses and hard study, and the consequent strain upon the nervous system which is so apparent in our school children, few things can be more important than absolute quiet in which to master their lessons. If a class is constantly interrupted by the singing, marching, or reciting of the scholars in the next room, it is impossible for them to apply themselves and accomplish the best results in study, and they are continually wrought up to a state of nervous excitement, which is injurious to the health and a perfect torment to their teacher.

For these reasons the necessity of preventing the sounds of one room from penetrating into another is now generally recognized, and has led to exhaustive inquiry into the various methods and materials to be employed for accomplishing it. It is known that the ordinary plaster and timber construction forms a very imperfect barrier to the conduction of sound, plaster being at all times a poor non-conductor, and tbe timbers, so far from helping matters, often increase the difficulties, each one forming a telephone to convey the sound. It is therefore necessary to line the floors and walls with some material that will break up and absorb the sound-waves, and which will also at the same time meet the other requirements, such as durability, reasonable expense, hygienic properties, etc.

Cabot's deafening quilt is suggested as the best solution for imperfect acoustical conditions.

Meurer Bros. Exhibit at the Fair

Meurer Bros. Company, manufacturers of metal Spanish and Mission tile and roofing tin, have an interesting exhibit in the Manufacturers building, Panama-Pacific Exposition. The booth is in charge of the San Francisco manager's son, A. H. McDonald, who takes pleasure in explaining the merits of the different products manufactured by the big Brooklyn house. The booth is designed in the Mission style from plans by Architect C. H. Miller of Oakland. Besides Mission and Spanish tile in copper and galvanized iron, the booth shows different styles of copper cornices, metal shingles, galvanized iron ventilators and Columbia gas boilers. A number of steel oil barrels are also shown. Many of the buildings at the Fair are roofed with Meurer metal shingles, among them the three fire houses, the Inside Inn, Hawaiian building, and the Idaho and Arkansas State buildings.

The Latest in Sanitary Drinking Faucets

L. Haws, inventor and manufacturer of the well-known Haws sanitary drinking faucet, has devised a rubber bowl for use in the railway cars, which promises to revolutionize present methods of drinking on the trains. If adopted by the railroad companies it will do away with the sanitary cup which passengers are now required to carry with them or purchase from the newsboys at a cent apiece. The faucet is constructed on the same principle as the regulation street faucet, except that the bowl is of rubber, which prevents possible breakage or injury to the person while drinking because of the motion of the train.

Another improved fixture just perfected by Mr. Haws is equipped with a self-closing push button valve with loose key stop. This takes the place of the customary nickle-plated regulating screw to which some people object on the ground that they are both unsanitary and unsightly.

Mr. Haws is planning an extended trip into Oregon and Washington, where he will arrange with various wholesale and retail plumbing houses to handle his goods.

Well-Known Brick Man Enjoys Exposition

Howard Frost, president and general manager of the Los Angeles Pressed Brick Company of Los Angeles, which operates three plants in Southern California and one in San Francisco, recently spent two enjoyable weeks taking in the Panama-Pacific Exposition. Mr. Frost made his headquarters at the Inside Inn, and was accompanied by his wife and son. He expressed himself as being very much pleased with the Fair. Incidentally Mr. Frost was the recipient of warm congratulations for his company's splendid exhibit in the Varied Industries building.

Grand Prize for the Tuec

The United Electric Company, manufacturers of the well-known vacuum cleaner—Tuec—has been awarded a grand prize ribbon by the Panama-Pacific Exposition. This ribbon is the highest honor the exposition confers upon exhibitors. Of the several exhibitors in this line the Tuec was the only firm to be honored with a grand prize. Major Collins, the San Francisco manager, is naturally very much elated.

Good Terra Cotta

The terra cotta exterior of the new Capital National Bank building in Sacramento, which is to be furnished by the Steiger Terra Cotta & Pottery Works, will be the same as that used on the Mary L. Phelan residence in San Francisco, Charles Peter Weeks, architect.

Mr. Alden Anderson, president of the Capital National Bank, visited San Francisco purposely to see this terra cotta and was very much pleased with it.

American Builders' Week

Editor The Architect and Engineer:—

Some two years ago a movement was instituted to hold a celebration in the interest of the building industry in connection with the Panama-Pacific International Exposition. The matter was introduced by the delegates of the General Contractors' Association at the convention of the National Association of Builders' Exchanges at Columbus, Ohio, in January of this year and met with the unanimous approval of the convention, which, by invitation, selected the week of October 18-23 to be termed "American Builders' Week."

A wonderful transformation has taken place during the past nine years in our city—from waterless ruins infected with vermin and threatened with plague—to a clean, healthy, modern city, crowned with the world's most beautiful and comprehensive exposition of contemporary achievements.

Architects, financiers, merchants, manufacturers, professional men, politicians, workers and dreamers—everyone has had his important share in bringing about this result, but the work was actually done by the builders. Our house is now in order. With the world as our city's guest, let us have an American Builders' field day and in our celebration and by the manner and magnitude of it, show our fellow citizen what manner of men we are.

It is aimed to make this an occasion of general interest to the entire building industry of the country, apart from any set conventions which may be held by local or national branches of the business. It is to be a general gathering of men engaged in any branch of the building business wherever located in the United States.

A meeting of the committees appointed by the various organizations was held on June 14th, and it was decided to appoint certain "Delegates at Large" to the committee by way of increasing its strength and scope.

Owing to your past interest in this movement and having in mind the value of your assistance in the work of the committee you are cordially invited to become a member of same and by your attendance at our meetings and co-operation in the work assist us to make this a great occasion in San Francisco.

Very truly yours,
General Committee of American Builders' Week,
By W. M. Hope, *Temporary Secretary.*

Gold Medal for Butterfly Map

The new method of cartographic projection invented by Architect Cahill, has been judged worthy of a prize by the jurors of the Exposition in the shape of a gold medal.

The new world map has been described in The Architect and Engineer. It is the only single map of the world which neither exaggerates nor distorts. It is the only world map which preserves a uniform scale throughout, and the only world map on which lines drawn straight from one point to another are also the shortest distances between those points.

The "Butterfly" map is on exhibition in the Palace of Liberal Arts.

Advertising

The stoppage of advertising during times of stress and change has two bad effects upon the business involved. It turns off immediately a method of securing new business and holding old business. In addition to that, it advertises the pessimistic views of the advertiser, and therefore spreads his own lack of faith in himself, his goods, his country, and the future to other business men who are, perhaps, also on the verge of doing the same thing.

Without in any way minimizing the crisis which the world now faces, without ignoring the fact that a long, expensive war in Europe will result in a great deterioration of values and a tremendous adjustment of commerce and finance when it is over, there is nevertheless sufficient ground for believing that this country is going on, that the manufacture and consumption of goods will continue, and that the manufacturers who are enterprising, alert, and far-sighted enough to take advantage of existing and new markets and to push their business as they would in ordinary times, are going to benefit by their actions.

The point is that the war will either end everything in the world or it will not. If it does not, business, among other things, must go on. In our own country it must go on now. It cannot wait until the war is over.

In this country there are a hundred million of us who must live and who must buy all things that make life possible, and somebody's going to supply these things.

There are very few articles that we cannot make or produce. We have now an opportunity to find out what we can do. All of these new resources will develop business and that activity which ultimately results in good times.—From The Outlook.

Granite from Boulders

An interesting feature of the production of granite in California is the quantity of stone quarried from large residual boulders. These boulders, according to the United States Geological Survey, represent the remnants left from prolonged disintegration of large granite masses, but after a thin weathered coating is removed they yield sound stone. Good granite should stand a crushing strain of at least 20,000 pounds to the square inch; some granites will stand 40,000 pounds. This may be compared to common red brick, which will crush at about 3,000 pounds to the square inch.

Architect Louis du P. Millar of Pasadena has been commissioned to design a bungalow to be built in Greece. A call from the Old World to the New World for architectural work is indeed rare.

CHARLES HOLLOWAY, JR.

Remarkable Success of a Young San Francisco Industry

THIS year marks the second anniversary of the Holloway Expanded Metal Company, organized by Charles Holloway, Jr., well known in San Francisco and Los Angeles building circles on account of his former connection with the Roebling Construction Company as manager of the wire lath department. The success of the Holloway Expanded Metal Company has been little short of phenomenal, due not only to the personal efforts of Mr. Holloway, but also to the energetic co-operation of Mr. Charles Wright, former president of the General Contractors Association of San Francisco, and Mr. C. H. Johnson, former superintendent of the Roebling Construction Company. The management attributes the success of the company not only to the aggressiveness of its officers, but to the meritorious worth of its material—"Steelcrete" wire lath possessing many features superior to other similar lines on the market. Starting with a business of modest proportions, the company has steadily developed until to-day it can point to contracts successfully performed and aggregating in value several hundred thousand dollars.

The output of the Consolidated Expanded Metal Company of Braddock, Pa., from which the San Francisco concern obtains its material, has been repeatedly taxed to its capacity, due undoubtedly to the painstaking efforts of the management to please its clients. Their slogan—"A million yards of metal lath in twelve months without a complaint," means that the company has filled contracts aggregating a million yards of material, and has had none of it rejected or refused. It certainly speaks

well for "Steelcrete" lath and the firm's method of doing business.

Largely through the efforts of Mr. Holloway, who, by the way, was formerly manager of the lath department of both the San Francisco and Los Angeles offices of the Roebling Construction Company, lath is now being specified by weight and gauge, instead of gauge alone, and this insures to the owner and architect exactly what they call for, for the reason that all gauges are made in different weights. "Steelcrete" expanded metal lath has been extensively used with very satisfactory results by the United States Government on post-office buildings throughout the country. One reason why the government uses "Steelcrete" is because it runs 7 per cent heavier per square yard in weight, gauge for gauge, than other materials.

The Holloway Company is in a position to supply material on short notice and will deliver lath in orders as small as one yard and as large as a carload promptly and without excessive charges. It carries one of the largest stocks in San Francisco and the bay cities, the variety covering all inside and outside work. The company not only carries on a jobbing business, but does a large contracting business in furring and lathing. Among the buildings that have been supplied with "Steelcrete" are the following: Polytechnic High School, designed by the Consulting Board of Architects of San Francisco; Fireman's Fund Insurance building, designed by Louis P. Hobart; Cooper School, Houghton Sawyer, architect; Wilson apartment house, C. A. Meussdorffer, architect; Greenwich residence apartments, T. P. Ross, architect; San Francisco Labor Temple, O'Brien & Werner, architects; Stockton Bank building, L. B. Dutton and Stone & Wright, architects; Y. W. C. A. building, Oakland, Julia Morgan, architect; Fairfield High School, Henry C. Smith, architect; a number of apartments designed by Rousseau & Rousseau, architects, and four new piers on the San Francisco water front designed by the Harbor Commission.

New Edition of the Hy-Rib Hand Book

A most comprehensive and complete hand book on Hy-Rib and Rib Lath products is represented by the 1915 edition of the Hy-Rib hand book just off the press. This publication embraces all the advantageous features and information in previous editions besides many valuable and important additions.

All the various types of Hy-Rib are shown with their applications to all types of constructions. Specifications and reading matter have been completely revised and include the most recent developments and improvements. Many new details and discussions have been added. The photographs of installations are particularly comprehensive, including many new applications. Illustrations and information on pressed steel studs and Kahn pressed steel construction, as well as the Floretyle construction have been added.

Readers of this publication doubtless will find this Hy-Rib hand book a valuable addition to their technical libraries. The book is sent free to interested parties. The table of contents on the opening page gives the general contents of the hand book, while the reading pages go comprehensively into the subjects indicated. Published by the Trussed Concrete Steel Company, Youngstown, O.

A Testimonial of Efficiency

Some eighteen years ago the well-known firm of heating and ventilating engineers, W. Morgan & Co. of San Francisco, installed a hot-air heating plant in the old El Dorado school at Stockton, California. The system heated thirteen class rooms adequately and very economically, in fact from twenty-five to thirty per cent cheaper than other systems then in use in the Stockton schools. The results were so satisfactory that during the current year, when the splendid new El Dorado school was erected from plans by Architects Stone & Wright, it was decided by the school board and the architects to install again the Morgan system in the new building. The Morgan equipment includes the

plenum system of heating and ventilating, oil-burners and automatic temperature regulation, the total cost of the plant complete being about $5,000.

The fact that the school authorities insisted on having a duplicate of the old plant installed in the new school speaks well for the efficiency of the Morgan equipment, and doubtless will influence other school boards and architects seeking efficient school house heating.

Another Victory for Home Industry

The Capitol Sheet Metal Works of San Francisco and Oakland were awarded the contract for metal furniture for the new City Hall of San Francisco. The contract will run to about $25,000. This is quite a victory for our home people. The opposition from the East was very strong and very bitter. In spite of this the local firm won on their merits. This firm recently completed a large contract for steel roller book shelves for the Oakland Hall of Records.

The above, taken from a San Francisco publication, promoting Home Industry, tells its own story, and the officers of the company are justly proud of the notoriety accorded them in the award of this substantial public contract.

Since 1911 the Capitol Sheet Metal Works have been manufacturing Underwriters labelled windows and fire doors in metals, Kalamein doors and trim, "Hauser" reversible metal windows, and all other classes of fine sheet metal work in tin, copper and galvanized iron.

They have recently furnished and installed metal doors and windows for the Fort Mason warehouses, Kalamein doors and trim for the Fireman's Fund Insurance building, Kalamein doors and trim for San Francisco City Jail and City Morgue, skylights, roofing, etc., for the California Academy of Sciences building in Golden Gate Park, and many other important structures in and around San Francisco and interior California.

The company maintains a large office and factory at 1927-1935 Market street, San Francisco, and a branch office and factory at 117-119 Franklin street, Oakland.

This company has made rapid headway since its commencement and has a reputation for doing only high class work.

The active officers of the company are Mr. G. A. Wieland and Mr. W. F. Aldrich, men who enjoy a long and varied experience in the sheet metal industry.

E. A. Bullis Sells Out

C. W. Coburn & Co., 320 Market street, San Francisco, has purchased the interests of E. A. Bullis & Co. in "Carbite" and in their dry mortar colors. They also take over the agency of the Federal Steel Cement Mills, which include a cement hardener and the Federal Elastic Compound.

Current Prices of Building Materials

These quotations furnished by reliable San Francisco and Los Angeles dealers

(Names and addresses will be supplied upon request.)

SAN FRANCISCO PRICES

Common Red Brick, $7.50 per M, ex. cars.
No. 1 Pressed Brick, $35.00 to $40.00 per M; Wire cut, $35.00 per M.
No. 1 Red Pressed Brick, $20.00 to $30.00 per M.
Red Stock Brick, $14.00 to $16 00 per M.
California Portland Cement, C/L $2.30 per bbl.; L.C.L. $2.55 per bbl.
White Cement: Atlas, $6.00; Medusa, $6.00 per bbl.
Sand and Gravel mixed, 70c per ton, F. O. B. cars.
Sand (washed, screened river sand) 65c per ton, F. O. B. cars.
Bank Sand, $1.00 per cu. yd.
Roofing Gravel, $1.40 per ton.
Crushed Rock or Gravel, 75c per ton.
Red Roofing Tile, $22.00 to $25.00 per square, laid.
Brick Lime, $1.35 per bbl., C/L.
Finish Lime, $1.50 per bbl., C/L.
Hardwall Gypsum Plaster, $11.00 per ton, carload; 1150 per ton, ex. warehouse.
Oregon Pine, Rough Common, 1 x 3 to 1 x 10, $13.00.
Oregon Pine, Rough, 2 x 3 to 2- 12, $15.00.
Oregon Pine 1 x 4 T. & G. Flooring, No. 1, $31 per M; No. 2, $28; No. 3, $24.
Oregon Pine T. & G. Ceiling, No. 1 and 2 mixed, $26 to $28.
Redwood, Rough Common, 1 x 4 and up, $20.00.
Redwood, Rough Common, 2 x 3 to 2 x 10, $20.00 to $22 00.
Redwood Rustic, No. 1, $35.00; No. 2, $32.00.
Redwood Ceiling, No. 1, $29.00; No. 2, $26.00.
Redwood Shingles, No. 1, $2.40 full count.
Red Cedar Shingles, Star-A-Star, $2.40 full count.
Pine Lath, $2.40 per M.
Metal Lath, 13 to 25c per yd., according to quality.
1 x 3 Oak Flooring, Q. S. Clear, $116.00 per M; Select $75.00 per M.
½ x 2½ Oak Flooring, Q. S. Clear, $96.00 per M; Select, $74.00 per M.
1 x 3 Maple Flooring Clear, $71.00 per M; Clear White, $85.00 per M.
White Lead in Oil, 8¼c per lb.
Dry Red Lead, 8c per lb.
Boiled Linseed Oil, 74c gal. Raw Linseed Oil, 72c gal.
Turpentine, per gallon, 63 to 70c in bbls.
Dry Shellac, 35c per lb., variable.
Hyloplate Blackboard, 25 to 35c per foot, installed.
Composition Flooring, 25 to 30c per foot, laid.
Genuine Slate Blackboards, 40 to 50c per foot, erected.

LOS ANGELES PRICES

Common Red Brick, No. 2, $4.50 per M.
Clinker Brick, $9.00 per M.
Pressed Brick, $35.00 per M.
Enameled Brick, $65.00 per M.
Red Roofing Tile, $12.00 and $15.00 per square (not laid).
White Cement, $6.00 per bbl.
Portland Cement, $2.30 per bbl.
Lime, $1.50 to $1.75 per bbl.
Hardwall Plaster, per ton, $9.90 ex. whse.
Oregon Pine, Rough Common, 1 x 3 up, $19.00 to $22.00 per M.
Oregon Pine, Rough Common, 2 x 3 up, $17.00 to $21 00 per M.
Oregon Pine Flooring, 1 x 4, No. 1, $40.00; No. 2, $35.00; No. 3, $22.50 per M.
Oregon Pine Ceiling, 1 x 4, No. 1, $36.00; No. 2, $31 00.
Redwood, Rough Common, $20 00 to $24 00.
Redwood Rustic, No. 1, $38.00; No. 2, $33.00 per M.
Redwood Ceiling, 1 x 4, No. 1, $33.00; No. 2, $28.00 per M.
Redwood Shingles, 4 bdls. to M, No. 1, $2.25; No. 2, $1.75.
Red Cedar Shingles, 4 bdls. to M, Star-A-Star, $2.75.
Pine Lath, 1½ in. x 4 ft., $3.25 per M; 1⅝ in. x 4 ft. $3.65 per M.
White Lead in Oil, 8½c per lb.
Red Lead, dry, 8½c per lb.
Raw Linseed Oil, bbls., 65c gallon.
Boiled Linseed Oil, bbls., 65c gallon.
Turpentine, bbls., 63 to 70c. gallon.
Crushed Rock and Gravel, $1.65 per yard.
Sand, 85c per yard.

SACRAMENTO PRICES

Common Brick, $7.00 per M, C/L.
Pressed Brick, Wire Cut, $30.00 per M, C/L.
Portland Cement, $2.40 per bbl. carloads.
Crushed Rock and Gravel, 85c per ton, ex. cars.
Sand, $1.00 yd. on cars.
Roofing Gravel, $1.50 per ton.
Lime, $1.35 bbl.
Hardwall Plaster, $13.00 per ton, ex. whse.

STOCKTON PRICES

Common Brick, $7.75 per M, del.
Face Brick, Wire Cut, $31.00 per M C/L.
Cement, $2.40 per bbl., C/L.
Crushed Rock and Gravel, 90c ton.
Sand, 90c.
Roofing Gravel, $1.50 per ton.
Lime, $1.35.
Hardwall Plaster, $13.00 ex. whse. per ton.

FRESNO PRICES

Common Brick, $9.50 per M, del.
Face Brick, Wire Cut, $35.00 per M, C/L.
Cement, $2.84 per bbl., C/L.
Crushed Rock and Gravel, $1.35 per ton.
Black Face Brick, $25.00 per M—F. O. B.
Sand, $1.00 per yd., del.
Roofing Gravel, $1.85 per ton.
Lime, $1.50 bbl.
Hardwall Plaster, $14.00 per ton, ex. whse.

BAKERSFIELD PRICES

Common Brick, $9.00 per M, del.
Face Brick, Wire Cut, $37.00 per M, C/L.
Cement, $2.77 per bbl., C/L.
Crushed Rock and Gravel, $1.80 per ton.
Sand, $1.00 per yd., del.
Roofing Gravel, $2.00 per ton.
Lime, $1.50 per bbl.
Hardwall Plaster, $15.00 per ton, ex. whse.

NORTHERN CALIFORNIA POINTS

Common Brick, $11.00 per M, del.
Face Brick, Wire Cut, $35.00 per M, C/L.
Cement, $2.65 per bbl.
Crushed Rock and Gravel, 85 to 90c per ton, C/L.
Sand, $1.00 per yard.
Roofing Gravel, $1.50 per ton.
Lime, $1.40 bbl.
Hardwall Plaster, $14 00 per ton, ex. whse.

Book Review

DISPLAY WINDOW LIGHTING and THE CITY BEAUTIFUL, by F. Laurent Godinez, New York, The Wm. T. Comstock Co. Cloth, Illuminated Cover, 6 x 9. 226 pages. 115 illustrations. Colored plates. Price, $2.00.

The profession of Illuminating Engineer is one that I have heard of—in one ear and out the other—for the past seven years. Whether there were illuminating engineers before that time I could not testify. But it was in one ear and out the other until recently I found that I was injuring my eyes—ruining them—reading evening after evening under four 40-watt tungsten lamps which threw their light downward seemingly just the way to get a good, bright, helpful light though actually, as I have said, doing great injury.

The subject of reflected light was then only casually investigated and a chandelier or fixture with sockets for three lamps—one 60 watt and two 40 watt—of a kind that threw the principal light upward and only allowed a diffused and softened downthrow was installed in place of the deadly direct light. The result was magical in two ways; the painful burning vanished; it actually rested the eyes to look square at the soft radiance which the new style fixture diffused; and, what seemed more remarkable, the amount of current consumed was cut in thirds.

It was actually easier to read under one 60-watt lamp—the light was better as well as softer than it had been under four 40 watts. I estimate that the one 60 gives as much more efficiency as could make the actual current consumed just one-third what had been used before.

So impressed have I been with my experience that I have asked the privilege of speaking a word about Mr. Godinez's book.

Here, among other things, is stated a new use for a show window. The old notion that it was only really necessary as a mirror in which passing ladies and gentlemen could view their counterfeit presentments and arrange their hats, their hair or their neckties is exploded. I have recently seen show windows in which you could only see the goods in the windows instead of yourself as you looked within. But that, perhaps, is not just what Mr. Godinez writes of here.

But my experience opened my eyes, and I can testify now from actual experience that there is "something to it"—something big.

Every architect ought to read and master this book. Every owner should read it or employ Mr. Godinez to overhaul his lighting fixtures.

Perhaps—I could almost say surely—the amount of electric current consumed would not be so great if everybody's show window, not to mention his shop and his home, were lighted by a modern scientific system, such as Mr. Godinez has outlined. But that would not be putting it right either, for the electric light, for instance, would find so many more users that the total consumption would probably increase faster than ever.—Theodore Starrett.

(Reprinted from "Architecture and Building.")

Otis Elevator Company Exhibit at the Panama-Pacific Exposition Wins Recognition

The Otis Elevator Company exhibit of elevator machines and safety devices in the Palace of Machinery at the Panama-Pacific International Exposition is conceded to be one of the most attractive exhibits in the building.

Although it has been impossible, obviously, in the limited space available, to display all of the many types of Otis electric, hydraulic, belt and hand power elevators, yet a splendid opportunity is given to become fully conversant with the newer developments in high speed electric and push button controlled machines.

The display of Otis 1:1 and 2:1 Gearless Traction Elevator Machines has been awarded the Grand Prix and the Grand Prix has also been awarded on the Otis Worm Gear Traction alternating current two-speed machine, which is arranged for speeds up to and including 350 feet per minute. This achievement, as can be readily appreciated, is a most notable advance in elevator design. The widening use of alternating current has prompted this important development, which unlocks many doors heretofore tightly closed against the specification of a comparatively high speed alternating current elevator. A gold medal has been awarded on the new Otis Electro-Mechanical Safety, the product of years of searching study and thought on the part of the company's officials and engineers. This new safety device has many distinct advantages over its predecessor for very high speed elevators, and has been granted the unqualified approval of the New York City Building Department, under whose supervision it was first tested and used.

A gold medal has been awarded on the Otis oil buffer, the invention and perfection of which has added so materially to the safetly of elevator operation. One of these buffers is on exhibition, exposed, to illustrate the delicate and exact construction of its chambers.

A medal of honor has been awarded the Otis automatic push button control electric elevator, which travels twenty-four feet in an open hatchway to the balcony above, with its machine and controller located below to demonstrate the precise control qualities of this popular elevator.

The total awards granted the Otis Elevator Company are two grand prizes, one medal of honor and two gold medals.

New Firm of Architects

Hart Wood, for twelve years with Bliss & Faville, and H. G. Simpson, formerly associated with L. B. Dutton and later with W. H. Ratcliff, Jr., have formed a partnership for the practice of architecture, with offices in the French Bank building, San Francisco. Mr. Simpson worked on the plans submitted in competition by Mr. Dutton for the San Francisco City Hall, and was also associated with Mr. Dutton on the First Trust and Savings bank building, Oakland, and the Stockton Savings bank.

Roman Company Moves

C. Roman Company, paint manufacturers and manufacturers' agents, have given up their store and show-rooms on Jessie street and taken an office in the Sharon building, San Francisco.

Architectural Competition

(From the Visalia Delta.)

Prizes have been decided on by the auditorium committee for the best sets of plans for the new municipal building which is to be built under the $50,000 bond issue voted by the people. The committee believes that by this means the best ideas can be secured, an advantage that will be of value to the city. The first prize will be the acceptance of the plans and the 5 per cent commission for the superintendence of the work. The second prize will be $250 and the third prize $150.

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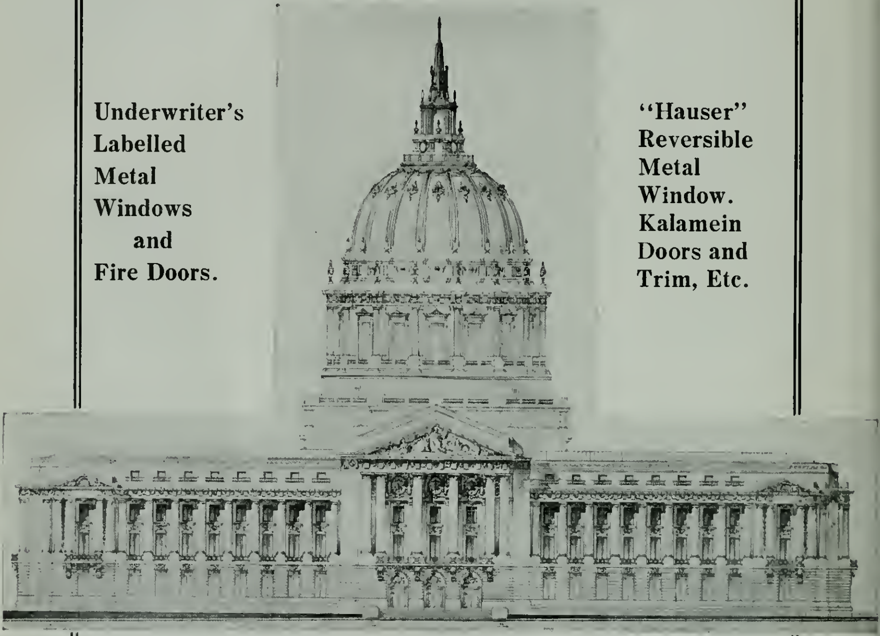

San Francisco City Hall. Bakewell & Brown, Architects

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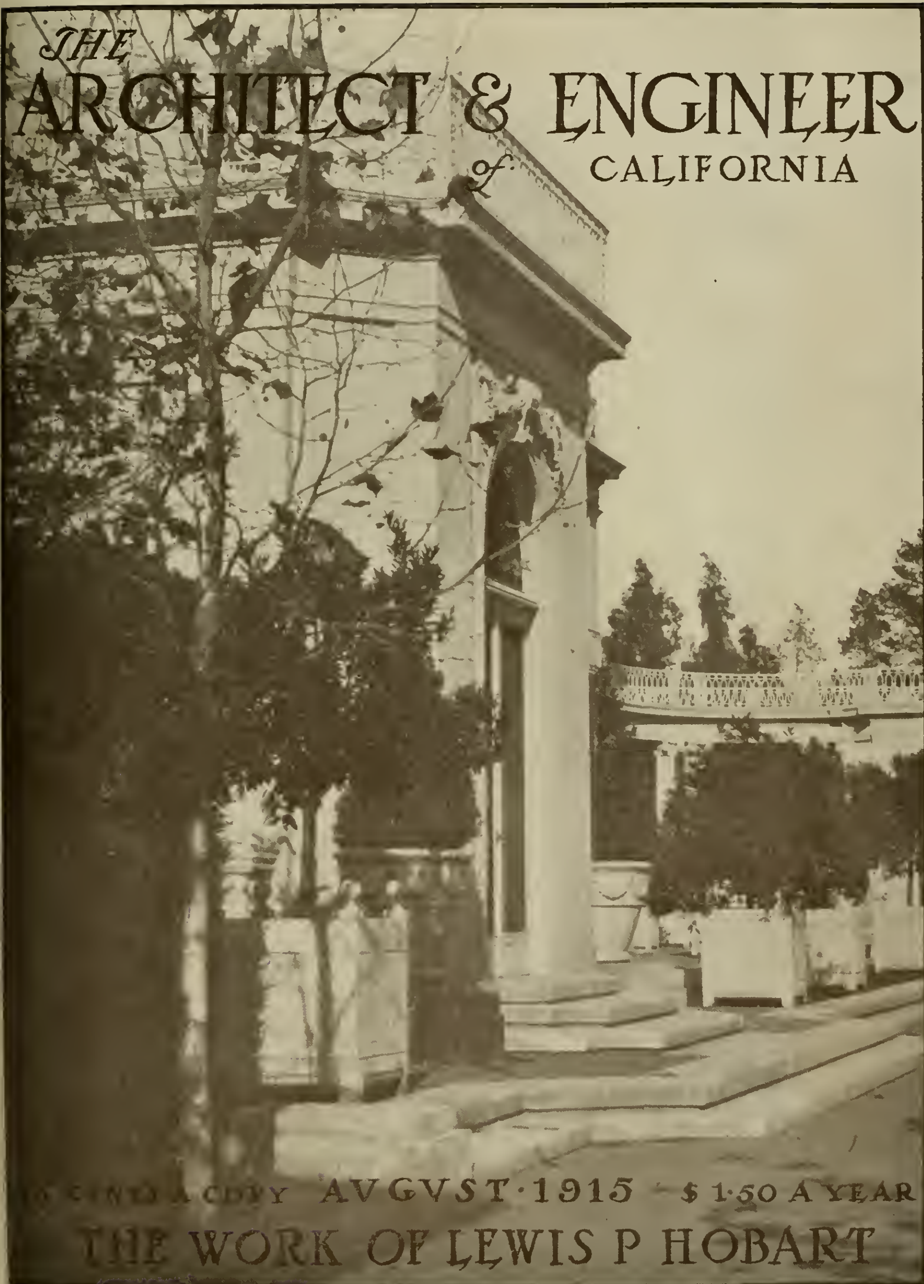

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Architects' Specification Index

(For Index to Advertisements, see next page)

An Index to the Advertisements

ARCHITECTS' SPECIFICATION INDEX—*Continued*

CEMENT EXTERIOR WATERPROOF COATING —Continued.

Imperial Waterproofing, manufactured by Imperial Co., 183 Stevenson St., San Francisco.
Trus-Con Par-Seal, made by Trussed Concrete Steel Co., Youngstown, O.
Paraffine Paint Co., 34 First St., San Francisco.

CEMENT EXTERIOR FINISH

Bay State Brick and Cement Coating, made by Wadsworth, Howland & Co. (See list of Distributing Agents on page 30.)

Glidden's Liquid Cement and Liquid Cement Enamel, sold on Pacific Coast by Whittier, Coburn Company, San Francisco, and California Glass & Paint Company, Los Angeles.

Medusa White Portland Cement, California Agents, the Building Material Co., Inc., 587 Monadnock Bldg., San Francisco.

Concrete Cement Coating, manufactured by the Muralo Company, 540 Valencia St., San Francisco.

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 30.)

Fuller's Concrete Floor Enamel, made by W. P. Fuller & Co., San Francisco.

Glidden's Concrete Floor Dressing, sold on Pacific Coast by Whittier, Coburn Company, San Francisco, and California Glass & Paint Company, Los Angeles.

CEMENT TESTS—CHEMICAL ENGINEERS

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

CHURCH INTERIORS

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

CHUTES—GRAVITY SPIRAL

Insley Gravity System for pouring concrete, represented by Garfield Myers, Hearst Bldg., San Francisco.

COLD STORAGE PLANTS

Vulcan Iron Works, San Francisco.
T. P. Jarvis Crude Oil Burning Co., 275 Connecticut St., San Francisco.

COMPOSITION FLOORING

Fibrestone & Roofing Co., 971 Howard St., San Francisco.

"Kompolite," sold by John King & Sons, 36 Stanford street, San Francisco.

Magnesite Flooring, laid by National Roofing Company, Plaza Bldg., Oakland.

COMPRESSED AIR CLEANERS

The B. & W. Stationary Vacuum Cleaner, sold by Arthur T. Riggs, 510 Claus Spreckels Bldg., San Francisco.
Excello Stationary Vacuum Cleaner, F. W. Schaer Co., Pacific Coast Agts., Santa Maria Bldg., San Francisco.
Invincible Vacuum Cleaner, sold by R. W. Foyle, 149 New Montgomery St., San Francisco.
Tuec., mfrd. by United Electric Company, Coast Branch, General Contractors' Association, San Francisco.

CONCRETE CONSTRUCTION

American Concrete Co., Humboldt Bank Bldg., San Francisco.
Clinton Fireproofing Co., Mutual Bank Bldg., San Francisco.
Barrett & Hilp, Sharon Bldg., San Francisco.
P. A. Palmer, Monadnock Bldg., San Francisco.
International Concrete Construction Company, West Berkeley, Cal.

CONCRETE MACHINERY

Garfield Myers, factory representative of Insley Manufacturing Company, and Marsh-Capron Company, Hearst Bldg., San Francisco.

CONCRETE MIXERS

Austin Improved Cube Mixer. Factory branch. 473-485 Sixth St., San Francisco.
Foote Mixers sold by Edw. R. Bacon, 40 Natoma St., San Francisco.

CONCRETE PILES

McArthur Concrete Pile Company, Chronicle Building, San Francisco.

CONCRETE REINFORCEMENT

United States Steel Products Co., San Francisco, Los Angeles, Portland and Seattle.
"Kahn System," see advertisement on page 23, this issue.
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 & Gunn, 444 Market St., San Francisco.
Pacific Coast Steel Company, Rialto Bldg., San Francisco, and Union Oil Bldg., Los Angeles.

CONCRETE SURFACING

"Concreta" sold by W. P. Fuller & Co., San Francisco.
Wadsworth, Howland & Co.'s Bay State Brick and Cement Coating, sold by Jas. Hambly Co., Pacific Bldg., San Francisco and Los Angeles.
Glidden Liquid Cement, manufactured by Glidden Varnish Co., Whittier, Coburn Co., San Francisco, and California Glass & Paint Company, Los Angeles.

ARCHITECTS' SPECIFICATION INDEX—*Continued*

CONTRACTORS, GENERAL
- American Concrete Co., Humboldt Bank Bldg., San Francisco.
- Marius F. Bos, New Call Bldg., San Francisco.
- Dunnavant-Oakley Co., 1430 Powell St., San Francisco.
- Geo. W. Boxton & Son, Hearst Bldg., San Francisco.
- Collman & Collman, 526 Sharon Bldg., San Francisco.
- Construction & Engineering Co., 1047 Folsom St., San Francisco.
- M. Fisher, 863 Mission St., San Francisco.
- Van Sant, Houghton Co., Hooker & Lent Bldg., San Francisco.
- Howard S. Williams, Hearst Bldg., San Francisco.
- Harvey A. Klyce, Sheldon Bldg., San Francisco.
- Lange & Bergstrom, Sharon Bldg., San Francisco.
- A. H. Leaf Co., New Call Bldg., San Francisco.
- Lester Stock, 12 Geary St., San Francisco.
- McLaren & Peterson, Sharon Bldg., San Francisco.
- John Monk, 216 Sharon Bldg., San Francisco.
- Monson Bros., 1907 Bryant St., San Francisco.
- Burt T. Owsley, 311 Sharon Bldg., San Francisco.
- Robert Trost, 26th and Folsom Sts., San Francisco.
- Western Building & Engineering Co., 455 Phelan Bldg., San Francisco.
- Williams Bros. & Henderson, Holbrook Bldg., San Francisco.

CORK FLOORING
- "Linotile," manufactured by Armstrong Cork & Insulation Company. M. C. Van Fleet, agt., 120 Jessie St., San Francisco.

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

CORNER BEAD
- Capitol Sheet Metal Works, 1827 Market St,, San Francisco.
- United States Metal Products Co., 525 Market St., San Francisco.; 750 Keller St., San Francisco.

CRUSHED ROCK
- Grant Gravel Co., Flat Iron Bldg., San Francisco.
- Niles Rock, sold by California Building Material Company, new Call Bldg., San Francisco.
- Niles Sand, Gravel & Rock Co., Mutual Bank Bldg., San Francisco.
- Pratt Building Material Co., Hearst Bldg., San Francisco.

DAMP-PROOFING COMPOUND
- Glidden's Liquid Rubber, sold on Pacific Coast by Whittier, Coburn Company, San Francisco, and California Glass & Paint Company, Los Angeles.
- Armorite Damp Resisting Paint, made by W. P. Fuller & Co., San Francisco.

DAMP-PROOFING COMPOUND—Continued.
- Imperial Co., 183 Stevenson St., 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.
- 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.

DRINKING FOUNTAINS
- Haws Sanitary Fountain, 1808 Harmon St., Berkeley, and C. F. Weber & Co., San Francisco and Los Angeles.
- Crane Company, San Francisco, Oakland, and Los Angeles.
- J. B. Clow & Son, Hearst Bldg., San Francisco.
- Pacific Porcelain Ware Co., 67 New Montgomery St., San Francisco.

DUMB WAITERS
- Spencer Elevator Company, 173 Beale St., San Francisco.
- Burdett-Rowntree Mfg. Co., Underwood Bldg., San Francisco.

ELECTRICAL CONTRACTORS
- Butte Engineering Co., 683 Howard St., San Francisco.
- Boynton Electric Co., 504 Rialto Bldg., San Francisco.
- Central Electric Co., 618 Mission St., San Francisco.
- Newbery Electrical Co., Humboldt Bank Bldg., San Francisco.
- Pacific Fire Extinguisher Co., 507 Montgomery St., San Francisco.
- H. S. Tittle, 245 Minna St., San Francisco.
- Standard Electrical Construction Company, 60 Natoma St., San Francisco.

ELECTRICAL ENGINEERS
- Chas. T. Phillips, Pacific Bldg., 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.
- Pacific Gurney Elevator Co., 186 Fifth St., San Francisco.
- B. C. Van Emon Elevator Co., 235 First St., San Francisco.

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

ARCHITECTS' SPECIFICATION INDEX—*Continued*

ARCHITECTS' SPECIFICATION INDEX—*Continued*

HARDWOOD FLOORING
- Parrott & Co., 320 California St., San Francisco
- White Bros., Cor. Fifth and Brannan Sts., San Francisco.
- Strable Manufacturing Company, Oakland, California.

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.
- Strable Manufacturing Company, Oakland, California. (See advertisement above.)

HEATERS—AUTOMATIC
- Pittsburg Water Heater Co., 237 Powell St., San Francisco.
- Hoffman Heater Company, 397 Sutter St., San Francisco.

HEATING AND VENTILATING
- American Heat & Power Co., Oakland, Cal.
- Fess System Co., 220 Natoma St., San Francisco.
- Gilley-Schmid Company, 198 Otis St., San Francisco.
- Mangrum & Otter, Inc., 507 Mission St., San Francisco.
- Charles T. Phillips, Pacific Building, San Francisco.
- William F. Wilson Co., 328 Mason 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., 730 Larkin St., San Francisco.

HEAT REGULATION
- G. E. Witt Company, Inc., 850 Howard St., San Francisco.
- Johnson Service Company, 149 Fifth St., San Francisco.

HOLLOW BLOCKS
- Denison Hollow Interlocking Blocks, 310 Ochsner Bldg., Sacramento, and Chamber of Commerce Bldg., Portland.

HOSPITAL FIXTURES
- J. L. Mott Iron Works, 135 Kearny St., San Francisco.

INGOT IRON
- "Armco" brand, manufactured by American Rolling Mill Company, Middletown, Ohio.

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

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

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

LAMP POSTS
- J. L. Mott Iron Works, 135 Kearny St., San Francisco.

LIME
- 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.
- E. K. Wood Lumber Company, East Oakland, California.
- Pacific Manufacturing Company, San Francisco, Oakland and Santa Clara.
- Tilden Lumber Company, foot of Unversity Ave., Berkeley, Cal.

MILL WORK
- Dudfield Lumber Co., Palo Alto, Cal.
- Pacific Manufacturing Company, San Francisco, Oakland and Santa Clara.

MAIL CHUTES
- Cutler Mail Chute Co., Rochester, N. Y. (See Adv. on page 28 for Coast representatives.)

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

MARBLE
- G. Tomagnini & Co., 219 Tenth St., San Francisco.
- Sculptor's Workshop. (See adv., page 134.)

METAL AND STEEL LATH
- "Steelcrete" Expanded Metal Lath, sold by Holloway Expanded Metal Company, Second and Federal Sts., San Francisco.

METAL CEILINGS
- San Francisco Metal Stamping & Corrugating Co., 2269 Folsom St., San Francisco.

METAL DOORS AND WINDOWS
- U. S. Metal Products Co., 525 Market St., San Francisco.
- Capitol Sheet Metal Works, 1927 Market St., San Francisco; 117 Franklin St., Oakland.

METAL FURNITURE
- Capitol Sheet Metal Works, San Francisco and Oakland.
- A. H. Andrews Co., 728 Mission St., San Francisco.

ARCHITECTS' SPECIFICATION INDEX—*Continued*

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

OIL BURNERS
S. T. Johnson Co., 1337 Mission St., San Francisco.
American Standard Oil Burner Co., Seventh and Cedar Sts., Oakland.
W. S. Ray Manufacturing Company, 218 Market St., San Francisco.
Fess System Co., 220 Natoma St., San Francisco.
T. P. Jarvis Crude Oil Burner Co., 275 Connecticut St., San Francisco.
Rotary Oil Burner Company, 159 Twelfth St., Oakland.
G. E. Witt Oil Burner Company, 850 Howard St., San Francisco.

ORNAMENTAL IRON AND BRONZE
Brode Iron Works, 31-37 Hawthorne St., San Francisco.
Burnett Iron Works, Fresno.
Palm Iron & Bridge Works, Sacramento.
J. G. Braun, Chicago and New York.
Ralston Iron Works, 20th and Indiana Sts., San Francisco.
Monarch Iron Works, 1165 Howard St., San Francisco.
J. L. Mott Iron Works, 135 Kearny 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.

PAINT FOR CEMENT
Bay State Brick and Cement Coating, made by Wadsworth, Howland & Co. (Inc.). (See Adv. in this issue for Pacific Coast agents.)
Fuller's Concreta for Cement, made by W. P. Fuller & Co., San Francisco.
Glidden's Liquid Cement, sold on Pacific Coast by Whittier, Coburn Company, San Francisco.
Trus-Con Stone Tex., Trussed Concrete Steel Co. (See Adv. for Coast agencies.)
Concreto Cement Coating, manufactured by the Muralo Company, 540 Valencia St., San Francisco.
Samuel Cabot Mfg. Co., Boston, Mass., agencies in San Francisco, Oakland, Los Angeles, Portland, Tacoma and Spokane.

PAINT FOR STEEL STRUCTURES, BRIDGES, ETC.
Glidden's Acid Proof Coating, sold on Pacific Coast by Whittier, Coburn Company, San Francisco.
Trus-Con Bar-Ox, Trussed Concrete Steel Co. (See Adv. for Coast agencies.)
Paraffine Paint Co., 34 First St., San Francisco.
Premier Graphite Paint and Pioneer Brand Red Lead, made by W. P. Fuller & Co., San Francisco.

PAINTS, OILS, ETC.
Bass-Hueter Paint Co., Mission, near Fourth St., San Francisco.
Glidden Varnish Co., Cleveland, Ohio, represented by Whittier-Coburn Co., San Francisco, and California Glass & Paint Company, Los Angeles.
R. N. Nason & Company, San Francisco, Los Angeles, Portland and Seattle.
W. P. Fuller & Co., all principal Coast cities.
Standard Varnish Works, 113 Front St., San Francisco.

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

PHOTOGRAPHY
R. J. Waters Co., 717 Market St., San Francisco.

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.
C. C. Morehouse, Crocker Bldg., San Francisco.
J. J. Connolly & Son, Builders' Exchange, San Francisco.
Herman Bosch, 2054 Market St., San Francisco.

PLUMBING CONTRACTORS
Gilley-Schmid Company, 198 Otis St., San Francisco.
Scott Co., Inc., 243 Minna St., San Francisco.
Petersen-James Co., 730 Larkin St., San Francisco.
Wittman, Lyman & Co., 341 Minna St., San Francisco.
Alex Coleman, 706 Ellis St., San Francisco.

PLUMBING FIXTURES, MATERIALS, ETC.
J. B. Clow & Son, Hearst Bldg., San Francisco.
Crane Co., Second and Brannan Sts., San Francisco.
California Steam Plumbing Supply Co., 671 Fifth St., San Francisco.
Gilley-Schmid Company, 198 Otis St., San Francisco.
Glauber Brass Manufacturing Company, 1107 Mission St., San Francisco.
Miller-Enwright Company, Sacramento, Cal.
J. L. Mott Iron Works, D. H. Gulick, selling agent, 135 Kearny St., San Francisco.
H. Mueller Manufacturing Co., Pacific Coast branch, 589 Mission St., San Francisco
Pacific Sanitary Manufacturing Co., 67 New Montgomery St., San Francisco.
Western States Porcelain Co., San Pablo, Cal.
Wm. F. Wilson Co., 328 Mason St., San Francisco

POTTERY
Steiger Terra Cotta and Pottery Works, Mills Bldg., San Francisco.

PUMPS
Chicago Pump Company, 612 Howard street, San Francisco.

RADIATORS
"Presto" Sanitary Radiators (see page 132 for Pacific Coast Agents.)

REFRIGERATORS
McCray Refrigerators, sold by Nathan Dohrmann Co., Geary and Stockton Sts., San Francisco.
Vulcan Iron Works, San Francisco.

REVERSIBLE WINDOWS
Hauser Reversible Window Company, Balboa Bldg., San Francisco.

REVOLVING DOORS
Van Kennel Doors, sold by U. S. Metal Products Co., 525 Market St., San Francisco.

ROCK BREAKING MACHINERY
Vulcan Iron Works, Francisco and Kearny Sts., San Francisco.

ARCHITECTS' SPECIFICATION INDEX—*Continued*

ROLLING DOORS, SHUTTERS, PARTITIONS, ETC.

Pacific Building Materials Co., 523 Market St., San Francisco .

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

Kinnear Steel Rolling Doors, W. W. Thurston, agent, Rialto Bldg., San Francisco.

Wilson's Steel Rolling Doors, U. S. Metal Products Co., San Francisco and Los Angeles.

ROOFING AND ROOFING MATERIALS

Grant Gravel Co., Flat Iron Bldg., San Francisco.

Fibrestone & Roofing Co., 971 Howard St., San Francisco.

National Roofing Company, Plaza Bldg., Oakland.

"Malthoid" and "Ruberoid," manufactured by Paraffine Paint Co., San Francisco.

United Materials Co., Crossley Bldg., San Francisco.

ROOFING TIN

Meurer Bros., A. H. MacDonald, agent, 630 Third St., San Francisco.

SANITARY DRINKING FOUNTAINS

J. L. Mott Iron Works, 135 Kearny St., San Francisco.

Haws' Sanitary Drinking Faucet Co., 1808 Harmon St., Berkeley.

J. B. Clow & Son., Hearst Bldg., San Francisco.

SASH CORD

Samson Cordage Works, manufacturers of Solid Braided Cords and Cotton Twines, 88 Broad St., Boston, Mass.

SCENIC PAINTING—DROP CURTAINS, ETC.

The Edwin H. Flagg Scenic Co., 1638 Long Beach Ave., Los Angeles.

SCHOOL FURNITURE AND SUPPLIES

C. F. Weber & Co., 365 Market St., San Francisco; 512 S. Broadway, Los Angeles.

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Whitaker & Ray-Wiggin Company, 776 Mission St., San Francisco.

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Paraffine Paint Co., 34 First St., San Francisco.

SHEET METAL WORK, SKYLIGHTS, ETC.

Capitol Sheet Metal Works, 1927 Market St., San Francisco.

U. S. Metal Products Co., 525 Market St., San Francisco.

SHINGLE STAINS

Cabot's Creosote Stains, sold by Waterhouse & Price, San Francisco, Los Angeles and Portland.

Fuller's Pioneer Shingle Stains, made by W. P. Fuller & Co., San Francisco.

SLATE ROOFING

Fiberstone & Roofing Co., 971 Howard St., San Francisco.

STEEL AND IRON—STRUCTURAL

Burnett Iron Works, Fresno, Cal.

Central Iron Works, 621 Florida St., San Francisco.

Dyer Bros., 17th and Kansas Sts., San Francisco.

Brode Iron Works, 31 Hawthorne St., San Francisco.

Golden Gate Iron Works, 1541 Howard St., San Francisco.

Judson Manufacturing Co., 819 Folsom St., San Francisco.

Mortenson Construction Co., 19th and Indiana Sts., San Francisco.

Pacific Rolling Mills, 17th and Mississippi Sts., San Francisco.

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

Palm Iron & Bridge Works, Sacramento.

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.

Woods, Huddart & Gunn, 444 Market St., San Francisco

STEEL PRESERVATIVES

Wadsworth, Howland & Co., Boston Mass. (See Adv. for Coast agencies.)

Paraffine Paint Co., 34 First St., San Francisco.

STEEL BARS FOR CONCRETE

Kahn and Rib Bars, made by Trussed Concrete Steel Co. (See Adv. for Coast agencies.)

Woods, Huddart & Gunn, 444 Market St., San Francisco.

Pacific Coast Steel Co., Rialto Bldg., San Francisco, and Union Oil Company, Los Angeles.

STEEL MOULDINGS FOR STORE FRONTS

J. G. Braun, 615-621 S. Paulina St., Chicago, Ill.

STEEL FIREPROOF WINDOWS

United States Metal Products Co., San Francisco and Los Angeles.

ARCHITECTS' SPECIFICATION INDEX—*Continued*

STEEL ROLLING DOORS
Kinnear Steel Rolling Door Co., W. W. Thurston, Rialto Bldg., San Francisco.

STEEL WHEELBARROWS
Champion and California steel brands, made by Western Iron Works, 141 Beale St., San Francisco.

STONE
California Granite Co., 518 Sharon Bldg., San Francisco.
Raymond Granite Co., Potrero Ave. and Division St., San Francisco.
Colusa Sandstone Co., Potrero Ave. and Division St., San Francisco.
McGilvray Stone Company, 634 Townsend St., San Francisco

STORAGE SYSTEMS—GASOLINE, OIL, ETC.
S. F. Bowser & Co., 612 Howard St., San Francisco.

SURETY BONDS
Globe Indemnity Co., Insurance Exchange Bldg., San Francisco.
J. B. Nabors & Sons, Kohl Bldg., San Francisco.
Fidelity & Deposit Co. of Maryland, Mills Bldg., San Francisco.
Pacific Coast Casualty Co., Merchants' Exchange Bldg., San Francisco.

TEMPERATURE REGULATION
Johnson Service Company, 149 Fifth St., San Francisco.
G. E. Witt Company, Inc., 850 Howard St., San Francisco.

THEATER AND OPERA CHAIRS
A. H. Andrews, 728 Mission St., San Francisco.
C. F. Weber & Co., 365 Market St., San Francisco.
Whitaker & Ray-Wiggin Company, 776 Mission St., San Francisco.

TELEPHONE EQUIPMENT
Telephone Electric Equipment Co., 612 Howard St., San Francisco.

TILES, MOSAICS, MANTELS, ETC.
Mangrum & Otter, 561 Mission St., San Francisco.

TILE FOR ROOFING
Fibrestone & Roofing Co., 971 Howard St., San Francisco.
Gladding, McBean & Co., Crocker Bldg., San Francisco.
United Materials Co., Crossley Bldg., San Francisco.

TILE WALLS—INTERLOCKING
Denison Hollow Interlocking Blocks, Ochsner Bldg., Sacramento.

VITREOUS CHINAWARE
Pacific Porcelain Ware Company, 67 New Montgomery St., San Francisco.

VACUUM CLEANERS
Invincible Vacuum Cleaner, R. W. Foyle, Agent, San Francisco.
"Tuec" Air Cleaner, manufactured by United Electric Co., 110 Jessie St., San Francisco.

VALVES
Jenkins Bros., 247 Mission St., San Francisco.

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

VARNISHES
W. P. Fuller Co., all principal Coast cities.
Glidden Varnish Co., Cleveland, O., represented on the Pacific Coast by Whittier-Coburn Co., San Francisco.
R. N. Nason & Co., San Francisco, Los Angeles, Portland and Seattle.
Standard Varnish Works, 113 Front St., San Francisco.
S. F. Pioneer Varnish Works, 816 Mission St., San Francisco.

VENETIAN BLINDS, AWNINGS, ETC.
C. F. Weber & Co., 365 Market St., San Francisco.

WATER HEATERS—AUTOMATIC
Pittsburg Water Heater Co. of California, 237 Powell St., San Francisco, and Thirteenth and Clay Sts., Oakland.
Hoffman Heater Co., 397 Sutter St., San Francisco.

WALL BEDS
Marshall & Stearns Co., 1154 Phelan Bldg., San Francisco.

WALL BOARD
"Amiwud" Wall Board, manufactured by Paraffine Paint Co., 34 First St., San Francisco.
Schumacher Wall Board Co., 149 California St., San Francisco.

WATERPROOFING FOR CONCRETE, BRICK, ETC.
Armorite Damp Resisting Paint, made by W. P. Fuller & Co., San Francisco.
Concreto Cement Coating, manufactured by the Muralo Co. (See page 5.)
Fibrestone & Roofing Co., 971 Howard St., San Francisco.
Glidden's Concrete Floor Dressing and Liquid Cement Enamel, sold on Pacific Coast by John King & Sons, 36 Stanford St., San Francisco.
Whittier, Coburn Company, San Francisco, and California Glass & Paint Company, Los Angeles.
Imperial Co., 183 Stevenson St., San Francisco.
Samuel Cabot Mfg. Co., Boston, Mass., agencies in San Francisco, Oakland, Los Angeles, Portland, Tacoma and Spokane.
Wadsworth, Howland & Co., Inc. (See Adv. for Coast agencies.)

WHEELBARROWS—STEEL
Western Iron Works, Beale and Main Sts., San Francisco.

WHITE ENAMEL FINISH
"Gold Seal," manufactured and sold by Bass-Hueter Paint Company. All principal Coast cities.
"Silkenwhite," made by W. P. Fuller & Co., San Francisco.
"Satinette," Standard Varnisb Works, 113 Front St., San Francisco.
Trus-Con Sno-wite, manufactured by Trussed Concrete Steel Co. (See Adv. for Coast distributors.)

WINDOWS—REVERSIBLE, ETC.
Whitney Adjustable Window Co., San Francisco. (See page 125.)
Hauser Reversible Window Co., Balboa Bldg., San Francisco.

WINDOW SHADES
Top Light Shade Co., 737 Market St., Oakland.

WIRE FABRIC
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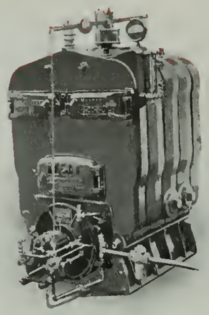

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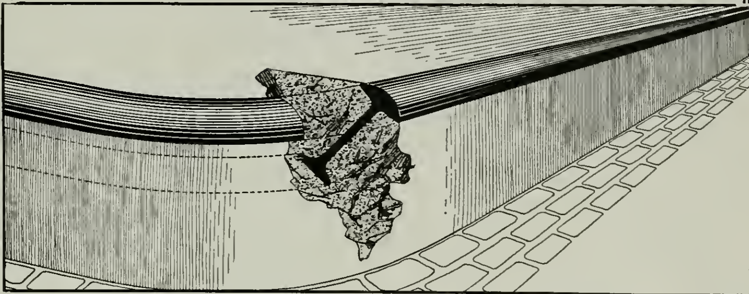

SECTIONAL VIEW OF DOLBEAR CURB BAR IN CONCRETE

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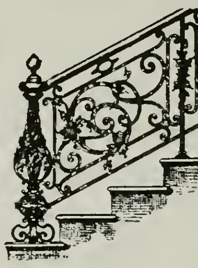
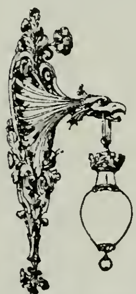


Catalog to Architects, Architectural Iron Works and Builders only on Application



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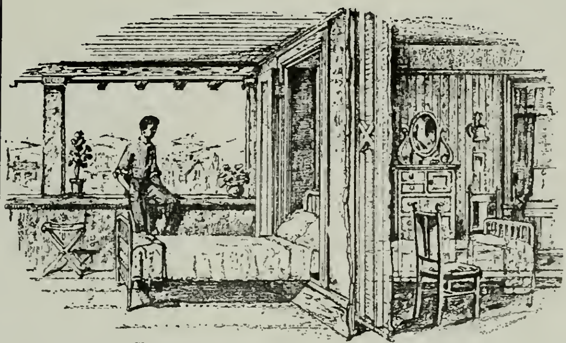

Sleeping Porch — Bed Room

Isometric View of the

Oscillating Portal Wall Bed

showing how the same bed may be used, at will, either on the sleeping porch or in the room.

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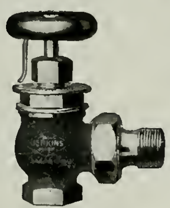

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Pacific Coast States

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Contents for August

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The Architect and Engineer
of California
for August, 1915

NEWHALL OFFICE BUILDING, SAN FRANCISCO
LEWIS P. HOBART, ARCHITECT

THE

Architect and Engineer

Of California

Vol. XLII AUGUST, 1915 No. 2.

STUDY—SOUTH ELEVATION, DR. W. C. CHIDESTER HOUSE, SAN MATEO, CALIFORNIA
Lewis P. Hobart, Architect

The Architecture of Mr. Lewis P. Hobart

By LOUIS CHRISTIAN MULLGARDT, F. A. I. A.

IT does not often befall an architect to do an extensive amount of work in the beginning of his career, however competent he may be to evolve good designs and arrange for their proper execution.

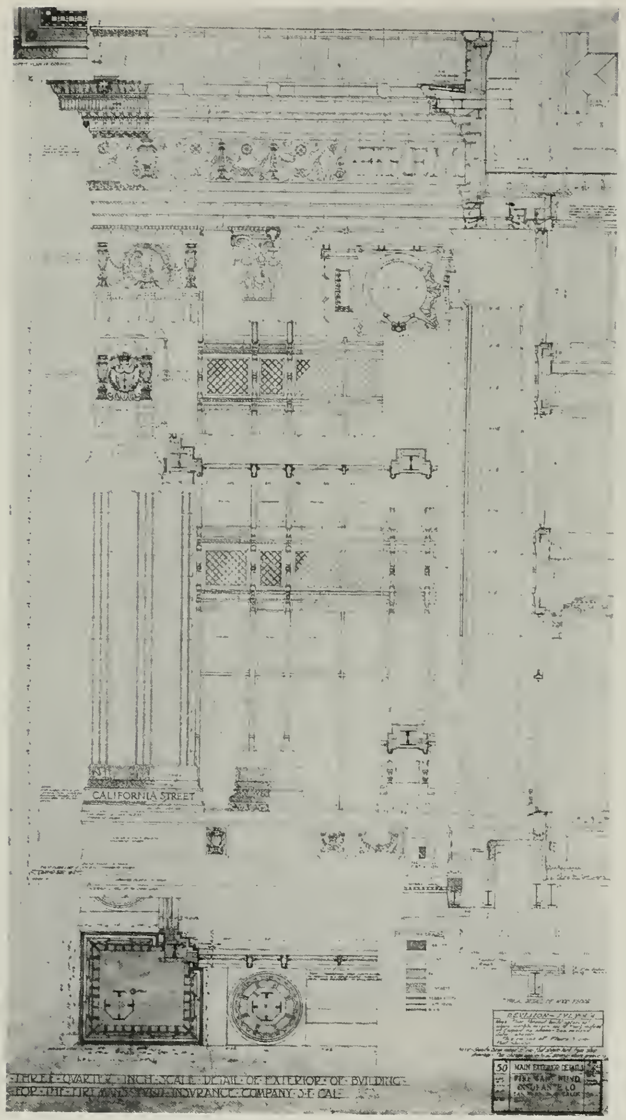
It is common to see a new practitioner struggling along for years, doing small homes and other less important work, until in time and by chance or good fortune he acquires a clientele that enables him to do large and important work, which makes sincere effort and personal qualification really worth while.

It is most uncommon to find a superior order of people with capital to invest in buildings who are willing to intrust their work to the hands of a new practitioner, however capable he may be.

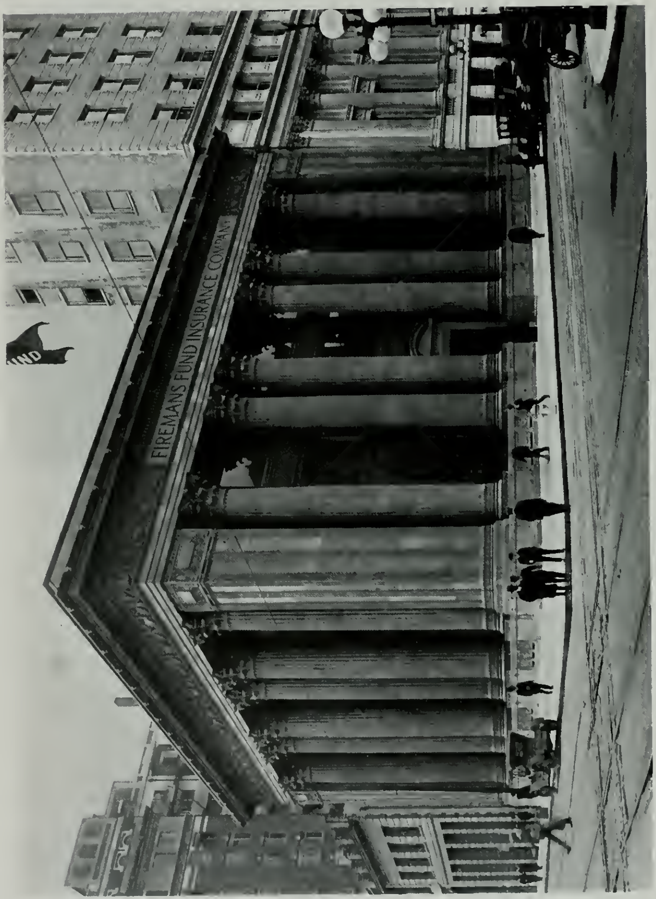
Mr. Lewis P. Hobart of San Francisco has attained a position of prominence on the Pacific Coast, as a result of superior design and work, during approximately nine years of private practice, which places him in the front rank with his professional contemporaries in the United States.

Mr. Hobart's public edifices, commercial buildings, city planning, banks, residences and landscape architecture are sufficiently illustrated on the accompanying pages to clearly denote the personality which he infuses into every

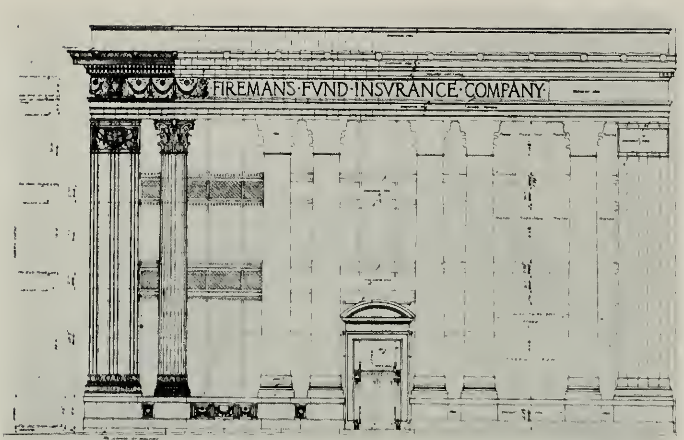
DETAIL OF FACADE, FIREMAN'S FUND INSURANCE BUILDING, SAN FRANCISCO
LEWIS P. HOBART, ARCHITECT



THREE-QUARTER INCH SCALE DETAIL, CALIFORNIA STREET ELEVATION, FIREMAN'S FUND INSURANCE BUILDING
LEWIS P. HOBART, ARCHITECT



FIREMAN'S FUND INSURANCE BUILDING, SAN FRANCISCO
LEWIS P. HOBART, ARCHITECT



CALIFORNIA STREET ELEVATION, FIREMAN'S FUND INSURANCE BUILDING, SAN FRANCISCO
Lewis P. Hobart, Architect

structure which has been built from drawings prepared by himself and amplified in his office under his care and administration.

Everyone initiated in the art and science of architecture will readily recognize that distinctive and distinguished personal character which his buildings possess. There is no mistaking the fact that his sensitive master mind has steadfastly individualized the ultimate result attained in every instance.

Mr. Hobart's work is unquestionably that of a man who is amply possessed of the fundamental requisite of fitness for the profession of architecture. This fundamental quality of fitness enabled him, from the beginning, to understand the importance of persistent grinding, during his student days in San Francisco, New York, Paris, Rome and extensive European travels to fully qualify him for his subsequent private practice, which began in San Francisco in 1906.

Mr. Hobart's work clearly indicates his superior fitness in the sincerity with which he pursues traditional requisites which make for better achitecture as applied to modern requirements. His sense of refinement and good taste is strongly exemplified by the way in which he has solved the varied exactions of each problem. A gentle modesty pervades the atmosphere which his work establishes. It is entirely free from exaggerations in scale or violent effort to produce startling effects, so common in American architecture.

The Pacific Coast is, indeed, fortunate in having acquired his citizenship as a valuable acquisition to its formidable list of highly qualified architects.

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BUILDING FOR THE DOMINION OF NEW ZEALAND, P. P. I. E
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DETAIL OF ENTRANCE, BUILDING FOR THE DOMINION OF NEW ZEALAND
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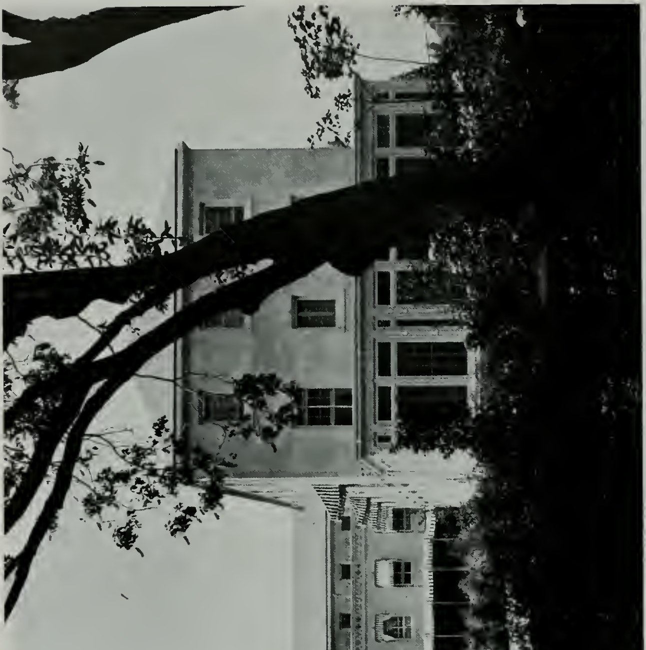
RED CROSS HOSPITAL, SAN MATEO, CALIFORNIA
LEWIS P. HOBART, ARCHITECT



GARDEN ELEVATION, RED CROSS HOSPITAL, SAN MATEO, CALIFORNIA
LEWIS P. HOBART, ARCHITECT

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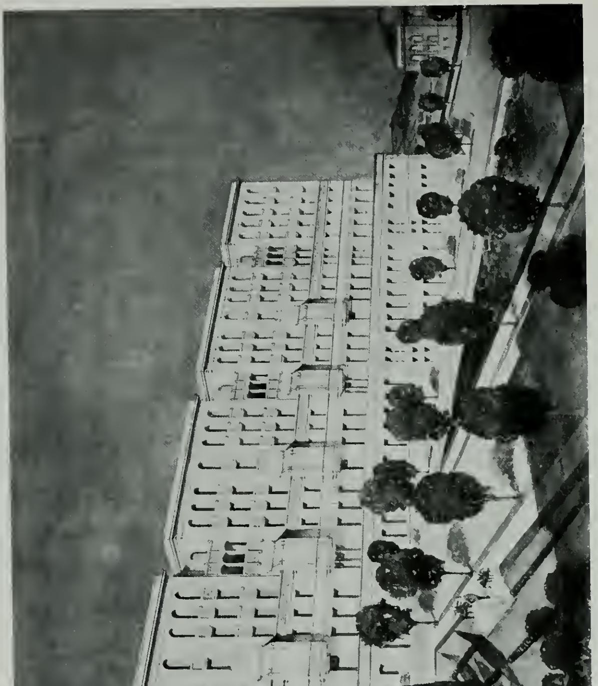
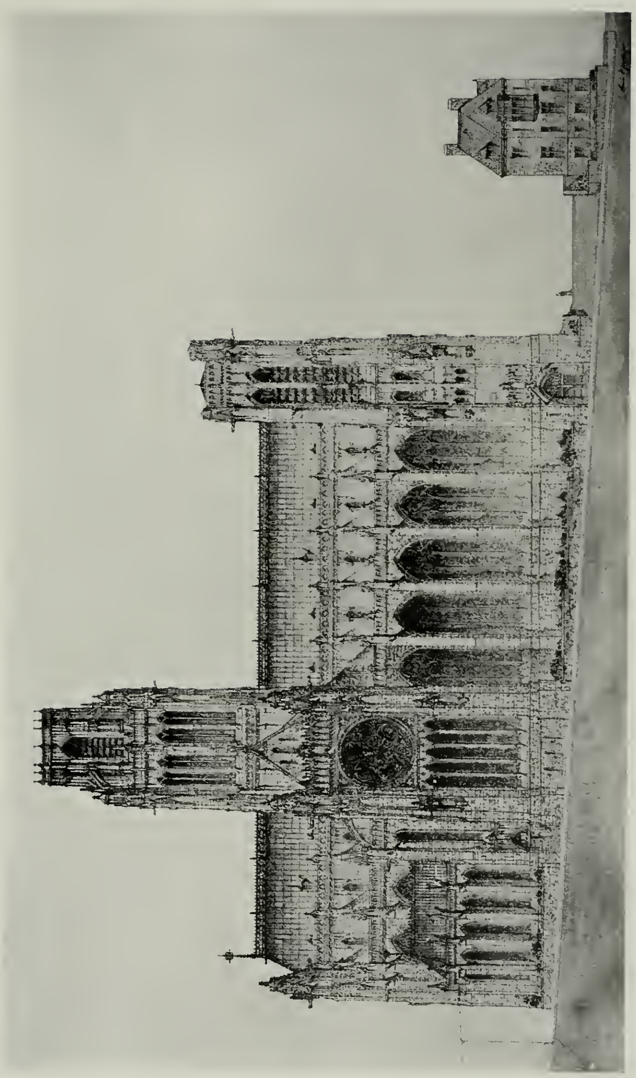
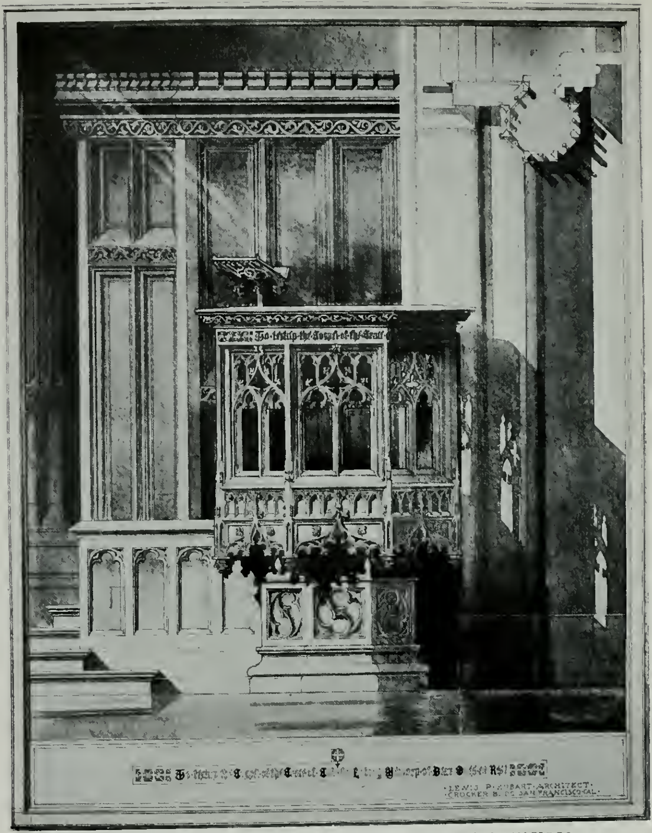


PERSPECTIVE—UNIVERSITY OF CALIFORNIA HOSPITAL, SAN FRANCISCO
LEWIS P. HOBART, ARCHITECT

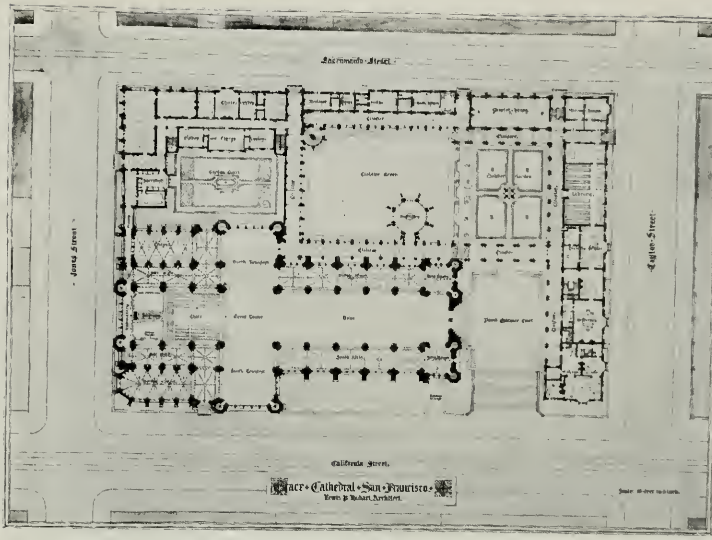


STUDY FOR GRACE CATHEDRAL, SAN FRANCISCO
LEWIS P. HOBART, ARCHITECT



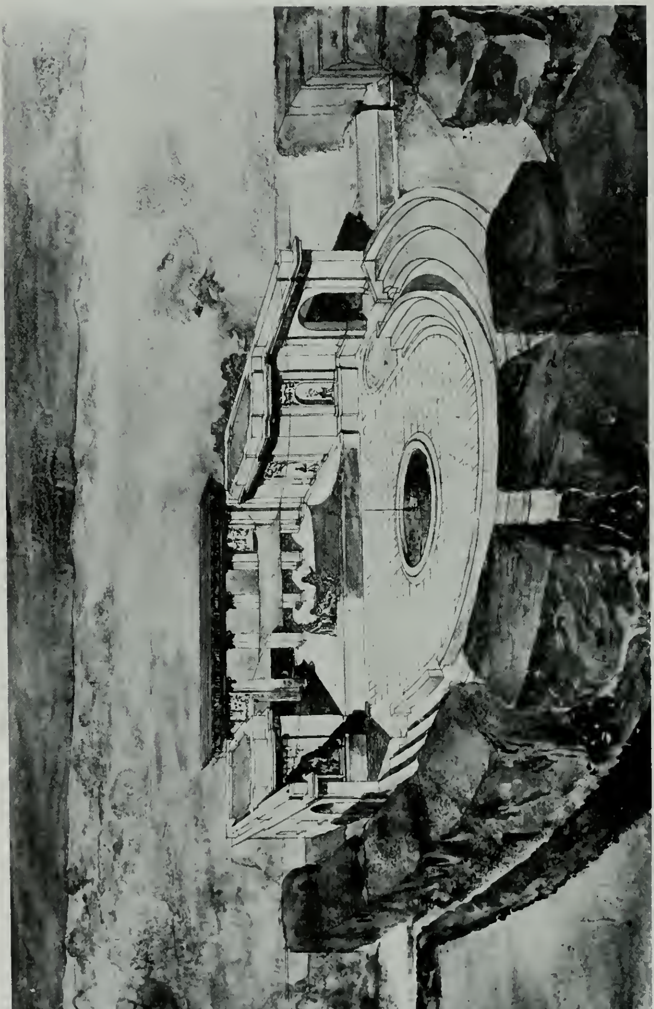
DETAIL OF PULPIT FOR GRACE CATHEDRAL, SAN FRANCISCO
Lewis P. Hobart, Architect

ENTRANCE LOCKWOOD SCHOOL, OAKLAND
Lewis P. Hobart, Architect *Jno. J. Donovan, Associate*



GROUND PLAN, GRACE CATHEDRAL, SAN FRANCISCO
Lewis P. Hobart, Architect

COLONNADE AND PATIO, LOCKWOOD SCHOOL
Lewis P. Hobart, Architect



PERSPECTIVE—OPEN AIR THEATER, BAKERSFIELD, CALIFORNIA
LEWIS P. HOBART, ARCHITECT

OPEN AIR THEATER, BAKERSFIELD, CALIFORNIA
LEWIS P. HOBART, ARCHITECT

OPEN AIR THEATER, BAKERSFIELD, CALIFORNIA
Lewis P. Hobart, Architect

STUDY FOR A COUNTRY HOUSE
Lewis P. Hobart, Architect

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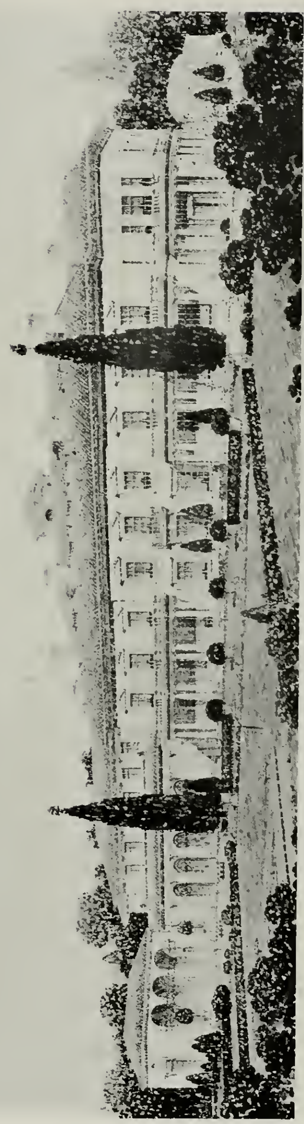
Lewis P. Hobart, Architect

INTERIOR, PEBBLE BEACH LODGE, MONTEREY, CALIFORNIA
Lewis P. Hobart, Architect



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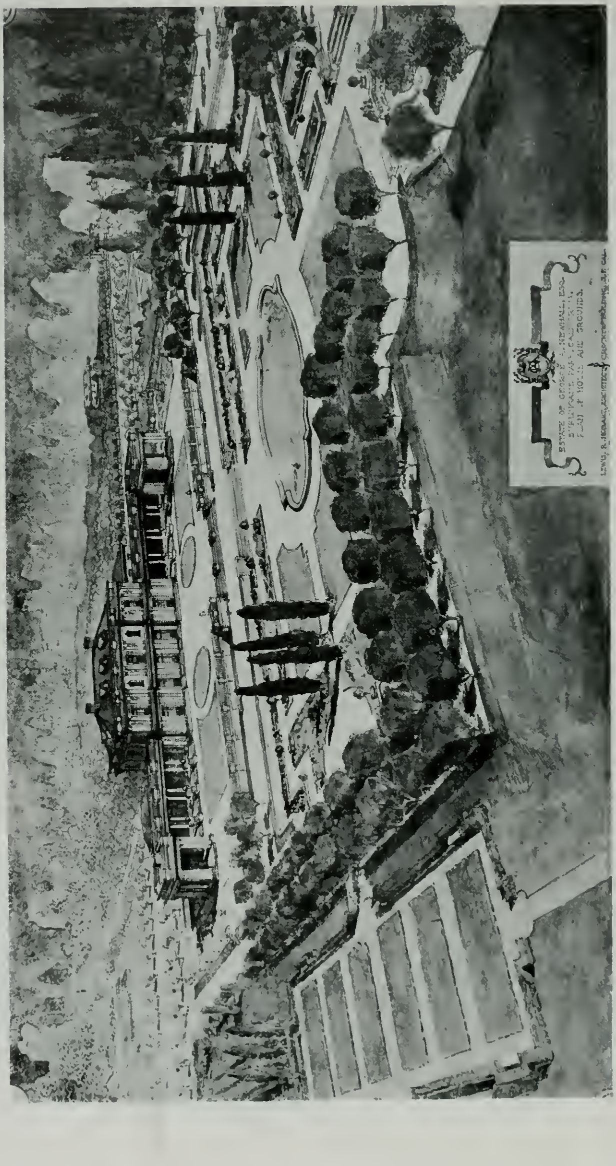

ESTATE OF GEORGE A. NEWHALL, BURLINGAME PARK, CALIFORNIA
LEWIS P. HOBART, ARCHITECT

GENERAL VIEW, ESTATE OF GEO. A. NEWHALL, ESQ.
LEWIS P. HOBART ARCHITECT

GENERAL VIEW, ESTATE OF GEO. A. NEWHALL, ESQ.
LEWIS P. HOBART, ARCHITECT

ENTRANCE FRONT, RESIDENCE OF GEO A. NEWHALL, ESQ.
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GARDEN, ESTATE OF GEO. A. NEWHALL, ESQ.
Lewis P. Hobart, Architect

GARDEN, ESTATE OF GEO. A. NEWHALL, ESQ.
Lewis P. Hobart, Architect

PORTION OF GARDEN, ESTATE OF GEO. A. NEWHALL, ESQ.
LEWIS P. HOBART, ARCHITECT

SECOND FLOOR SITTING ROOM, RESIDENCE OF GEO. A. NEWHALL, ESQ.
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LIVING ROOM, RESIDENCE OF GEO. A. NEWHALL, ESQ.
Lewis P. Hobart, Architect

STAIRCASE HALL, RESIDENCE OF GEO. A. NEWHALL, ESQ.
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ENTRANCE HALL, RESIDENCE OF GEO A. NEWHALL, ESQ.
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HOUSE OF W. G. HITCHCOCK, ESQ., HILLSBOROUGH, CALIFORNIA
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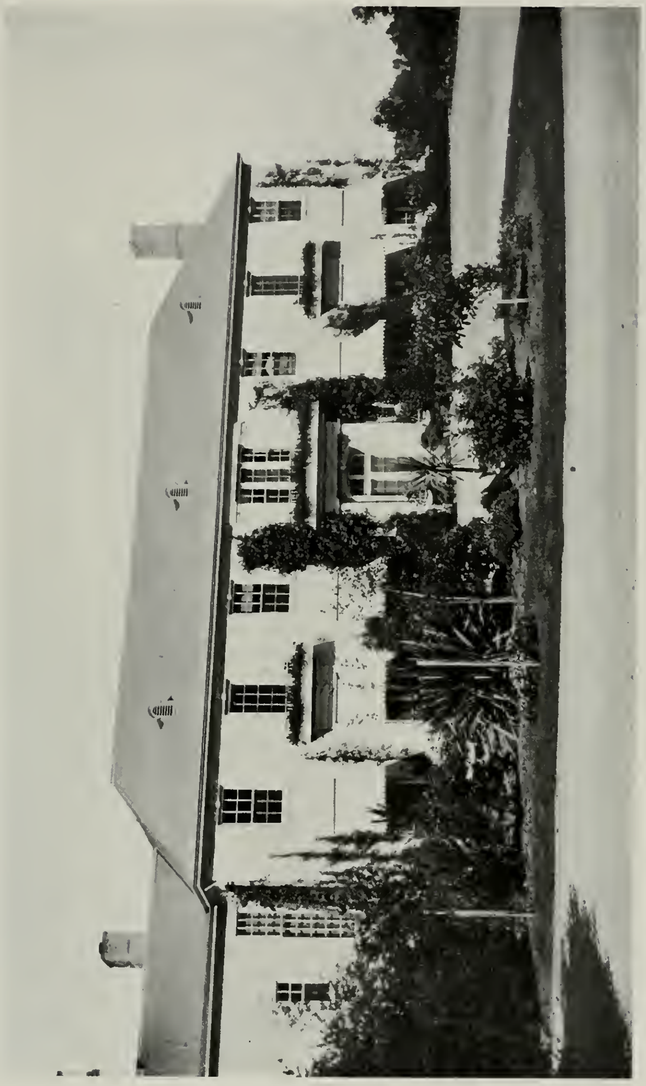
GARDEN ELEVATION, HOUSE OF GEO. A. CAMERON, ESQ., HILLSBOROUGH, CALIFORNIA
LEWIS P. HOBART, ARCHITECT

TERRACE, HOUSE OF GEO. A. CAMERON, ESQ.
LEWIS P. HOBART, ARCHITECT

EAST ELEVATION, RESIDENCE OF THOS. DRISCOLL, ESQ., BURLINGAME, CALIFORNIA.
LEWIS P. HOBART, ARCHITECT



HOUSE OF THOS. DRISCOLL, ESQ.
LEWIS P. HOBART, ARCHITECT

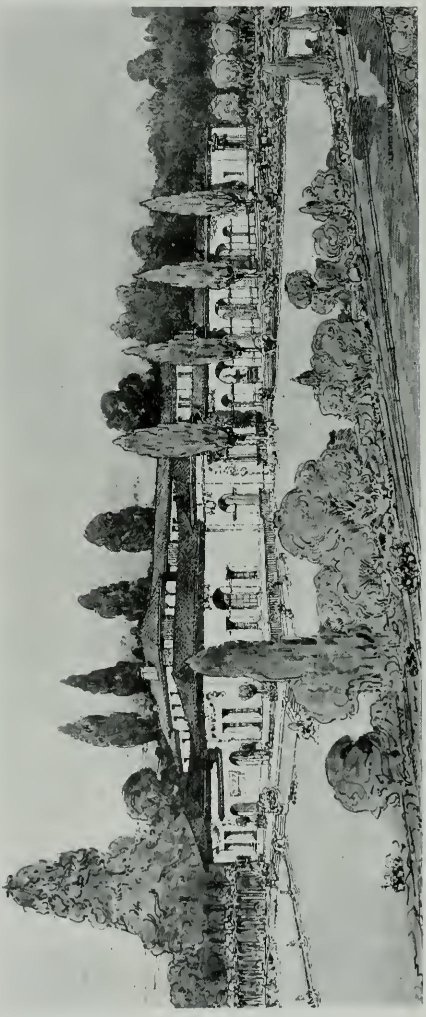
ENTRANCE DETAIL, HOUSE OF THOS. DRISCOLL, ESQ.
LEWIS P. HOBART, ARCHITECT

GARDEN TERRACE, HOUSE OF ANSEL M. EASTON, ESQ., EASTON, CALIFORNIA
LEWIS P. HOBART, ARCHITECT

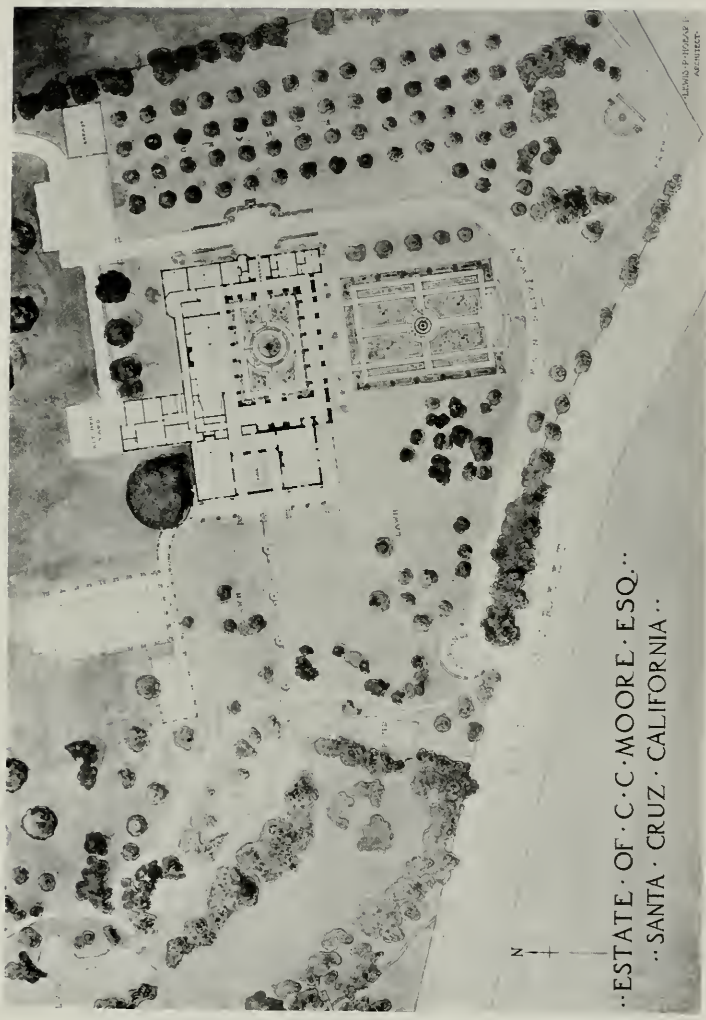
ELEVATION, HOUSE OF DR. W. C. CHIDESTER, SAN MATEO, CALIFORNIA
LEWIS P. HOBART, ARCHITECT

HOUSE, DR. W. C. CHIDESTER, SAN MATEO, CALIFORNIA
Lewis P. Hobart, Architect

HOUSE OF ANSEL M. EASTON, ESQ., EASTON, CALIFORNIA
Lewis P. Hobart, Architect



HOUSE FOR CHARLES C. MOORE, ESQ., SANTA CRUZ, CALIFORNIA
LEWIS P. HOBART, ARCHITECT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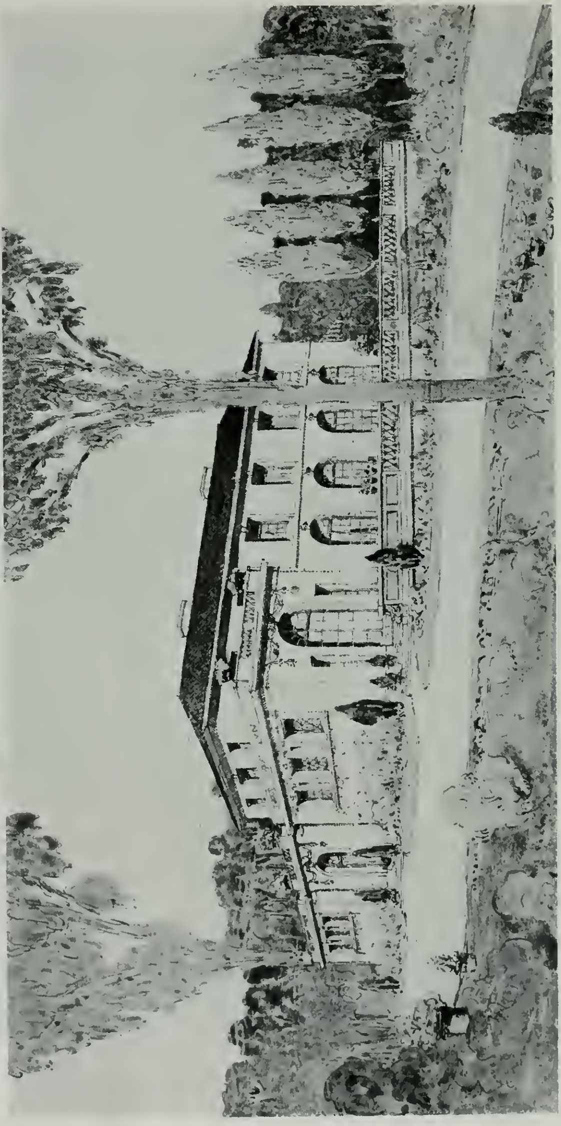
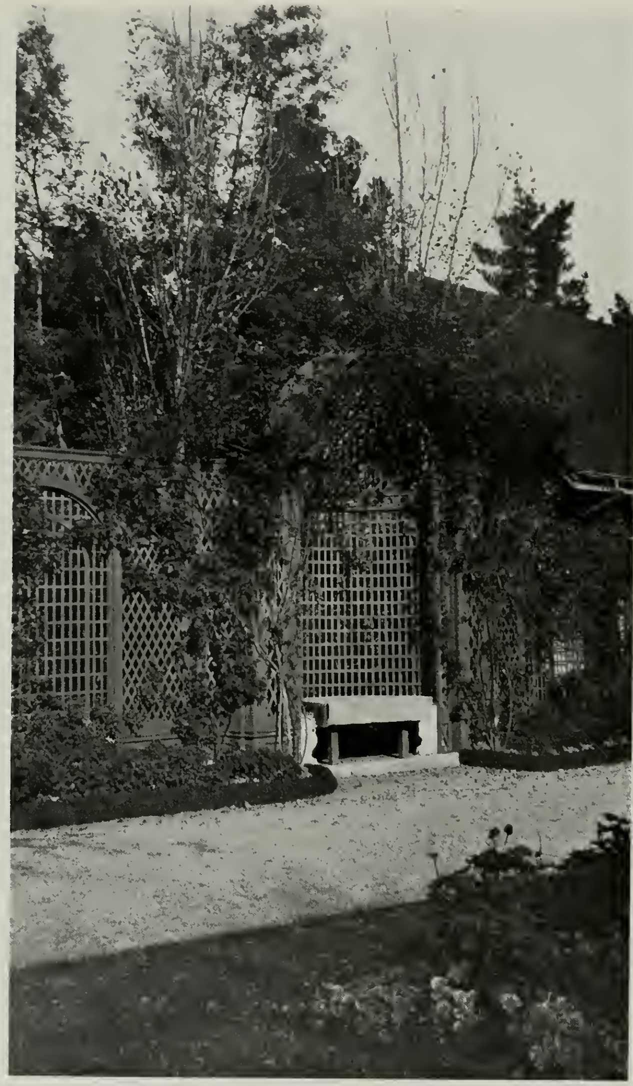


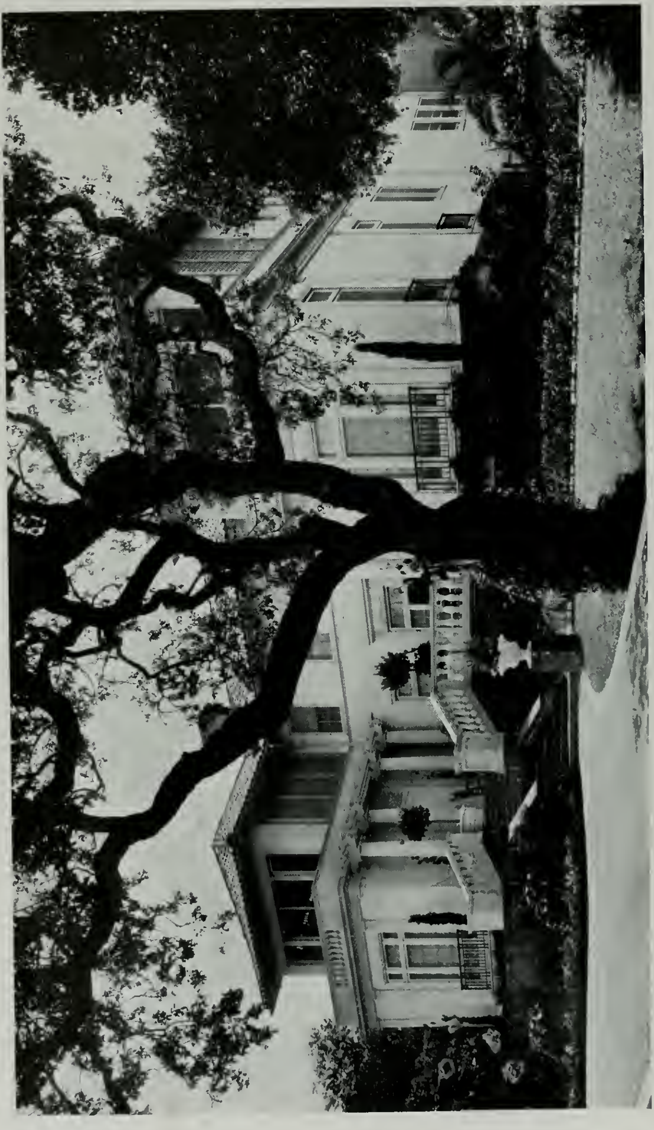
PERSPECTIVE STUDY OF HOUSE FOR MRS. H. S. KIERSTED, HILLSBOROUGH, CALIFORNIA
LEWIS P. HOBART, ARCHITECT

GARDEN ELEVATION, HOUSE OF MRS. H. S. KIERSTED, HILLSBOROUGH, CALIFORNIA
LEWIS P. HOBART, ARCHITECT

GARDEN ELEVATION, HOUSE OF R. M. TOBIN, ESQ., HILLSBOROUGH, CALIFORNIA
LEWIS P. HOBART, ARCHITECT



GARDEN, HOUSE OF R. M. TOBIN, ESQ.,
HILLSBOROUGH, CALIFORNIA
LEWIS P. HOBART, ARCHITECT



HOUSE OF HENRY DERNHAM, HILLSBOROUGH, CALIFORNIA
LEWIS P. HOBART, ARCHITECT

COUNTRY HOUSE OF LEWIS P. HOBART, SAN MATEO, CALIFORNIA
LEWIS P. HOBART, ARCHITECT

Some Lines of Progress in School Architecture*

By CHARLES SUMNER KAISER, Architect, San Francisco

SCHOOL architecture is solely concerned with making schools supremely fit for children. No work could have a higher purpose, yet, as a rule, even professed school architects fail to appreciate the greatness of this problem and in undertaking it are only too willing to draw at ease upon established precedent. Their thinking, in fact, is more than half done with the acceptance of our "American school building standards" which have been published and republished, legalized and crystallized almost into a national dogma. Witness the essential sameness of all our modern schools.

No real advance, of course, can be expected from this complacent manipulating practice. Progress calls for knowledge, plus imagination. In school architecture it calls for a first-hand knowledge of children's needs and, arising from this knowledge, some vision of a better and healthier school life. School architects, then, must get nearer to the root of things and develop their own stimulating ideals; progress demands that they shall free themselves from the slavery of rules and formulas and reach their own conclusions as to a rational, consistent character for school buildings.

A few suggestions in this direction should appear in reviewing some recent and interesting lines of progress—as, for example, in providing light, warmth and fresh air. Until our children's needs are perfectly met in such matters our finest schools will yet be comparative failures, and there will be ample room and the best of incentives for further improvement.

HEATING AND VENTILATING

After a full generation of our respected but obsolete heating and ventilating standard, we have come at last to see that the chief physiological purpose of ventilation is not merely to provide air to breathe, but to aerate the whole body and aid its nicely balanced heat mechanism in maintaining the constant temperature upon which life depends. We have found that the precise and overheated product of our "standard" heating plant tends precisely against this vital purpose, while the environment that promotes it is the moving, changing, relatively humid open air. Upon this better realization are based three interesting and divergent lines of progress—in mechanical ventilation, in the application of the "fresh air" idea and finally, in the approach to a higher and truer ideal in heating science.

Our older system has had its own line of development, in air-washing, moistening and regulating apparatus, chiefly, and is now facing almost a revolution. Hygienists of reputation have asserted that the purity, temperature, humidity and movement of the air can be fully controlled by such mechanical means, and hence that health-giving conditions for schools can be most efficiently realized by closing the out-door supply, sealing the windows, and mechanically re-washing, recirculating and using practically the same air over and over again. Such a system has been installed in the new Wethersfield avenue school, Hartford, capable of operating with only ten per cent of out-door air. If this method is a success, mechanical ventilation will indeed have reached its logical, if somewhat startling, conclusion.

At the farthest extreme from this is the happy and beneficient Open Air School, with its direct recourse to nature. Here temperature is secondary so long as the air is fresh, while the heat economy of the body is promoted in all

*Read at the Eighth Congress of The American School Hygiene Association, San Francisco, June 26, 1915.

climates by suitable clothing, feeding and physical activities. There is every reason for the wide favor this school is gaining. It seems to offer the only effective invitation to that vague wholesome out-door quality which still eludes capture at the hands of ventilating engineers, and which is still missed in the compromises frequently attempted.

Each of these methods, in its own way, looks back to nature. Neither, however, quite achieves her high ideal, for a complete "natural standard" of warmth and air has not been adequately formulated. The air of nature is most vitalizing and agreeable, not merely when cool and moving, but when heat energy is streaming through it on the rays of the sun. As with an open fire, this radiance brings physical comfort with air temperatures eight to twelve degrees lower than where heat is carried by the air itself, with marked effects in physical and mental stimulation. Nature's method, accordingly, gives the body adequate heat without depriving it of really fresh air. At the same time it exhibits that complete separation of heating and ventilating functions which is so much desired and theorized about, but which is almost never found in practice.

It is precisely in the unnatural combination of these two functions, in fact, that all our troubles arise. Our unsanitary dust-decomposing "radiators," so called, are designed chiefly to heat the air by convection and circulation. Unless this air itself is overheated enough to counterbalance the heat losses through the walls and windows of rooms, such surfaces will remain cold and must absorb heat from the occupants, inducing chill. This is aggravated by the relative dryness of the overheated air, and the consequent rapid evaporation of the surface moisture of the body. For both comfort and health, therefore, the natural principle seems to be that heat should not be carried primarily by the air, but should be imparted in some measure to the building itself. Our ideal, in other words, demands that the radiant heat of the sun shall be brought indoors.

Though the idea is far from new, the possibilities of radiant heat have hardly been touched in modern times. Undoubtedly the most splendid examples of radiant heating were the Calidaria of the ancient Roman baths, in which the hot gases from fires were carried under the floors and upward through hollow walls. The same method seems to have been used in some Roman palaces for comfort alone. After the lapse of centuries, however, this same principle has re-appeared on a large scale in the "Hot Panel" system of heating, originally devised by Mr. A. H. Barker, B. Sc., of the University College, London, and applied by Captain H. Riall Sankey, R. E., in some important buildings at Liverpool—in particular, the Royal Liver office buildings and the Midland Adelphi hotel. Here the heat radiating elements have taken the form of hot wall panels, floor borders, cornices, and even the ceilings of rooms; and the results are said to have exceeded all expectations. The plane radiating surfaces are proved to be much more effective than ordinary "radiators"; their temperature is kept relatively low; the lower air temperature permitted requires less fuel to produce and involves less waste by radiation through unheated walls and windows.

While these installations were probably expensive, the fundamental idea is simple, and it can and doubtless will be simply applied as soon as the subject is better understood. Mr. John V. Van Pelt's suggestion of foot-warming plates for Open Air Schools is a step in this direction. Cheap electric current would here offer the most attractive possibilities. When fully developed, radiant heating should not only prove invaluable for schools, but it is the one kind of heating that is perfectly adapted to hospitals and sanitoriums.

In view of this advance in heating science, the pursuit of a natural, healthful ideal by the means now employed seems quite futile. For this purpose Nature must be more closely studied, and our artificial methods profoundly modified. Measured by the same ideal, the Open Air School itself accepts a too stern and cheerless natural standard—fresh air without the full, pervading warmth of sunshine. This, however, may be incidental, for the spread of this splendid type of school is doubtless far less retarded by indifference to the fresh air ideal than by the prevailing sedentary character of school work; all of which leads to the conclusion that a natural ideal of warmth and air must involve likewise more natural and suitable school occupations.

LIGHTING

School lighting may also be referred to a natural ideal—especially since, in modern life, the functions for which the eye was developed are so highly, and it seems necessarily, abused. In discharging its functions the eye naturally prefers that light which with least effort gives objects the clearest definition. To appreciate the progress toward this ideal, the chief requirements of good lighting must be very simply re-stated.

The object viewed must first be adequately lighted. It is agreed that ten metre-candles will suffice for ordinary reading, that twenty is necessary for really effective lighting, and fifty for work with fine detail or colored materials. While these are minimum values, it appears significant that visual acuity for both shades and characters reaches its limit at twenty to thirty metre-candles and thence remains practically constant to a high intensity. It is under ten metre-candles, moreover, that most of the pupillary variation of the eye takes place, leaving it less protected against the higher intensities. The eye can adapt itself, of course, to a very wide range of brightness, but the fact remains that nature seems to have developed it for moderate degrees of illumination.

The object viewed must not only have light, it must have the shades and shadows necessary for easy visual judgment. Light for this purpose must be definitely enough directed to mark these shades and shadows, and sufficiently diffused to illuminate them and soften their outlines. For the same purpose the shadows should not be too short, as with vertical light, or too long, as with horizontal rays. In no case, naturally, should a shadow be thrown upon the object itself, as from the body or hand of the beholder.

Finally, the flow of light must be reasonably steady to avoid fatigue in pupillary reaction, and a fairly uniform surface illumination is required to avoid disturbing retinal contrasts. Even at the margin of the field, bright spots cause a partial contraction of the pupil and a corresponding loss of illumination at the center of vision.

To provide for the minimum requirement of ten metre-candles of desk illumination in schools we have the familiar rules of window height and area, or in more scientific practice, observations of the visible sky surface and its brilliancy. These are well so far as they go, but authorities who properly favor a much higher minimum than ten metre-candles declare that all our commonly accepted values are too low. Moreover, as applied in our standard classroom, they involve inequalities of distribution which should by no means be overlooked.

Ordinarily, the desks near a schoolroom window receive nearly five times as much light as those farthest inside the room. The great range in the intensity of light from the darkest winter afternoon to the brightest summer day, when multiplied by this factor, promises overlighting, on the one hand, or underlighting on the other. Eye strain from both these causes may occur in the same classroom, and even with the daily fluctuations of sunlight and shadow. While very careful to avoid such extremes with artificial lighting, with natural light we thus seem to lean too much upon the ocular power of adaptation; we have not sufficiently considered the moderate range of illumination within which it will probably do its most effective work.

This condition is very generally aggravated by the failure to exclude direct sunlight. Sunlight reflects far too strongly even from dark-colored surfaces; its wide variation makes the light exceedingly tiresome; adequate diffusion is impossible. It gives, in short, the worst possible light for ordinary classroom occupations.

Sunlight, nevertheless, is demanded almost everywhere for its "sweetening" and purifying effect upon the classroom air. This of course adds new difficulties. Any exposure which gives early or late sun in winter, when it is most wanted, gives sunlight through study hours at other seasons and hence requires the use of window shades. These not only cut off the purifying rays, for the time being, but almost invariably transmit too much or too little light, and leave annoying spots and streaks of high brilliancy in the field of vision. Moreover, this hygienic function of sunlight in classrooms appears to be greatly overrated. The germicidal ultra-violet rays cannot pass through window glass; and even if admitted, their effective action would require such a duration and extent of sunshine as would be quite ruinous to the eyesight.

This "secondary function" of light thus seems to add unnecessary confusion to the problem of good lighting. It may be suspected, indeed, that the desire for sunlight in schoolrooms is more closely related to heating than to air-purifying. Partiality for easterly exposures tends to confirm this. Buildings lose their heat over night; the walls remain cold and draw heat from all available sources, among which the human body is by no means exempt. The morning sun brings a radiant heat which compensates for this loss, and gives a quality of comfort which is not attained by any existing system of school heating. While, of course, sunlight may have certain health-giving effects upon the air which we do not yet recognize, such influences can only be exerted in full measure out of doors. Nor is it for our children's health that we shut them up in schoolrooms. Hence, if we insist upon sunshine in schools we should at least make it harmless while it lasts by a relief from studious occupations.

Naturally, the building standards involving these compromises and contradictions have not escaped the constructive criticism upon which progress depends. North lighting, the standard for all maturer pursuits, has been tried in a number of schools, and is said to be decidedly worth while if only in the elimination of window shades. In place of the direct sun, it offers at least the compensation of an outlook upon the bright sunny side of things. While north lighting itself is justly popular, however, northerly exposures, as we know, are not.

The difficulties of unequal distribution with all one-side lighting have prompted another innovation—lighting from overhead. This is admitted to have immense advantages, and is sanctioned by some of the best authorities. It is, accordingly, more than a mere fad. So far all the examples of this mode of lighting appear to be of the picture-gallery type, with diffusing sashes of frosted or prismatic glass set in the plane of the ceiling. This method promises its own drawbacks. Even with north skylights the diffusing plane will necessarily have a high degree of illumination, and portions of its glaring surface will fall within the normal field of vision. Furthermore, the light thus transmitted is apt to be both too vertical and too thoroughly diffused for proper shadow formation, unless amply reinforced by directed light from windows.

This calls for special notice, since the enthusiasm for overhead lighting has been accomplished in some quarters by a peculiar bias against side lighting. In one case windows have been provided avowedly as a concession to external appearance. Quite aside from other considerations no prejudice, of course, could be less wisely or less humanely misdirected. Not only the eye, but the mind's eye of the child needs relief in a frequent and grateful change of focus.

Each of these two diversions in school lighting plainly has merits which the other lacks. If we extend north window lighting upwards, we shall have the light of the artists' studio, which is not only well diffused and definitely directed, but more abundant and far more equally distributed than in the typical classroom. The widespread use of one-story schools should encourage a step, at least, in this conservative direction. The standard window height, if not that of the whole ceiling, may here be increased to great advantage. This is easy, yet it is rarely or never done. In the upper story of taller buildings the same opportunity is not only disregarded, but the windows are virtually reduced, on occasion, by overhanging cornices.

If, to go farther, we extend our north window-lighting overhead, we arrive at the "saw-tooth" construction found in factories. Mark, however, that the light here is still definitely directed and thoroughly diffused while perfectly distributed. In a schoolroom thus lighted there would be no bright transmitting surfaces in the field of vision, for ceiling sashes, if necessary for heat insulation, would be filled with clear glass.

One must apologize, nevertheless, for intruding an industrial suggestion, for it betrays at once that something is wrong. Overhead lighting is itself a confession that our schoolrooms are too wide, or too low—or too full of children.

CLASSROOM PROPORTIONS

Overhead lighting, being more or less independent of windows, has suggested an interesting change in the shape of the classroom. While the first aim in planning this fundamental school unit is to facilitate class instruction, its proportions have been determined mainly by other considerations. Its width is limited by the angle of light from windows, and hence the height of ceilings and the practicable height of stairs. Its length is fixed, in turn, by the number of pupils, which finally depends upon a supposed balance between the educational and financial interests of a community. With the average of forty to forty-five pupils, we thus find five or six rows of seats in width, and seven, eight, or even nine in length to the rear of the room.

Although nearly universal, this arrangement appears to be exactly wrong. For every phase of teaching—exposition, recitation and supervision—it seems indispensable to group the class so that each pupil shall be as near as possible to the teacher. Certainly this requirement should be no less essential for the classroom than for any other kind of auditorium. So far we find it answered nowhere between the small classes of the high school and the democratic "circle" of the kindergarten.

The standard proportions of the classroom may be modified at will, however, if we abandon the restrictions of side-lighting, or even if we give sufficient elevation to the windows themselves. With overhead lighting, for example, the teacher's desk may be located on one of the longer sides of the room. The files of desks in such a room are short; fewer pupils are "behind"; sight, hearing and supervision become easy and intimate. Speech becomes normal, and hence both more efficient and more pleasing than in the elongated classroom. Strange to say, this opportunity appears to have been entirely overlooked in all but one of our top-lighted schools. In the exception, the Joseph Sears school at Kennilworth, Illinois,* the teachers are not only pleased with the mode

*Designed by Mr. Geo. W. Maher, architect, of Chicago.

of lighting, but are quite enamored of the arrangement of desks. Not willingly, they say, would they go back to the ordinary kind of schoolroom.

ARCHITECTURAL EXPRESSION

Passing over many more pressing matters, like fire safety and sanitation, progress in school architecture can hardly be dismissed without some reference to the art which crowns, while it does not govern the work. The educative value of environment has long been admitted; but until late years, it seems, efforts to express this in cheerful and fitting terms have been few and unappreciated. Most of our older schools have a borrowed and cheapened monumental character; some even have the frank utilitarian hopelessness of factories. A grateful relief from these thoughtless adult conceptions has now come, for our more recent and intelligent school design not only shows appropriate scholastic antecedents, but the best of it has pleasant domestic associations as well. Here a rational and natural criterion of expression for school architecture asserts itself. Since childhood connotes, above all things, the home, schools for our children should realize their beauty in homelike and domestic, or even childlike terms. This, it will be observed, should crown the appeal for a complete natural ideal of school habitation. Surely children are entitled to an "environment suited to their nature," no less than other untamed animals in captivity.

FUTURE PROGRESS

Two general aspects of such a complete ideal for schools are suggested by this glance at recent progress. A natural standard of school habitation, such as we have just fancied, would logically call not only for more homelike and juvenile buildings, but also for smaller and more familiar class and school groups. Such a standard would hence be in full accord with educational thought, which has long inclined to more intimate and less wholesale methods of teaching. In this same connection it is significant that practically all of our problems of school building and school hygiene are problems of crowding, and that they tend to disappear, like many of our educational problems, as the class, and even the school itself, is reduced in size. What finally consistent and complete educational-hygienic standard this may or may not lead to, future progress will show.

Finally, the ideal school we are trying to visualize is not only smaller and more homelike than our spreading educational "plants," but it is relatively simple as well. Reviews of this kind are useless unless they emphasize the fact that progress in school architecture is not going to cease with ourselves. Doubtless our standards are the highest yet attained, and we have much else to congratulate ourselves upon. Let us be assured, nevertheless, that after all is now said the coming generation will look back with equal complacency upon our undeveloped ideals and mistaken methods, and—as history repeats itself—will seriously question the propriety of sending its young to the proudest of our present-day school buildings. Hence a problem which progress imposes upon us. Of all the arts, architecture is the art conservative, finding its expression in relatively enduring terms which not only crystallizes the ideas and motives of the time, but perpetuate them to become the reactionary influences of the future. The swifter the advance, as apparent now in school architecture, the more imperative it is that this potential reactionary force should be recognized and sanely anticipated. By all means let us build schools as well and as healthfully as we know how, but let us, at the same time, make them reasonably responsive to future progress.

City Planning and Housing

Edited by CHARLES HENRY CHENEY

Why Bad Housing Costs and Better Housing Pays

From a report on "Better Housing in California" by LEWIS P. HOBART and CHAS. H. CHENEY, to the Commission of Immigration and Housing of California, 1915.

III. Preventable Causes of Bad Housing

WITH all California counting upon a sure increase of population, both from foreign immigration and from the even greater influx from Eastern states, is it not common sense to prepare in our cities against congestion, disease, crime and other costly problems?

In 1914, 32,000 immigrants arrived in United States ports, giving California as their destination, and the total in the ten years previous, 1905 to 1914, was 260,537 immigrants.*

After the war authorities are very uncertain as to what the influx of immigrants will be, but California can expect a great many more than ever before, by the new route. Are these people to be allowed to congest in our present tenement districts and to form new ones as they have in New York, Boston and elsewhere,—or will California cities plan for this emergency now?

From 1900 to 1910 the population of the whole state increased only 60.01%, yet several fairly large cities of the state increased over 200% in the same period.** Everything points to a greater increase in population in the next ten years. California must be prepared to care for these people properly and to the advantage instead of to the disadvantage of the people who are already here.

Ignorance.—One of the chief causes of bad housing conditions is ignorance. Immigrants, ignorant of American standards of living, tend to herd together, accepting insanitary and overcrowded conditions. They must be educated to better standards. Builders ignorant of better housing follow stupid models.

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*These figures include chiefly immigrants arriving through eastern ports. How many more will come in the next ten years to California through the Panama Canal?

**There is a marked increase in the population of the chief cities of the state. In San Francisco there has been a steady growth. The average increase each census over that of the census preceding being thirty per cent since 1870. A very rapid growth has characterized the development of Los Angeles, 190 per cent being the average ten-year increase. A similar growth is shown in all the rest of the cities. That this increase will continue seems inevitable and almost sure to be accompanied by greater congestion in the cities. With conditions already acute, the need of housing reform is evident.

The chief cities of California show an average increase in aggregate population for each census period over the figures for the preceding census of 53.7 per cent since 1870. From 1900 to 1910 there was an increase of 77.5 per cent. The housing of this urban population, that will continue to increase in the future both numerically and proportionately, must be taken care of.

The population of the secondary cities of the state doubled between 1900 and 1910.

The increase in the total population of California has averaged 44.3 per cent each census period over the population at the beginning of each period for the last forty years. Greater rapidity in the growth of the chief cities is shown by an average increase of 53.7 per cent in their population during this time.

The bulk of the immigration to California during the fifteen years from 1898 to 1914 was made up of the following races: North Italians, 67,336; Japanese, 38,544; English, 36,014; South Italians, 23,396; German, 21,772; Scandinavian, 16,748; Portuguese, 15,981; Irish, 13,450; French, 13,277.

The immigration of Italians from both North and South has shown a steady increase. A number of immigrants of these types can be expected in the future. A noticeable feature in connection with the Japanese immigration is the way which it has gradually increased after a sharp falling off subsequent to the adoption of the exclusion agreement with Japan. The English immigration is characterized by a fairly steady growth during the whole period. An increased immigration of all races can be expected according to these figures.

The state could better afford to give out, free, good building plans, as in Australia and elsewhere. Citizens ignorant of vile conditions near at home do not realize that public health, safety and morals are menaced. They must be wakened to the necessity of safeguarding their own interests.

The low income of recently arrived immigrants tends further to produce overcrowding and acceptance of worst conditions, keeping up the demand for wretched dwellings. The community in self-protection will probably have to provide sanitary houses for families earning less than the minimum wage.

Investigation among recently arrived immigrants shows that a large proportion of them are absorbed into families already here. Thus if 10,000 immigrants were put down in San Francisco tomorrow they would be found to be living generally with people of their own race and crowded in, one, two and three additional families in the original apartment or house of one family. The commission found many cases of two and even three families in one apartment with two bedrooms. Neither San Francisco nor any other city in California offers apartments or houses enough, at rents they can pay, to take care of even 5,000 new immigrants.

Ignorance and low income together are responsible for the immigrant lodger evil.*

Heads of families renting four- or five-room houses or flats, in such districts as Telegraph Hill, San Francisco, must pay more than they can afford. They crowd the family into congested space, and rent the best two or three rooms to newly-arrived immigrants. Privacy is destroyed, lodgers often having to go through family bedrooms to reach the toilet. Mixing families and taking lodgers means not only insanitary congestion, but a lowered standard of living morals.

California cities will have to make it somebody's business to plan and secure better living quarters for these people.

Weak Laws.—That the present tenement house law is very weak will be testified to by the building inspectors of our principal cities, and that its ambiguous wording makes evasion of the intent of the law possible in a great many cases, may be evidenced in some of the bad buildings photographed by the commission.

When we find cellar lodgings with no ventilation for sixty-four rooms, toilets opening into bedrooms and kitchens, with no other ventilation, and insanitary back-yard toilets, it is generally because of the lack of inspection. The truth of the matter is that outside of Los Angeles and San Francisco there is practically no effort made to enforce the housing laws which we have, and even then there are a great many loop-holes and ways to evade their intent. Every year that goes by sees an increasing number of badly built houses that should never have been permitted, only making the general housing problem worse.

Two things are necessary—the tenement and other housing laws must be strengthened and simplified, and enough money must be appropriated for inspectors either by the cities or by the state to properly enforce these laws. Most of the cities of California refuse to appropriate, so that the duty of enforcement clearly devolves upon the state

*Newly arrived immigrants especially keep lodgers. Per cent of 8,597 immigrant families keeping lodgers residing in United States less than five years, 37.3 per cent; over ten years, 18.8 per cent. Per cent of Polish families keeping lodgers residing in United States less than five years, 58.8 per cent; over ten years, 19.4 per cent.

There is a tendency of immigrants and the first generation of their native born descendants to congregate in cities; 21.8 per cent of the inhabitants of California are foreign born whites, while 24.5 per cent of the population of the eight chief cities and 31.4 per cent of the population of San Francisco are of this same class. Native whites of foreign or mixed parentage comprise 26.7 per cent of the population of the state, 30.5 per cent of the population of the chief cities and 36.9 per cent of the population of San Francisco.

**The Legislature of 1915 gave the Immigration and Housing Commission power to enforce the tenement house law when the cities fail to do so.

Deteriorated Districts.—One of the most difficult problems to deal with in all cities has been the deteriorated districts. These are generally caused by the shifting and uncertainty of business centers and the lack of any protection from intrusion even in the best class of residence districts, until recent real estate restrictions began to apply artificially within the past ten years.

In almost any city in California we find the industrial plant hampered by small, often ignorant property owners, whenever a spur track privilege or any other expansion is desired, and along side of it the dejected homes of the small laborers and mechanics, the very uncertainty of whose tenancy, even though they own the land, begets poor citizenship, careless living, and unhappy surroundings. Such an atmosphere can never be found to encourage permanent homes with gardens and other products of care and self-respect.

It pays industries better to concentrate in industrial districts for shipping facilities. The Bush Terminal in New York city is a very good illustration of this.

In the same way it pays residential districts to be protected from future intrusions of industries. Unguided haphazard development with both industries and housing thrown in each other's way, puts each at a disadvantage. Streets suited for residences are not best for industry, and industrial property should not permit bad housing. Separate zones or districts pay best for both residences and industry. As it is today, the well-to-do man can buy a home in a restricted residence district. Why does the city not give the same protection from intrusion to small homes? Lack of a city policy or established plan of growth and zone restrictions means only decay, waste and uncertainty.*

Exploitation.—Undoubtedly the poor man is worse exploited in housing than any other class, and there seem to be several reasons for it. What choice has the $8 to $20 per month renter in any California city? He must take what he can get.

Compare the opportunity of the workers in New Zealand:

Advances to Workers.—The intent of the advances to Workers Act, passed in 1906, is to extend the advance of public money to workers desirous of providing themselves with homes, to be secured by a first mortgage of the premises, which may be either freehold or leasehold. A worker is defined by the law as a person employed in either manual or clerical work who is not in receipt of an income of more than $1,000 per annum at the time of making application for the loan, and is not at the time owner of any other land, besides that which is offered as security. The person applying may be either a man or woman.

The loan may be used either for the purchase of land on which a house has already been built, or for the purpose of building on land already the property of the person applying. The largest amount that can be borrowed from the public fund by one applicant is fixed at $2,250, a sum sufficient under ordinary circumstances to pay for the erection of a cottage home of six rooms well and substantially built.

In case the loan is required for the erection of a house, the money is to be advanced by installments as the building progresses; the house must be inspected by a government officer and a certificate secured from him before the balance of the loan can be obtained. The sum advanced shall not exceed the value of the dwelling house to be erected, or three-fourths of the value of the security in the case of freehold land, or three-fourths of the lessee's interest in the lease in the case of leasehold land. The advance is secured by a mortgage over the whole property.

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*"The safety of your health is determined not by your own mode of living, but by that of your worst housed and poorest neighbor. You must be the keeper of your neighbor's health in order to safeguard your own and that of those nearest to you.

"There are in our cities business as well as residential slums. Skyscrapers in which thousands of people work without proper air and light are as dangerous as houses in the building of which light and air are not the first consideration.

"Industry, business and home life may flourish in the same community if they are distributed according to an intelligent community plan. Without a plan, moral, sanitary and economic slums are created.

"Wage earners are seeking the peace and comfort of the exclusive suburban communities. Their ignorance and the speculator's greed are bringing the slums into the open country. Not to prevent this is wasteful for the present and unjust to the future." —Dr. Carol Aronovici in Town Development.

The interest is payable half-yearly, together with an installment of the principal, which by this means is fully repaid in thirty-six and one-half years, when the mortgage is released. Valuation fees and the cost of preparing and registering the necessary deeds are fixed by regulation on an exceedingly low scale and are payable by the borrower.

Loans are granted only on the installment system. Interest is charged at the rate of 5 per cent, reducible to 4½ per cent, provided payment is made not later than fourteen days after due. No procuration fee, commission or charge for obtaining a loan is paid to any person. Persons desiring an advance make written application on a form obtained from any postmaster. The postmaster also supplies an envelope in which the application may be forwarded, and gives the applicant any explanation which may be required respecting the filling in of the form. The department supplies applicants with *house plans and specifications free of charge.* Eighteen different types of homes, containing from two to eight rooms, are covered by the plans. They are drawn with the view to getting the maximum amount of room and convenience for a reasonable price. The cost of the building varies according to the size from $600 to $3,200.

The applications received for loans during the year ending March 31, 1912, numbered 2,223, the aggregate amount required being $3,753,860. The total number of loans from the inception of the system was 7,674, and the aggregate amount authorized, $10,803,325. Of these, 686 grants amounting to $791,450 were declined, so that the net authorizations number 6,988 for an aggregate amount of $10,011,875.—From 1st An. Rep. Mass. Homestead Comm., 1913, page 94.

Causes of Bad Housing.—The causes of bad housing may be summarized briefly as follows:

ECONOMIC AND INDUSTRIAL CAUSES

(1) Low Income.—Tends to produce crowding and forces acceptance of worse conditions; keeps up the demand for wretched dwellings; lessens demand for good dwellings. The community has not planned to care for those who cannot help themselves.

(2) High Land Values from speculative profits leave small value for rent payers. No community study of the unearned increment in land values.

(3) Shifting Population and Business causes uncertainty, deterioration and great economic loss in residence districts, with transformation of single houses to tenements. District or zone restriction not yet applied.

(4) Unregulated Industries and Stores. Factories near center of city with long hours and low wages increase congestion. The intrusion of factories and railroads with smoke and noise ruins residential districts. Zone ordinances not yet applied.

(5) Transient Immigration, non- family life causing lodger problem.

LEGAL AND ADMINISTRATIVE CAUSES

(1) The Law Is Not Enforced. No complete state supervision, no tenement regulation of importance in California until 1909, and that is not enforced in most cities.

(2) The Law Is Weak. Has inadequate restrictions upon lot and room congestion. Permits insanitary dwellings and flats that are a menace to health, safety, comfort and convenience of the public.

(3) Little or no Community Guidance or Protection of residence districts. A lot worth $100 in the outskirts should not be permitted to be covered as completely as a lot in the center worth $100,000.

(4) Size of Lots not Adapted to type of dwelling. A 25-foot lot is not so bad for one-story cottages but is not fit for three-story flat buildings. More than 110 feet deep causes rear house or alley problems. No checking up of lot sizes and uses when new plot maps are filed.

(5) Violations of the Law Authorized or winked at by public authorities.

(6) Tax Systems Unequal and discriminatory.

PSYCHOLOGICAL CAUSES OF BAD HOUSING

(1) Lack of Community Study, planning ahead and guidance to good housing.

(2) Ignorance. The public does not realize that these bad conditions exist, that they are a menace to public health, safety, morals and comfort. Builders follow stupid models. Immigrants ignorant of American standards of living.

(3) Excessive Thrift in both landlords and tenants.

(4) Gregarious Tendency—especially among newly arrived immigrants. General increase of proportion of city to rural population. No definite effort by cities to spread small houses out over land or to discourage congested tenements.

These causes of bad housing could be largely prevented by sensible planning ahead by official city planning commissions or other similar bodies with authority.

Note—This is the third of six articles on "Better Housing in California," the first of which appeared in the June number. The fourth will appear in the September issue.—Ed.

* * * *

Some Splendid Suggestions

SO long as casual labor broods in squalid lairs in sunless streets, and ugly dwellings are its only habitation, we shall continue to turn out nervous manikins instead of enduring men. Motherhood, childhood, youth, society and the race demand the demolition of the soul destroying slum. The mean street produces mean men, the lean and tired women and the unclean children.

"Plan the town if you like; but in doing it do not forget that you have got to spread the people. Make wide roads but do not narrow the tenements behind. Dignify the city by all means but not at the expense of the health of the home and the family life."—Right Hon. John Burns, author of the English Town Planning Act of 1909.

* * * *

Wooden Fences

Many small cities and towns, as well as a few larger municipalities, have begun a campaign against the high board fences so commonly found in the rear of city residences. These fences have been declared "breeders of fires, crime and disease" and officials of the Health, Police and Fire departments are energetic in the movement for their abolition.

Statistics show that a great number of serious fires occur in localities where wooden fences are common, the fire often running down the length of the block carried by the wooden fence.

That the fences serve as screens and hiding places for marauders is also claimed by certain police officials. That they are an encouragement to the collection of rubbish is a certain fact.—Town Development.

* * *

What Was It, Then?

"I don't see why you call your place a bungalow," said Smith to his neighbor.

"Well, if it isn't a bungalow, what is it?" said the neighbor. "The job was a bungle and I still owe for it."

Willis Polk Suggests a Plan for Partial Preservation of Exposition Buildings

MR. WILLIS POLK has forwarded to us the following correspondence relative to preserving certain features of the Panama-Pacific Exposition. It is hoped that Mr. Polk's suggestions will bear fruit.

PANAMA-PACIFIC INTERNATIONAL EXPOSITION.
OFFICE OF THE PRESIDENT.

June 17th, 1915.

Mr. Willis Polk,
Chairman, Architectural Commission,
Hobart building, San Francisco, California.

Dear Sir:

At the time that Designers' Day was held at the Exposition recognition was given to the architects who contributed a definite element of the Exposition picture, and medals were, therefore, given to the architects who had been engaged therein.

We have since received a communication from the other members of the Board of Architects calling our attention to the fact that in the preparation of the ground plan, necessarily an important portion of the Exposition work, the part taken by you in that work, as well as in the deliberations of the Architectural Commission that determined this plan and the distribution of the work to the various architects, was most helpful and effective.

Therefore, I feel it proper on behalf of the Exposition to give you this recognition, and I take much pleasure in sending to you a medal, which I trust will give you the same pleasure in receiving as it affords us in giving it to you.

The Exposition is under a great debt to the architects for their enthusiasm and intelligence that governed their artistic expression in the great work here.

Yours very truly,
(Signed) CHAS. C. MOORE, President.

WILLIS POLK & CO.

June 18th, 1915.

Charles C. Moore, Esq.,
President Panama-Pacific International Exposition,
San Francisco, Cal.

My dear Mr. President:

It gives me great pleasure to accept with thanks the kind acknowledgment extended to me by the Exposition Company for my services as chairman of the Architectural Commission, under whose jurisdiction the plan and design of your incomparable exposition were formulated. At the same time I deeply appreciate your acknowledgment of the part taken in this work by Mr. Edward H. Bennett. It is difficult to accurately measure the credit to which any of the many architects, painters, sculptors and other artists engaged would be entitled, but it is certain that their performances as a body, as well as individuals reached the highest mark ever attained in exposition building.

In accepting your recognition for the part I took in this great work, I cannot refrain from telling you that, however small it was, it will never cease to be a matter of pride to me.

It is not, therefore, with any misgivings that I now suggest that steps be taken to preserve some part at least of this glorious work as a permanent feature of the beauty and adornment of our city.

For example—assume that all the buildings must be removed as being only of temporary character—why not retain the South Gardens and Horticultural building, the Marina (North Gardens) with its wonderful water front, in fact all the planting, all the roadways, etc. Then again why not retain the Palace of Fine Arts and its lagoon and gardens. After that, upon the Presidio lands are the plantings surrounding the various foreign and state pavilions. Is not the Japanese Tea Garden in Golden Gate Park a delightful reminder of the Midwinter Fair? Why not retain equally delightful memories of the fair of 1915? A practical solution of this problem may not be beyond the bounds of reason. Why not try to find such a solution?

During the original meetings of the Architectural Commission this matter was considered. Mr. Thomas Hastings was appointed a committee of one to formulate a report thereon.

I now have the honor to transmit herewith his report, together with a supplementary one by Mr. John McLaren.

Very truly yours,
(Signed) WILLIS POLK.

CARRÉRE & HASTINGS
225 Fifth avenue, New York.

April 28th, 1915.

Dear Willis Polk:

I remember well how interested and glad I was to be appointed a committee of one to report on the question of permanency for the Panama-Pacific Exposition.

In the several exhibitions with which I have been connected I have always contended at the outset that an Exposition Commission should feel a great sense of responsibility in the question of what to do for a community or a municipality to better its general appearance.

In Europe the best results have always obtained, more especially as you well know, in a city like Paris, where we have such a lasting benefit from the Exposition of 1900 in the great avenue leading from the Champs Elysees over the Pont Alexandre III to the dome of Les Invalides,—one of the most splendid architectural centers of Paris. This great avenue must be about two miles long, forming a vista almost as important as that of the Champs Elysees itself, which leads to the Arc de Triomphe. This is all the outcome of those who planned the Exposition in 1900.

We might equally well refer to the former expositions of Paris, where the Esplanade of the Invalides, Gardens of the Trocadero, and numerous avenues of approach are the result of the same process of reasoning.

None of our cities in this country, so far as I can see, have yet benefited materially and permanently from an exposition, unless we might instance some individual building, insignificant as related to the things that might have been done.

In the case of the San Francisco Exposition you have, as you know, built on redeemed land and unimproved property mostly belonging to two or three individuals. I have inquired from two of these people who reside here in the East, and I believe that they would be much interested in the proposition.

The situation in your case is unusually interesting, and adapts itself more to treatment for permanent results than any exposition which we have had and with which I have been connected.

Your site lies between one of the principal avenues of the city,—one which has improved in a very great degree in recent years, and the Presidio, where there is contemplated, I believe, an important circulation or boulevard driveway on the water-front to go for some distance. One or two of the main circulations of the Exposition grounds, it seems to me, should be studies to combine with this new avenue and connect it with the main part of San Francisco. If the buildings themselves were all removed and certain minor circulations in the Exposition plan were eliminated, many also of its details,—but other minor details were to be preserved, the results obtained would be of lasting benefit to the city of San Francisco as well as to those who hold property in this vicinity, as well as those who own the property itself.

Such an undertaking might result either in a public park, which of course would be the ideal solution of the problem, or practically as good a result would be a scheme of subdividing the land now occupied by the buildings into villa plots, or a very fine land improvement and investment scheme. The property which lies immediately above the Exposition ground on higher land and west of the Exposition grounds is now, as I remember it, a very high character of residential buildings,—some of the best houses and best known people being located there.

The property on the lower land closer to the Exposition is less good in character, but would of necessity benefit by such a land improvement as the Exposition grounds might offer, lying as it does between two much improved property zones.

In the general scheme of the Exposition the features that interest me most to preserve are, primarily, the planting which has been so successful and upon which more money has been spent in a short space of time than has probably ever been spent on any planting scheme for the benefit of the general uplift of any municipality in this country. Is this all to go to waste? It has been so intelligently done and the materials so well selected that if left as a part of a scheme of permanency it would grow and improve every year to produce what, in my opinion, would be one of the most splendid centers of the state. All this planting in ten years' time would grow into so beautiful a scheme that it would compare favorably with the splendid success of the architectural exposition as it now stands.

In connection with this planting the Exposition people have spent an enormous amount of money in grading and permanent pavements in the avenues, terraces, wall over the water-front, a large basin in the Court of the Universe and all this with a small amount of money could be made permanent and most effective.

Fountains might be in some instances modified and kept as permanent features as well as many other architectural landscape features which would be harmonious and make up a part of the general planting scheme. If I remember rightly, the boat landing basin might also be retained. A great deal of planting brought in connection with some of the state buildings and foreign government buildings might be retained, and all with intelligent planting be brought together to make part of the new ensemble. These are all too numerous to mention in this writing, but I do feel very strongly that the directors of the Exposition in consultation with the Board of Architects should appoint an architect to take in hand, in the near future, the study of this most interesting problem.

It is most interesting because the results could be made a permanent benefit to the community. It should be a thorough architectural study made in the form of tracings over the plans, as they now exist, that were made for the placing of the buildings. It should be a drawing primarily, studying the thorough process of elimination of buildings and motives in order to produce the best results for the new plan of permanency.

Inasmuch as there would be some considerable expense attached to the making of such drawings, the one who is asked to do this work would be in the employ of the Exposition Commission on a business basis for some compensation for his time and expenses involved.

All this is respectfully submitted only as suggestions coming from your committee of one, and I might add that I have no objection to your using them if they may be of any help.

Very sincerely yours,

(Signed) THOMAS HASTINGS.

Willis Polk, Esq.,
Hobart building, San Francisco, Cal.

OFFICE OF THE PARK COMMISSIONERS
Park Lodge.

Willis Polk, Esq.,
Hobart building, San Francisco.

Dear Sir:

Yours of May 12th is at hand. In reply I beg to state that I have examined the soils in and around the different courts of the Exposition grounds, and in my opinion the trees and shrubs with the soil surrounding them should, under present conditions, remain permanent for many years, with the exception of those in the sunken portions of the Court of the Universe and the Court of Abundance.

I see no reason why the soils and conditions in the North and South Gardens, the trees surrounding the lagoon in front of the Fine Arts building, the Avenue of Palms, and the trees on each side of Fillmore street should not do equally well.

Of course when the buildings are removed and the winds allowed to reach these trees they will become more or less affected by the continual winds that blow in from the Pacific ocean, but if shelter is provided by buildings or other protections, they will no doubt thrive.

I am charmed with the idea of having these grounds remaining permanent features of this locality, which before the filling in began was such a neglected unsightly spot.

Very truly yours,

(Signed) JOHN McLAREN.

July 26th, 1915.

Mr. R. B. Hale,
Care Hale Bros., San Francisco.

My dear Mr. Hale:

I acknowledge with thanks your favor of the 24th inst., enclosing editorial from New York Evening Post, which you forwarded to me at the request of Mr. William H. Crocker.

In reference to the architecture of the Fair, the main point in this editorial touched upon the architectural plan of the Exposition as a whole, with relation to the impulse it might give to city planning. The subject of city planning is comparatively a new one, and I believe one that is not well understood by the public at large, and by city officials in particular. Yet I believe that we are destined to give it more intelligent consideration in the development of our country. It was this motive, and this alone, that inspired my interest in our Exposition. I could not bring myself to enthuse with regard to any particular building, but I did devote my best thoughts to the plan in general, and while it is true that I had very little to do with any particular detail of the Fair, I felt that my influence, and the very earnest work done by a Mr. Edward H. Bennett contributed to the general success of the Fair in no small degree. The individual buildings, and the work of the individual architects are so fine that it would be hard to believe that the general plan of the Fair contributed in any way to their success, but all you have to do is to imagine the South Gardens out of line with the Court of the Universe, or the Fine Arts building at one side of the lateral axis, or even the dome of the Horticultural building off the axis of the Court of the Four Seasons, then you will understand to what a large degree the plan in general contributed to the success of the Fair.

The same applies to city planning, therefore I trust that you will use your personal influence to encourage all communities to give serious thought to this subject.

Very truly yours,

WILLIS POLK.

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THANK YOU!

It is not the policy of this magazine to indulge in self-praise. The publishers feel that the greatest commendation that a magazine can be given is that which comes voluntarily from its satisfied readers. But we are going to make an exception here just to say that at no time in the history of this publication —eleven years—has it received so many messages of congratulation as in the last two or three months. New subscriptions from most unexpected sources—from bankers, owners and Eastern architects—have come to us, accompanied invariably by a pleasant note of encouragement. For example, one architect writes: "You give me the biggest value for my dollar and a half of anybody I know of."

Another architect, referring to the June number, writes: "Keep it up and you will have all the Eastern publications on the run!"

THE EVILS OF IRRESPONSIBLE BIDDING

"Contractor Throws Up Job on School." Not a very dignified title, but it affords a splendid text for an oft-repeated sermon in these columns.

The quotation, taken from the daily papers, refers to a contractor on one of Berkeley's new school houses, who figured so low that everybody predicted he could not possibly make good and escape bankruptcy, and their prophecy has proved all too true.

Ere sixty per cent of the work had been done this contractor was broke and now the bonding company must finish the building.

When will our municipal authorities and private owners awaken to the fact that there is no economy in awarding contracts to irresponsible contractors on bids that are little short of suicidal? Common sense will tell a man that a contractor who is several thousand dollars low on a job, the total cost of which is under $50,000, cannot, under ordinary circumstances, make good. His predicament invariably ends by resorting to one of two things: Either he must ignore the specifications and substitute cheaper materials, or he must fail to meet his obligations and go into bankruptcy.

Why cannot we have some sort of legislation that will protect us against the dangers of irresponsible bidding? It is no wonder some architects open their doors to only a few selected bidders. Can you blame them? The better element of the contracting business, in San Francisco and Bay Cities, should unite and its members should decline to figure work in competition with irresponsible bidders. And those who figure should do so with the idea of a profit, otherwise it would be better to step out of the game.

REACHING THE ARCHITECT

A well-known San Francisco architect, God bless him, indeed has our interests at heart, as indicated by the following postal card, handed to us unsolicited by a somewhat flabbergasted wholesale house which has finally concluded to "do some advertising." The postal, mailed to the firm in question, speaks for itself:

Dear Sir: Your advertising matter received with thanks. We respectfully suggest that a card of yours in The Architect and Engineer, published in San Francisco, would be much easier for us to find—when wanted. We preserve the latter. Politeness forbids one from stating what becomes of the former.

In the August issue of Judicious Advertising is an interesting article by Robert B. Shapinsky entitled "Reaching the Architect." The author tells of an interview with a prominent architect as to the best way of reaching the members of his profession and persuading them to specify certain building materials. It is so much in line with the postal card to which we have just alluded that part of the interview is printed herewith:

I get my information concerning the newest building materials and specialties from the architectural and engineering journals' advertising pages. I get two architectural papers and one engineering magazine and I read the advertisements with the same attention that I give the text.

But the fact that a manufacturer says that a certain product is used in the Blank building doesn't influence me to use it in any of the buildings I am designing, although it frequently prompts me to make inquiries. I want to learn something about the material itself—a description of its merits and what it adds to the value of a building. I consider myself a judge of building materials, and the mere fact that some other architect or some contractor or owner has selected it is no reason why I should follow his example. So many building material advertisements carry only the name of the brand and the owner and his address. Many others indicate that the advertiser seems to think he is influencing the architect when he names the buildings where his materials are used. When there is some reason **why** the products should be used, I send for "fuller information" and am ready to listen to the salesman, whether it is something well established or an article that has just been placed on the market.

A Letter From Mr. Parmentier

Fernand Parmentier of Los Angeles secretary of the Southern California Chapter of the American Institute of Architects, who enlisted in the French army at the outbreak of the European war, is now fighting the Turks on the Galipoli peninsula. Mr. Parmentier was fighting the Germans in Alsace up to last March and no word had come from him since until a few days ago when A. C. Martin, president of the Southern California Chapter, A. I. A., received the following letter:

July 8th, 1915.

My dear Albert: I am on the Oriental front and up against the Turks. The battle is fierce and continuous and the weather is hot to beat the band, and altogether we are having no picnic.

The sick, wounded and dead are accumulating at a rapid rate, but here I must cease, for military censorship is strict and does not permit me to go into further details. My only hope is that this damnable mix-up may soon come to an end and may the powers of Europe wake up to the fact that they are bespattering with mud their much boasted of and boosted civilization. How the savages would laugh at us. There are some people here who will have much to answer for, when the end comes, if they will only get what is coming to them.

If this letter reaches you (for many from here never reach destination) kindly give word to any of my friends and acquaintances who may be interested, for I can write only to a few; time is limited and I never know when I may have a few minutes to write.

Remember me to all the boys of the Chapter and tell them that I often think of our pleasant reunions and look forward to the time when we shall all meet again and I can tell of my experiences and describe to them how it feels to be in "hell."

But my time is drawing to a close and I must stop. I give you my address enclosed. All letters are directed to Marseilles and thence forwarded to us by battleship or transports.

Kindly remember me to Mrs. Martin and with best wishes for your success and prosperity, believe me as ever

Your sincerely,
FERNAND PARMENTIER.

Address:
Fernand Parmentier, Caporal,
176 ieme Regiment d' Infantine
6 ieme Compagnie. Corps Expeditionaire d' Orient.
Par Marseille, France.

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Engineers and Architects in the Movies

A moving picture film taken at Universal City two or three months ago, on the occasion of the visit there of the Los Angeles Engineers and Architects Association, during which the members participated as actors in the making of a film for "The Blood of His Brothers," will be shown in California Theatres shortly.

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Los Angeles State Board Active

The Southern California State Board of Architecture, through its attorney, has obtained a warrant for the arrest of M. Eugene Durfee of Anaheim. The complaint alleges that Mr. Durfee has violated the state law governing the practice of architecture. Mr. Durfee has recently planned and had charge of the erection of several substantial buildings at Anaheim and vicinity.

A fine of $75 was recently imposed upon Leonard L. Jones of Los Angeles on charges of violating the state law governing the practice of architecture, preferred by the California State Board of Architecture. The specific charge was that he had signed, as architect, the plans and specifications for a reinforced concrete building.

Given High Recognition

Mr. Joseph F. Weston of Los Angeles, formerly draftsman in the office of Architect Elmer Gray, has been awarded the highest recognition within the bestowal of the Society of Beaux Arts at its twenty-second session in New York City. Mr. Weston secured the muchly coveted honor of "first mention placed" for his exhibition of colored designs and sectional drawings for an open-air moving picture theatre plant. While in New York Mr. Weston was a student in Atelier Hirons.

Stores and Apartments

W. H. Armitage of San Francisco has prepared plans for a three-story and basement frame store and apartment house to be erected on Folsom street, San Francisco, for Mrs. Helen McClew. Estimated cost, $10,000. The same architect has taken bids for extensive alterations to a four-story brick building owned by the Keane Estate Company on Grant avenue.

Personal

Chas. H. Alden, architect, who has maintained offices at 513 Colman building, Seattle, for some time past, but who has been in San Francisco in charge of the architectural department of the division of works of the Panama-Pacific International Exposition, has again returned to Seattle. Upon the completion of the addition to the Fine Arts building at the Exposition on May 15, 1915, Mr. Alden's engagement with the San Francisco fair terminated.

Louis J. Gill, architect of San Diego, is on a business trip to Richmond, Va. The leading architectural journals of the country have given much space in picturing some of Mr. Gill's work, and as a result, plans for extended work at a point near Richmond await Mr. Gill's action. While in the East he expects to visit his old school in Boston and his former home in New York. He will return some time in September.

H. J. Brunnier, C. E., of San Francisco, has gone to Honolulu on a part business and part pleasure trip. He is accompanied by Mrs. Brunnier.

Hunter & Morton have been appointed consulting engineers to the county of Yuma, Arizona, and are engaged in preparing data and estimates for the highway construction to be done under the $500,000 bond issue that has recently been sold. They may be addressed at Yuma, Arizona.

John C. Austin, architect of Los Angeles, has been commissioned to prepare plans for a $100,000, class B apartment building to be erected at Atlanta, Georgia.

Charles Gordon, who has had an office in the Investment building, Los Angeles, has returned to Chicago to engage in the architectural business there.

S. Tilden Norton, Title Insurance building, Los Angeles, has returned from the East, where he spent several months visiting New York, Philadelphia, Washington and other cities.

John Parkinson of Los Angeles, formerly of Parkinson & Bergstrom, has exchanged his 184-acre orange grove near San Dimas for the business property at Colorado street and Marengo avenue, Pasadena, on which stands the building of the Crown City Savings & Trust Co. The transaction is said to involve over $250,000.

Bertram Goodhue of New York has returned to the East after two weeks spent in California visiting the San Francisco and San Diego expositions. Mr. Goodhue has a commission to prepare plans for a large residence at Pasadena and has a prospective commission at Riverside.

George A. Howard Jr. has moved his offices from the Grant building to 318 Investment building, Los Angeles.

Charles W. Buchanan and Leon Caryl Brockway, architects, announce the removal of their office from 65 North Raymond avenue to 400-402 Chamber of Commerce building, Pasadena, California.

Miss Lilian Bridgman announces that she has been certificated by the State of California to practice architecture and has opened an office in the First National Bank building, Berkeley, California.

Gold Medal for Messrs. Shea & Lofquist

Architects Shea & Lofquist have received many compliments for their splendid design of the Sacramento grammar school, illustrated in the June number of this magazine. The firm has been awarded a gold medal for the water color of this school, which is now on exhibition in the Palace of Education, P. P. I. E. The following complimentary letter has been received from the Exposition officials:

PANAMA-PACIFIC INTERNATIONAL EXPOSITION
STATE OF CALIFORNIA, 1915
EDUCATIONAL COMMITTEES
(COPY)

July 14, 1915.

Shea & Lofquist, Architects,
742 Market street, city.
Gentlemen:—

As chairman of the committee having in charge the Education Exhibit in the Palace of Education, Panama-Pacific Exposition, I am passing on to you officially, word of the award made to the Sacramento grammar school, of which you are the architects, and of which a replica was sent to the Exposition.

You, as architects and collaborators in this exhibit, are, together with the superintendent and school authorities of Sacramento, to be congratulated upon the gold medal received. It is highly deserved. Yours sincerely,

(Signed) ARTHUR H. CHAMBERLAIN,
Chairman.

$40,000 Apartments

Messrs. Falch & Knoll of San Francisco have completed plans for a $40,000 apartment house to be erected at Taylor and Washington streets, San Francisco, at an estimated cost of $40,000. It will be one of the most completely equipped apartment houses on the Pacific Coast.

The same architects have also prepared plans for four flats, a garage and store to be erected at 20th and Bryant streets for Mrs. Carl Bunner.

Messrs. Falch & Knoll have completed plans for two frame and plaster residences to be erected on Sacramento, near Cherry street, for the Isenbach Company.

Residence Work

Milton Lichtenstein of San Francisco is preparing plans for a $7,500 residence to be erected on Lake street in the Richmond District, San Francisco. Mr. Lichtenstein is also making plans for alterations and additions to the residence and garage of Mr. Abe L. Gump, on Green street, San Francisco.

Albert Farr has plans under way for a $10,000 residence to be built on 7th Avenue for Mrs. A. Morrison. Figures have been taken by the same architect for a $5,000 home in Piedmont for Robert Sharon.

Architectural Club Committees

President Frederick H. Meyer of the San Francisco Architectural Club has appointed the following committees for 1915-16.

Education—John Bakewell, Jr., chairman; B. R. Maybeck and W. C. Hayes.

Entertainment and Meetings—J. Harry Blohme, chairman; John Reid, Jr., and Geo. W. Kelham.

Membership—Charles Peter Weeks, chairman; J. Harry Blohme, John Bakewell, Jr., Herman Barth and Frederick H. Meyer.

Moving Picture Plant

Messrs. Ellis & Skilling of San Jose are the architects of a moving picture plant about to be established at Santa Clara. The buildings will include a glass domed studio to cost about $8,000, a two-story administration building with roof garden, an open-air stage, scenic studios, garage, and concrete film vault.

Visalia Auditorium Competition

Eight sets of competitive plans were submitted by as many architects for Visalia's new municipal auditorium to cost $35,000. A committee has been appointed to select the best set of plans and the successful architect will be engaged to take charge of the construction of the building.

Wood & Simpson, Architects

Mr. Horace G. Simpson and Mr. Hart Wood announce the opening of offices in the French Bank building, San Francisco, for the practice of architecture, under the firm name of Wood & Simpson.

Mr. Simpson is a graduate of the Institute of Technology, and has studied extensively in Europe as holder of the Rotch Traveling Scholarship. He also has had valuable training as a designer in the offices of Cass Gilbert, Guy Lowell and other leading eastern architects. Since coming to California he was for some years chief designer for L. B. Dutton & Co, now retired. Among other buildings for this firm which have caused favorable comment may be mentioned the First Trust and Savings Bank of Oakland, and the English Cottage for the Holt Manufacturing Company's exhibit at the Exposition.

Mr. Wood came to California in 1902 and was for a time connected with the office of Mr. Hodges, then resident architect of Stanford University. After coming to San Francisco he allied himself with the firm of Bliss & Faville, and remained with them until recently. During his stay with that firm he had charge of the design of most of their important work; among which may be mentioned the Bank of California, Columbia Theater, Savings Union Bank and Trust Company, Children's Hospital, Masonic Temple, St. Francis Hotel additions, and the main group of buildings at the Exposition.

The sound training of these men and their long experience with the highest class of work promise well for the future of the firm.

Architects Will Collaborate

Messrs. Frederick H. Meyer and John Reid Jr., formerly members of the Consulting Board of Architects of the City of San Francisco, will collaborate in preparing plans for the northeast wing of the San Francisco hospital, which is to cost $300,000, and for the new Redding school, to be erected at Larkin and Pine streets, San Francisco, at a cost of $125,000. The plans for both buildings will be gotten out jointly by the two architects.

Plans for two additional fire houses—one at 34 Mint avenue to cost $30,000, and one on Howard street, near Third, to cost $50,000—will be prepared by Messrs. Ward and Blohme.

Hall of Records

Charles S. Kaiser of San Francisco has completed plans for a two-story and basement reinforced concrete Hall of Records to be erected at Oroville for Butte county. The exterior of the building will be finished in white cement and terra cotta. The estimated cost is $50,000.

Crane Company to Build Warehouse

Walter D. Reed is preparing plans for a two-story reinforced concrete warehouse and show room for the Oakland branch of the Crane Company. The building will be erected at Ninth and Webster streets, and is designed to carry three stories, but only two will be built at present. The estimated cost is between $40,000 and $50,000. The exterior of the building will be finished in stone and pressed brick.

Rousseau Bros. Busy

Rousseau Bros., the San Francisco architects, are busy on quite a little important work, including several apartment houses, a store building for Frank Powers in Vallejo, three bungalows in Berkeley for E. P. Reigh, and a residence in Easton for the Clyde Investment Co. This firm is making a specialty of residence work for suburban development.

San Jose Architect Busy

F. D. Wolfe of San Jose has let a contract for the erection of a $6,500 residence at San Rafael for Dr. C. B. Marston. The same architect has taken bids for the construction of a two-story and basement frame and plaster apartment house in San Jose for Mrs. Mary A. Ward. Mr. Wolfe is making preliminary plans for extensive alterations to the Bank of Italy building, San Jose.

Christian Science Church

R. S. Hotchkin, formerly with B. G. McDougall of San Francisco, has been commissioned to prepare plans for a new edifice for the First Church of Christ Scientist, Fresno, to cost approximately $75,000.

Two Palo Alto Homes

Chas. S. Kaiser of San Francisco is preparing plans for two attractive country homes to be erected at Palo Alto for Robert C. Ray. About $20,000 will be expended.

$40,000 School House

Orville C. Clark of Bakersfield has completed plans for a $40,000 two-story Class C grammar school building to be erected at Woodlake, near Visalia.

Addition to High School

Chas. S. McKenzie of San Jose has prepared plans for a two-story frame and plaster addition to the San Jose High school. Building will be for the commercial department and equivalent to twelve rooms.

"American Builders' Week" at Panama-Pacific International Exposition

By G. ALEXANDER WRIGHT, Architect

THE most important coming event of the year to builders is unquestionably "American Builders' Week" at the Panama-Pacific International Exposition in October next, from the 18th to the 23d. Indeed, it is doubtful whether any event in the history of the United States can possibly have any greater significance to builders and the allied trades.

The importance of the builder, as an individual as well as collectively, his intimate connection with all industrial and national progress, is at once manifest when we recall the fact that forty per cent. of the entire population of the United States is directly or indirectly dependent upon the building industry and its success. No one line of business has more to do with progress than the builders of homes, of cities and towns and those public utilities upon which the comfort, health and happiness of our people depend.

The assembling of many thousands of builders from every city and corner of the country to participate in such a builders' celebration cannot fail to promote and foster an interchange of progressive thought upon technical and business matters or to more firmly establish good fellowship, educational and social intercourse.

Actively identified as builders naturally are in the upbuilding and development of our cities and towns, these visitors to San Francisco this year will have not only the opportunity of viewing the greatest constellation of exquisitely beautiful Exposition buildings ever built, but in the city by the Golden Gate, renowned the world over for its progress and hospitality, they will find what is today, without doubt, the most up-to-the-minute modern city in the world.

From a mass of ashes, ruins, and complete desolation which covered over four square miles in April, 1906, a new city has arisen! A new San Francisco, The "Queen of the West," and she stands today an eloquent monument to her local builders, the men who are now cordially inviting their brethren and all who build, to come and view their finished work, to share their hospitality, and to contribute by their presence to the joy and success of American Builders' Week.

It is eminently fitting, therefore, that at this great international Exposition, which commemorates the bringing together, the uniting of two great oceans, builders, that our national builders in every line of activity, should also be brought together and be permanently united in lasting bonds of friendship, sympathy, and mutual support, upon a scale never before attempted.

We learn that a strong general committee embracing representatives from all branches of the building business in San Francisco, with numerous sub-committees, are actively engaged in making the necessary arrangements to insure the success of this great celebration of builders. Invitations to attend are being sent to every Builders' Exchange and similar organizations in the country and to the building press.

It may be stated that the leaders in every trade connected with the San Francisco building industry, the local building material firms and supply houses are all heartily co-operating with the builders in this movement.

* * *

Following are the important committees upon whose work depends very largely the success of the movement:

J. D. McGilvray, Sr., chairman; Ralph McLeran, first vice-chairman; J. K. Moffitt, second vice-chairman; I. F. Littlefield, third vice-chairman; R. A. Hiscox, fourth vice-chairman; G. Alexander Wright, fifth vice-chairman; Executive Committee—Wm. H. George, finance; Chas. M. Elliot, publicity and advertising; Alex. Coleman, invitation; Anson S. Blake, transportation; Henry Jacks, hotel and housing; Harry Maundrell, reception; D. Zelinsky, entertainment; Chas. Wright, program; E. J. Brandon, parade; Wm. E. Hague, at large.

Finance Committee—Wm. H. George, chairman; I. D. Bluxome, L. R. Boynton, J. W. Bender, W. T. Beck, J. W. Cobby, W. W. Dennis, Walter Dyer, D. O. Druffel, George Eastman, George S. Forderer, F. E. Irving, F. E. Knowles, H. T. Lally, I. F. Littlefield, Nels Larsen, J. B. Leonard, P. McG. McBean, L. B. McDonald, Alex. Mennie, Ralph McLeran, F. C. Price, A. B. Sibley, Chris. F. Seitz, Fred'k W. Snook, A. C. Schindler, George Uhl.

California Electrical Contractors

The California electrical contractors held their sixth annual convention last month in the Rialto building, San Francisco.

The officers of the association are: President, C. C. Schneider of Sacramento; vice-presidents, L. R. Boynton of San Francisco, L. B. Gilpin of Oakland, F. J. Somers of San Jose and Claude Loveday of Santa Barbara; secretary and treasurer, W. S. Hanbridge of San Francisco.

California State Architect Busy

Plans for construction work on California state buildings, the cost aggregating many thousands of dollars, are being prepared by State Architect McDougall.

Plans have been completed for two cottages at the Southern California State hospital, to cost $40,000, necessary because the present quarters are overcrowded, and an addition to the Manual Arts building of the Los Angeles State Normal school.

Work is progressing, and is well toward completion on drawings for additional cottages for the California School for Girls at Ventura, the cost to be $45,000.

Plans also soon will be completed for three additional buildings for the Norwalk State Hospital near Los Angeles, to cost about $95,000. The structures will be of English architecture, and of brick.

Preliminary sketches are being made for temporary buildings for the Humboldt State Normal school at Arcata, the cost to be between $15,000 and $18,000.

Sketches are being prenared for additional class rooms for the San Jose Normal school, to cost $20,000. The school is badly overcrowded and more room is necessary.

Preliminary plans for the remodeling of the San Francisco Normal school are being drawn. The cost will be $12,000.

Granite Strike Delays Construction Work

The granite cutters' state-wide strike, which is delaying the completion of the granite setting at the new San Francisco City Hall, is also retarding the contract for the construction of the Public Library building in the Civic Center. Until the strike is settled estimates and bids for the granite for this big building cannot be obtained, and the same applies to the $800,000 Benjamin I. Wheeler classroom building at Berkeley.

Fresno Contractor Gets His Per Cent.

Judgment for $2,523.76 has been handed down by Judge Allen in the case of Manning vs. Gibson. The judgment also allows the Fresno contractor privilege of foreclosing on the lien against the beautiful Gibson home over which job of construction he was supervisor. Manning claims a five per cent. commission on the contract price for the house as well as his $6 per day as supervisor. Gibson alleges that certain of the articles mentioned in the final figures had been doubled wherefore the house had cost more than it should.

To Build Two Concrete Bridges

McLaren & Peterson, Sharon building, San Francisco, have been awarded contracts to build two reinforced concrete bridges at Red Bluff, California, for $14,000 and $17,000, respectively.

Buildings Built in Movies

Still another use has been found for motion pictures. The Third National Bank building of Springfield, Mass., a ten-story bank and office structure now in course of erection by Hoggson Brothers of New York and Chicago, will have its complete history shown on the film, while individual bank buildings being constructed in different sections of the country by the same concern will furnish the basis for certain features of the pictures.

Not only will the history of the erection be followed, from the demolition of the old building and the excavations for the new one, through the construction to the actual moving in of the bank's business, but the various materials to be used in the construction will be followed from their respective sources until they are installed in proper place in the building.

The operation of quarries from which the stone and granite for the foundations and base of the building are taken will be portrayed; the rolling of steel be shown in the Pittsburg steel mills; the beams loaded on cars ready for shipment and at the building, lifted and put in place as a part of the great skeleton. Huge trees will be shown felled in the forests of Austria, Africa and South America, and they will be followed through the saw mills, the cabinet shops of Hoggson Brothers, there to be made up into furniture and bank fixtures, and later fitted in as a part of the building. Terra cotta and brick for the exterior and the interior fireproofing will be shown cast and burned, and set in the growing edifice.

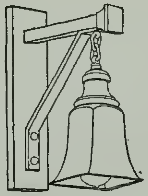
The spectacular casting and moulding of bronze will be reviewed, as will another visit to quarries for the marble to be used as the base of the counter screen and for the wainscoting in the upper corridors. In European countries will be seen the weaving of floor coverings, fine hangings and draperies for the officers' quarters and reception room.

Finally will be shown the completed building, exterior and interior, the furniture in place to the smallest detail of ink-well and waste-paper basket; finished, ready for occupancy.

Contractor Declines to Pay

A newspaper dispatch from Oakdale, Cal., says:

"The Oakdale irrigation district and T. K. Beard, contractor at Modesto, have locked horns over a little matter of $10,000, balance due for the construction of the Clavey Pipe line or Booster plant. The siphon was built of concrete. It leaks. Contractor Beard admits it leaks, but not enough to hurt it. The district agreed to pay him for his work. The contract was completed two years ago and Beard received the $10,000. He put up a bond to insure its return if the siphon failed to work. The district says it doesn't work. Beard says he won't pay.



Heating and Lighting

Plumbing and Electrical Work

Artificial Illumination in Relation to Architectural Effects*

By S. D. CHALMERS, M. A.†

THE great progress in the theory and practice of artificial illumination has provided architects with new materials and resources for producing architectural effects, particularly in relation to the interiors of buildings and the decoration of halls and smaller rooms. It is true that the illuminating engineer has as yet made little progress in the application of his new methods of these purely architectural problems; it was only natural that he should first turn his attention to the more utilitarian aspects of artificial lighting; his aim has been to produce the illumination requisite for the comfortable use of a room for its ordinary purposes; and economy has been one of his prime considerations. He has, to a very considerable extent, solved the problem of the efficient and economical distribution of the light available. He avoids excessive illumination of any point, and by screening his sources of light reduces the glare, and so is able to obtain the same visual effects with reduced actual illumination. He takes into account the reflection coefficient of his walls and ceilings, the nature of the objects to be illuminated, and the fineness of detail which must be distinguishable. Incidentally he has made some progress in the illumination of the architectural features and decorations of the rooms. But progress in this latter direction is more dependent on the architect than on the illuminating engineer. It is not always possible to make effective use of artificial light in buildings and rooms which have been designed entirely with a view to their effect in daylight. Just as the architect considers the site and lighting of his building in regard to its outside form and its interior decoration, so he should consider the scheme of interior decorations in relation to the artificial lightings with which it will be used. Some types of decoration are quite unsuitable for artificial illumination and should be avoided in rooms which are intended to be used almost exclusively in artificial light. Other types are suitable for either illuminant. But the differences between the characteristics of daylight and artificial illumination are such that one cannot assume that good results will be obtained by artificial light, even though the results by daylight are most satisfactory.

But under the term of artificial illumination we include such varieties of actual lighting that much may be done to improve the effect in any given case.

It is my object to point out the fundamental similarities between natural and artificial lighting, to indicate how variations in natural lighting have led to important architectural developments, and to show how the results achieved with natural lighting may indicate the successful treatment with artificial lighting.

The great contrast between the Classic and Gothic styles is closely associated with the variation of the lighting conditions. In Greece the conditions were simple—a bright source of light almost always available, and a relatively small amount of diffused light. In the sunlight clear-cut shadows were produced, and only shallow mouldings were necessary to secure the necessary contrasts of light and shade. This is well illustrated in the columns of the Parthenon, where the sharply undercut mouldings produce clear, sharp bands of shadow. But when buildings in the Classic style are erected in climates like our own the quality of the light is different, and the features must be modified if the same effect is to be produced; and the proportion of diffused light being greater, it is necessary to deepen the flutings to produce sufficient contrast. This same general characteristic is noticeable in artificial illumination when one bright source is replaced by a number of small ones.

It is this same effect of deeper mouldings and flutings that marks the Gothic as contrasted with the Classic architecture, and once more it is the lighting conditions which determine the extent of the change; the more diffused the light,

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* Paper before the Society of Architects.

† Head of the Department of Technical Optics, Northampton Institute, England.

the deeper must be the moulding. Another case of adaptation to the lighting is the pulvinated frieze, in which the surface is lightly curved, so that the upper part intercepts more light than it otherwise would do, and so gives a shading from the bright upper to the dull lower part. This is effective in the case where the light is well diffused, but comes only from a comparatively restricted sky area. This is an intermediate case between the direct sunlight and the wholly diffused light.

These same general principles apply also to interior ornament. The more diffuse and less direct the lighting, the more is it necessary to intensify the mouldings, carvings, and other relief. When the lighting comes from above in a comparatively narrow beam, the ornament must be in low relief, while a general diffused lighting from in front is more suitable for cases of deeper relief. An illustration of this principle is furnished by the Miserare seats, with the low relief above and deep relief below. In most cases of artificial lighting, ornaments on the level of the lights may be in deeper relief than those well above or below. In the same way it is unwise to illuminate a ceiling with deep mouldings by lights placed too close to the ceiling, as this results in long and deep shadows. When the lighting is very diffuse, it is sometimes preferable to produce the impression of depth by special devices, such as the linen-fold panel of the English and Flemish architecture of the fifteenth century. Such devices are usually suitable for artificial as well as natural lighting.

Turning now to the possibilities of the artificial illumination of interiors, we find that the conditions are in some respects less, and in other more, favorable than those of natural lighting. The daylight usually comes as diffused light from a comparatively large window area, producing very variable illumination throughout the room. It is exceedingly difficult to modify its distribution to any appreciable extent, and the amount is very variable throughout the day and year. On the other hand, the eye adapts itself very readily to the variations of daylight, ignoring all excessive contrast and accepting the variations in color of the light without noticing them. Not the smallest advantage, perhaps, is that the actual source of light does not come into view, and we are not obliged to devise special methods of screening it.

In the case of artificial illumination the original sources are comparatively small bright objects which obtrude themselves most unpleasantly if we omit to screen them from direct view. But because the sources are small we can surround them by diffusing screens or reflectors, and materially modify the distribution of the light coming from each source. With modern, properly designed reflectors it is possible to produce almost any desired distribution of the light, from practical uniformity to concentration in comparatively small angles in any desired direction. By the judicious placing of the sources of light and the proper choice of reflectors we can obtain almost any desired distribution of the light with one limitation, that the light coming from each individual source to any point will be coming in a comparatively small angle. Each source would tend to produce well marked deep shadows, and care must be taken that the effects of the other sources are to reduce the depth and size of these shadows to the desired amount. In this way the shadows may be made architecturally useful rather than the reverse.

It is this possibility of varying the character of the lighting and the change in the distribution almost at will that makes it possible to obtain different architectural effects. The ideal of the illuminating engineer has generally been to produce even and soft illumination throughout the room. But it seems to me that this is not always the most suitable lighting, and that in some cases a more one-sided lighting, with a subsidiary cross or reverse lighting, might be usefully employed. In using this method one must not attempt to imitate the conditions of daylight too closely. The variations must be considerably less than those of daylight, because the actual illumination will usually be considerably below that which prevails with daylight, and at this lower illumination the variation is much more readily appreciated. This effect is not materially altered by actually increasing the illumination by artificial light, because of the dazzling effect of intense artificial light. Owing to the adaptation of the eye to the conditions prevailing in artificial illumination, comparatively small variations are effective, and it is unwise to produce strong contrasts between the different parts of the room. Most people find it unpleasant to sit in a well-lighted part of a room while the rest is in comparative darkness. It is on account of this adapt condition of the eye that it is so important to screen the modern sources of high intrinsic brilliancy, and the only effective way is to make the light appear to come from an area much larger than that of the source. The smallness of the size of artificial sources is troublesome when reflecting surfaces, such as varnished wood, are present, and in some cases the reflections are objectionable. They may be reduced by increasing the size of the source or altering its position. The same difficulty of reflection occurs in connection with picture lighting, and care should always be taken to place the sources sufficiently above the picture to make the reflection invisible at the ordinary level of the eye. This generally adds to the difficulty of securing even illumination on the picture, but by properly distributing the light from the source almost any required degree of evenness of illumination can be obtained.

Still further difficulties are encountered in regard to colored ornamentation, and these troubles are accentuated if the illumination on the colored object is low. The relative brightness of the parts of different colors will change as the illumination is diminished, and it is a wise precaution to secure abundance of light for any colored ornamentation. Even with this precaution the color values are unlikely to be exactly the same as with daylight, though the recent attempts to improve the color rendering by artificial light have met with considerable success. But the rendering of variations of shade in a flat object is almost the same by artificial light as by daylight, and the same may be said of pierced work where the contrast of a carving is enhanced by piercing.

Pierced screens are interesting, as showing one of the earliest methods of combining natural with artificial lighting effects. In daylight the screen is lit from in front, the openings appearing dark to contrast with the screen; when the altar is lit up the screen is seen in silhouette, and the piercings are light. The same effect of interchange of light and dark in natural and artificial lighting is seen in the windows of churches and other buildings. The walls near the windows, which are of least importance in daylight, are the most prominent features in the artificial light. Their architectural treatment, though making little difference by daylight, may be of the greatest value for artificial lighting.

But there are other methods of artificial lighting to which I would like to refer. In these methods attempts have been made to imitate the conditions of daylight lighting. An example is the use of a group of lights surrounded by large diffusing screens or reflectors, in imitation of the method of the oculus as used in the lighting of the Pantheon. It is easy in special cases to imitate the effect of this method of daylight lighting, and the method is applicable in large halls or theatres. But the method of indirect lighting approaches most directly to the effects of daylight.

In this method the light from the source is sent on to a white ceiling or screen and is directed downwards to illuminate the room. The absence of marked shadows renders this method useful for certain purposes, as, for example, the lighting of drawing offices, but unless the illumination is very high the method gives the impression of a poor imitation of daylight, suggesting coldness and winteriness. We interpret this artificial lighting, in terms of daylight and the suggestions that this daylight carries with it.

It is probably on this account that many people prefer the semi-indirect system of lighting, in which part of the light from the source is allowed to pass through the shade, while the other part illuminates the ceiling. In this case the impression of artificial lighting is retained and the comparison with daylight does not obstrude itself; at the same time the conditions of shadow are more those of daylight, and the indirect light from the ceiling tends to soften the whole lighting. This method of semi-indirect lighting is specially useful when the ceiling and frieze are worthy of attention in themselves, as, for example, in beautiful moulded ceilings.

In all these cases of indirect lighting it seems preferable to show sources which illuminate the ceiling even if the greater part of the light be really derived from concealed sources. There are, however, a number of cases where the ceiling has been lit entirely by means of concealed lights, and the effect has not been happy. These lights produce beautifully even lighting on the ceiling, but one unconsciously asks where does the light come from, and the only explanation is that there must be an opening between the walls and the ceiling, and apparently it must extend all round, there being no distinctive direction in which the light comes, and ceilings which are unsupported are uncanny. In one of these cases the effect was much improved by the use of a number of visible sources which apparently illuminate the ceiling. Thus, as regards interior illumination, the conditions are somewhat different for artificial and natural lighting. But each has its advantages, and by judiciously using the resources of artificial lighting it should be possible to obtain quite as good results as with natural lighting, but this is a matter for the architect as well as the illuminating engineer. New methods and arrangements of lighting are required.

In the cases where rooms are to be used only or mainly by artificial light, the architectural features should be designed in relation to the actual method of lighting to be employed. When few but large sources of light are to be used, the conditions approximate to outside natural illumination, and models of ornament and architecture may well be sought in Classical types; but when numerous smaller sources are to be used, the conditions approximate more to the Gothic conditions, and mouldings and ornamentation of this style might well be studied in connection with their value in artificial light.

The Relation of the Architect and the Engineer

[Editor's Note—Since the publishing of the article "Recognition of the Profession of Heating and Ventilating Engineering" in the two previous months' issues the article under the above heading, read by D. D. Kimball, president of the American Society of Heating and Ventilating Engineers, before the Pittsburgh Chapter of the American Institute of Architects, presents certain interesting conclusions, in regard to the payments of engineering services and is, therefore, reprinted herewith:]

"IF the architect receives 6 per cent on a piece of work the engineer should also receive 6 per cent upon his portion of the work," writes Mr. Kimball, "or if the architect receives 5 per cent the engineer should also receive 5 per cent.

"Some architects are in the habit of asking owners to pay 5 per cent or 6 per cent extra on the cost of the engineering equipment where engineering services are employed. Others ask the owner to pay 2½ per cent or 3 per cent. I have discussed this matter with many architects, and in the majority of cases there is an agreement of opinion that while the owner directly receives the benefit of the engineering services and may, therefore, be reasonably asked to pay the extra cost to the architect, there is no justification for asking the owner to pay a full 5 per cent or 6 per cent extra, for the architect is certainly saved some expense in the making of plans and specifications and supervision of the work, and he is not called upon to give of special training, experience or knowledge on this work.

"If the owner pays the architect 6 per cent on the cost of the complete structure, including the engineering equipment, and is then asked to pay 6 per cent extra on the cost of the engineering equipment for the services of the engineer, he is somewhere paying for more than he is getting, for is it not true that not both the architect and engineer are called upon to give the same knowledge and experience or are put to the full expense of making the plans and specifications and supervising the installation of the engineering equipment? The engineer certainly is put to the full expense customary in professional services of this nature, and the architect is put to a certain but not equal expense. Therefore, a logical conclusion would seem to be that the engineer should be paid a full fee and that the architect should be paid in proportion to the expense to which he is put, plus the usual profit. Thus the owner gets full value of what he pays.

"An arrangement which has many times proven satisfactory provides an extra payment of 2½ per cent to 3 per cent for engineering services, depending upon whether the architect's fee was 5 per cent or 6 per cent.

"The payment of an extra 3 per cent on the mechanical equipment of a building represents apparently an increase on the cost of the building of but three-tenths to seven-tenths of 1 per cent, but actually the employment of the independent engineer will save much more than this in the cost of installation and in the annual cost of operation and maintenance. The use of contractor's or manufacturer's plans and specifications will assuredly mean an increased cost of installation and operation much greater than the amount of the engineer's fee.

"By some it is contended that the architect's fee over the entire building should be increased sufficiently to include the cost of engineering services. The first objection to this lies in the popular, but mistaken, impression that the architect's fee is already extremely profitable and, consequently, a further general increase would be most unpopular. A second objection is that some architects would still not employ the engineer, while others would employ the cheapest talent. Again, in a hospital costing $1,000,000 the entire equipment might represent 25 per cent of the cost of the building, and in a cathedral costing the same sum the equipment might cost but 5 per cent. This difficulty would be experienced in fixing a rule or even in determining the correct fee in an individual case.

"The demand for a full extra fee on the mechanical equipment has many times led owners to separate entirely the architectural and engineering work, paying to the architect and engineer a full fee on the portion of the work assigned to each only.

"There is a disposition among certain engineers to argue that the construction of a building, including foundations, structural steel, walls, floors, partitions, spacing and equipment is largely an engineering problem and that, therefore, the entire commission should be placed in the hands of an engineer who should employ an architect to add the aesthetic features to the plans.

"The adoption of an accepted method of procedure adhered to by all architects will materially lessen the force of such views.

* * *

"The lack of uniformity in the practices of architects in these matters has befogged the entire subject and prevented altogether the enlightenment of the owner.

"The schedules of fees of the American Institute of Architects provides that the owner shall pay extra for engineering fees where such services are required, but to the average owner this provision is ambiguous. It does not state the amount of such extra payment nor does it state to what class of work this rule is to be applied. Consequently some architects suffer extreme embarrassment in asking for an extra payment for engineering services, while others, and I have one particularly in mind, unhesitatingly apply this rule on practically all occasions.

"Recently I have had three different experiences, all of the architects involved being members of the American Institute of Architects. In the first case I had the good fortune to be personally acquainted with five of seven members of the building committee. This gave me an unusual opportunity for this presentation of the American Institute of Architects' rule for extra payment for engineering services. I still believe that this rule could have been made effective in this case had not the selected architect volunteered to assume all of the expense of engineering services. In the second instance the president of the building committee was an intimate friend and was agreeable to paying extra for engineering services. The architect in this case volunteered to relinquish all claim to a fee on the engineering equipment, so that the engineer and architect were employed and paid separately. In the third case the committee had been brought to a point where they were prepared to pay extra for engineering services, when three architects volunteered to assume the expense of engineering services if they but be given the job.

"In the matter of payment to the engineer there is just as little uniformity of practice.

"Is there any reason why the method of payment provided for in the architects' schedule of charge should not be applied by the architect in making payments to the engineer, even to the payment of the usual proportion of the engineer's fee when the letting of the contract is delayed through no fault of the engineer, especially when the making of the plans and specifications for the engineering equipment by the engineer has been essential to the letting of the construction contract, and the architect has received his usual payment of the construction contract?"

The Cartwright Law Might Be Applied Here to Good Advantage

[From the San Jose Mercury]

The Santa Clara county supervisors want to buy 50,000 barrels of cement. But they can't do it.

Several weeks ago they advertised for bids for supplying the cement, to be used in constructing and repairing county highways. Several bids came in and were opened in due course of time.

The supervisors learned something that seemed to defy the laws of mathematical probability. Every bid, in all of its ramifications and minute details, was precisely identical with every other bid in the lot.

So the supervisors rejected all the bids, and advertised again. At the next meeting the law of mathematical probability was again severely beaten up. Once more all the bids coincided.

The supervisors say they refuse to buy cement, unless bids that are not so extraordinarily similar are submitted. It is their plan to go out in the open market and buy the cement, if the law will let them do so. District Attorney Arthur M. Free will render an opinion on the legality of this contemplated course within a few days.

Alex Coleman Honored

Mr. Alexander Coleman has again been honored by the Master Plumbers of California. Last year Mr. Coleman was elected a delegate from the Golden State to the National convention at Atlantic City. This year, at the annual state convention in San Francisco, Mr. Coleman was elected president by a unanimous vote, indicating his popularity and appreciation of his untiring services in behalf of the Master Plumbers' Association. The other officers elected are: J. Hokom, Los Angeles, state vice-president; Fred Wilson, San Francisco, state treasurer; John L. Furman, San Francisco, state secretary; V. W. Guercio, Los Angeles, assistant state secretary. These officers, together with Fred Heilbron of San Diego, D. A. Newman of Fresno, and Edw. R. Wright, past president, of Los Angeles, compose the board of directors. San Francisco proved a most generous and hospitable host, including in the entertainment a banquet and an all-day picnic on Sunday.

Figuring the Big Work Again

No more encouraging sign of returning prosperity could be offered than the announcement that several of the large contracting firms in San Francisco are again going after business. For a year or two these firms have declined to figure, except possibly an occasional job, realizing that with so much competition the opportunities for landing a contract at a profit were extremely small. The Gilley-Schmid Company, pioneers in the heating and plumbing business in San Francisco, a firm that did a large share of the better class of work right after the fire, is again figuring the big work and undoubtedly will be successful in landing some good contracts. This firm has splendid backing and employs a force of highly competent heating engineers.

Polytechnic College

Frederick H. Meyer has completed plans and has taken figures for the construction of a three-story and basement Class A school building at 26th and Folsom streets, for the Cogswell Polytechnic College. Building is expected to cost $150,000.

State, County and Municipal Engineering

Good Roads—Water—Sewers
—Bridges—Fire Protection

Engineers as Viewed by Contractors

By RICHARD W. SHERMAN *

COMPLETE harmony cannot exist between engineers and contractors, as each represents opposing interests. The engineering graduate starts with an educated prejudice against contractors, whom he believes to be, in the main, determined to get the best of engineers; and therefore he is on his guard, and purposes not only to take care of himself but to get the best of the contractors.

Contractors dread the "boy engineer" just from college. These young engineers are extremely technical. They expect a literal compliance with every iota of the contract obligations by the contractor.

With rare exceptions, men greatly improve in learning, wisdom, and disposition as they grow older. After twenty or thirty years, a man is surprised to find how little he knew when he started his professional or business career. He has grown riper in judgment, and has developed greater caution, discretion, and justice towards others. He grows considerate, amiable, and kind.

Contractors are largely influenced by their opinions of engineers. The engineer who has a reputation for ability, honesty, fairness, and good disposition will attract bidders for any work of which he has charge; and the desire to do work under him would be an incentive to reasonably low prices. It is a feature of contracting to size up the engineer with as much accuracy as possible.

In bidding for work, contractors are almost as sensitive as weather-vanes. It may be possible to make a profit at a given bid under one engineer, and impossible to avoid a loss under some other engineer, with all other conditions similar, and the quality and the merits of the work constructed being equally good at the same cost to the owner in each case.

A majority of bids are too high. The highest bid is often twice as much as the lowest, even when the lowest is sufficient. Over-anxiety to secure the contract is the commonest cause of low bidding. Low bids are often made to keep a contractor's organization together for future work on which he hopes for better prices.

* Chief Engineer of the New York State Highway Commission.

Contractors who do not care for the contract often bid fairly high up, without any expectation of securing the contract, but merely to avoid a reputation among contractors of being low bidders, and with the bare chance of getting the work at good prices. Excessively high bids are usually the result of lack of knowledge of the value of the work and lack of time to become familiar with it.

If an engineer's preliminary estimate is believed to be too low, it drives away bidders and tends to indifferent, high bidding. Some over-anxious contractors may be influenced thereby to bid too low. They may secure the work, in which event the engineer has an unpleasant task during construction. There is almost sure to be a disposition on the part of the contractor to save himself from loss, and he is thus tempted to slight the quality of the work. Both contractor and engineer are in some degree injured by the work having been done at less than cost.

An engineer who can make reliable preliminary estimates will find his services in demand by municipalities, corporations, and other owners; or, if he chooses to practice as a contractor's engineer, he will find his services of great value in that field. Some prominent engineers of my acquaintance would not under any circumstances do engineering work for contractors, confining their services entirely to the owners. I know of other engineers who confine themselves wholly to engineering for contractors, and who do a large business as engineering experts for contractors, in litigations.

These two fields of engineering are becoming more and more distinct, and it is my opinion that an engineer is wise who makes his choice and adheres strictly either to the one line of practice or to the other.

The contracts and specifications on very large and important works are usually models of perfection. In smaller works, such as may amount to, say, not over $200,000, contractors are often confronted with bidding papers, contracts, specifications, plans, etc., which are a disgrace to the engineer who drew them.

There are a few engineers who are sometimes called "specification fiends."

They write to many places where work is advertised, for specifications, etc. They read them eagerly and often clip such paragraphs as catch their fancy—usually those which are harsh, severe, and unreasonable from a contractor's standpoint. With these clinnings to aid them, they draw up specifications, etc., which often deserve the name of "crazy-quilt" specifications. Such papers are full of contradictions, useless paragraphs, and ambiguities which are almost sure to cause contention and trouble during the construction and in the final settlement, or lead to litigation. Such engineers are apt to insert severe conditions such as excessive cash deposits with the bids, unreasonably short time in which to construct the work, excessive per diem liquidated damages for overtime, excessive bonds, and sometimes excessive retained percentage where monthly payments are provided. About all they can think of is to make the work undesirable and objectionable to contractors. Such engineers and their work are often avoided by the best class of bidders, and the contracts are apt to go to rather undesirable contractors.

How Standards of Quality for Concrete Road Materials Are Rising

THE successful future of concrete roads depends upon firm adherence to superior quality concrete. Sub-grading and drainage may be good, and of course must be good for any road that is to endure, but the final criterion of a concrete road as distinguished from other construction, according to Engineering and Contracting, is the integrity and durability of the material itself—the quality of the concrete. The service to be given by concrete in no other structure calls for such perfect quality of material as is demanded in a road. This truth is not a new discovery; it has long been known to the few best students of concrete roads. The new feature is that, whereas formerly the few observed the truth and the many neglected it, now the many observe the truth and only the few neglect it. One is very strongly impressed with this change when reviewing the last season's reports of municipalities that have been building concrete roads for a few years.

The quality of concrete is determined by the quality of the raw materials, by the proportioning and incorporation of these materials, and by the curing of the deposited mixtures. To the perfection of all of these things experienced concrete road builders are paying now much more strict attention than a year ago was considered at all essential, and are urging even stricter attention in future work. Practice has reached a point where a demand exists for refinement in materials for and processes of concrete production for roads. This stage of attainment in the development of the concrete road is to our mind the finest promise that we have that the concrete road has arrived.

First, in the attention being given to ensure better concrete materials, is cement. Very few communities having much experience in concrete road building fail to provide for the thorough testing of all cement. This is essential. Few materials as widely manufactured as is Portland cement rank as more uniformly of high average quality, but all cement is not test-proof any more than are every brick and every steel bar. No road job of any size fails to receive an occasional shipment of cement that has to be rejected. The safeguard is testing. To make testing practicable and to provide direct control, commissions having concrete road work in charge are adopting the plan of furnishing all cement. Besides securing control of the testing, the road authorities by this plan avoid any tendency of the contractor to reduce the cement content of his concrete. Excessive use is prevented by holding the contractor responsible for any overrun of cement and for loss of cement bags.

Aggregates for concrete for road work need, and are receiving, increased scrutiny as to quality. Pit run gravel is not accepted by many. Stone and screened gravel are reqnired to be graded and to be kept within narrow size limits. In some work the coarse aggregate is required to conform to a set co-efficient of wear. Inspection of sand is rigid. The dirt content and the proportion of flat flakes are being strictly limited, and it is a usual demand that the grading of particles be fairly perfect. Altogether concrete road practice in the requirements for quality of concrete aggregates is superior to that in almost all other kinds of concrete construction.

The best road construction sets a high standard of perfection in the proportioning and mixing of concrete. Set proportions are commonly abjured. The aggregate is studied to determine proportion of voids, sizes, form and gradation of particles, and the concrete content is varied to conform, and as frequently as need be, with the purpose of securing density of mixture. Duration and speed of mixing are strictly governed. One road commissioner has conducted careful tests to determine the quality of mixture produced by different numbers of revolutions and different speeds of rotation of the mixer used, and on the results has set rigid requirements for mixing time and mixing speed. Here it may be noted that individual tests are positively necessary on each work where different mixers are used; for the speed of rotation and number of turns which give the best concrete with one mixer are no criterion of what another mixer will do.

The methods of curing are nnmerous, and the difference in efficiency between the better methods is not great. The advance in curing methods indicated by recent practice is shown rather in the care with which all methods are carried out than in devising unique methods. The curing period is lengthened wherever possible; water is supplied liberally, and the road slab is kept continuously wet; protection from wind and sun is sought.

The preceding summary of increased refinement in conducting concrete road work can be lengthened materially by adding minor details. The fact that concrete road building is becoming a very particular task of concrete construction has, however, been clearly indicated—and that is all that it was proposed to do. The contractor whose experience has been confined to general concrete construction must be prepared to accept new standards of refinement in concrete production when he enters the field of road work. It is more important to emphasize this fact than most of the other changed conditions that concrete road construction brings, because it is less obvious than most of the others. Coincidentally it should be noted that the tendency for increased refinement is bringing an increase in concrete pavement costs. The old "dollar a yard" slogan of the concrete road enthusiast is ceasing to have much of the truth that it once had. Dollar a yard concrete roads will be built in occasional places, but the concrete road of the future will most certainly exceed materially the cost of most of the concrete roads of the past—and it should do so, for unless all indications fail it will be a much better road.

Road Building Exhibit at Oakland, California

A ten-acre lot near Oakland's new municipal auditorium will show in September the finest examples of road building in the world. The lot has been set aside for experimental work by the experts of the American Road Builders' Association and the American Highway Association, which will hold a joint convention in Oakland under the name of the Pan-American Road Congress.

The ten acres will be criss-crossed with the very latest examples of road building, fifty- to one-hundred-foot lengths. Every conceivable kind of road will be exhibited, some of them to be finished before the convention meets and others to be worked on during the meeting, to show the latest methods and machinery used in road building.

Practical demonstrations of up-to-date and ahead-of-date ways of construction will be made. City and county officials from all over the country have already announced their intention of being present.

Veterinary College

Plans are being prepared for a handsome building for the San Francisco Veterinary College by Norman R. Coulter. The building is to be erected upon a lot on the east side of Tenth street, 125 feet southerly from Stevenson street, between Market and Mission streets.

The facade of the structure will be in the classic design, giving the college an individuality. Reinforced concrete will be employed throughout in construction, as it is aimed by the directors of the college to have the building fireproof. All the latest appliances will be installed, including steam heat, electrical equipment, sanitary plumbing, compressed air for cleaning and surgical purposes, and hot and cold water in every department. The estimated cost is $25,000.

The Longevity of Redwood

The following newspaper dispatch from Arcata was printed recently in a San Francisco paper:

> Redwood shingles that were put on the barn of J. S. Seeley, west of this city, in 1863, when being replaced with new ones were found to be about as good as ever. The loss of the shingles was caused by the high wind in April.

Shea & Lofquist Busy

Messrs. Shea & Lofquist of San Francisco have plans for a $12,000 brick and frame sister's residence for St. Paul's Roman Catholic Parish, also plans for a reinforced concrete Catholic Church for the Rev. F. W. Ellis of Sacramento.

The Steel Industry and a Few Trade Notes

Motion Pictures of Steel Production

In the exhibit of the United States Steel Corporation at the Panama-Pacific International Exposition, more than six miles of motion picture film traces all the operations required to convert the reddish iron ore into finished products. Those familiar with motion picture film know that each foot contains 16 small pictures, ¾ by 1 in. each. In six miles of film, therefore, there are somewhat more than 500,000 individual pictures, each slightly different from the one immediately preceding. In these 500,000 successive pictures is shown the entire "Story of Steel." A regular schedule is followed: At 11:00 in the morning the mining pictures are shown, beginning with the prospecting for iron ore, the "stripping" of barren soil which covers the ore deposits, the actual mining of the iron ore and final loading of the ore into gigantic, specially designed ore-boats. Then follows the transportation of the ore and the unloading at the blast furnaces. As coal is required to make coke (which is used for fuel in blast furnaces) the next pictures are those showing the mining of coal; and subsequently the making of coke, both in bee-hive and by-product coke ovens. In proper sequence follows the refining of the iron ore into crude iron (pig iron containing about 6 per cent of impurities) and the further refining of this crude iron into highly refined steel, which contains only one-half per cent impurities. This refining of crude iron into steel is shown in three processes, viz.: open-hearth furnace, Bessemer converter, and electric furnace. Finally pictures are shown of the rolling mill and finishing operations. The spectator, at the conclusion of these films, has seen practically every important step involved in the transformation of iron ore into finished steel products, including pipe, seamless tubing, rails, cylinders, wire, wire fences, sheets, etc.

BURNHAM'S CHIEF ENGINEER RESIGNS

Mr. Joachim G. Giaver, who for the past seventeen years has been chief engineer of structural design and foundations for D. H. Burnham & Co., announces that he has left that concern and opened offices for the practice of consulting engineering at 751 Railway Exchange building, Chicago, where he intends to specialize in structural design, foundations and building engineering in general.

One of the pioneers in the structural field, he was the introducer of spandrel wind bracing in the modern steel frame building and the first to drive building foundations to rock in Chicago, Milwaukee, Detroit and other Western cities.

Another innovation was the use of reinforced steel sheet piling as a retaining

wall for building excavations in large cities. Mr. Giaver's latest skyscraper has been the new forty-story Equitable Life building in New York City.

WOODS & HUDDART ENLARGE THEIR BUSINESS

Announcement is made of a change of firm name of a well-known San Francisco enterprise. Woods & Huddart will hereafter do business as Woods, Huddart & Gunn, the incoming member of the firm being Charles M. Gunn, formerly with the Columbia Steel Company. Mr. Gunn will be in charge of a new department—pig iron, coke and ferro alloys, products of Crocker Bros. of New York. Messrs. Woods & Huddart are one of the best known iron and steel jobbers in San Francisco, having contributed very largely to the upbuilding of the city since its destruction by fire in 1906. Mr. Huddart is a steel man of wide experience and his firm was one of the first on the Coast to handle the twisted and steel reinforcing bars used in connection with concrete construction. It was in January, 1906, that the firm began to do business, then, in a modest way—today somewhat more pretentiously, for there are very few concrete jobs, indeed, that they are not called upon to figure. Besides reinforcing bars and pig iron already referred to, Woods, Huddart & Gunn carry in stock for immediate delivery structural steel, wire fabric, steel rails, new and relaying, pipe, casing, tubing, lock-bar steel pipe, castings, etc. Their office is at 444 Market street, San Francisco.

J. H. BURNETT INVENTS SAFETY BOLT LOCK

J. H. Burnett and Henry Clark of the Burnett Iron Works, Fresno, recently paid a visit to a number of eastern cities to arrange for the manufacture of a safety bolt lock which has been awarded the highest prize at the Panama-Pacific Exposition. Railroads and factories have shown much interest in the new invention, and it is probable that a big factory will be arranged for in the East.

GOES WITH DETROIT PRODUCTS COMPANY

Mr. Edgar R. Ailes, formerly assistant treasurer of the Trussed Concrete Steel Company of Youngstown, Ohio, has accepted a position with the Detroit Steel Products Company of Detroit, where he will have charge of the accounting and credit departments. Mr. Ailes is a graduate of the law department of the University of Michigan.

Heating Engineers Interested

The American Standard Oil Burner Co. have added to their exhibit at the P. P. I. E. a demonstration of the Simplex-Light Mechanical Oil Burning System for marine and large stationary boilers. The exhibit of their Simplex Standard Rotary Crude Oil burner, in operation in a sectional steam boiler equipped with instruments for making tests, is creating a good deal of interest among visiting heating engineers.

Industrial and Trade Notes

Opening Bids in Public

The question of the public opening of bids is now one of the livest issues in the building industry of San Francisco.

Some mention was made in a recent review of the plan successfully operating in the Master Plumbers Association by which bids are opened in public and the Lathing Contractors Association have also adopted such a plan with benefit and protection to their members.

There is undoubtedly an insistent demand for the public opening of bids by architects and general contractors among all the specialty contractors in their various associations and the time must come when this method will be publicly recognized as the only fair and square manner of awarding contracts. It is safe to say that 90 per cent of all the contractors in all the different branches of the business are in favor of this and it only remains for effective means to be found of putting such a system into practice throughout the business. Under this plan all are bound to receive a square deal as the peddling of bids is absolutely eliminated and the moral tone of the building business elevated to a standard which is very necessary for the good of the business and failing which the conditions which have demoralized the business for so many years will continue to take the profit away from men who are rightfully entitled to a just compensation for their labor.—San Francisco General Contractors Association Review.

Another Excavator in the Field

The Architect and Engineer for May contained an interesting description of an excavator and loader patented by V. M. Younger, and now being operated by the Pacific Excavator Company by lease or contract. Now comes an announcement of a similar invention by John H. Albrecht, who claims to have been five years developing his machine. The T. L. Smith Co .of Milwaukee have secured the manufacturing and selling rights. Like the Younger machine, the Albrecht excavator is a combination scraper, excavator and wagon loader, suitable for the excavation of large foundations, basements and drainage ditches, for backfilling, loading sand and gravel, etc. It will dig at a distance of 100 feet from the machine and at any desired depth for ordinary excavation at the rate of one round trip per minute. The machine carries a twelve horse-power gas engine, providing power to dig and load twenty cubic yards per hour.

White Bros. New Stock List

White Bros., the well-known San Francisco hardwood lumber dealers, have just published their 1915 stock list, which every architect should have in his files. The list covers the various grades and varieties of hardwood flooring, veneers and panels carried in stock, together with sizes and price list. In spite of the fact that the market has been considerably depressed during the past year on account of the European war and consequent closing down of many of the largest mills of the country, Messrs. White Bros. have been alert and have bought at prices that now enable them to market the product on terms within the reach of all. With the reopening of all the great steel and cotton mills of the country, there is sure to be an industrial awakening and it is good sound advice that this firm is giving to its customers—"buy now."

National Roofing Company

With the retirement from the Oakland field of J. R. D. McKenzie, doing business as the McKenzie Roof Company, the National Roofing Company expects to have most of the bay county work. This company has been doing business for some time under the capable management of J. F. Ellis, and has worked up a very satisfactory trade. Among the contracts that have been carried out successfully is the roofing of an apartment house and moving picture theatre designed by Architect W. H. Ratcliffe, Jr., the Berkeley school house designed by Architects Coxhead & Coxhead, and several Oakland apartment houses and residences. They have recently taken the contract to lay the roof of the Newark school, and also a building for the Clyde Investment Company. The National Roofing Company also maintains a magnasite composition flooring department for bathrooms and kitchens, the latter being equipped with magnasite drain boards. Among the contracts taken lately for composition flooring is one which calls for thirty-nine shower baths in the Sommerston Apartments on Alice street, Berkeley. Mr. Ellis is also connected with the College Avenue Garage at 5325 College avenue, Oakland.

Lithoid Products Co.'s Successors

The well known Lithoid Composition Flooring and Waterproofing are now manufactured and sold by John King & Sons, 36 Stanford street, San Francisco. Mr. King Sr. has been in charge of the Lithoid factory since first organized and both by knowledge and equipment is in a position to install any contracts, large or small, which may be entrusted to him. The old-time reliability and strict guarantees as to permanency will be continued.

School Sanitation Pamphlet Free to Architects

A most valuable monograph on school sanitation, prepared by Mr. Harold Farnsworth Gray, health officer at Palo Alto, has been printed for circulation among architects, school officers, etc. It deals with an interesting phase of school construction and will be found of considerable interest to architects, contractors, etc.

Send your name and address to the Pacific Porcelain Ware Company, 67 New Montgomery street, San Francisco, and a copy will be mailed without charge.

Big Steel Plant Resumes Operations

The great plant of the United Steel Corporation, or its subsidiary, the Illinois Steel Company, at Gary, Ind., partially shut down for the last two years, this month began with a force of 12,000 men, an increase of 6,000 over the average number on the payroll recently. This means the operation of eight blast furnaces, forty-two open-hearth furnaces, coke ovens, rail, axle and other rolling mills. It means, also, a return of good times to Gary, the prosperity of which will be immediately felt in Chicago. This resumption of industry is one of the most encouraging events the Middle West has known since the period of depression set in.

Fresno Apartment House

Plans have been drawn for a two-story apartment house to be erected for Jacob Richter at Merced and P streets, Fresno, at a cost of $20,000. The building will be a two-story frame structure of 20 apartments. Henry F. Starbuck is the architect.

Death of Mr. Jordan L. Mott

Pacific Coast friends of Mr. J. L. Mott, of the J. L. Mott Iron Works, one of the best known plumbing fixture houses in this country, were shocked to learn of his death in New York city, July 26. The following letter announcing Mr. Mott's demise was received by Mr. D. H. Gulick, the San Francisco selling agent:

Mr. D. H. Gulick,
135 Kearny street, San Francisco.

It becomes our sad duty to advise you of the death of our president, the Honorable Jordan L. Mott, which took place at 6 o'clock yesterday afternoon (July 26).

Thus is closed a long and honorable career as a manufacturer and merchant and public man, who was respected and loved by all whose privilege it was to know him.

The funeral will take place Thursday, July 29th, at 2 o'clock.

THE J. L. MOTT IRON WORKS,
(Signed) Edward Hammann,
Second Vice-President.

Concrete Cannery Destroyed

The Di Fiori cannery, situated on the Stevens Creek road, near San Jose, was totally destroyed by fire July 22.

The origin of the fire is a mystery which may never be solved. It started in the warehouse and was discovered by S. Di Fiori shortly after noon.

The cannery was a new concrete structure and opened for business last summer. The warehouse and receiving shed were of wood, and it was there that the flames got their impetus. The concrete was not reinforced and the heat caused the walls to crack and fall to the ground.

New Architects

The California State Board of Architecture, Southern Division, has granted certificates to practice architecture to the following: Herbert C. Howard, 212 Broadway Central building; Frank R. Farrar, 1523 Martel avenue, Hollywood; and Edgar W. Maybury, 600 Chamber of Commerce building, Pasadena.

Is Not an Engineer

Editor The Architect and Engineer:

The use of the title "Chief Engineer" which appears after my name under cut of station "K" in your July issue, should not be used, as I am not the head of the engineering department, my work being exclusively architectural and is only one phase of the work included within this department, which is under Mr. H. C. Vensano, civil engineer.

Yours very truly,
IVAN C. FRICKSTAD.

Some New Books

The Wm. T. Comstock Company, 23 Warren street, New York, has just published two new books of an interesting character. One, "American Renaissance," is a review of domestic architecture with many colonial examples by Joy Wheeler Dow, architect. It is a carefully prepared history of American domestic architecture from colonial days and elaborately illustrated. The other volume is entitled "Two Family and Twin Houses," edited by Wm. T. Comstock.

Art in Plaster

Lyden & Bickel of 269 Fell street, San Francisco, have established a high reputation among leading architects for their artistic modeling. They have been successful in carrying out with pleasing effects the architectural designs of such architects as Lewis P. Hobart, Bliss & Faville, G. A. Lansburgh, Willis Polk, Reid Brothers, E. T. Foulkes, Krafft & Sons, and many others. The plastering contracts (plain and ornamental) for the following buildings, among many others, were executed by them:

Academy of Sciences, San Francisco.
Mt. Zion Hospital, San Francisco.
Hale Bros.' building, San Francisco.
Ehrman residence, San Francisco.
Joseph D. Grant residence, Hillsborough.
Richmond Public Library.
Mission Branch Library, San Francisco.
Keystone apartments, San Francisco.

Also, they have done some notable work at the P.-P. I. E.

Contractors Dissolve Partnership

Messrs. Gaspard & Hammond have dissolved partnership and Mr. E. C. Gaspard succeeds to the business. This firm has been associated in the contracting business in San Francisco for the past two years. During that time contracts have been taken and completed for the construction of a five-story steel and brick apartment house in Berkeley, designed by W. H. Ratcliffe Jr., Majestic Theater, Berkeley, by the same architect; Berkeley fire house at Ellis and Alcatraz streets; Chinese Methodist Mission at Sacramento and Stockton streets, San Francisco, and a number of smaller buildings. Mr. Gaspard at the present time has under construction a frame flat building at Sixteenth avenue and California street, San Francisco, for Mr. Meyer, from plans by Architect B. S. Hirschfeld.

Scott Company Does Much Work for Architect Hobart

Probably no one concern in San Francisco has done as much work for Architect Lewis P. Hobart as the Scott Company, formerly the John G. Sutton Company, with offices at 243 Minna street. A majority of Mr. Hobart's most pretentious buildings have been heated and ventilated by this firm. One of the largest installations is the St. Luke's Hospital, where a complete power plant has been furnished; also one of the latest and most improved ventilating systems. This equipment includes two 125 horsepower boilers, two electric generators, feed water heater, vacuum pumps, boiler feed pumps, hot water circulating pumps, etc. This contract amounted to more than $30,000. The Scott Company installed a steam heating plant in the Fireman's Fund Insurance building, the Underwood building, on Market street, the Academy of Science building in Golden Gate Park, and the Newhall and Crocker residences in San Mateo county.

"What's worth doing at all is worth doing well," is the Scott Company's slogan, and the fact that their business is constantly on the increase is good evidence that their work is satisfactory.

Current Prices of Building Materials

These quotations furnished by reliable San Francisco and Los Angeles dealers

(Names and addresses will be supplied upon request.)

SAN FRANCISCO PRICES

Common Red Brick, $9.00 per M, ex. cars.
No. 1 Pressed Brick, $35.00 to $40.00 per M; Wire cut, $35.00 per M.
No. 1 Red Pressed Brick, $20.00 to $30.00 per M.
Red Stock Brick, $14.00 to $16.00 per M.
California Portland Cement, C/L $2.30 per bbl.; L.C.L. $2.55 per bbl.
White Cement: Atlas, $6.00; Medusa, $6.00 per bbl.
Sand and Gravel mixed, 70c per ton, F. O. B. cars.
Sand (washed, screened river sand) 65c per ton, F. O. B. cars.
Bank Sand, $1.00 per cu. yd.
Roofing Gravel, $1.40 per ton.
Crushed Rock or Gravel, 75c per ton.
Red Roofing Tile, $22.00 to $25.00 per square, laid.
Brick Lime, $1.35 per bbl., C/L.
Finish Lime, $1.50 per bbl., C/L.
Hardwall Gypsum Plaster, $11.00 per ton, carload; 1150 per ton, ex. warehouse.
Oregon Pine, Rough Common, 1 x 3 to 1 x 10, $13.00.
Oregon Pine, Rough, 2 x 3 to 2- 12, $15.00.
Oregon Pine 1 x 4 T. & G. Flooring, No. 1, $31 per M; No. 2, $28; No. 3, $24.
Oregon Pine T. & G. Ceiling, No. 1 and 2 mixed, $26 to $28.
Redwood, Rough Common, 1 x 4 and up, $20.00.
Redwood, Rough Common, 2 x 3 to 2 x 10, $20.00 to $22.00.
Redwood Rustic, No. 1, $35.00; No. 2, $32.00.
Redwood Ceiling, No. 1, $29.00; No. 2, $26.00.
Redwood Shingles, No. 1, $2.40 full count.
Red Cedar Shingles, Star-A-Star, $2.40 full count.
Pine Lath, $2.40 per M.
Metal Lath, 13 to 25c per yd., according to quality.
1 x 3 Oak Flooring, Q. S. Clear, $116.00 per M; Select $75.00 per M.
½ x 2½ Oak Flooring, Q. S. Clear, $96.00 per M; Select, $74.00 per M.
1 x 3 Maple Flooring Clear, $71.00 per M; Clear White, $85.00 per M.
White Lead in Oil, 8¼c per lb.
Dry Red Lead, 8c per lb.
Boiled Linseed Oil, 74c gal. Raw Linseed Oil, 72c gal.
Turpentine, per gallon, 63 to 70c in bbls.
Dry Shellac, 35c per lb., variable.
Hyloplate Blackboard, 25 to 35c per foot, installed.
Composition Flooring, 25 to 30c per foot, laid.
Genuine Slate Blackboards, 40 to 50c per foot, erected.

LOS ANGELES PRICES

Common Red Brick, No. 2, $4.50 per M.
Clinker Brick, $9.00 per M.
Pressed Brick, $35.00 per M.
Enameled Brick, $65.00 per M.
Red Roofing Tile, $12.00 and $15.00 per square (not laid).
White Cement, $6.00 per bbl.
Portland Cement, $2.30 per bbl.
Lime, $1.50 to $1.75 per bbl.
Hardwall Plaster, per ton, $9.90 ex. whse.
Oregon Pine, Rough Common, 1 x 3 up, $19.00 to $22.00 per M.
Oregon Pine, Rough Common, 2 x 3 up, $17.00 to $21.00 per M.
Oregon Pine Flooring, 1 x 4, No. 1, $40.00; No. 2, $35.00; No. 3, $22.50 per M.
Oregon Pine Ceiling, 1 x 4, No. 1, $36.00; No. 2, $31.00.
Redwood, Rough Common, $20.00 to $24.00.
Redwood Rustic, No. 1, $38.00; No. 2, $33.00 per M.
Redwood Ceiling, 1 x 4, No. 1, $33.00; No. 2, $28.00 per M.
Redwood Shingles, 4 bdls. to M, No. 1, $2.25; No. 2, $1.75.
Red Cedar Shingles, 4 bdls. to M, Star-A-Star, $2.75.
Pine Lath, 1½ in. x 4 ft., $3.25 per M; 1⅝ in. x 4 ft. $3.65 per M.
White Lead in Oil, 8½c per lb.
Red Lead, dry, 8½c per lb.
Raw Linseed Oil, bbls., 65c gallon.
Boiled Linseed Oil, bbls., 65c gallon.
Turpentine, bbls., 63 to 70c. gallon.
Crushed Rock and Gravel, $1.65 per yard.
Sand, 85c per yard.

SACRAMENTO PRICES

Common Brick, $7.00 per M, C/L.
Pressed Brick, Wire Cut, $30.00 per M, C/L.
Portland Cement, $2.40 per bbl. carloads.
Crushed Rock and Gravel, 85c per ton, ex. cars.
Sand, $1.00 yd. on cars.
Roofing Gravel, $1.50 per ton.
Lime, $1.35 bbl.
Hardwall Plaster, $13.00 per ton, ex. whse.

STOCKTON PRICES

Common Brick, $7.75 per M, del.
Face Brick, Wire Cut, $31.00 per M C/L.
Cement, $2.40 per bbl., C/L.
Crushed Rock and Gravel, 90c ton.
Sand, 90c.
Roofing Gravel, $1.50 per ton.
Lime, $1.35.
Hardwall Plaster, $13.00 ex. whse. per ton.

FRESNO PRICES

Common Brick, $9.50 per M, del.
Face Brick, Wire Cut, $35.00 per M, C/L.
Cement, $2.84 per bbl., C/L.
Crushed Rock and Gravel, $1.35 per ton.
Black Face Brick, $25.00 per M—F. O. B.
Sand, $1.00 per yd., del.
Roofing Gravel, $1.85 per ton.
Lime, $1.50 bbl.
Hardwall Plaster, $14.00 per ton, ex. whse.

BAKERSFIELD PRICES

Common Brick, $9.00 per M, del.
Face Brick, Wire Cut, $37.00 per M, C/L.
Cement, $2.77 per bbl., C/L.
Crushed Rock and Gravel, $1.80 per ton.
Sand, $1.00 per yd., del.
Roofing Gravel, $2.00 per ton.
Lime, $1.50 per bbl.
Hardwall Plaster, $15.00 per ton, ex. whse.

NORTHERN CALIFORNIA POINTS

Common Brick, $11.00 per M, del.
Face Brick, Wire Cut, $35.00 per M, C/L.
Cement, $2.65 per bbl.
Crushed Rock and Gravel, 85 to 90c per ton, C/L.
Sand, $1.00 per yard.
Roofing Gravel, $1.50 per ton.
Lime, $1.40 bbl.
Hardwall Plaster, $14.00 per ton, ex. whse.

Home Manufacturing Co. Make Good Record

The Home Manufacturing Co., cabinet makers of this city, have established a high reputation for superior workmanship and are considered favorably by architects when artistic execution of special designs is desired. They point with pride to several recent contracts for interior fittings in such leading buildings as Grace cathedral, San Francisco; Bank of Lodi, Bank of Willits, Bank of Yreka, Hotel Fielding, and Bank of Richmond; also the telegraph and ticket offices in the new Southern Pacific depot, San Francisco, and the interior of W. R. Grace & Co's, and Eaton, Graney & Pike Co's offices.

The public press is loud in its praise of the laurel furniture made by them from designs by Vickery, Atkins & Torrey and installed through the munificence of Mrs. Phoebe A. Hearst in the Woman's Reception Hall in the California building, P. P. I. E.

A Letter of Appreciation

The G. E. Witt Co. is naturally much elated with the following letter from Architect Hermann Barth relative to the installation of an oil burner and pump in the Sheridan apartments:

San Francisco, Cal., July 29, 1915.
G. E. Witt Company, Inc.,
San Francisco, Cal.:

Gentlemen—It gives me pleasure to say that the oil pump and burner you installed at my building, northwest corner of Clay and Hyde streets, as well as the two pumps and burners you installed at the Sheridan apartments, northwest corner California and Hyde streets, have so far given entire satisfaction. The apparatus is very simple and easy to take care of and should recommend itself to all parties contemplating oil-burning installations.

Yours very truly,
(Signed) HERMANN BARTH.

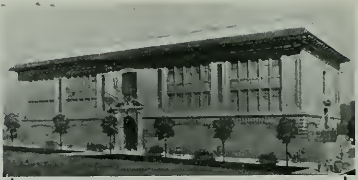
The Witt Co. are sending, free, to parties contemplating the use of crude oil in heating installations, an interesting circular describing its various oil burners and equipment.

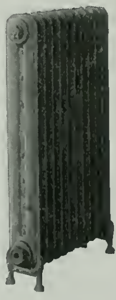
Fontana Business Buildings

The Fontana Development Company, which is building a city at Fontana, near San Bernardino, Southern California, in addition to planting and subdividing several thousand acres of citrus land, is endeavoring to establish a civic center in the town and to obtain an appropriate and harmonious design for the business structures which it will be necessary to erect. The group will include an office building, stores, packing house, residences, etc.

Casement Window Business Good

Wm. H. Pringle, formerly sales agent for the Whitney Window Company in California, has severed his connection with the company, which is now under new management. They report that business is showing great improvement.





THE ARCHITECT AND ENGINEER OF CALIFORNIA

THE WORK OF ALLISON AND ALLISON

SEPTEMBER MCMXV

PUBLISHED IN SAN FRANCISCO

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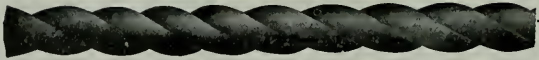

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Architects' Specification Index

(For Index to Advertisements, see next page)

An Index to the Advertisements

ARCHITECTS' SPECIFICATION INDEX—*Continued*

CEMENT EXTERIOR WATERPROOF COATING —Continued.

Imperial Waterproofing, manufactured by Imperial Co., 183 Stevenson St., San Francisco.
Trus-Con Par-Seal, made by Trussed Concrete Steel Co., Youngstown, O.
Paraffine Paint Co., 34 First St., San Francisco.

CEMENT EXTERIOR FINISH

Bay State Brick and Cement Coating, made by Wadsworth, Howland & Co. (See list of Distributing Agents on page 30.)

Glidden's Liquid Cement and Liquid Cement Enamel, sold on Pacific Coast by Whittier, Coburn Company, San Francisco, and California Glass & Paint Company, Los Angeles.

Medusa White Portland Cement, California Agents, the Building Material Co., Inc., 587 Monadnock Bldg., San Francisco.

Concrete Cement Coating, manufactured by the Muralo Company, 540 Valencia St., San Francisco.

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 30.)

Fuller's Concrete Floor Enamel, made by W. P. Fuller & Co., San Francisco.

Glidden's Concrete Floor Dressing, sold on Pacific Coast by Whittier, Coburn Company, San Francisco, and California Glass & Paint Company, Los Angeles.

CEMENT TESTS—CHEMICAL ENGINEERS

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

CHURCH INTERIORS

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

CHUTES—GRAVITY SPIRAL

Insley Gravity System for pouring concrete, represented by Garfield Myers, Hearst Bldg., San Francisco.

COLD STORAGE PLANTS

Vulcan Iron Works, San Francisco.
T. P. Jarvis Crude Oil Burning Co., 275 Connecticut St., San Francisco.

COMPOSITION FLOORING

Fibrestone & Roofing Co., 971 Howard St., San Francisco.

"Kompolite," sold by John King & Sons, 36 Stanford street, San Francisco.

Magnesite Flooring, laid by National Roofing Company, Plaza Bldg., Oakland.

COMPRESSED AIR CLEANERS

The B. & W. Stationary Vacuum Cleaner, sold by Arthur T. Riggs, 510 Claus Spreckels Bldg., San Francisco.
Excello Stationary Vacuum Cleaner, F. W. Schaer Co., Pacific Coast Agts., Santa Maria Bldg., San Francisco.
Invincible Vacuum Cleaner, sold by R. W. Foyle, 416 Harriet St., San Francisco.
Tuec., mfrd. by United Electric Company, Coast Branch, General Contractors' Association, San Francisco.

CONCRETE CONSTRUCTION

American Concrete Co., Humboldt Bank Bldg., San Francisco.
Clinton Fireproofing Co., Mutual Bank Bldg., San Francisco.
Barrett & Hilp, Sharon Bldg., San Francisco.
P. A. Palmer, Monadnock Bldg., San Francisco.
International Concrete Construction Company, West Berkeley, Cal.

CONCRETE MACHINERY

Garfield Myers, factory representative of Insley Manufacturing Company, and Marsb-Capron Company, Hearst Bldg., San Francisco.

CONCRETE MIXERS

Austin Improved Cube Mixer. Factory branch. 473-485 Sixth St., San Francisco.
Foote Mixers sold by Edw. R. Bacon, 40 Natoma St., San Francisco.

CONCRETE PILES

McArthur Concrete Pile Company, Chronicle Building, San Francisco.

CONCRETE REINFORCEMENT

United States Steel Products Co., San Francisco, Los Angeles, Portland and Seattle.
"Kahn System," see advertisement on page 23, tbis issue.
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 & Gunn, 444 Market St., San Francisco.
Pacific Coast Steel Company, Rialto Bldg., San Francisco, and Union Oil Bldg., Los Angeles.

CONCRETE SURFACING

"Concreta" sold by W. P. Fuller & Co., San Francisco.
Wadsworth, Howland & Co.'s Bay State Brick and Cement Coating, sold by Jas. Hambly Co., Pacific Bldg., San Francisco and Los Angeles.
Glidden Liquid Cement, manufactured by Glidden Varnish Co., Whittier, Coburn Co., San Francisco, and California Glass & Paint Company, Los Angeles.

ARCHITECTS' SPECIFICATION INDEX—*Continued*

CONTRACTORS, GENERAL
- American Concrete Co., Humboldt Bank Bldg., San Francisco.
- Marius F. Bos, New Call Bldg., San Francisco.
- Dunnavant-Oakley Co., 1430 Powell St., San Francisco.
- Geo. W. Boxton & Son, Hearst Bldg., San Francisco.
- Collman & Collman, 526 Sharon Bldg., San Francisco.
- Construction & Engineering Co., 1047 Folsom St., San Francisco.
- M. Fisher, 863 Mission St., San Francisco.
- Van Sant, Houghton Co., Hooker & Lent Bldg., San Francisco.
- Howard S. Williams, Hearst Bldg., San Francisco.
- Harvey A. Klyce, Sheldon Bldg., San Francisco.
- Lange & Bergstrom, Sharon Bldg., San Francisco.
- A. H. Leaf Co., New Call Bldg., San Francisco.
- Lester Stock, 12 Geary St., San Francisco.
- McLaren & Peterson, Sharon Bldg., San Francisco.
- John Monk, 216 Sharon Bldg., San Francisco.
- Monson Bros., 1907 Bryant St., San Francisco.
- Burt T. Owsley, 311 Sharon Bldg., San Francisco.
- Robert Trost, 26th and Folsom Sts., San Francisco.
- Western Building & Engineering Co., 455 Phelan Bldg., San Francisco.
- Williams Bros. & Henderson, Holbrook Bldg., San Francisco.

CORK FLOORING
- "Linotile," manufactured by Armstrong Cork & Insulation Company. M. C. Van Fleet, agt., 120 Jessie St., San Francisco.

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

CORNER BEAD
- Capitol Sheet Metal Works, 1827 Market St,, San Francisco.
- United States Metal Products Co., 525 Market St., San Francisco.; 750 Keller St., San Francisco.

CRUSHED ROCK
- Grant Gravel Co., Flat Iron Bldg., San Francisco.
- Niles Rock, sold by California Building Material Company, new Call Bldg., San Francisco.
- Niles Sand, Gravel & Rock Co., Mutual Bank Bldg., San Francisco.
- Pratt Building Material Co., Hearst Bldg., San Francisco.

DAMP-PROOFING COMPOUND
- Glidden's Liquid Rubber, sold on Pacific Coast by Whittier, Coburn Company, San Francisco, and California Glass & Paint Company, Los Angeles.
- Armorite Damp Resisting Paint, made by W. P. Fuller & Co., San Francisco.

DAMP-PROOFING COMPOUND—Continued.
- Imperial Co., 183 Stevenson St., 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.
- 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.

DRINKING FOUNTAINS
- Haws Sanitary Fountain, 1808 Harmon St., Berkeley, and C. F. Weber & Co., San Francisco and Los Angeles.
- Crane Company, San Francisco, Oakland, and Los Angeles.
- J. B. Clow & Son, Hearst Bldg., San Francisco.
- Pacific Porcelain Ware Co., 67 New Montgomery St., San Francisco.

DUMB WAITERS
- Spencer Elevator Company, 173 Beale St., San Francisco.
- Burdett-Rowntree Mfg. Co., Underwood Bldg., San Francisco.

ELECTRICAL CONTRACTORS
- Butte Engineering Co., 683 Howard St., San Francisco.
- Boynton Electric Co., 504 Rialto Bldg., San Francisco.
- Central Electric Co., 618 Mission St., San Francisco.
- Newbery Electrical Co., Humboldt Bank Bldg., San Francisco.
- Pacific Fire Extinguisher Co., 507 Montgomery St., San Francisco.
- H. S. Tittle, 245 Minna St., San Francisco.
- Standard Electrical Construction Company, 60 Natoma St., San Francisco.

ELECTRICAL ENGINEERS
- Chas. T. Phillips, Pacific Bldg., 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.
- Pacific Gurney Elevator Co., 186 Fifth St., San Francisco.
- B. C. Van Emon Elevator Co., 235 First St., San Francisco.

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

ARCHITECTS' SPECIFICATION INDEX—*Continued*

ELEVATOR ENCLOSURES
J. G. Braun, 615-621 S. Paulina St., Chicago, Ill.

ENGINEERS
W. W. Breite, Clunie Bldg., San Francisco.
Chas. T. Phillips, Pacific Bldg., San Francisco.
Hunter & Hudson, Rialto Bldg., San Francisco.

ESTIMATORS
Alfred Alt, 335 Eighth St., Oakland.

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

EXCAVATING CONTRACTORS
Pacific Excavator Company, Builders' Exchange, Oakland.

FIRE EXIT DEVICES
Russell & Erwin Mfg. Co., Commercial Bldg., San Francisco.

FIRE ESCAPES
Burnett Iron Works, Fresno, Cal.
Pacific Structural Iron Works, Structural Iron and Steel, Fire Escapes, etc. Phone Market 1374; Home J. 3435. 370-84 Tenth St., San Francisco.
Palm Iron & Bridge Works, Sacramento.
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.

FIREPROOFING AND PARTITIONS
Gladding, McBean & Co., Crocker Bldg., San Francisco.
Los Angeles Pressed Brick Co., Frost Bldg., Los Angeles.

FIREPROOF PAINT
Glidden Products, sold by Whittier-Coburn Co., San Francisco, and California Glass & Paint Company, Los Angeles.

FIXTURES—BANK, OFFICE, STORE, ETC.
A. H. Andrews, 728 Mission St., San Francisco.
Mullen Manufacturing Co., 20th and Harrison streets, 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.

FLAG POLES—TACKLE, ETC.
Pacific Foundry Company, Harrison and 18th Sts., San Francisco.
Bolander & Hallawell, 270 First St., San Francisco.

FLAG POLE TOPS
Bolander & Hallawell, 270 First St., San Francisco.

FLOOR VARNISH
Bass-Hueter and San Francisco Pioneer Varnish Works, 816 Mission St., San Francisco.
Fifteen for Floors, made by W. P. Fuller & Co., San Francisco.
Standard Varnish Works, Chicago, New York and San Francisco.
Glidden Products, sold by Whittier-Coburn Co., San Francisco, and California Glass & Paint Company, Los Angeles.

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

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

GAS FURNACES
Cole Gas Furnace, Fisher & Klauser, distributors, Lick Bldg., San Francisco, 1764 Broadway, Oakland.

GARAGE EQUIPMENT
Bowser Gasoline Tanks and Outfit, Bowser & Co., 612 Howard St., San Francisco.

GARDEN FURNITURE
G. Tomagnini & Co., 219 Tenth St., San Francisco.
O. S. Sarsi, 123 Oak St., San Francisco.

GAS GENERATORS
Utility Gas Generator Co., 340 Sansome St., San Francisco.

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

GRADING CONTRACTORS
Pacific Excavator Company, Builders' Exchange, Oakland.

GRANITE
California Granite Co., Sharon Bldg., San Francisco.
Raymond Granite Co., Division and Potrero Sts., San Francisco.
McGilvray-Raymond Granite Co., 634 Townsend St., San Francisco.

GRAVEL, SAND AND CRUSHED ROCK
California Building Material Co., new Call Bldg., San Francisco.
Del Monte White Sand, sold by Pacific Improvement Co., Crocker Bldg., San Francisco.
Pratt Building Material Co., Hearst Bldg., San Francisco.
Grant Gravel Co., Flatiron Bldg., San Francisco.
Niles Sand, Gravel & Rock Co., Mutual Savings Bank Bldg., 704 Market St., San Francisco.

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

HARDWARE
Corbin Hardware sold by Baker & Hamilton, San Francisco and Los Angeles.
Russwin Hardware, Joost Bros., San Francisco.
Pacific Hardware & Steel Company, representing Lockwood Hardware Co., San Francisco.
Sargent's Hardware, sold by Bennett Bros., 514 Market St., San Francisco.
Russell & Erwin Manufacturing Co., Commercial Bldg., San Francisco.

ARCHITECTS' SPECIFICATION INDEX—*Continued*

HARDWOOD FLOORING
- Parrott & Co., 320 California St., San Francisco
- White Bros., Cor. Fifth and Brannan Sts., San Francisco.
- Strable Manufacturing Company, Oakland, California.

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.
- Strable Manufacturing Company, Oakland, California. (See advertisement above.)

HEATERS—AUTOMATIC
- Pittsburg Water Heater Co., 237 Powell St., San Francisco.
- Hoffman Heater Company, 397 Sutter St., San Francisco.

HEATING AND VENTILATING
- American Heat & Power Co., Oakland, Cal.
- Fess System Co., 220 Natoma St., San Francisco.
- Gilley-Schmid Company, 198 Otis St., San Francisco.
- Mangrum & Otter, Inc., 507 Mission St., San Francisco.
- Charles T. Phillips, Pacific Building, San Francisco.
- William F. Wilson Co., 328 Mason 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., 730 Larkin St., San Francisco.
- C. A. Dunham Co., Wells Fargo Bldg., San Francisco.

HEAT REGULATION
- G. E. Witt Company, Inc., 850 Howard St., San Francisco.
- Johnson Service Company, 149 Fifth St., San Francisco.

HOLLOW BLOCKS
- Denison Hollow Interlocking Blocks, Forum Bldg., Sacramento, and Chamber of Commerce Bldg., Portland.

HOSPITAL FIXTURES
- J. L. Mott Iron Works, 135 Kearny St., San Francisco.

INGOT IRON
- "Armco" brand, manufactured by American Rolling Mill Company, Middletown, Ohio.

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

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

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

LAMP POSTS
- J. L. Mott Iron Works, 135 Kearny St., San Francisco.

LIME
- 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.
- E. K. Wood Lumber Company, East Oakland, California.
- Pacific Manufacturing Company, San Francisco, Oakland and Santa Clara.
- Tilden Lumber Company, foot of Unversity Ave., Berkeley, Cal.
- Van Arsdale-Harris Lumber Company, Fifth and Brannon Sts., San Francisco.

MILL WORK
- Dudfield Lumber Co., Palo Alto, Cal.
- Pacific Manufacturing Company, San Francisco, Oakland and Santa Clara.

MAIL CHUTES
- Cutler Mail Chute Co., Rochester, N. Y. (See Adv. on page 28 for Coast representatives.)

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

MARBLE
- G. Tomagnini & Co., 219 Tenth St., San Francisco.
- Sculptor's Workshop. (See adv., page 134.)

METAL AND STEEL LATH
- "Steelcrete" Expanded Metal Lath, sold by Holloway Expanded Metal Company, Second and Federal Sts., San Francisco.

METAL CEILINGS
- San Francisco Metal Stamping & Corrugating Co., 2269 Folsom St., San Francisco.

METAL DOORS AND WINDOWS
- U. S. Metal Products Co., 525 Market St., San Francisco.
- Capitol Sheet Metal Works, 1927 Market St., San Francisco; 117 Franklin St., Oakland.

METAL FURNITURE
- Capitol Sheet Metal Works, San Francisco and Oakland.
- A. H. Andrews Co., 728 Mission St., San Francisco.

ARCHITECTS' SPECIFICATION INDEX—*Continued*

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

OIL BURNERS
- S. T. Johnson Co., 1337 Mission St., San Francisco.
- American Standard Oil Burner Co., Seventh and Cedar Sts., Oakland.
- W. S. Ray Manufacturing Company, 218 Market St., San Francisco.
- Fess System Co., 220 Natoma St., San Francisco.
- T. P. Jarvis Crude Oil Burner Co., 275 Connecticut St., San Francisco.
- Rotary Oil Burner Company, 159 Twelfth St., Oakland.
- G. E. Witt Oil Burner Company, 850 Howard St., San Francisco.

ORNAMENTAL IRON AND BRONZE
- Brode Iron Works, 31-37 Hawthorne St., San Francisco.
- Burnett Iron Works, Fresno.
- Palm Iron & Bridge Works, Sacramento.
- J. G. Braun, Chicago and New York.
- Ralston Iron Works, 20th and Indiana Sts., San Francisco.
- Monarch Iron Works, 1165 Howard St., San Francisco.
- J. L. Mott Iron Works, 135 Kearny 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.

PAINT FOR CEMENT
- Bay State Brick and Cement Coating, made by Wadsworth, Howland & Co. (Inc.). (See Adv. in this issue for Pacific Coast agents.)
- Fuller's Concreta for Cement, made by W. P. Fuller & Co., San Francisco.
- Glidden's Liquid Cement, sold on Pacific Coast by Whittier, Coburn Company, San Francisco.
- Trus-Con Stone Tex., Trussed Concrete Steel Co. (See Adv. for Coast agencies.)
- Concreto Cement Coating, manufactured by the Muralo Company, 540 Valencia St., San Francisco.
- Samuel Cabot Mfg. Co., Boston, Mass., agencies in San Francisco, Oakland, Los Angeles, Portland, Tacoma and Spokane.

PAINT FOR STEEL STRUCTURES, BRIDGES, ETC.
- Glidden's Acid Proof Coating, sold on Pacific Coast by Whittier, Coburn Company, San Francisco.
- Trus-Con Bar-Ox, Trussed Concrete Steel Co. (See Adv. for Coast agencies.)
- Bay State Steel Protective Coating. (See page 30 for coast agents.)
- Paraffine Paint Co., 34 First St., San Francisco.
- Premier Graphite Paint and Pioneer Brand Red Lead, made by W. P. Fuller & Co., San Francisco.

PAINTS, OILS, ETC.
- The Brininstool Co., Los Angeles, represented in San Francisco by Marion D. Cohn Co., Hansford Building.
- Bass-Hueter Paint Co., Mission, near Fourth St., San Francisco.
- Glidden Varnish Co., Cleveland, Ohio, represented by Whittier-Coburn Co., San Francisco, and California Glass & Paint Company, Los Angeles.
- Jones-Duncan Paint Co., 414 Ninth St., San Francisco.
- R. N. Nason & Company, San Francisco, Los Angeles, Portland and Seattle.
- W. P. Fuller & Co., all principal Coast cities.
- Standard Varnish Works, 113 Front St., San Francisco.

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

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

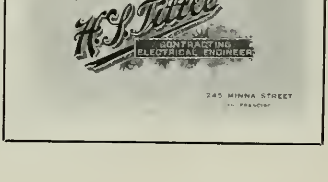
PIPE—VITRIFIED SALT GLAZED TERRA COTTA
- Gladding, McBean & Co., Crocker Bldg., San Francisco.
- Pacific Sewer Pipe Co., I. W. Hellman Bldg., Los Angeles.
- Pratt Building Material Co., Hearst Bldg., San Francisco.
- Steiger Terra Cotta and Pottery Works, Mills Bldg., San Francisco.

PLASTER CONTRACTORS
- A. Knowles, 985 Folsom St., San Francisco.
- C. C. Morehouse, Crocker Bldg., San Francisco.
- Hermann Bosch, 2054 Market St., San Francisco.

PLUMBING CONTRACTORS
- Gilley-Schmid Company, 198 Otis St., San Francisco.
- Scott Co., Inc., 243 Minna St., San Francisco.
- Petersen-James Co., 730 Larkin St., San Francisco.
- Wittman, Lyman & Co., 341 Minna St., San Francisco.
- Alex Coleman, 706 Ellis St., San Francisco

PLUMBING FIXTURES, MATERIALS, ETC.
- J. B. Clow & Son, Hearst Bldg., San Francisco.
- Crane Co., Second and Brannan Sts., San Francisco.
- California Steam Plumbing Supply Co., 671 Fifth St., San Francisco.
- Gilley-Schmid Company, 198 Otis St., San Francisco.
- Glauber Brass Manufacturing Company, 1107 Mission St., San Francisco.
- Miller-Enwright Company, Sacramento, Cal.
- J. L. Mott Iron Works, D. H. Gulick, selling agent, 135 Kearny St., San Francisco.
- H. Mueller Manufacturing Co., Pacific Coast branch, 589 Mission St., San Francisco
- Pacific Sanitary Manufacturing Co., 67 New Montgomery St., San Francisco.
- Western States Porcelain Co., San Pablo, Cal.
- Wm. F. Wilson Co., 328 Mason St., San Francisco
- C. A. Dunham Co., Wells Fargo Bldg., San Francisco.

POTTERY
- Steiger Terra Cotta and Pottery Works, Mills Bldg., San Francisco.



ARCHITECTS' SPECIFICATION INDEX—*Continued*

PUMPS
Chicago Pump Company, 612 Howard street, San Francisco.

RADIATORS
"Presto" Sanitary Radiators (see page 132 for Pacific Coast Agents.)

REFRIGERATORS
McCray Refrigerators, sold by Nathan Dohrmann Co., Geary and Stockton Sts., San Francisco.
Vulcan Iron Works, San Francisco.

REVERSIBLE WINDOWS
Hauser Reversible Window Company, Balboa Bldg., San Francisco.

REVOLVING DOORS
Van Kennel Doors, sold by U. S. Metal Products Co., 525 Market St., San Francisco.

ROCK BREAKING MACHINERY
Vulcan Iron Works, Francisco and Kearny Sts., San Francisco.

ROLLING DOORS, SHUTTERS, PARTITIONS, ETC.
Pacific Building Materials Co., 523 Market St., San Francisco .
C. F. Weber & Co., 365 Market St., San Francisco.
Kinnear Steel Rolling Doors, W. W. Thurston, agent, Rialto Bldg., San Francisco.
Wilson's Steel Rolling Doors, U. S. Metal Products Co., San Francisco and Los Angeles.

ROOFING AND ROOFING MATERIALS
Grant Gravel Co., Flat Iron Bldg., San Francisco.
Fibrestone & Roofing Co., 971 Howard St., San Francisco.
National Roofing Company, Plaza Bldg., Oakland.
"Maltboid" and "Ruberoid," manufactured by Paraffine Paint Co., San Francisco.
United Materials Co., Crossley Bldg., San Francisco.

ROOFING TIN
Meurer Bros., A. H. MacDonald, agent, 630 Third St., San Francisco.

SANITARY DRINKING FOUNTAINS
J. L. Mott Iron Works, 135 Kearny St., San Francisco.
Haws' Sanitary Drinking Faucet Co., 1808 Harmon St., Berkeley.
J. B. Clow & Son., Hearst Bldg., San Francisco.

SASH CORD
Samson Cordage Works, manufacturers of Solid Braided Cords and Cotton Twines, 88 Broad St., Boston, Mass.

SCENIC PAINTING—DROP CURTAINS, ETC.
The Edwin H. Flagg Scenic Co., 1638 Long Beach Ave., Los Angeles.

SCHOOL FURNITURE AND SUPPLIES
C. F. Weber & Co., 365 Market St., San Francisco; 512 S. Broadway, Los Angeles.
A. H. Andrews & Co., 728 Mission St., San Francisco.
Whitaker & Ray-Wiggin Company, 776 Mission St., San Francisco.

SEWAGE EJECTORS
Chicago Pump Co., represented by Telephone Electric Equipment Co., 612 Howard street, San Francisco.

SHEATHING AND SOUND DEADENING
Samuel Cabot Mfg. Co., Boston, Mass., agencies in San Francisco, Oakland, Los Angeles, Portland, Tacoma and Spokane.
Paraffine Paint Co., 34 First St., San Francisco.

SHEET METAL WORK, SKYLIGHTS, ETC.
Capitol Sheet Metal Works, 1927 Market St., San Francisco.
U. S. Metal Products Co., 525 Market St., San Francisco.

SHINGLE STAINS
Cabot's Creosote Stains, sold by Waterhouse & Price, San Francisco, Los Angeles and Portland.
Fuller's Pioneer Shingle Stains, made by W. P. Fuller & Co., San Francisco.

SLATE ROOFING
Fiberstone & Roofing Co., 971 Howard St., San Francisco.

STEEL AND IRON—STRUCTURAL
Burnett Iron Works, Fresno, Cal.
Central Iron Works, 621 Florida St., San Francisco.
Dyer Bros., 17th and Kansas Sts., San Francisco.
Brode Iron Works, 31 Hawthorne St., San Francisco.
Golden Gate Iron Works, 1541 Howard St., San Francisco.
Judson Manufacturing Co., 819 Folsom St., San Francisco.
Mortenson Construction Co., 19th and Indiana Sts., San Francisco.
Pacific Rolling Mills, 17th and Mississippi Sts., San Francisco.
Pacific Structural Iron Works, Structural Iron and Steel, Fire Escapes, etc. Phone Market 1374; Home, J. 3435, 370-84 Tenth St., San Francisco.
Palm Iron & Bridge Works, Sacramento.
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.
Woods, Huddart & Gunn, 444 Market St., San Francisco

STEEL PRESERVATIVES
Bay State Steel Protective Coating. (See page 30 for coast agents.)
Wadsworth, Howland & Co., Boston Mass. (See Adv. for Coast agencies.)
Paraffine Paint Co., 34 First St., San Francisco.

ARCHITECTS' SPECIFICATION INDEX—*Continued*

STEEL BARS FOR CONCRETE
Kahn and Rib Bars, made by Trussed Concrete Steel Co. (See Adv. for Coast agencies.)
Woods, Huddart & Gunn, 444 Market St., San Francisco.
Pacific Coast Steel Co., Rialto Bldg., San Francisco, and Union Oil Company, Los Angeles.

STEEL MOULDINGS FOR STORE FRONTS
J. G. Braun, 615-621 S. Paulina St., Chicago, Ill.

STEEL FIREPROOF WINDOWS
United States Metal Products Co., San Francisco and Los Angeles.

STEEL ROLLING DOORS
Kinnear Steel Rolling Door Co., W. W. Thurston, Rialto Bldg., San Francisco.

STEEL WHEELBARROWS
Champion and California steel brands, made by Western Iron Works, 141 Beale St., San Francisco.

STONE
California Granite Co., 518 Sharon Bldg., San Francisco.
Raymond Granite Co., Potrero Ave. and Division St., San Francisco.
Colusa Sandstone Co., Potrero Ave. and Division St., San Francisco.
McGilvray Stone Company, 634 Townsend St., San Francisco

STORAGE SYSTEMS—GASOLINE, OIL, ETC.
S. F. Bowser & Co., 612 Howard St., San Francisco.

SURETY BONDS
California Casualty Company, Merchants' Exchange Bldg., San Francisco.
Globe Indemnity Co., Insurance Exchange Bldg., San Francisco.
J. B. Nabors & Sons, Kohl Bldg., San Francisco.
Fidelity & Deposit Co. of Maryland, Mills Bldg., San Francisco.
Pacific Coast Casualty Co., Merchants' Exchange Bldg., San Francisco.

TEMPERATURE REGULATION
Johnson Service Company, 149 Fifth St., San Francisco.
G. E. Witt Company, Inc., 850 Howard St., San Francisco.

THEATER AND OPERA CHAIRS
A. H. Andrews, 728 Mission St., San Francisco.
C. F. Weber & Co., 365 Market St., San Francisco.
Whitaker & Ray-Wiggin Company, 776 Mission St., San Francisco.

TELEPHONE EQUIPMENT
Telephone Electric Equipment Co., 612 Howard St., San Francisco.

TILES, MOSAICS, MANTELS, ETC.
Mangrum & Otter, 561 Mission St., San Francisco.

TILE FOR ROOFING
Fibrestone & Roofing Co., 971 Howard St., San Francisco.
Gladding, McBean & Co., Crocker Bldg., San Francisco.
United Materials Co., Crossley Bldg., San Francisco.

TILE WALLS—INTERLOCKING
Denison Hollow Interlocking Blocks, Ochsner Bldg., Sacramento.

VITREOUS CHINAWARE
Pacific Porcelain Ware Company, 67 New Montgomery St., San Francisco.

VACUUM CLEANERS
Invincible Vacuum Cleaner, R. W. Foyle, Agent, San Francisco.
"Tuec" Air Cleaner, manufactured by United Electric Co., 110 Jessie St., San Francisco.

VALVES
Jenkins Bros., 247 Mission St., San Francisco.

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

VARNISHES
W. P. Fuller Co., all principal Coast cities.
Glidden Varnish Co., Cleveland, O., represented on the Pacific Coast by Whittier-Coburn Co., San Francisco.
R. N. Nason & Co., San Francisco, Los Angeles, Portland and Seattle.
Standard Varnish Works, 113 Front St., San Francisco.
S. F. Pioneer Varnish Works, 816 Mission St., San Francisco.

VENETIAN BLINDS, AWNINGS, ETC.
C. F. Weber & Co., 365 Market St., San Francisco.

WALL PAINT
San-A-Cote and Vel-Va-Cote, manufactured by the Brininstool Co., Los Angeles; Marion D. Cohn Co., Hansford Bldg., San Francisco, distributor.

WALL BEDS
Marshall & Stearns Co., 1154 Phelan Bldg., San Francisco.

WALL BOARD
"Amiwud" Wall Board, manufactured by Paraffine Paint Co., 34 First St., San Francisco.
Schumacher Wall Board Co., 149 California St., San Francisco.

WATER HEATERS—AUTOMATIC
Pittsburg Water Heater Co. of California, 237 Powell St., San Francisco, and Thirteenth and Clay Sts., Oakland.
Hoffman Heater Co., 397 Sutter St., San Francisco.

WATERPROOFING FOR CONCRETE, BRICK, ETC.
Armorite Damp Resisting Paint, made by W. P. Fuller & Co., San Francisco.
Concreto Cement Coating, manufactured by the Muralo Co. (See page 5.)
Fibrestone & Roofing Co., 971 Howard St., San Francisco.
Glidden's Concrete Floor Dressing and Liquid Cement Enamel, sold on Pacific Coast by John King & Sons, 36 Stanford St., San Francisco.
Whittier, Coburn Company, San Francisco, and California Glass & Paint Company, Los Angeles.
Imperial Co., 183 Stevenson St., San Francisco.
Samuel Cabot Mfg. Co., Boston, Mass., agencies in San Francisco, Oakland, Los Angeles, Portland, Tacoma and Spokane.
Wadsworth, Howland & Co., Inc. (See Adv. for Coast agencies.)

WHEELBARROWS—STEEL
Western Iron Works, Beale and Main Sts., San Francisco.

WHITE ENAMEL FINISH
"Gold Seal," manufactured and sold by Bass-Hueter Paint Company. All principal Coast cities.
"Silkenwhite," made by W. P. Fuller & Co., San Francisco.
"Satinette," Standard Varnish Works, 113 Front St., San Francisco.
Trus-Con Sno-wite, manufactured by Trussed Concrete Steel Co. (See Adv. for Coast distributors.)

WINDOWS—REVERSIBLE, ETC.
Whitney Adjustable Window Co., San Francisco. (See page 125.)
Hauser Reversible Window Co., Balboa Bldg., San Francisco.

WINDOW SHADES
Top Light Shade Co., 737 Market St., Oakland.

WIRE FABRIC
U. S. Steel Products Co., Rialto Bldg., San Francisco.

WOOD MANTELS
Fink & Schindler, 218 13th St., San Francisco.
Mangrum & Otter, 561 Mission St., San Francisco.

No Wood Too Good For Hueter's Varnish

Every piece of furniture about the home can be made to look as bright as the day it came from the factory.

It is simply a question of re-varnishing to obliterate the mars and scratches that come from use and wear.

You can do much of the work yourself, but with fine furniture and woodwork we recommend the employment of an experienced varnisher.

The one point we want to impress upon you now is the brand of varnish to use.

There are all grades of varnish on the market but you can well afford to use the best, because in the long run it costs the least.

Hueter's Varnishes

are the highest grade manufactured because the maker uses the best of raw materials and aims for quality rather than for low price.

The cost between a cheap varnish and Hueter's is very little on the finished job—not over ten or twenty cents on a piece of furniture that may have cost you $25 or $50.

But there is a mighty big difference in the appearance and wear of the finished article.

We recommend Hueter's Varnish, knowing its use means permanent satisfaction.

There is a Hueter Varnish for every purpose, each first quality goods.

Hueter's Elastic Exterior Finish for outside doors that are exposed—resists Pacific Coast climate.

Hueter's Elastic Interior Durable Wood Finish for all natural woods, painted or grained work.

Hueter's Floor Finish—a perfect floor coating, dries hard over night, will not scratch white or show heel marks, not affected by dampness.

Hueter's Cabinet Rubbing Varnish for all kinds of furniture.

Hueter's Matt Lac Finish for producing a rubbed effect without the labor or cost of rubbing.

Hueter's Linoleum Finish—a tough, durable, quick-drying varnish that will dry over night and stand months of wear.

We will be pleased to tell you about all the other Hueter Varnishes and show samples of woodwork which prove the quality of these goods.

BASS-HUETER PAINT CO.

816 Mission Street   1564 Market Street

SAN FRANCISCO

Portland   Los Angeles   Seattle

[T]ouch to Good School Architecture

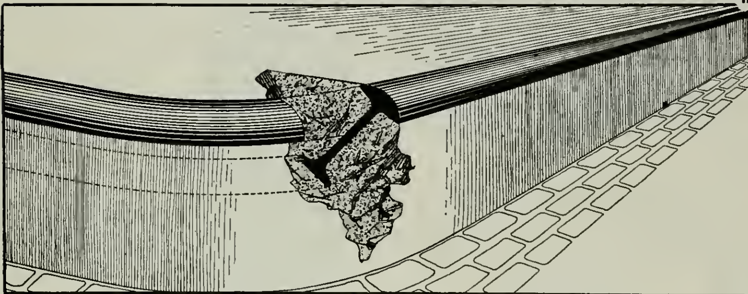
SANTA MONICA HIGH SCHOOL

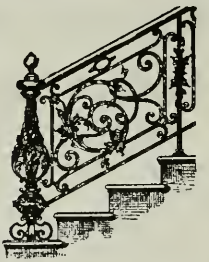
GARVEY SCHOOL, ALHAMBRA.
FREMONT SCHOOL, ALHAMBRA.
GALLATIN SCHOOL, DOWNEY.
CALEXICO HIGH SCHOOL.
COLTON SCHOOL.
CORONA SCHOOL.
HOLTVILLE SCHOOL.
VAN NUYS HIGH SCHOOL.
AZUSA SCHOOL.
MARENGO SCHOOL.
GARFIELD SCHOOL, ALHAMBRA.

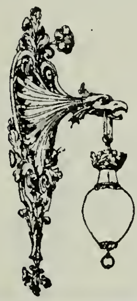
BRICK COMPANY, Los Angeles

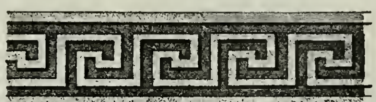
PANY, Northern Distributors

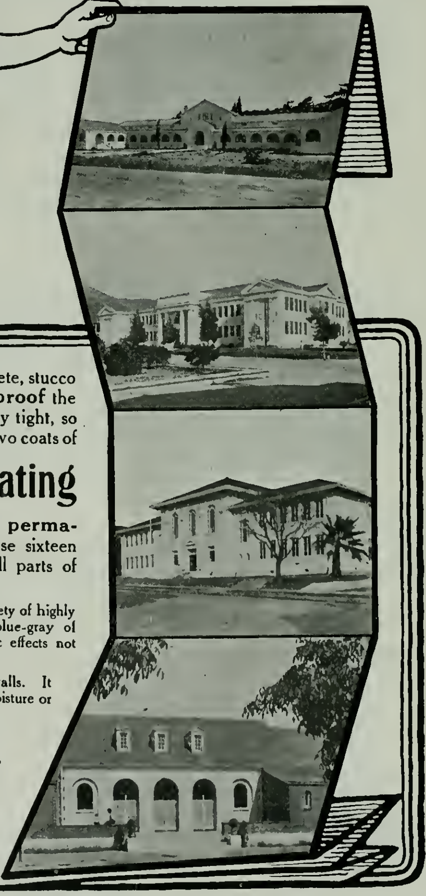
San Francisco, Cal.

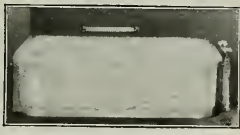












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Contents for September

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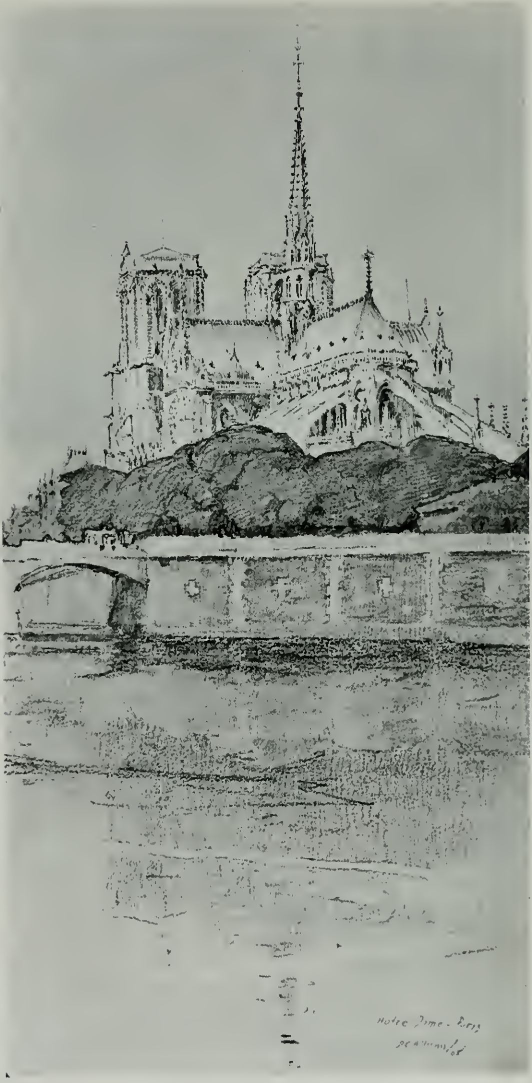


NOTRE DAME, PARIS
D. C. ALLISON, Architect

Frontispiece
The Architect and Engineer of California
for September, 1915.

THE

Architect and Engineer

Of California

VOL. XLII SEPTEMBER, 1915 No. 3.

The Work of Messrs. Allison & Allison

By MYRON HUNT, F. A. I. A.

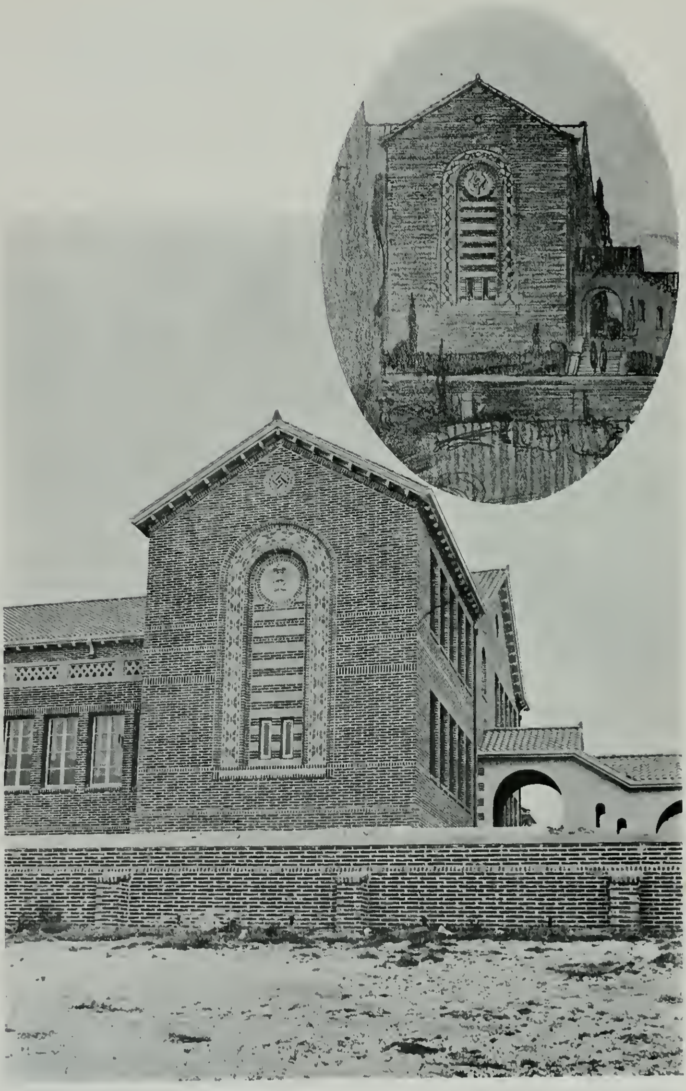
RECOGNITION from members of his own profession is the greatest prize that can come to any professional man, and when this professional recognition comes to an architect, it is doubly prized, because the practice of the architectural profession involves an admixture of pure business, which has always made more difficult than in the other professions, the adherence to a strictly professional attitude by its members.

This recognition has come to the brothers, J. E. and D. C. Allison, who five years ago transferred their offices from Pittsburgh, Pa., to Los Angeles. It had come to them in their eastern home, as is shown by the award to them of one of the $1,000 prizes in the competition for the buildings of the University of Western Pennsylvania, into which competition they had entered as free lances against a very strong, especially invited field, as well as against a local Pittsburgh field carrying other influential names.

Every architect in Los Angeles will long remember the thrill of pleasure that came to him upon first seeing D. C. Allison's European sketches, forty or fifty of them in number, quietly framed, and which had been in equal unostentation, entered at the architectural exhibit of the Los Angeles Sketch Club. We all saw that the new architects who had made their appearance, were artists; but being an artist alone, does not bring opportunity and the repetition of opportunity. That he shall be artist, scholar, gentleman, diplomat, executive, man of business, master mechanic; all these, in some degree, the public and his competitors in his profession, expect of him.

In the blending of these varied requirements, all of which each possesses, one brother has shown himself a notable leader in the executive field; and the other a leader in the artistic. Working together as a team, each thoroughly trained, and equally forceful, the natural leanings of the two minds have served to make what is a most rare combination—a truly successful partnership in architecture. The older brother, Mr. J. E. Allison, has not only found time to look after the executive and critical sides of an office which has built up a broad practice, but has done more in recent years than any other local member

House in Los Angeles



FINAL PRELIMINARY STUDY AND DETAIL OF END PAVILION (COMPLETED) MAIN BUILDING, SANTA MONICA HIGH SCHOOL
ALLISON & ALLISON, ARCHITECTS

FINAL PRELIMINARY STUDY,
ENTRANCE MAIN BUILDING
HIGH SCHOOL GROUP, SANTA MONICA
ALLISON & ALLISON, ARCHITECTS

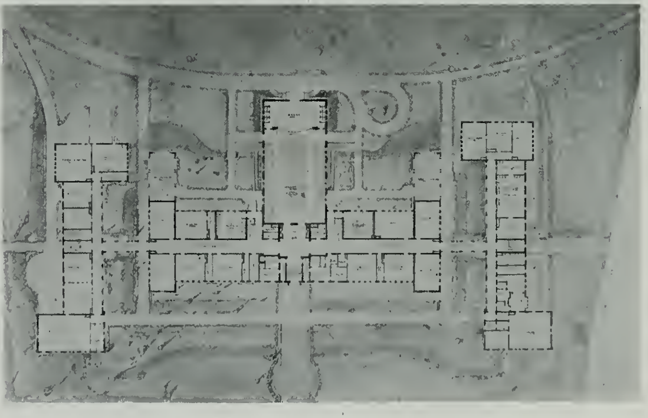
ENTRANCE MAIN BUILDING, HIGH SCHOOL, SANTA MONICA
ALLISON & ALLISON, ARCHITECTS

ENTRANCE AND TOWER, MAIN BUILDING,
HIGH SCHOOL GROUP, SANTA MONICA
ALLISON & ALLISON, ARCHITECTS

ELLIOTT MEMORIAL GATE HIGH SCHOOL GROUP, SANTA MONICA
Allison & Allison, Architects

VAWTER MEMORIAL GATE, HIGH SCHOOL GROUP, SANTA MONICA
Allison & Allison, Architects

OPEN AIR CLASS ROOMS, HIGH SCHOOL, SANTA MONICA
Allison & Allison, Architects



MAIN FLOOR PLAN, HIGH SCHOOL, SANTA MONICA
Allison & Allison, Architects

of the profession toward the advancement of architecture as a profession in Southern California, and in the State at large. He has served on numerous committees and commissions looking toward the improvement of local and State building laws, and has made himself a bulwark in the holding up of the ideals of the profession through his work in the local Chapter of the American Institute.

Mr. D. C. Allison has also been persistent in his efforts along professional lines. He has taken charge of evening classes of young draftsmen, who found themselves unable to attend architectural schools, and as a brilliant draftsman himself, has been a source of inspiration to not only the younger, but older men as well. His two years at the University of Pennsylvania, and his two years in Europe, half of which he spent with Duquesne in Paris, coupled with his enthusiasm and natural ability as an instructor, have made his teaching valuable.

Scheme I for House at Beverly Hills, Cal.

There are two kinds of draftsmen: One has the ability to make a drawing which will fool the public, and perhaps fool the draftsman himself; and the other, the ability to make a good drawing which is as well a conscientious study. To be able to think at once in terms of color, form, and material, and to be able to transcribe his dreams to paper is D. C. Allison's fort.

An examination of his sketches, many of which are herewith reproduced in connection with the actual photographs of the finished work, will show that these sketches are studies, and while obviously made for the purpose of explaining to the client the work contemplated, the trained eye sees in them at the same time, the effects of conscientious study and hard work.

The photographs of the plan, and the photographs of the general perspective of the high school at Santa Monica are especially worth examination in conjunction with the general photographs of the finished work and the photographic detail of its various parts. This group is the most notable opportunity in point of site and magnitude which has come to Messrs. Allison, and it is perhaps at the same time, their greatest success.

Scheme II for House at Beverly Hills, Cal.

Southern California is almost devoid of the usual building materials. There is no good building stone within hundreds of miles, and there has always been an inclination, especially since the advent of reinforced concrete, to lean toward a plastered exterior surface, the work of the old Spanish padres forming a natural precedent. Incidentally, it was not supposed that there was even a good brick obtainable in Los Angeles. The Allison brothers loved brick, and have helped a great deal in the development of its local manufacture.

It is only fair to say that the drawings and photographs of their buildings are really more brilliant in color texture than most of the buildings are themselves; this perhaps because of the openness of the country about most of the schoolhouses in which they have specialized, and the fact that one gets his first impression of a number of these buildings from too great a distance. They as yet lack foliage and neighboring buildings to form a foil.

Grammar School, Corona, Cal.

Brickwork, after all, lending itself to a mosaic treatment as it does, is something to

MAIN BUILDING, VAN NUYS HIGH SCHOOL
Allison & Allison, Architects

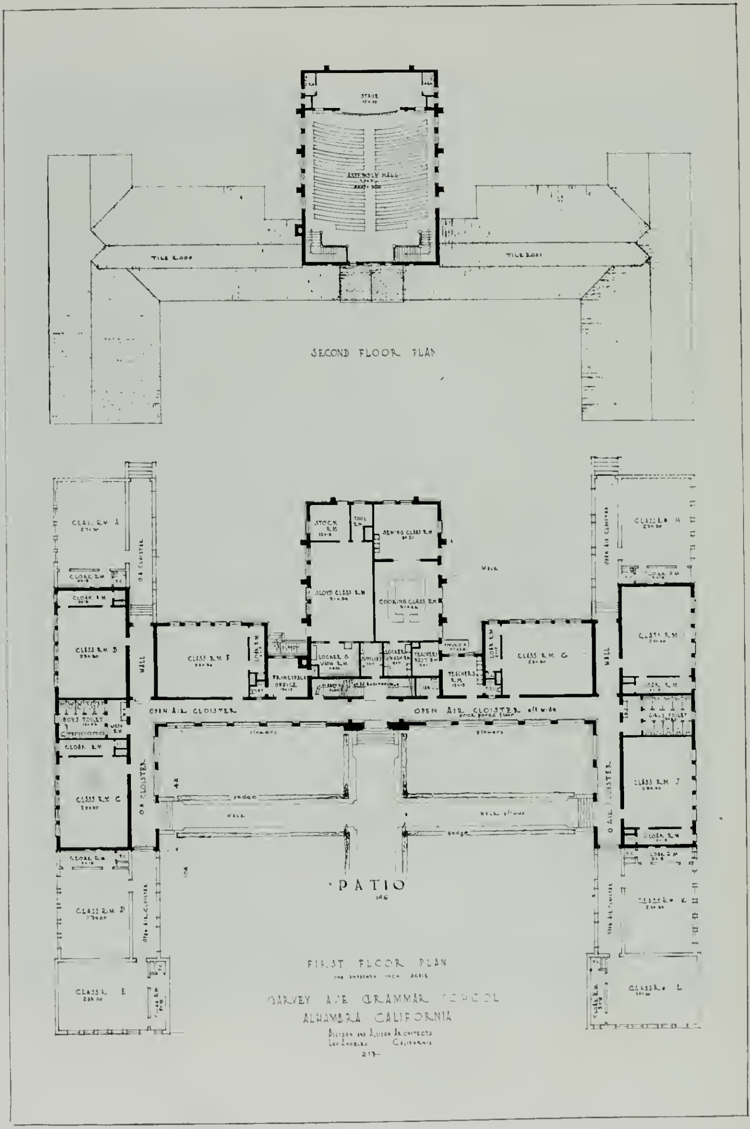
DETAIL, MAIN BUILDING, VAN NUYS HIGH SCHOOL
Allison & Allison, Architects

MANUAL ARTS BUILDING, HIGH SCHOOL, MONROVIA
Allison & Allison, Architects

PORTION OF GROUP NOW COMPLETED, WILMINGTON HIGH SCHOOL
Allison & Allison, Architects

*MAIN ENTRANCE HIGH SCHOOL BUILDING
WILMINGTON DISTRICT, LOS ANGELES
ALLISON & ALLISON, ARCHITECTS*

DETAIL OF FRONT, WILMINGTON HIGH SCHOOL
ALLISON & ALLISON, ARCHITECTS

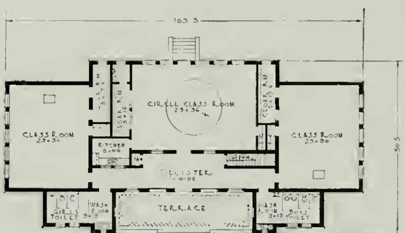


ASSEMBLY HALL
TILE ROOF
SECOND FLOOR PLAN
OPEN AIR CLOISTER
PATIO
FIRST FLOOR PLAN
GARVEY AVE GRAMMAR SCHOOL
ALHAMBRA CALIFORNIA

GARVEY AVENUE SCHOOL, ALHAMBRA,
AND DETAIL OF ENTRANCE
ALLISON & ALLISON, ARCHITECTS

FINAL PRELIMINARY STUDY AND FRONT OF COMPLETED MARENGO PRIMARY SCHOOL, ALHAMBRA, CALIFORNIA
ALLISON & ALLISON, ARCHITECTS

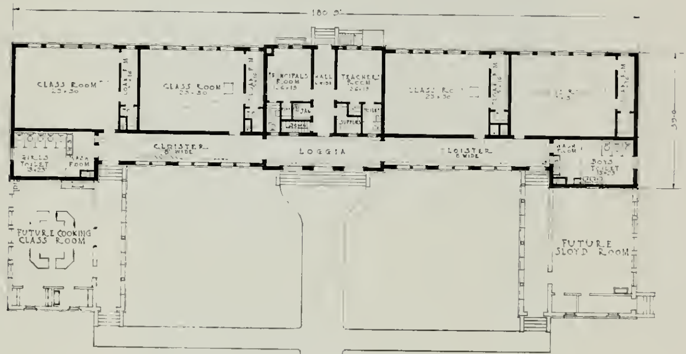
DETAIL, MARENGO PRIMARY SCHOOL, ALHAMBRA
Allison & Allison, Architects



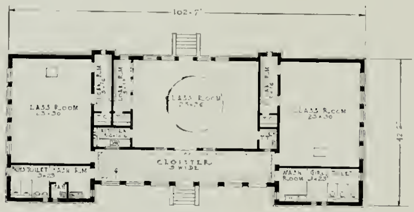
FLOOR PLAN, MARENGO PRIMARY SCHOOL
Allison & Allison, Architects

FREMONT AVENUE SCHOOL, ALHAMBRA
Allison & Allison, Architects

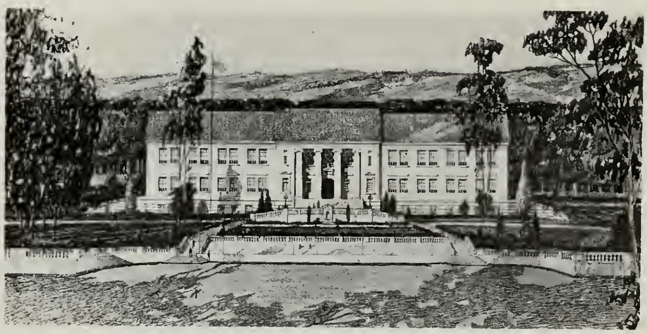
DETAIL, FREMONT AVENUE SCHOOL, ALHAMBRA
Allison & Allison, Architects



FLOOR PLAN
1/16 INCH SCALE
FREMONT · AVE · GRAMMAR · SCHOOL ·
ALHAMBRA SCHOOLS

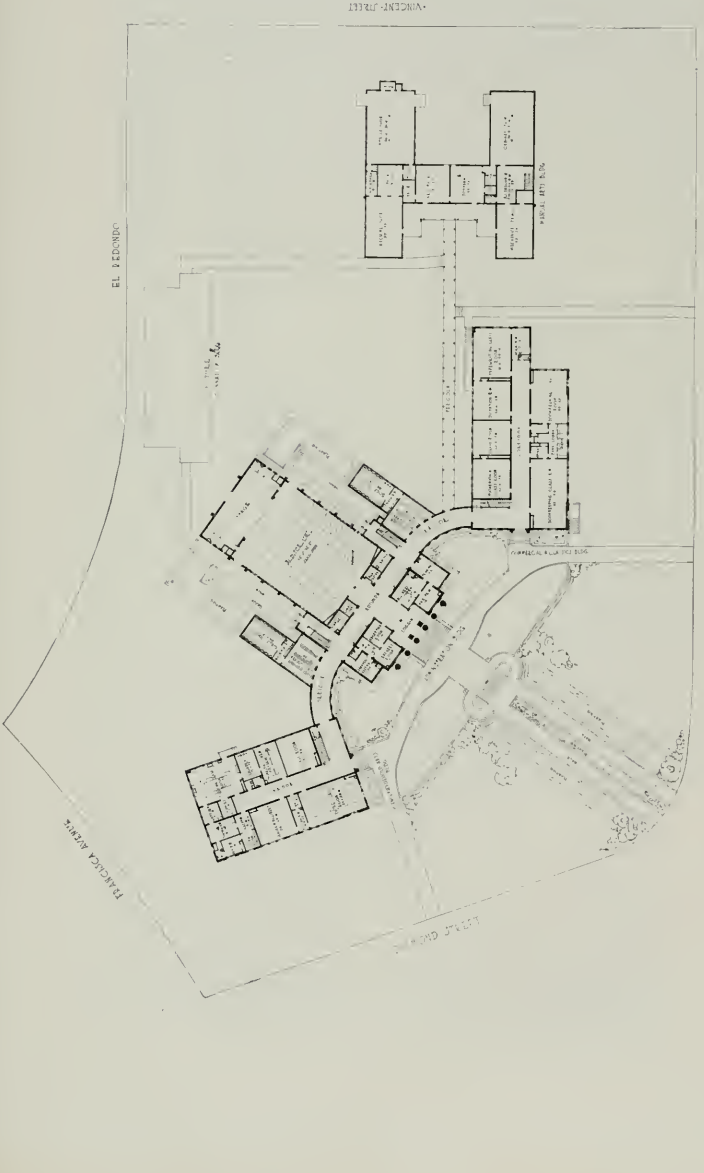


FLOOR PLAN
1/16 INCH SCALE
GARFIELD · PRIMARY · SCHOOL ·

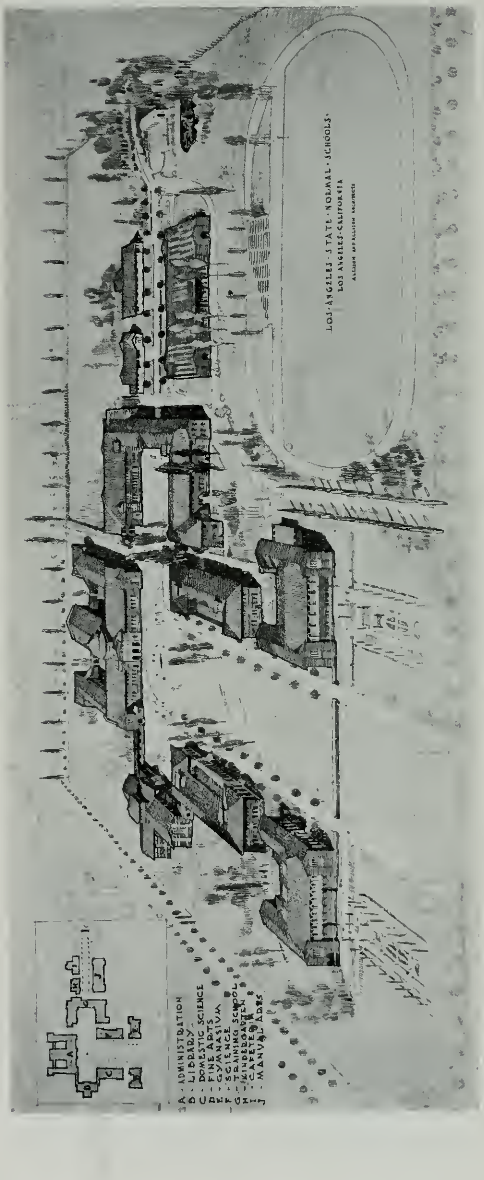


SANTA PAULA SCHOOL, SANTA PAULA
Allison & Allison, Architects

REDONDO UNION HIGH SCHOOL
ALLISON & ALLISON, ARCHITECTS



FLOOR PLAN, REDONDO UNION HIGH SCHOOL
ALLISON & ALLISON, ARCHITECTS



AEROPLANE VIEW AND BLOCK PLAN, LOS ANGELES STATE NORMAL SCHOOL
ALLISON & ALLISON, ARCHITECTS

FINAL PRELIMINARY STUDY OF FORECOURT AND TRAINING SCHOOL, AND DETAIL OF SAME (COMPLETED) LOS ANGELES STATE NORMAL SCHOOL

ALLISON & ALLISON, ARCHITECTS

W. F. McCLURE, STATE ENGINEER

DETAIL, MAIN ENTRANCE GYMNASIUM,
LOS ANGELES STATE NORMAL SCHOOL
ALLISON & ALLISON, ARCHITECTS
W. F. McCLURE, STATE ENGINEER

Caretaker's Entrance, Los Angeles State Normal School

be seen nearby, and a great group of brick buildings seen at a distance of a mile, must have a greater brilliancy in color than has yet been produced in Southern California, in order to make the mass not seem too somber. Seen from the distance, in the brilliant sunlight of the south, nothing will ever improve upon the old white plaster surfaces of the Spaniards; yet the great tawny group of the Santa Monica high school is certain to remain forever notable. Its silhouette is admirable; every possibility of a wonderful and difficult site seems to have been grasped by the designers.

The Normal school group, and a number of minor country schoolhouses, notably the grammar school at Glendora, represent other solutions in the use of local brick. Messrs. Allison have done much to demonstrate the possibilities of the country school. The Fremont avenue grammar school at Alhambra is a good illustration of this. The plan is so arranged as to place the school rooms proper with their long sides toward the easterly light, and the corridors which connect them, not needing heat in this climate, are thrown out of doors in the form of arcades, shielding the building from the heat of the afternoon sun. This scheme, they have repeated many times in other minor school buildings, and with notable success. The painstaking, well-thought-out detail, which is evident in all of their brickwork, is equally notable in these buildings.

An interesting example of what good architects may be to a community, is shown by their group plan for an intellectual civic center for the desert city of Calexico. Messrs. Allison were commissioned to plan a high school group in Calexico on property that was sufficiently large for the school and its future probable growth, together with space for an athletic field. Later, opportunity came to them to plan a Carnegie library for the same community. They made a drawing which so fired the imagination of the city, that a future civic center has been provided through selling a small city-owned parksite, and the purchasing of three entire city squares adjoining the high school site.

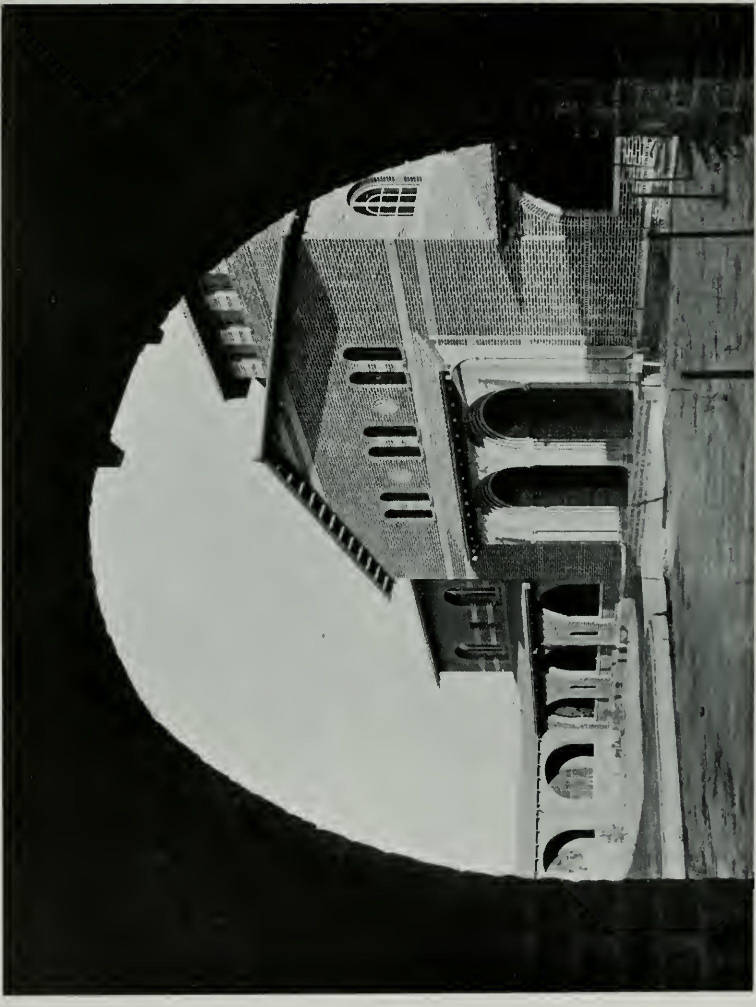
Cafeteria Los Angeles State Normal School

Kindergarten, Los Angeles State Normal School

It is a great thing for a growing community to get such a group started when land is comparatively inexpensive and before business conditions fix themselves. It is such services to a community as this that are not to be measured in terms of monetary compensation.

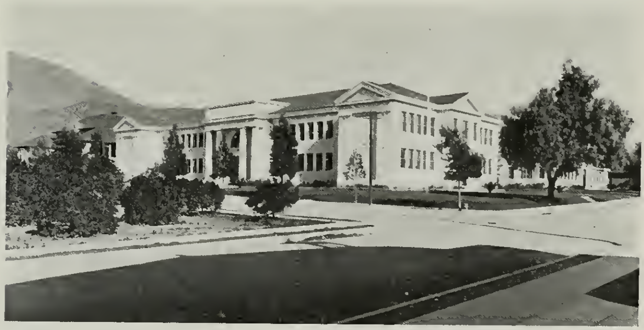
VIEW FROM TRAINING SCHOOL,
LOS ANGELES STATE NORMAL GROUP
ALLISON & ALLISON ARCHITECTS
W. F. McCLURE, STATE ENGINEER

DETAIL, MAIN ENTRANCE ADMINISTRATION BUILDING
LOS ANGELES STATE NORMAL SCHOOL
ALLISON & ALLISON, ARCHITECTS
W. F. McCLURE, STATE ENGINEER



LIBRARY FROM CLOISTER, LOS ANGELES STATE NORMAL SCHOOL
ALLISON & ALLISON, ARCHITECTS
W. F. McCLURE, STATE ENGINEER

PRELIMINARY STUDY, FINE ARTS BUILDING,
LOS ANGELES STATE NORMAL SCHOOL
Allison & Allison, Architects

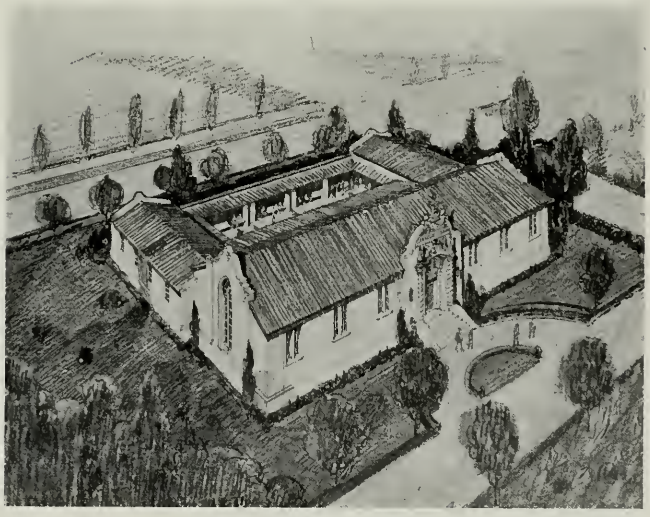


HIGH SCHOOL AND MANUAL ARTS BUILDING, MONROVIA
Allison & Allison, Architects

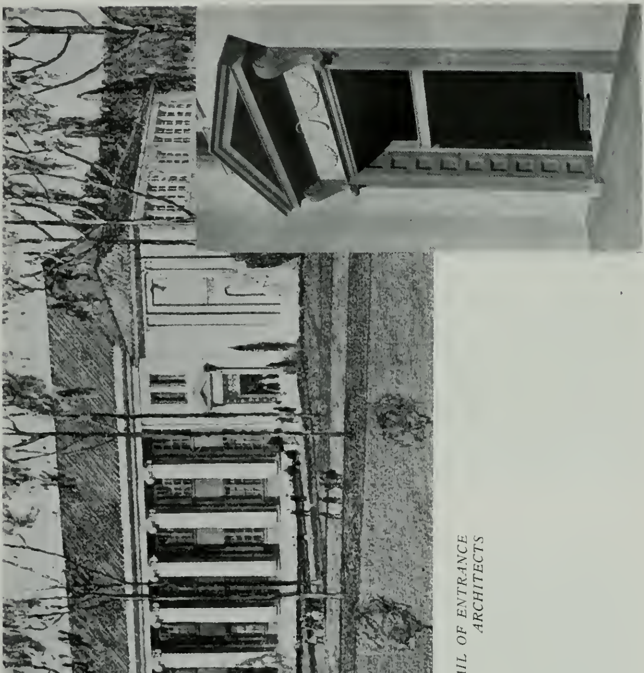
OPEN AIR AUDITORIUM THROUGH PERGOLA, HIGH SCHOOL, MONROVIA, CAL.
Allison & Allison, Architects

OPEN AIR AUDITORIUM, HIGH SCHOOL, MONROVIA, CAL.
PROSCENIUM ARCH ENCLOSURE SHOWN IN PLACE
Allison & Allison, Architects

GRAMMAR SCHOOL, MONROVIA, CALIFORNIA
Allison & Allison, Architects



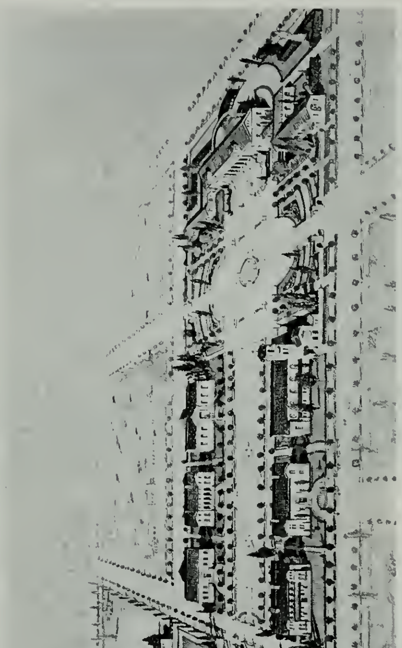
DESIGN FOR A CARNEGIE LIBRARY, CALEXICO, CALIFORNIA
Allison & Allison, Architects



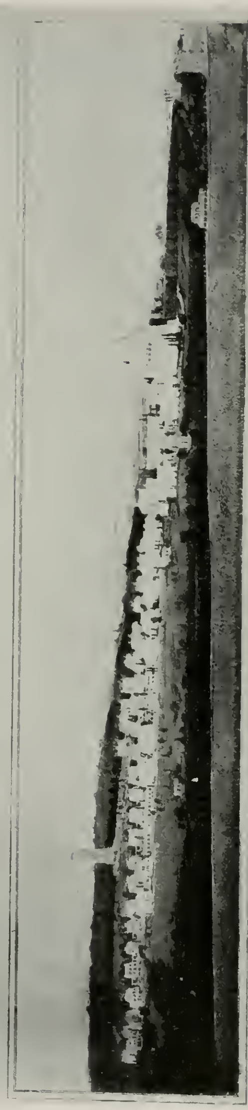
GRAMMAR SCHOOL, COLTON, CALIFORNIA, AND DETAIL OF ENTRANCE
ALLISON & ALLISON, ARCHITECTS

GRAMMAR SCHOOL, GLENDORA
Allison & Allison, Architects

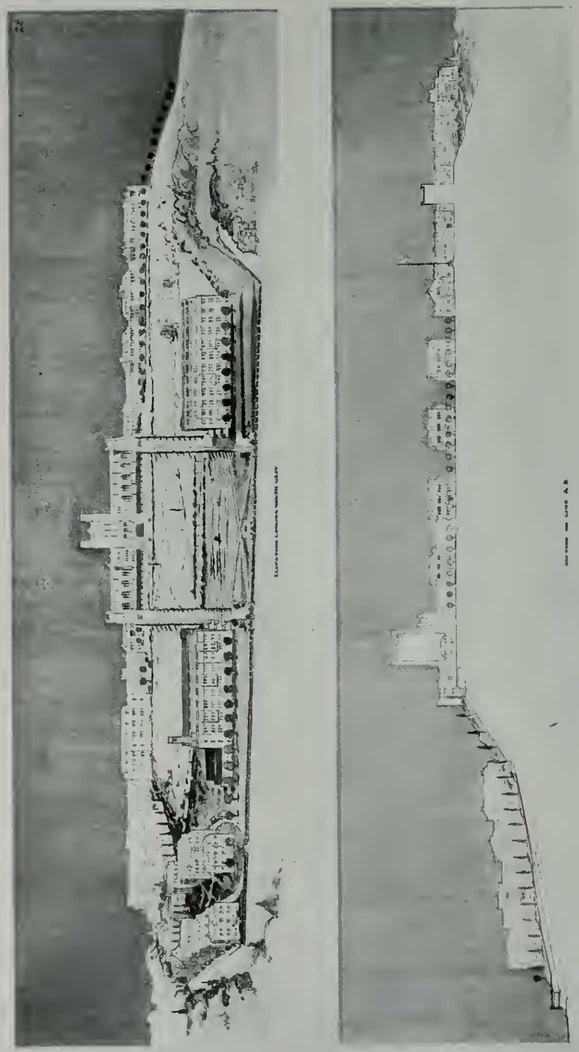
DETAIL GRAMMAR SCHOOL, GLENDORA
Allison & Allison, Architects



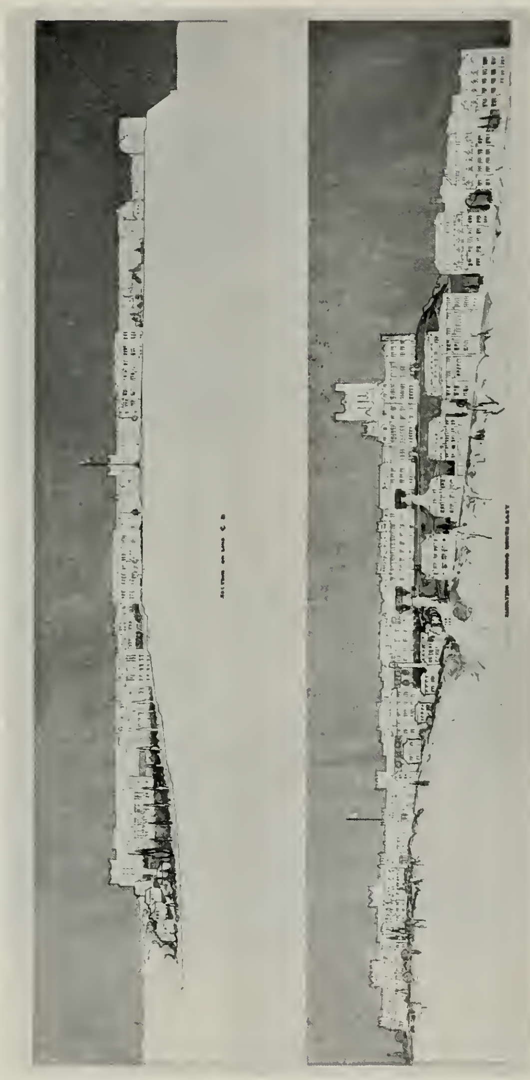
CIVIC CENTER, CALEXICO, CALIFORNIA
ALLISON & ALLISON, ARCHITECTS



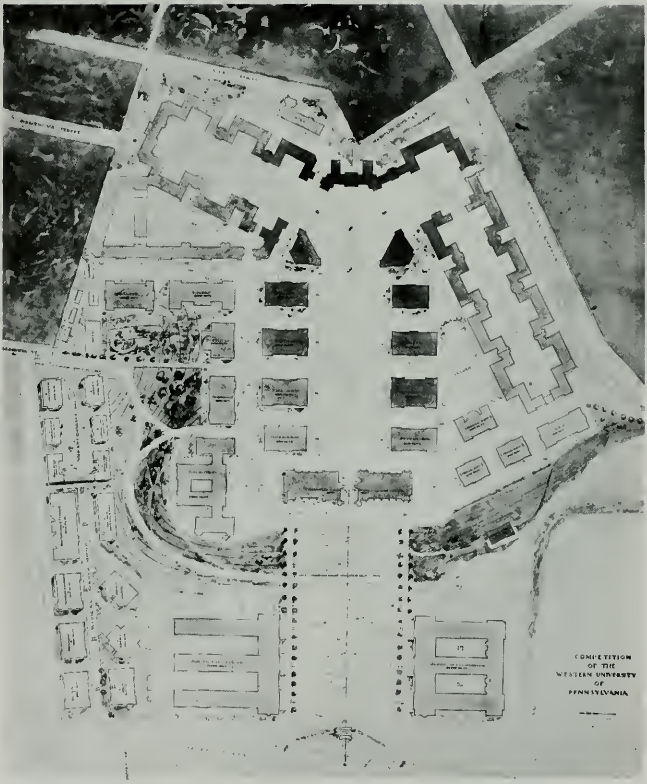
MASONIC HOME COMPETITION, ELIZABETHTOWN, PA
ALLISON & ALLISON, ARCHITECTS



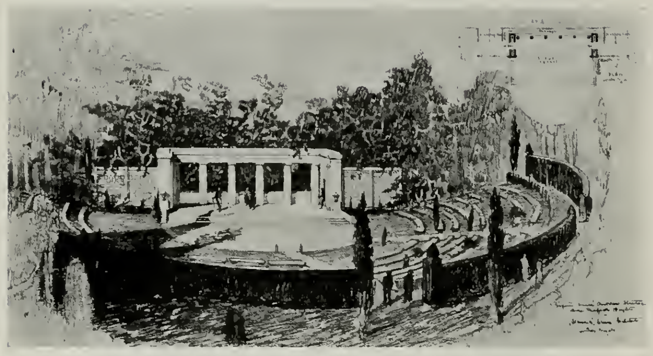
COMPETITION FOR THE WESTERN UNIVERSITY OF PENNSYLVANIA
AWARDED THIRD PRIZE ALLISON & ALLISON, ARCHITECTS



COMPETITION FOR THE WESTERN UNIVERSITY OF PENNSYLVANIA
ALLISON & ALLISON, ARCHITECTS

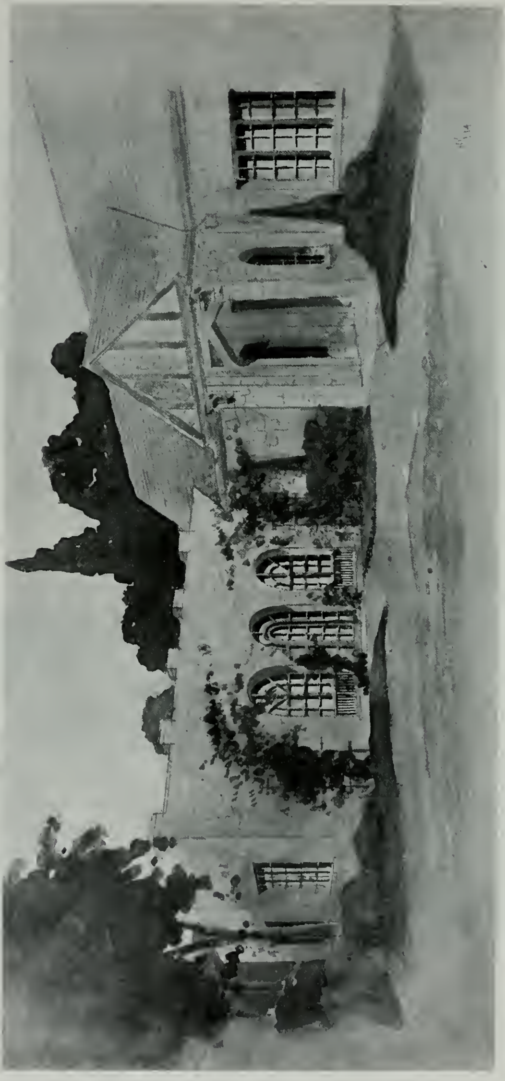


BLOCK PLAN COMPETITION OF WESTERN UNIVERSITY OF PENNSYLVANIA
ALLISON & ALLISON, ARCHITECTS



SMALL OUTDOOR THEATER FOR PRIVATE ESTATE IN PASADENA
Allison & Allison, Architects

RESIDENCE FOR MR. DAVID ROULY, SAN GABRIEL
Allison & Allison, Architects



COLUMBARIUM, CYPRESS LAWN CEMETERY, SAN MATEO COUNTY
WILLIAM H. CRIM, JR., ARCHITECT

Federal Buildings to be Standardized

Hereafter, public buildings erected by the government will be economically constructed. Where savings can be made on the total amount authorized by Congress it will be done, and fancy ornamentation hereafter will not feature federal buildings.

This is made certain, at least during the present administration, by orders just issued by Secretary of the Treasury McAdoo to the Acting Supervising Architect. The Secretary points out that standardization is necessary; that plans should be so made as to shorten the contract time of construction, and finally that the government hereafter will not be moved by sentiment in using local material in the construction of buildings, but to buy where the best price is obtainable.—Press Clipping.

By F. W. FITZPATRICK

A RECENT order of Secretary McAdoo's directs one of the most intelligent moves ever made by the Treasury Department in regard to public buildings. Heretofore, Federal structures, including postoffices, were erected when and how Congress directed, each building project was voted on and made the subject of trade and barter by congressmen. Perverted morals made it so that the congressman was envied and admired and lauded who could swing influence enough to secure a $50,000 building for every "tank" town or village of 300 people in his district. He, indeed, was giving his constituents ideal and profitable representation. That it was unseemly extravagance at the cost of the whole country, a species of graft on a par with spending millions in doing fool work upon rivers that never were nor never will be navigable, was lost sight of utterly. Public morals are queer things at best and Congress generally but reflects them—intensifies them.

If Secretary McAdoo can make his order stick in the face of the congressional opposition it is bound to meet, he will not only have the supervising architect's office producing sane and adequate buildings but at a greatly accelerated speed and will also come very near to securing us the much-to-be desired "budget" system of appropriations.

His order is that buildings shall be in classes according to the postal receipts of the places receiving new buildings. Instead of slapping down just as much of a building, however much more of it than justified by the business at that point, as the congressman can hypnotize out of the Government, a city or town doing such and such a postal business, judged by the postal receipts, is entitled to so much building only, class A, B or C and nothing more.

Further, the supervising architect's office is away behind with the work and costs much more than it should because heretofore every building had to be specially planned and laboriously detailed to its minutest requirement. It mattered little how much it might resemble some other post-office. It had to be all done in painful detail. Secretary McAdoo directs that economy be exercised and time gained by duplicating buildings where practicable, simply using the plans of one building for several.

Architects make their buildings enough alike anyway so that this move of the Secretary's will not be any great crime even against the canons and ethics of high Art. Why shouldn't the post office at Suchaburgh, Mo., be alike unto that that does duty very satisfactorily at Wheatvale, Minn., towns of the same size and postal importance?

A difference can be made in color of materials, one a buff brick, the other a gray, for instance, that would "take oft the curse," so to speak, even to a person going direct from one town to the other. Of course, discretion and good sense will be used in the matter and similar buildings will not be erected in near-by towns, and too, due regard will be given to climate and to having buildings conform in general terms at least to the geographic and vicinal conditions.

Certainly a move in the right direction and Mr. McAdoo deserves congratulations for having done the perfectly obvious thing to do—what has so often been suggested to the department, but that no predecessor of his ever had the courage to do.

* * *

The Ideal City

CITIES increase, and the country becomes more and more empty. Observers shake their heads as they walk through the long, dull streets and breathe the close air, and see the pale faces of the people. "God," they repeat, "made the country, man made the town." Their hearts sink at the thought of the future, and they find themselves saying that "cities will crowd in a blacker, incessanter line"; that "the din will be more," "the trade denser," and that they will "never see an ennobling sight, or drink of the feeling of quiet again."

They forget that the highest possible life for men may be a city life; and that the prophets foresaw, not a paradise or a garden, but a city with its streets and its markets, its manifold interests and its hum of life. A man often does well, as David, to leave the sheep folds to come down to see the battle.

The activities of the street, of the shop, and of the town meeting, are for many characters the best preparation for life in the City of God.

We have as our neighbors in a city, not the trees and the beasts, but fellow human beings. We can from them learn greater lessons, and with them do greater deeds. We can become more human.

The country may still be best for some people; it is probably at some periods of their lives best for all—there is an ideal village as there is an ideal city—but the movement of men is obviously from country to city; we must, as a consequence, fashion our cities after the highest pattern. We must make them good for the health as for the wealth of the citizens.

* * * * * * *

The Ideal City will be large, with a quarter or half a million citizens. There will thus be room for a great variety of life and pursuits. The citizens will find at their own doors the interest that comes from the clash of many thoughts and many experiences. Because, too, the city will be large, every citizen will have a greater sense of responsibility. He will feel himself a citizen of no mean city, and as such he will act, and as such expect to be treated.

The Ideal City will be old, the growth of centuries, bearing on its face the mark of many storms and triumphs. There will be the very marks left by men of old time, as they hammered out their rough thoughts. Some of their buildings will tell of times of luxury and victory; and in out-of-the-way places there will be remnants of castles and forts where the men of old fought and died for the city's liberties. The citizen, as he walks the streets of the Ideal City, notes the odd names, turns by some strange twist, or catches sight of some tower, will feel himself encompassed by a "cloud of witnesses," and will hear a voice telling him that the ground he treads is made holy by the toil of the city's fathers. He will be both humbled and inspired; two conditions necessary to satisfaction.

The Ideal City will be a new city. Its streets will be broad and lighted with electric lights. Its houses will be good, fitted with water and warmth for the comfort and the health of its inhabitants. Its spaces will be many; great open spaces for games; small open spaces, within the reach of every house, for the rest of the weak. Its public buildings will be of many styles, expressive of the character of their uses.

There will be the Cathedral brooding over the city, gathering together, as it were, its various interests, its manifold activities, to lift them up to higher issues, to God's uses. There will be the churches and the chapels, with open doors, offering the chance of quiet, and provoking thought by pictures and music. There will be the schools, with classrooms and playgrounds; technical schools, commercial schools, high schools. There will be the University college, with its laboratories, its great hall, and its classrooms. There will be the municipal offices, with its town hall, on the walls of which an artist will have painted scenes from the city's history, and where the citizens will throng in their thousands to hear great speeches or to listen to great music.

A visitor to the Ideal City would be charmed by its first aspect; its variety of architecture, its beauty of color, its freshness and purity. He would miss little of what he had left in the country. He would breathe easily, enjoy the play of change, and taste the quiet which comes of deeper feeling. And he would know none of the depression caused by great wealth or great poverty.

* * * * * * *

In the Ideal City none will be very rich, and none will be very poor. Knowledge and good will will join together to give to every child the best education, and to secure its use of the gift; to render every house and street as healthy as the healthiest hillside in the world; to provide the best doctor and the most comfortable hospital for everyone who is sick; and to have at hand a friend for everyone in trouble.

In our Ideal City art will grow out of common life, undisturbed by contrasts of wealth and poverty. The people will have pleasure in their work and leisure to admire what is beautiful.—From Worship and Work, from the writings of the late Canon Barnett.

* * *

Ancient Skyscrapers

IN the days of Solomon there were buildings ten stories high; one rabbi tells of climbing 100 feet to his room; Herodotus says there were houses in Babylon four stories high, and Greek historians report many houses in ancient Tyre ten stories high. Athens had a building law limiting the height of buildings for residences to ten stories.

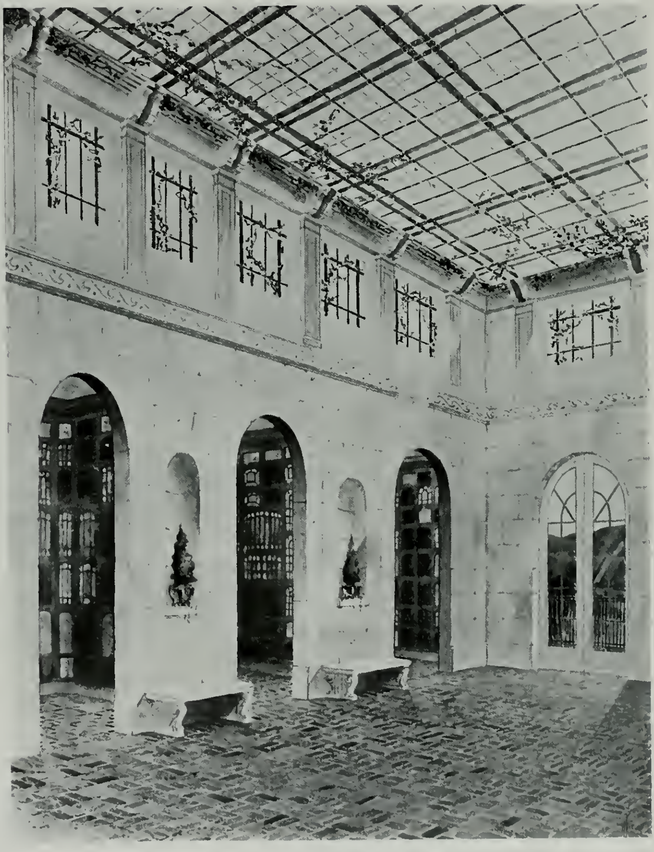
About the year 325 A. D., when Constantine, the Roman emperor, determined to establish his capital on the Golden Horn, he built a wall across the peninsula as the limits of his city and the dividing line between city and country taxes. Speculators rushed in and bought up land, raising real estate prices over 300 per cent within a year.

High buildings were the logical outcome of this condition, and the capitalists sent to Rome for architects who could design higher buildings, with the result that in ten years the new capital rivalled Rome in this regard.

Constantine, finding the view of the city and bay obstructed by these higher structures before he completed his palace, says an exchange, issued an edict forbidding buildings more than 100 feet high.

A wail went up from the speculators, but the tops of the buildings had to come off, and it is recorded that one block lost the four upper stories, which would indicate that there were buildings from 125 feet to 135 feet.

It is related that one Apothagos built a row of houses between the royal palace and the sea. They were of stone and brick as required by law and within the required limits of 100 feet, but on top of this he built frame structures of three stories. The royal "inspector of buildings" ordered these frame superstructures to be removed, but Apothagos, claiming it was only a temporary structure for housing his workmen while they completed the building, went into court with it. After ten years of litigation, the superstructures were torn down, but all this time royalty was much offended by the buildings standing between it and the sea.



INTERIOR COLUMBARIUM, CYPRESS LAWN CEMETERY, SAN MATEO COUNTY
WILLIAM H. CRIM, JR. ARCHITECT

TAYLOR STREET FRONT OF CHICAGO HEBREW INSTITUTE
Ottenheimer, Stern & Reichert, Architects

The Chicago Hebrew Institute — A Reinforced Concrete Structure Possessing Unusual Features

THE Chicago Hebrew Institute, at Taylor and Sibley streets, Chicago, presents an interesting study of reinforced concrete construction, and we are indebted to Engineering and Contracting for the following description and illustrations of the edifice:

The building is 96 feet wide by 231 feet long with a height, from ground floor to roof, of 52 feet. The reinforced concrete column footings and the outside wall footings extend 5 feet 1 inch below the level of the ground floor. The main portion of the structure, which has a curved roof, rising to the height of 52 feet, is flanked on each side by a two-story portion, one bent wide, which extends to a height of 21 feet 6 inches above the ground floor level. At the rear of the high portion of the building there extends for the full width of the structure, for a distance of 64 feet, a section having the same height as the wings. The outside walls of the two-story section, above grade, are self-bearing, 12 to 16-inch, "Denison" tile walls, with a cement plaster finish on the outside and lined on the inside with yellow pressed brick laid with ½-inch joints of white cement and lime mortar. The pressed bricks have a rough surface, to prevent their being easily defaced. Below grade, the outside walls are concrete. Most of the partitions are made of 4-inch, yellow, double-faced, pressed brick, laid in cement and lime mortar and reinforced every five joints with two ¼-inch rods. The second floor of the front portion of the building is occupied by the main gymnasium, this portion being open from the gymnasium floor to the roof, with the exception of a running track which circles the gymnasium and is cantilevered from the reinforced concrete columns. This track is about 15 feet above the gymnasium floor level. The rear portion of the building contains two swimming pools, a small gymnasium, dressing rooms, etc. The total cost of the structure, including equipment, is about $120,000, of which the cost of the equipment is only a few thousand dollars.

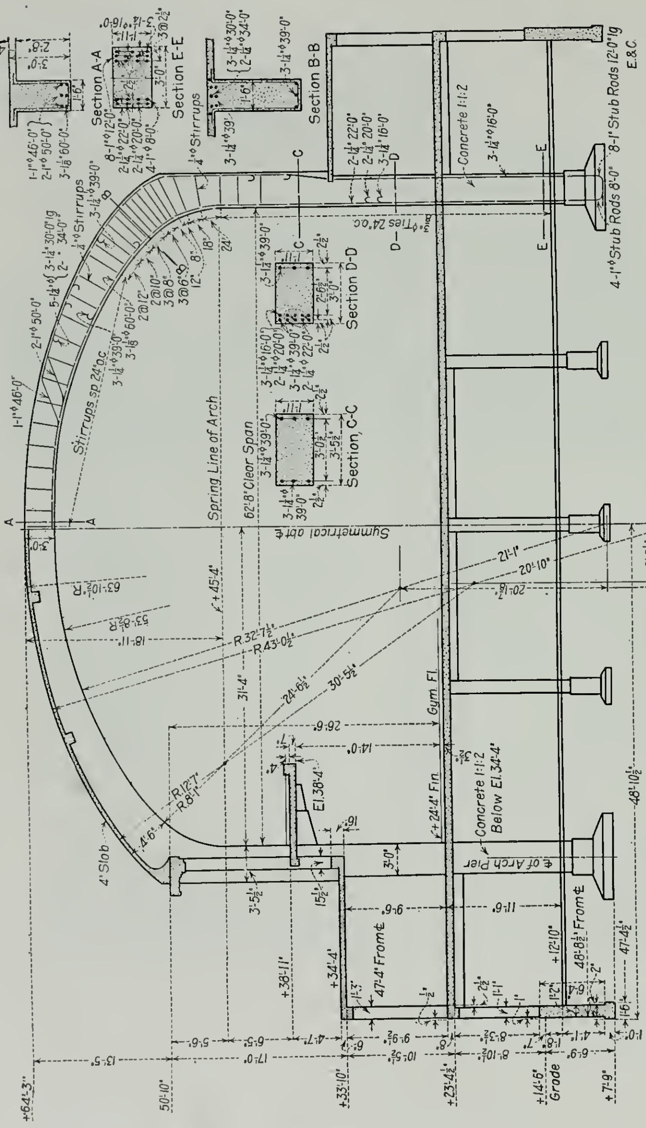


FIG. 1—CROSS SECTION THROUGH MAIN GYMNASIUM OF CHICAGO HEBREW INSTITUTE, SHOWING DETAILS OF ARCHES AND OF SUPPORTING COLUMNS
Ottenheimer, Stern & Reichert, Architects — *L. J. Mensch, Engineer*

STRUCTURAL DESIGN FEATURES

From an engineering standpoint, the reinforced concrete framework of the building presents a number of interesting features, the architectural requirements being such as to make the structural design somewhat intricate.

Design of Roof Arches and Supports.—Chief among the structural features are the reinforced concrete arches which form a part of the curved roof over the main portion of the building. The legs of these arches are continued to form the columns between the high portion of the building and the two-story wings. The arches and columns are poured monolithic, thus forming reinforced concrete bents. The arches have a clear span of 62 feet 8 inches, and a rise of 15 feet 11 inches. The length of the supporting legs, or columns, from spring line to bottom of footings, is 37 feet 7 inches. At the crown, the arches have a width of 1 foot 6 inches and a depth, including the roof slab, of 3 feet 0 inches; at the spring line, and continuing to the roof of the two-story wings, the width is increased to 1 foot 11 inches and the depth to 3 feet 5½ inches; below the roof of the two-story wings the columns are 1 foot 11 inches by 3 feet 0 inch.

Figure 1 is a cross section of the building through the main gymnasium. This drawing illustrates the type of construction used, and gives details of the arches and columns.

In designing the arches, they were considered to be fixed at the gymnasium floor level, elevation 24 feet 4 inches (see Fig. 1), the legs of each arch being tied together with four 1-inch round rods placed in the floor slab at this level. The design was first based on formulas for this type of construction given in Mensch's "Reinforced Concrete Pocket Book." These formulas are based on a constant moment of inertia, which did not obtain in this arch and its supports. It will be noted that the arch legs above the roof of the two-story portion, elevation 34 feet 4 inches (see Fig. 1), are larger than below this level, for architectural effect. The accompanying table gives the values of the moments at various points and of the thrust of the arch (both expressed in terms of pl^2) for the two conditions: (1) that the moment of inertia is constant; and (2) that it varies according to the shape of arch ring and legs, as shown in Fig. 1:

Constant moment of inertia	Variable moment of inertia
$M_a = 0.05\ p\,l^2$	$M_a = 0.04\ p\,l^2$
$M_b = 0.048\ p\,l^2$	$M_b = 0.0562\ p\,l^2$
$M_c = 0.028\ p\,l^2$	$M_c = 0.0207\ p\,l^2$
$T = 0.10\ \dfrac{p\,l^2}{h}$	$T = 0.096\ \dfrac{p\,l^2}{h}$

The arches were computed for a roof load, p, of 2,200 lbs. per linear foot. The stresses due to wind were taken into account, but they were not sufficiently large to affect the design. On account of the high stresses occurring in the arch legs a 1:1:2 concrete was used for their construction; for the arch proper a 1:2:4 concrete was used. The effect of the brackets, which support the running track, was to decrease rather than increase the stresses in the arches.

Column and Wall Footings.—Figure 2 is a footing plan of the columns and walls. These footings rest on clay, and were computed for an allowable pressure of 3,500 lbs. per square foot. In general the reinforced concrete footings of those columns which support the arches are 8 feet 6 inches square, although a few of them are 7 feet 6 inches square. Each 8-foot 6-inch footing is reinforced with rods running in each direction, a total of 40 ⅝-inch round rods, 8 feet 3 inches long being used. For the 7-foot 6-inch footings the reinforcement

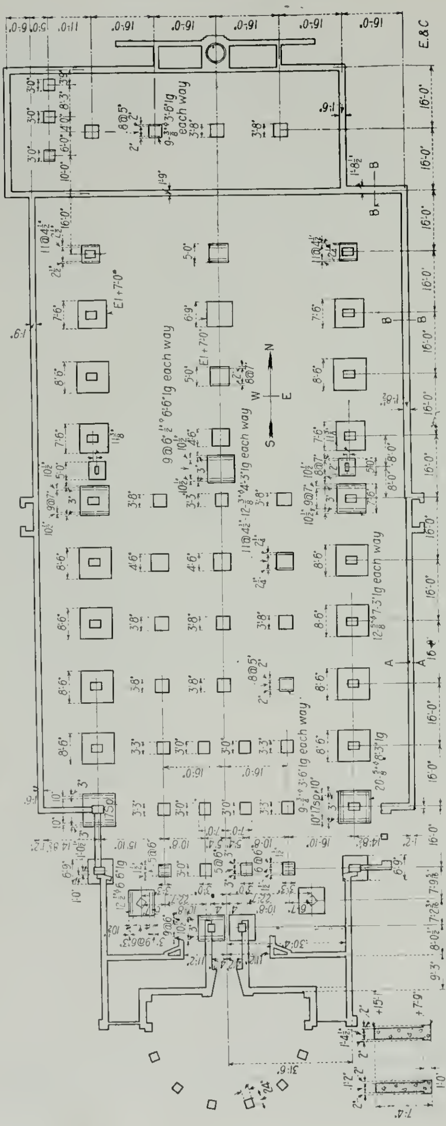


FIG. 2—FOOTING PLAN OF CHICAGO HEBREW INSTITUTE

consists of 24 ⅝-inch round rods, 7 feet 3 inches long. Stubs rods, bent into the footings, are used to connect the footings to the columns.

The details of the wall footings are shown in Fig. 2.

Roof Girders and Slab.—The curved roof over the main portion of the building is of the girder-and-slab type of construction. The roof slab has a thickness of 4 inches, and is reinforced in both directions with 7/16-inch round rods and two ⅝-inch square rods, and with 15 stirrups composed of ¼-inch roof slab, of 12¾ inches. Each girder is reinforced with two ¾-inch square rods and two ⅝-inch square rods, and with 15 stirrups composed of ¼-inch round bars. The front cornice girder is curved both in a vertical and in a horizontal plane.

The roof over the two-story portion of the building is also of the girder-and-slab type of construction, the thickness of the reinforced concrete slab being 6 inches. Figure 3 is the third floor and roof framing plan; elevation 34 feet 4 inches, the roof of the two-story wings and that of the second floor being at the same level. The elevation of the running track, shown in this drawing, is indicated in Fig. 1.

Running Track.—In general, the running track is supported on reinforced concrete cantilever brackets attached to the columns. At the north end of the track, however, some unusual design features are employed. By referring to Fig. 3, it will be noted that the cantilever brackets attached to columns Nos. 6 and 23 each carries (at its end) one end of a girder, the other end of which rests on a column; this girder, in turn supports a part of the track. Columns Nos. 35 and 48 do not extend above the running track. A double cantilever bracket at the top of each of these columns supports the track at these points. Column No. 52 also extends *only* to the running track level; it carries at its top a cantilever bracket, which in turn supports a large section of the running track.

Figure 3 (b) is an elevation of a typical cantilever bracket, the width of this bracket being 14 inches. Figure 3 (c) is an elevation of the double cantilever brackets used at columns Nos. 35 and 48.

First Floor Framing.—Figure 4 shows the framing at the second floor and natatorium floor levels. By referring to this drawing it will be noted that both flat slab and beam-and-girder constructions are used at this level. By referring to section B-B, Fig. 4, it will be noted that, due to changes in the floor level, thin, deep girders are used at these changes in grade. At the line in which column No. 34 is located the girders have a length, center to center of columns, of 16 feet, a depth of 4 feet 8 inches, and a width of 6 inches; while at the line in which column No. 57 is located the girders are 32 feet long, 6 feet 8½ inches deep, and 9 inches wide.

Swimming Pools.—At the north end of the building there are two swimming pools (for location see Fig. 4), each pool having a width, between concrete walls, of 25 feet 4 inches and a length of 60 feet 4 inches. Figure 5 is a plan and side elevation of one of these pools. These drawings, together with sections 1-1, 2-2 and 3-3, illustrate the construction features and the manner of reinforcing the sides and bottom of the pools.

CONSTRUCTION FEATURES

Forms.—On account of the careful designing of the framework and staging, the quantity of lumber used for this work was exceptionally small. Even though the crown of the curved roof of the main gymnasium is about 42 feet above the ground floor, the quantity of lumber used in stagings for the arches and roof slabs was only 4¼ feet B. M. per square foot of horizontal projection.

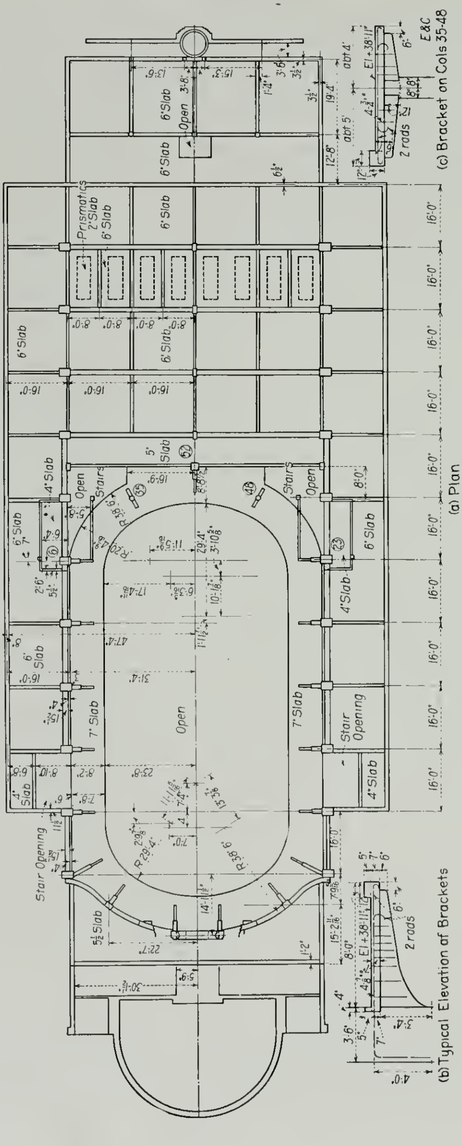


FIG. 3—CEILING OF SECOND STORY, ROOF OF TWO-STORY PORTION AND DETAILS OF BRACKETS SUPPORTING RUNNING TRACKS

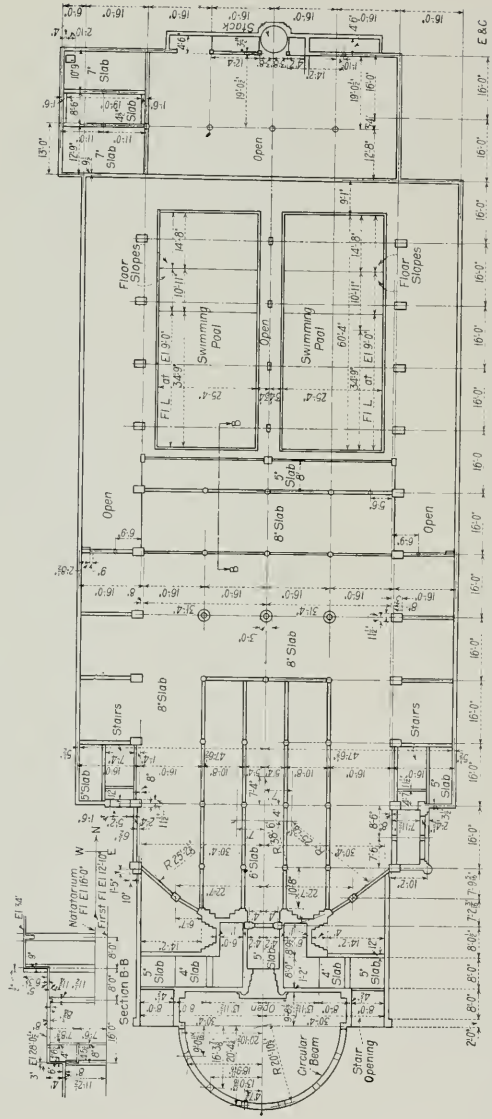


FIG. 4—CEILINGS OF FIRST STORY AND NATATORIUM FLOORS OF CHICAGO HEBREW INSTITUTE

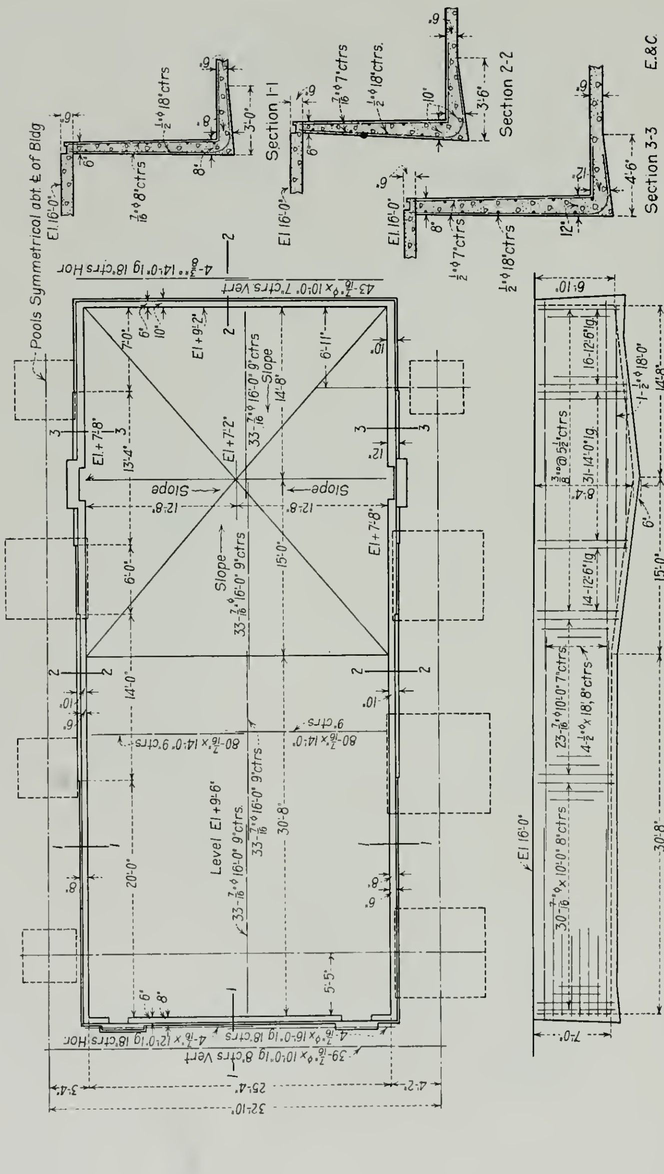


FIG. 5—PLAN, LONGITUDINAL ELEVATION AND PARTIAL SECTIONS OF SWIMMING POOL IN CHICAGO HEBREW INSTITUTE

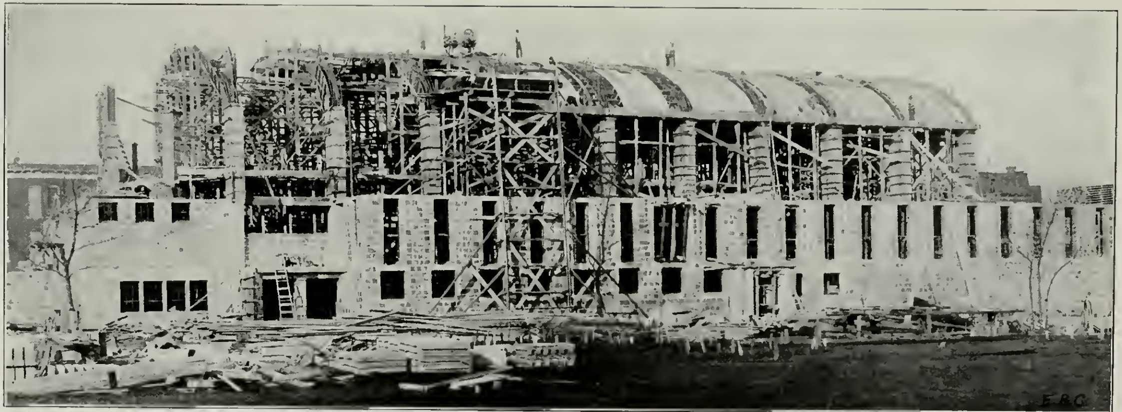


FIG. 6—EAST ELEVATION OF CHICAGO HEBREW INSTITUTE SHOWING ARCH AND ROOF-SLAB FORMS AND STAGING—VIEW ALSO SHOWS MATERIAL CARRIAGE HOIST

The staging under each arch consisted of four towers, each tower being composed of four 4x6-inch timbers, in the form of a 6-foot square, laced with 1x4-inch members to form 7-foot panels. A 6-foot space was left between each of the four towers. The various towers were then braced together to form a rigid system of falsework.

The arch forms were constructed on a 40x40-foot platform, built on the ground at one side of the building. Each form was built in four parts, and hoisted into place. When in place it rested, by means of wedges, on 2x6-inch timbers rough nailed to both sides of the 4x6-inch tower posts. Great care was used in constructing the arch forms to insure that they conform closely to the lines of the arches. For the central slightly-curved portions of these forms the bottoms were formed of two layers of 1-inch boards; while for the sharply-curved end portions four layers of ½-inch boards were used. By using thin boards it was possible to construct these forms both rapidly and economically. The sides of the arch forms were constructed of 1x8-inch boards, placed horizontally, and braced with 2x4-inch vertical pieces spaced about 2 feet on centers. Figure 6 is a view of the structure showing a part of the staging and forms for the arches and roof.

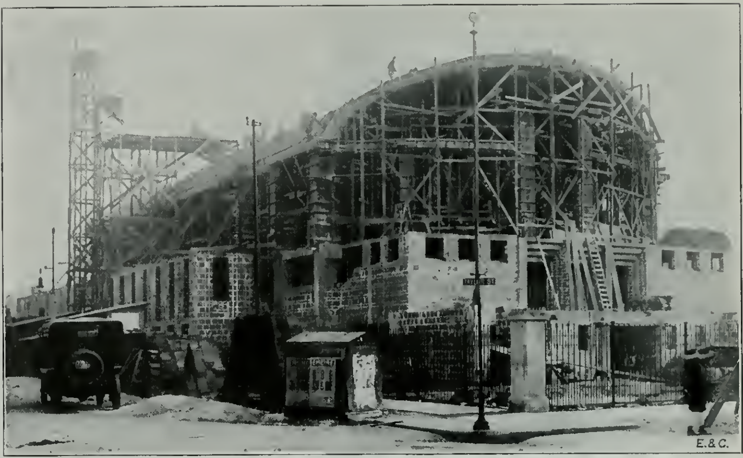


FIG. 7—FRONT AND WEST ELEVATIONS OF CHICAGO HEBREW INSTITUTE, SHOWING CONCRETE PLANT AND FORMS IN PLACE

The forms for the 4-inch roof slab between arches were supported on joists cut from 2x10-inch rough tamarack timber. The joists were placed perpendicular to the arches and were spaced about 2 feet on centers. They rested on 2x10-inch ledges nailed to the tops of the 4x6-inch posts, these ledges thus having a span of 6 feet. At the junction of the arch ribs and roof slab a 5x5-inch fillet was formed, using sheet metal forms for this purpose.

It was necessary to tie together the column forms at each arch to prevent their being forced out of line by the lateral pressure of the wet concrete on the steep slopes of the arch ribs. It was also necessary to provide against the tendency of the wet concrete to flow in the sloping cornice forms. These forms were braced with long 4x6-inch timbers, set with their bases at the 34-foot level. To lessen the pressure caused by the tendency of the wet concrete to flow toward the ends of the arch ribs, each arch was concreted in three sections, on three consecutive days. To insure a firm bond between these sections a high percentage of reinforcement was used at the junctions between sections. The lower portion of each arch, for a length of 18 feet, was so steep that an upper form was necessary to hold the wet concrete in place. This part of the arch form was built in 6x8-foot panels, held in place by spreaders, and wired to the joists.

For architectural effect, the front (Taylor street) wall of the gymnasium follows the line of the running track. At the intersection of this wall with the curved roof (as has been noted) an ornamental concrete cornice is provided, which follows the compound curve of the intersection of wall and roof. The construction of the forms for this cornice required very careful computations, but by using thin boards which could be readily sprung, it was possible to construct these forms with little difficulty. The forms were built on the 40x40-foot platform at the ground level and then hoisted into place and braced.

In constructing the forms for the brackets supporting the running track, sheet metal was used for their bottoms, to insure a smooth, even surface.

In building the forms for columns and girders 1-inch quarter rounds were used at the corners to give a finished appearance.

Bending and Placing Reinforcement.—The main reinforcing bars for the arches were bent on an ordinary bending bench, by means of gas-pipes, to templets made of ½-inch round bars. These were placed in the forms singly, and the ⅜-inch round ties then fastened to the bars by a man working inside of the forms while another man stood at the top of the form and held the bars in the correct position. The position and size of the arch reinforcement are shown in Fig. 1.

Hoist for Elevating Materials.—The lumber and reinforcing steel for the arches and roof were elevated in the special carriage hoist shown in Fig. 6. This hoist had a width of 10 feet and a capacity of one ton. It moved along two parallel tracks, and automatically dumped its load of lumber or steel on a platform at the roof level. The hoist was raised or lowered by means of a cable, operated from the concrete hoisting engine located on the opposite side of the building.

FIG. 8—INTERIOR VIEW OF PORTION OF MAIN GYMNASIUM OF CHICAGO HEBREW INSTITUTE

Concreting Plant and Procedure.—The concreting plant consisted of a ¾-cubic yard batch mixer, equipped with a side loader, discharging into a 20-cubic foot hoisting bucket which in turn emptied into a 1½-cubic yard hopper suspended from the hoisting tower.

In concreting the main arches, a staging was built adjacent to the hoisting tower, and extended from the 34-foot level to the 66-foot level, the latter being about 1 foot above the crown of the arches. This staging supported a runway, about 12 feet wide (see Fig. 7). The concrete for the arches and roof slab was dumped from the hopper into 4-cubic foot wheelbarrows and wheeled to the highest point of the roof and along the comparatively level crown portion. From this position, it was spouted to the lower parts by means of small chutes laid directly on the roof. For all other parts of the structure, the concrete was hauled in carts having a capacity of 6 cubic feet.

The concreting of the arches was done during the period Nov. 2-Nov. 6, 1914. Although the temperature was around 50° F., a number of salamanders were supported at a distance of about 6 feet below the roof surfacing and kept in operation both day and night to hasten the setting of the concrete. The arch forms were removed about the middle of December.

Testing of Arch.—In February, 1915, one arch was tested, by order of the city building department, by loading the half span with twice the live load used in its design. This loading test was quickly and economically conducted by suspending, at three points along the half span (7 feet 8 inches apart), a cradle on which was piled the required load, consisting of 2x10-inch by 14-foot planks. This cradle was swung from the arch a few feet above the ground floor by means of a ⅝-inch cable about 300 feet long, the cable being passed successively around the timbers of the cradle and the loading points of the arch, through holes cut in the roof slab. "Crosby" clips were used at connection points, to prevent an unequal distribution of the applied load.

The test was made while the staging was still in place so that measurements to determine possible deflections could be made quite accurately. Although careful measurements were made, there was no appreciable deformation of the arch or change in the distance between columns at the springing lines. The difference in temperature between that existing in the morning and afternoon caused a rise and fall of the crown of about 1/16 inch.

Removal of Forms and Finishing.—The settlement of the crown when the arch forms were removed was between ⅛ and 3/16 inch. The staging was left in place until the 3-inch pipes for the gymnasium apparatus and electric light fixtures were installed and until after the ceiling was painted.

The painting of the ceiling consisted of applying three coats of white cement paint. All floors have a granitoid finish, the surface of which was covered with sand and kept wet for a week after being laid. Figure 8 is an interior view showing the surface finish of the concrete, and the interior brick finish of the tile walls. The view also shows a portion of the arches and running track.

Swimming Pools.—The two swimming pools (for details see Fig. 5) were built in four working days, each pool being completely concreted in one day. They were constructed of 1:1½:3 concrete, heavily reinforced, and were waterproofed with three coats of "Ironite." The pools were lined with white mosaic tile, and gutters were constructed of cement.

Stairs.—The reinforced concrete stairs were constructed after the building was enclosed, and finished immediately after being concreted. Some of the stairs, which have 4-inch brick walls for railings, were built by first concreting the inclined slabs, then constructing the 4-inch walls, and finally placing the ready-made steps in position. The remaining stairs were built in the usual manner.

Railing Posts for Running Track.—The railing posts along the outer edge of the running track were cast in advance of the construction of the 7-inch track slab. The reinforceing bars in these posts were extended beyond the bases and bent into the plane of the slab. The posts were then set in place and the running track slab concreted.

* * *

California an Art Center

RATHER interesting is the fact that eastern Massachusetts and Southern California, on opposite sides of the continent, should be conspicuous today for triumphs in the realm of esthetics that probably neither the conscience-impelled Pilgrims and Puritans nor the gold-seeking "forty-niners" supposed would become part of the ultimate civilization of the two coasts, says Christian Science Monitor. Equally important to note in connection with the achievements in the plastic arts is their distinct, authentic, characteristically native quality, but little influenced, if at all, by any prevailing fashions in Europe or in the quasi-American city of New York.

How far climate, scenery, and the survivals of aboriginal and Spanish art have shaped the California school Mary Austin tells in the April Century. It is a convincing, persuasive argument, with its references to the classic cases of Greece and Italy, as showing the relation of the external world to the art that flowered out in Athens and in Rome. Where color abounds in sky and on land, where there is clean-cut definition of landscape forms, where agriculture and its fruits may be made contributory to the pageantry of human experience formally arranged, and where there appears to be a never-ceasing impression upon the beholder of the vitality of nature, there, according to this California interpreter, the creative impulse always flowers out in art.

To these influences, native and inherent, as might be said, in the very physical structure of the region, and bound to influence all who dwell there more or less, add any imported influences of an educational or broadening sort, such as in the course of time may come from contact with Japanese and Chinese art and artists, or as must be latent in the art exhibits of foreign nations at the San Francisco and San Diego expositions, and it should not surprise the nation if out of the southwest and the west were to come some of the greatest of painters, sculptors and architects. The inspirational influence of the total environment has already registered itself in verse and in fiction, and in nature interpretation by such a genius as Muir.

* * *

The Owner and His Building

JUST how far shall the owner interest himself in the planning, construction and materials of his building so as to insure the most satisfactory results in the completed structure?

All of us are familiar with the bromidic expression—"No one ever builds who wouldn't make changes the next time." The many extras that accumulate in building operations are further evidence of the lack of complete understanding between the owner, the architect and the contractor. Such conditions are always unsatisfactory to all concerned. Surely the blame for this situation cannot be placed with the competent architect and contractor who, being trained and skilled in their lines of work, are able and desirous of securing perfect results.

Is not the trouble, after all, largely due to the owner's lack of knowledge or attention to the details of planning, construction and materials that go to make up his building? The architect attempts to translate into finished work, the indefinite idea of a building which an owner has given to him in more or less impractical and untechnical language. Needless to say, it is the duty of the owner to carefully review the plans and specifications to see that he is securing at every step just what he desires. He should thoroughly investigate the materials and equipment that go into the various parts of the building. By actually being familiar with these products he knows how the completed work will look and thus avoids subsequent changes and extras.

The architect is, no doubt, in all sincerity providing what he thinks is best, but cannot of necessity know the individual tastes or requirements of the particular owner. The conscientious architect welcomes a knowledge of building products on the part of his client in order that he may be sure that he is providing just what is wanted.

The interest displayed by owners in the materials that go to make up their buildings is daily growing and becoming more evident. Many large companies and manufacturers maintain special organizations and conduct tests before choosing the material for their buildings. An instance of this kind is furnished in the case of the refitting of the Edison Plant at Orange, New Jersey. In this case all the various competitive materials were placed side by side and searching comparisons were made between them. In one instance a special building was constructed in order to test out the fire-resisting qualities of competitive products. Mr. Thomas A. Edison, himself, took a personal interest in these matters.

Needless to say, a general understanding of building methods and materials on the part of the owner will insure permanent satisfaction with the completed building. It will mean the elimination of needless changes and burdensome extras. It will encourage the betterment of building products generally, due to the knowledge that the owner is sufficiently well-versed to recognize the value of quality in the various products. Architects, contractors and manufacturers all welcome the growing interest taken by owners in the different phases that make up building construction. —Exchange.

Painting Structural Steel

THE following recommendations are abstracted from a report of the Committee on Iron and Steel Structures at a recent meeting of the American Railway Association:

Scientific research and numerous practical tests have demonstrated the fact that certain paint pigments, though possessing excellent moisture-repelling properties, will actually stimulate corrosion when applied directly to steel surfaces, while certain other pigments have a tendency to restrict and repress corrosion when used for primers and foundation coats. Because of this, we divide the pigments into rust retarding, and air and moisture excluding groups, using the first for priming and contact coats, and the latter for finishing and exposed outer surfaces.

A rust retarding coat may be suitably compounded from red lead mixed with pure linseed oil. The average stock mixture may consist of from twenty-five to thirty pounds of red lead to the gallon of oil. This mixture can then be reduced to the proper consistency at the time of application. A small amount of turpentine added to this brush coating will greatly help in its manipulation and will also provide for proper penetration. Red lead should always be mixed at the time of its application, for it settles quite readily, as it is an extremely heavy pigment.

Natural oxides have also grown to be very good for priming purposes, and very satisfactory results are recorded from their use. A number of consumers favor oxides because of their easier application and the less expert class of labor which is required to apply them. A saving of from 5 to 10 per cent, as compared with red lead paint, can thus be effected. Some concerns are using a combination of red lead and oxide and make good reports regarding it.

It appears to be a universal opinion that linseed oil is not a desirable material for the prime coating of metals when used without the addition of pigments. A foundation coat of linseed oil is very often the direct cause of peeling and blistering of the other several coatings applied over it.

Paints containing the same kinds of pigments as for shop coatings, can be successfully used for the first field coat, providing it is covered with another elastic outer coating. If that is not done. paints suitable for finishing coats should be applied, and the first field coat omitted. Red lead or oxide priming should be darkened for this coat by adding carbon or lampblack in the proportion of 90 to 95 per cent of the reds and 5 to 10 per cent of carbon mixed.

Carbon, lampblack and graphite pigments, singly or mixtures of them, have given best satisfaction as outer surface and finishing paints. These, combined with some inert and reinforcing pigments, according to special formulas, form the basis for nearly every satisfactory brand of metal paint on the market. The addition of some high-grade gum-like Kauri improves a finishing paint greatly, producing more elasticity, resistance and life. It is, of course, just as essential that the oils entering into the makeup and composition of the various paints are of the proper kind and quality, as that the selection and composition of pigments be properly made.

Paints containing tar, or those with a tar base, should not be used on steel structures exposed to the sun and weather, as tar-paint films rapidly check, crack and "alligator."

When for any reason it becomes necessary to repaint an iron or steel structure, the paint should never be applied in wet or freezing weather, and the surface should be freed absolutely from all scale, rust, dirt, etc.

Victory Against Billboards in Illinois

THE Supreme Court of Illinois has recently delivered an interesting decision on the regulation of billboards and outdoor advertising.

In the case of Cusack Company vs. City of Chicago, et al., the court held valid the section of the municipal ordinance of Chicago, which requires frontage consents of a majority of the property owners in residence blocks, for the erection of billboards and signboards, on the ground that the city had power to legislate on the subject of regulation of billboards, and that this ordinance was a reasonable exercise of such power. A petition for rehearing has been filed by the billboard company, largely, it may be presumed for purposes of delay, as there is no reason to believe that the court will reverse itself.

This decision was not based on any revolutionary principle of allowing aesthetic considerations alone to empower the city to regulate outdoor advertising. The Illinois court, as in most other states, has hitherto refused to consider offenses to the eye as subject to control in the same manner as those to the ear and nose.

The decision is, however, of national importance as a precedent, because in its full application it means that a municipality can absolutely prohibit billboards in residence districts on utilitarian grounds, if it so desires. The requirement of frontage consent is merely the grant of a privilege to property owners to waive the right of prohibition of such structures. It would be held discriminatory and unconstitutional as depriving property-owners of their property without due process of law, if it were not based on the right of the municipality to entirely prohibit boards in the districts described. This right necessarily follows from the decision, and is based on established law protecting the health, comfort, and security of citizens, the application of which has, however, been broadened to such an extent that the municipality should be able to exercise much stricter regulation than heretofore.

No testimony was introduced in the case relative to aesthetic considerations, although the particular board on which the case arose was flagrantly offensive to the public because it was situated at a turn on Sheridan Road, north of Lincoln Park, and cut off the view of two or three miles of the shore of Lake Michigan from all those going north on that most important boulevard.

The evidence showed that fires had been started from the accumulation of combustible material behind boards; that the boards afforded protection to disorderly and lawbreaking persons, and that residence districts are not so well protected against fire and crime as business districts in the city of Chicago; that the darkness behind boards contributed to immorality, and that filth and nuisances are permitted to exist in the rear of surface billboards, which disseminate diseases. It appeared also that women and children unaccompanied frequent streets in residence districts more than in other districts.

The Supreme Court held that all these matters could be gone into in determining the reasonableness of the ordinance, although the lower court, in enjoining the city from removing the board in question, had shut out some of this evidence as immaterial.

* * *

The Harvest

What reaps the Artist from the joyous seed
Sown of his soul?
What price but the joy of the sowing done?
The rest is the love of his precious Art
That is echoed back from another heart
A hundred fold. —Tyler McWhorter in Art and Progress.

Brick and Tile Output Valued at $130,000,000

THE great brick and tile industries of the United States in 1914 produced material to the value of $129,588,822. This was a considerable decrease, according to the United States Geological Survey, from the value for 1913, which was $143,296,757, but as compared with the output for a number of years preceding it shows a general growth for the industry. Compared with 1911, the figures for 1914 show an increase of $1,871,201; compared with 1908 they show a gain of $21,526,615.

The principal clay product, considered as to value, is common brick, the value of which comprised over one-third of that of all brick and tile products in 1914. The quantity reported for 1914 was 7,146,571,000, valued at $43,769,-524, a decrease of 942,219,000 brick in quantity and of $6,365,233 in value from 1913. The average price per thousand of common brick declined eight cents, from $6.20 in 1913 to $6.12 in 1914. Illinois was the leading common brick producing state in 1914, reporting 941,343,000, valued at $4,898,698. This was a decrease of 214,137,000 brick in quantity and of $1,547,123 in value. This decrease may be in some measure due to strikes in Chicago, the principal brick producing center of the state.

Common brick is made in every state of the Union and in the District of Columbia and in Porto Rico.

The second clay product in importance is fire brick, the output of which was valued at $16,427,547 in 1914, compared with $20,627,122 in 1913, a decrease of $4,199,575. Fire brick is used principally in the iron and steel and coke-making industries and its production naturally rises and falls with the fluctuations in these industries.

Sewer pipe, third product in value, with an output worth $14,014,767, or 10.81 per cent of the total, was made in 28 states in 1914. The leading states in the production of sewer pipe in 1914, named in the order of their importance, were: Ohio, Missouri, California, Pennsylvania, Illinois, Georgia, Indiana, and Iowa. Ohio's output was valued at $4,691,719 in 1914, a decrease of $467,829 from 1913. Missouri, on the other hand, showed a small increase, $22,347, from $1,213,889 in 1913 to $1,236,236 in 1914. This output in California decreased from $1,032,094 in 1913 to $959,193 in 1914, a loss of $72,901. The decrease in the total value of sewer pipe in 1914 compared with 1913 was $857,336.

Production of vitrified paving brick or block, valued at $12,500,866, or 9.65 per cent of the value of all brick and tile products in 1914, was reported from 28 states. This is the only important clay product whose output increased in value in 1914. The increase was $362,645, or 2.99 per cent over 1913. The quantity of vitrified brick decreased 27,356,000 brick from 1913, and the average price per thousand increased from $12.66 in 1913 to $13.42 in 1914. Ohio was the leading state in the production and value of vitrified paving brick in 1914, reporting an output of 293,381,000 brick, valued at $3,682,230, or $12.55 per thousand, a decrease in quantity of 11,010,000 brick, but an increase in value of $373,255 over 1913.

There were 810,495,000 front or face brick marketed in 1914, valued at $9,289,623 or 7.17 per cent of the total, a decrease of 17,170,000 brick in quantity and of $324,515 in value. Front brick was reported from 41 states in 1914. Pennsylvania leads in production and value.

Drain tile ranked sixth among the brick and tile products in value in 1914.

Fireproofing, including hollow building tile, or block, ranked seventh among brick and tile products in value in 1914. It was reported to the value of $8,385,-337, or 6.47 per cent of the total, a decrease from 1913 of $234,879. Ohio is the leading state, reporting fireproofing to the value of $2,200,544, an increase of $84,683 over 1913. New Jersey was second and Iowa third in 1914, New Jersey reporting $1,599,295, a decrease of $493,075 from 1913, and the latter $1,083,397, an increase of $320,834 over 1913.

VALUE OF BRICK AND TILE PRODUCTS IN 1914

	Value.	Percentage of total.
Common brick	$ 43,769,524	33.77
Vitrified paving brick	12,500,866	9.65
Front brick	9,289,623	7.17
Fancy or ornamental brick	124,459	.10
Enameled brick	1,075,026	.83
Drain tile	8,522,039	6.58
Sewer pipe	14,014,767	10.81
Architectural terra cotta	6,087,652	4.70
Fireproofing	8,385,337	6.47
Tile, not drain	5,705,583	4.40
Stove lining	520,585	.40
Fire brick	16,427,547	12.68
Miscellaneous	3,165,814	2.44
Total	$129,588,822	100.00

* * *

Oil-Mixed Concrete for Damp-proofing

AFTER extensive laboratory and service tests the Department of Agriculture has secured results which appear to establish definitely the value of oil-mixed concrete for damp-proof construction. Detailed results of these tests, which were carried out in connection with the work of the Office of Public Roads, are contained in the new bulletin, No. 230, of the Department, entitled "Oil-Mixed Portland Cement Concrete." Briefly summarized, the conclusions to be drawn from them are that the admixture of certain mineral oils in small proportions, not to exceed 10 per cent of cement used, does not lessen the tensile strength of mortar; that the decrease in the compressive strength of mortar and concrete is not serious; that concrete mixed with oil takes much longer to set hard, perhaps twice as long, but that the increase in strength is nearly as rapid in the oil-mixed material as in the plain concrete. The use of oil does not make the concrete impervious to heavy water pressure, but it does make it practically nonabsorbent under low heads.

The value of oil-mixed concrete is said to be particularly great in the construction of basement floors and walls, watering troughs, cisterns, barns, silos, and in all parts of concrete structures that are to be made damp-proof.

The oil should in no case exceed 10 per cent of the weight of the cement and for the most part, 5 per cent is all that is necessary. Since a bag of cement weighs 94 pounds, 4.7 pounds of oil, or about 2½ quarts, should be added for each bag of cement used in the mixture. The sand and cement should be first mixed with the proper amount of water into a stiff mortar, to which is added the correct amount of oil, and the whole mass again thoroughly mixed until all traces of oil have disappeared. Particular care should be taken to insure that the oil is thoroughly incorporated in the mixture and the time of mixing should be practically double that when the oil is not used. For this reason a continuous mixer should not be used in oil-cement-concrete work, as it is difficult with this type of machine to increase the time of mixing sufficiently.

The kind of oil is also important and the following technical specifications are suggested in the bulletin in order to prevent the use of certain oils which might tend to impair the strength of the mortar or the concrete.

(1) The oil shall be a fluid petroleum product and shall contain no admixture of fatty or vegetable oils.

(2) It shall have a specific gravity not greater than 0.945 at a temperature of 25° C.

(3) It shall show a flash point of not less than 150° C. by the closed-cup method.

(4) When 240 cc. of the oil is heated in an Engler viscosimeter to 50° C., and maintained at that temperature for at least three minutes, the first 100 cc. which flows out shall show a specific viscosity of not less than 15 nor more than 30.

(5) When 1 part of the oil is shaken up with 2 parts of hundredth normal caustic soda, there shall be no emulsification, and upon allowing the mixture to remain quiet the two components shall rapidly separate in distinct layers.

For practical use the addition of oil will be found particularly useful in the construction of basement floors and walls. Many of these now in existence are continually damp and such a condition may be remedied by the application of an oil-mixed mortar coat to the oil surface. A mortar composed of one part of cement and two parts sand and containing 5 per cent of oil should be sufficiently non-absorbent for this purpose.

Watering troughs and cisterns made of oil-mixed concrete should also prove of considerable practical value in the conservation of water. In the construction of barns, where oil-mixed concrete is used, the interior will be noticeably drier than when ordinary concrete is used. Owing to their durability, cleanliness, and resistance to fire, concrete barns are becoming more and more popular, but they suffer from the disadvantage that during a long beating rain the side walls are inclined to absorb much moisture, which ultimately penetrates into the interior. The addition of oil to the extent of 5 per cent of the weight of cement in the concrete used in the side walls obviates this objection. Barn floors can also be constructed in the same way with advantage. A damp-proof floor is warmer because of the lack of evaporation from its surface, and it is also more sanitary than an ordinary concrete floor because of its non-absorbent character.

There are, of course, any number of other types of buildings and structures of all sorts in which oil-mixed concrete may be used advantageously, or, if this is not necessary, a coat of oil-mixed mortar may be applied effectively.

Attention is called, however, to the fact that extreme care in proportioning, mixing, and placing the concrete is absolutely necessary if the addition of any water-proofing agent is to be of value. The process of mixing oil with concrete has been covered by a public patent so that any one is at liberty to use it. The methods of using this material are discussed more fully in the bulletin already mentioned.

* * *

Will Mixing Concrete Too Wet Cause Its Failure?

IN an interesting discussion of this subject published in a recent issue of Concrete-Cement Age, Mr. C. H. Fuller, an engineering-contractor of Corinth, Miss., contributes the following:

"In the earlier days the tendency was to mix all concrete too dry and sidewalk and concrete block people still adhere to that practice, with the result that their products do not attain the strength of the wetter mixtures. Now the tendency, owing largely to the chuting systems of deposition in forms, is causing the pendulum of opinion to swing in the other direction and many contractors are mixing too wet, something that one is easily tempted to do because it facilitates the handling of the material.

"Mixing concrete is a chemical process and if sufficient water is not added at the time it is mixed, the cement not only fails to become thoroughly mixed with the balance of the material but from lack of water at the initial moment fails to attain the adhesive strength it should. On the other hand the addition of too much water causes the cement to segregate and separate from the heavier material and this is especially true in chuting systems. The exact proportion of water causes it to adhere and cling to the heavier material until it is all deposited in an even mass in the forms and from its weight the excess of moisture is removed. To get perfect concrete, just enough water should be added to make a thoroughly creamy consistent mixture in which every unit of the heavier material is well coated with cement and in which the heaviest stones will float and set without settling to the bottom. This kind of a mixture is easy to tamp, does not flow quite so readily in the chutes, requires more mixing and has a tendency to clog the mixer and tools but produces very little sweating or leaking of forms. While I have not had an opportunity to test samples of such concrete for comparison in the tensile and the crushing machines, I am convinced from observations in cutting holes in walls and mass masonry and in the destruction of concrete structures that the evenly mixed concrete is the strongest, and no concrete can be moved from the mixer and deposited in the forms and remain evenly mixed if there is too much water in it.

"On any large job, where the operations were sufficiently diversified, any one who knew just what he was looking for and equipped with a good camera would in a few days of watching pick up a number of photographs, the comparison of which would convince any rational minded man that the quantity of water plays an important part in the mixing of concrete. With a dozen or more photographs, such as I have in mind, I believe that I could put up a convincing argument along this line."

* * *

Cleaning Glazed Terra Cotta Ornaments

A painter in Pennsylvania desirous of ascertaining how to clean white glazed terra cotta ornaments on the exterior of a building which had been badly stained by smoke wrote to the Painters' Magazine for the desired information and the following suggestions were offered in reply:

"To remove the smoke make a stout lather of soap and water and add some ammonia, and apply this to the ornaments with a soft brush. Let it remain for a little while, but before it becomes dry brush it over the whole surface with a good scrubbing brush, taking care to get into the figures at every angle, then sponge off with clean water. If the smoke stains are obstinate, the addition of finely powdered pumice to the lather and good brushing will remove them. Other stains may be removed by the use of coal-tar benzol or pure spirits of turpentine on a rough cloth.

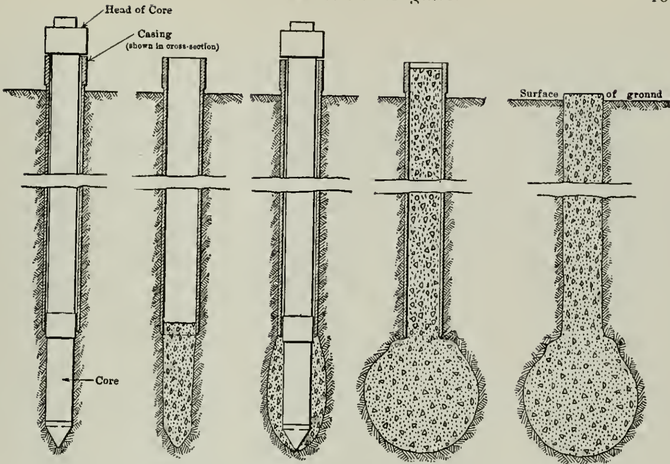
"When using pumice it is necessary to have the finest grade, known as flour of pumice, to keep the glazed surface from being scratched or dull the luster of the glaze."

* * *

There are three things which never return: time, a spoken word, and a neglected opportunity.

SOUTHERN PACIFIC RAILROAD STATION, OAKLAND, CALIFORNIA

FOUNDATION OF U. S. SUB-TREASURY BUILDING, SAN FRANCISCO
Showing Concrete Pedestal Piles



SHOWING METHOD OF FORMING PEDESTAL PILE

About Concrete Piling

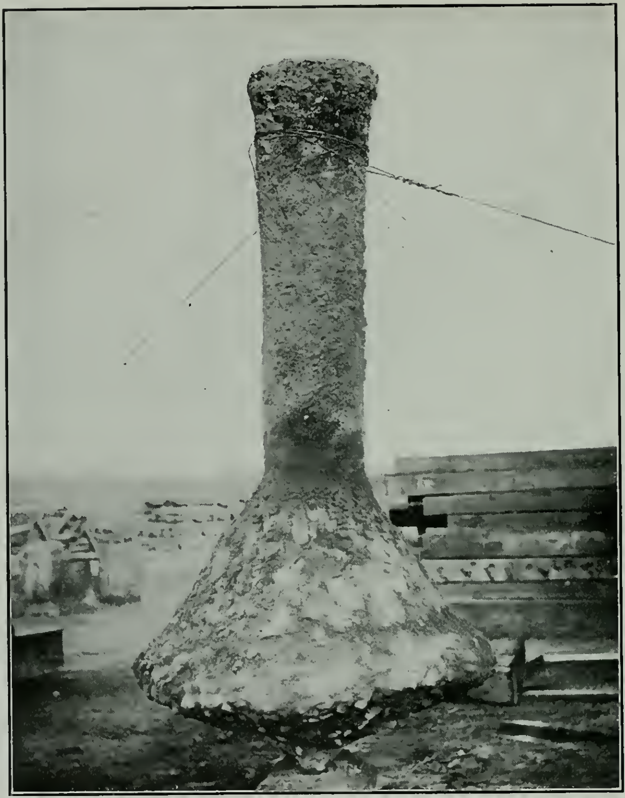
By F. WEBER, JR.*

CONCRETE piling is a child of cheap cement. It was not until the late '90s (when the cost of cement began to decline) that the inventive minds of America and Europe turned their attention to the substitution of concrete for wood in this long-used method of foundation construction.

It may not be too rash to predict that historians will refer to the period through which we are now passing as the "Cement Era." The marked improvement and economy in the manufacture of hydraulic or Portland cement, together with our present knowledge of how to combine it with steel, has made it an economical substitute for almost all types of permanent building construction. Conforming with the history of all widely adopted structural improvements, low cost, or marked advantages resulting in eventful economy, must be attained before Yankee ingenuity will give itself full swing.

It is probable that as yet we have not more than passed within the gates of the field of usefulness of reinforced concrete. Although rapid strides have been made in the understanding of its theories of design, there is yet much to learn about its adaptability. Furthermore, there is a mental impedence or prejudice against the new or unprecedented, which takes years of experience and education to entirely remove. It is interesting in this particular to observe that, although Europeans (I speak now, particularly, of French, English, German, and Italian engineers) are more conservative than Americans in most engineering subjects, they have, nevertheless, shown themselves most enthusiastic in adopting, and more versatile in applying, reinforced concrete. While French and English railroads are building long-span bridges of built-up reinforced concrete trusses, certain large railroad corporations in this country have not even given recognition to reinforced concrete, or used monolithic concrete for other than heavy retaining walls and buttresses. Almost the same statement may be made concerning the use of reinforced concrete in wharf and bulkhead construction. Wharves in England, France, and Germany are largely constructed of reinforced concrete, while in this country the number of important structures of this character may be counted on the fingers of one's hands.

*With McArthur Concrete Piling Company, San Francisco.



EXCAVATED PEDESTAL PILE
(One of 1361 driven for a five-million cubic foot gas holder, for Lynn Gas & Electric Company, Lynn, Mass.)

The pre-molded type of pile, however, has a wide field, particularly in water work or foundation construction in which the pile projects above the ground and is consequently subjected to lateral strains.

The molded-in-place type of pile, which is essentially a foundation or weight-carrying pile, is below illustrated.

The principal cast-in-place pile, known as the "Abbott" or pedestal pile, was invented by Mr. Hunley Abbott. This consists of driving a pipe or casing having an interior core. The theory of this pile is that penetration is secured to a hard-pan or substantial stratum, upon which rests the point of the core. The enlargement at the base of the pile is formed by ramming the concrete into the opening left by the removal of core and casing before the pipe itself is pulled up.

Timber piling for the foundations of buildings is not a new type of foundation for San Francisco. Owing to the vast amount of filled ground, as well as natural soil conditions being unsuitable to other types of foundation, it has been necessary to construct this type of foundation in this city.

It is not the purpose of this article to go into the engineering features of this class of work nor to go into any exposition of pile driving methods. There is one type of foundation however that engineers and architects are not as familiar with as they should be. The reason for this is that construction methods are fairly well fixed and any new method is a matter of progression. That particular method is the one used in driving the Pedestal Concrete Pile as executed by the MacArthur Concrete Pile and Foundation Co.

This type of foundation was used for the Fireman's Fund Insurance Building, San Francisco, illustrated in the August number of The Architect and Engineer. The original plan called for the driving of 401 wooden piles, but a new design was authorized and the Pedestal Pile adopted. Below is given a comparative statement of the relative costs of the two types. It can be readily seen that an owner can secure a concrete foundation for less money than a wooden pile foundation costs.

TIMBER PILING:		
401 Timber Piles, 20 feet, @ $7.25 each	$2900.00	
Concrete Capping, 353 yards, @ $6.50 per yd	2294.00	
Steel Reinforcement, 23 tons, $50.00 per ton	1150.00	
Excavation, 479 yards, @ $1.00 per yard	479.00	$6823.00
PEDESTAL CONCRETE PILES:		
154 Concrete Piles, 20 feet	$4250.00	
Concrete Capping, 177 yards, @ $6.50	1150.00	
Steel Reinforcement, 13 tons, $50.00	650.00	
Excavation, 243 yds., $1.00	243.00	$6293.00
Credited to owner for footage not driven, 220 feet, @ 40c		$ 88.00
ACTUAL COST TO OWNER		$6205.00

* * *

The Use of Sandstone in Building

ONE of the varieties of stone that has been in important use for structural and decorative purposes ever since the dawn of civilization is sandstone. This is of very wide occurrence, being found in almost every country, and it has such diversity of color and texture that it would naturally be chosen for architectural use, says Stone. Besides its beauty, sandstone has been commended to the builder by its great durability and its resistance to attacks by fire and the acids of the atmosphere. Many of the most notable buildings that have come down from antiquity are of sandstone. Temples and statues in ancient Egypt were cut in this material, although the patient craftsmen were just as willing to carve limestone, granite, or even the intractable basalt and porphyry.

In Persia and the various countries of Asia Minor, gigantic structures were reared in sandstone, the ruins of which have survived to awaken our admiration and wonder. The remarkable rock-cut temples and tombs of Arabia Petra are carved entirely from great cliffs of sandstone. The stone is a beautiful and delicate pink in color, with occasional markings in yellow, and the effect of rich carvings in such a material can scarcely be imagined.

In later times, sandstone was used very generally for cathedrals and churches in England and on the Continent. This made it possible to produce effects not only in stone of yellow and gray but also in brown, pink and red, and striking contrasts were available. It is only within the past few years that the present generation has learned the lesson of the excellent effects of polychromatic construction which might have been drawn long ago from the work of our forefathers. The varying colors of marble and sandstone enabled them freely to apply polychromy, both structural and decorative.

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THE GRANITE CUTTERS' STRIKE AND WHAT IT MEANS

Construction work on the San Francisco city hall is going along satisfactorily with the exception of the granite work, which is being held up on account of the granite cutters' strike. This is the poorest time in the world to make demands upon an employer. It will be a long time before the granite cutters will have as much work in prospect as now and this work will go to the terra cotta people if the granite workers refuse to compromise. Not only the city hall, but the $800,000 B. I. Wheeler hall in Berkeley, and the $1,000,000 Carnegie library in San Francisco, will use granite if the work can be carried on at a reasonable cost. But if the unions are going to demand wages which their employers consider beyond their means, the architects will be asked to substitute stone or terra cotta for the granite.

When the cutters quit work on the San Francisco city hall, there was a strike at Barre, Vermont, where cutters received only 42c an hour, as against 62½c in California. The Barre strike has been settled, the men receiving a minimum of 45c an hour, and, after March, 1916, 50c an hour.

In a statement issued with copies of the union's demands, their ultimatum and the Barre settlement, the employers say:

> Weather conditions in California permit men to work in the open a greater number of days than is possible in any section of the country, and the earning power of a granite cutter in this state is greater than elsewhere. Through various causes, wages in this state have been advanced in many lines to a point where the welfare of the various trades is greatly endangered. The advance of 60c a day, in addition to the other conditions demanded, still further endangers the continuance of the use of granite as a building material.

WHOSE PROPERTY ARE PLANS?

School boards, in common with other public authorities in certain localities, have erroneous ideas concerning the ownership of architects' plans and specifications.

Architects' plans are universally considered the property of their authors, to be used in the erection of the building, or buildings, for which they were specifically prepared. In the language of architects, plans are "instruments of service" the use of which only is paid for in the commission which the client pays on the total cost of a structure.

The American Institute of Architects and other architectural organizations have established a professional custom which, in the case of private clients is definitely expressed in contracts that bind the architect, on the one hand, to present an original plan for each building, and that grant to the client, on the other hand, the use of the plan only for that specific building. In general the same understanding, frequently expressed, but more generally implied, exists between public municipal, state and school authorities and architects.

There are many reasons which support the rule of plan ownership. A plan as such is not merely a drawing; it is a record of an idea which is to be translated in terms of brick and stone and other materials, into a building. Its use is wholly unlike the use to which an ordinary commodity is put. A plan mirrors the artistic and practical ability of the architect as applied to the solution of a given building problem. It reflects his individuality, his training and his experience. Whatever excellence it may have can only be judged in the result—the building which it produces.

The School Board Journal says it is not in sympathy with the outright purchase of schoolhouse plans for schoolhouses. We agree with the Journal that there can be no progress in school architecture, commensurate with the educational, hygienic and artistic needs of the children, unless each new schoolhouse is erected from plans drawn as the result of a study of the specific needs and conditions of the site and children. The duplication and the pirating of plans are evils second in their seriousness only to the "plan factory."

THE LATE BIDDER

A case of interest to the "last minute bidder" is now before a New York court. At a recent letting by the Public Service Commission of New York City, after the bids had been closed at the specified time an additional bidder appeared and offered to submit a proposal. The contractor stated that he had been held up on account of a heavy rainstorm and by a block in the subway. The chairman of the commission refused to accept the bid on the ground that it was not submitted at the proper time. The other bids were then opened. Later on the late bidder served a notice upon the commission to show cause why a writ should not be issued directing the commission to accept his bid, he stating that it was lower than all the others.

A similar case occurred recently in California when a San Francisco firm bid on a Woodland school. The bid was sent by registered mail and through a clerical error of Uncle Sam the letter went to another town and did not reach the school board in Woodland until after all the other bids had been opened. It developed later that the belated bid was the lowest, but the contract had already been let, and although the case was taken to the District Attorney, the San Francisco firm was given no redress.

BETTER TIMES IN SIGHT

Contractors have had their troubles this year. Construction undertakings in certain lines have not been as abundant as could be wished. Competition on many jobs has been great and work has gone at prices that will make the successful bidders hustle to break even. There have been few instances this season where proposals were rejected because they were in excess of the engineer's estimates. In fact, on many jobs the bids have been 20 to 40 per cent or even more under the figures of the engineer. Since the first of July, however, the work has been going at better figures, and the "get it at any price bidder" seems to have learned his lesson.

With the Architects and Engineers

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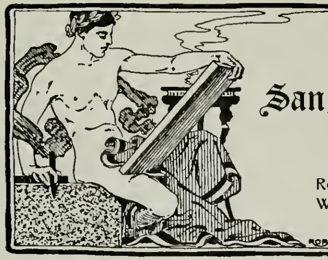
Southern California Residence

Myron Hunt of Los Angeles has prepared plans for a two-story, basement and attic country residence for E. M. Fowler to be erected near Chino. Construction will be fireproof, with brick walls, concrete floors and hollow tile partitions. The house will cost in the neighborhood of $100,000.



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Wednesday of Each Month

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Oakland Architect Has Much Work

After a lull of several months, C. W. Dickey, Central Bank building, Oakland, reports much new work on the boards. Mr. Dickey is designing a building for the Stockton Savings Bank which will cost approximately $75,000. He was awarded this commission in competition with some eight or ten other architects. Mr. Dickey is also making plans for a class "C" reinforced concrete residence to be erected in Piedmont for Miss Juliette Alexander. The cost will be $40,000. Mr. Dickey has also planned a one-story store building for which contracts already have been let.

San Mateo Residence

Architect Chas. Peter Weeks has prepared plans for a handsome country residence to be erected in San Mateo for Mr. E. J. Tobin. Mr. Weeks has completed preliminary sketches for a three-story reinforced concrete factory to be erected in San Francisco for the Bollman Company. Working drawings are now being made. Construction will be largely of reinforced concrete.

Herold Gets County Hospital

R. A. Herold of Sacramento, who has made plans for most of the county buildings in that city, has been commissioned to prepare drawings for a group of county hospital buildings that eventually will cost close to $400,000. The buildings are to be built in units, the first to be constructed being a ward building and a home for nurses. These structures will be erected within the next few months.

Smith O'Brien Busy

Smith O'Brien of San Francisco has prepared plans for a one-story class "C" commercial garage to be erected on Valencia street, between McCoppin street and Duboce avenue, at a cost of $12,000. Mr. O'Brien has also made plans for alterations and a one-story addition to the brick building at 639 Van Ness avenue for C. D. Farquharson.

Stone & Wright Have Several Schools

Messrs. Stone & Wright, architects of Stockton, have a number of schoolhouses, including a $25,000 building for the city of Stockton, to be erected at Lincoln and Jefferson streets, a $12,000 one-story school for the town of Lathrop, and a $7,000 one-story frame building for the Milnes School District near Oakdale. The same architects have also completed plans for a two-story brick office building for the Oakdale Irrigation District.

Personal

John P. Krempel of Los Angeles recently enjoyed a visit to the Exposition with his family. Mr. Krempel said that the longer he stayed the better he liked the fair, its buildings and numerous exhibits.

Mott Montgomery of the firm of Montgomery & Montgomery, Trust & Savings building, has returned after having spent some time in the State of Washington on business and pleasure. While in the north Mr. Montgomery was a guest of relatives at Fort Ward, the army post near Seattle.

Ed. W. Cannon is no longer associated with C. W. Dickey of Oakland. Mr. Cannon will open offices for himself.

Suisun Schoolhouse

William H. Crim, Jr., and Ed. J. Sims, associated, are preparing plans for a one-story and basement frame and plaster schoolhouse for the Suisun School District. It will cost $30,000.

Mr. Polk—Are You or Are You Not?

The San Francisco daily papers have reported that Willis Polk has declared himself a candidate for mayor of San Francisco. Of course, very few have taken the declaration (if a declaration there has been) very seriously, but The Architect and Engineer, nevertheless, wished to set its readers right in the matter, so wrote Mr. Polk the following note:

August 31, 1915.

Willis Polk,
Hobart Bldg., San Francisco.

Dear Mr. Polk: Are you a candidate for mayor of San Francisco?

If so, would you be good enough to give us your views? We are anxious to give our readers the right information on the matter.

Yours truly,

THE ARCHITECT AND ENGINEER.

Mr. Polk answered as follows, and the reader can form his own conclusions as to whether the versatile architect is or is not a candidate:

Of Interest to Architects

John Rogers, of the well known architectural firm of Rogers, Bonnah & Chaffee, of Detroit, in speaking of his trip to San Francisco and the Exposition, said in part: The finest part of the Fair is the Exposition buildings, when you take into consideration the construction, design and coloring. The main point of the color scheme is old rose, pink and gray and the effect is very pleasing to the eye.

It's a false impression that the Fair is a failure. It is a great success. To say the buildings are the best is no reflection on the exhibits. A number of people told me before I left here that three or four days would be sufficient. I spent a week and am sorry that I could not stay longer.

Any architect, in my mind, would be repaid to attend the Exposition if just to see the buildings. I returned by the Canadian Pacific and will say the scenery through the Canadian Rockies in my opinion is the finest in the world.—Michigan Contractor and Builder.

Concrete Sanitarium

The Burke Corporation will erect a two-story reinforced concrete sanitarium four miles outside of Santa Rosa. No architect has been selected. The company has offices in the Pacific building, San Francisco.

Architect to Build Apartment House

Earl B. Scott of San Francisco has designed and will erect for himself a three-story brick apartment house on Stockton street, north of Sacramento, San Francisco.

Sacramento Architects Have a Grievance

Some of the Sacramento architects have been greatly perturbed the past month because the city commission failed to notify them that it was open to suggestions for a Carnegie library. It seems there is $100,000 available for a building. It was first given out that the City Engineer had prepared a preliminary plan for a building. Later it was learned that Messrs. E. C. Hemmings and J. W. Wollett of Sacramento and Shea & Lofquist of San Francisco had asked permission to submit sketches. These drawings were to be examined on a certain date. The information leaked out and there came a protest from James Seadler, C. C. Cuff and Rudolph Herold, three other Sacramento architects, well known for their professional ability and high standing. They declined to be discriminated against. and suggested that if the commission was to hold a competition it should go about it right, and treat everybody fairly. The commission replied it was not holding a competition and that it had no objections to receiving plans from Messrs. Seadler, Cuff and Herold if they chose to submit them.

The October Architect and Engineer

Some good things are in store for readers of The Architect and Engineer. The October number will contain an interesting article by Horace G. Simpson of Wood & Simpson, on the English house designed by L. B. Dutton for the Holt Manufacturing Company at the Panama-Pacific Exposition. Photographic plates and working plans will be shown. There will also be an article with illustrations on a "Unique Design for a Municipal Park," by Wilbur David Cook, landscape architect of Los Angeles. The new postoffice building, Berkeley, will be described by William A. Newman.

What the California State Engineering Department has accomplished in modernizing the San Francisco water front will be told in a future number of this magazine by W. F. McClure, State Engineer. Photographic plates of completed buildings and perspectives will be shown. Mr. Irving C. Frickstadt will write about the Pacific Gas & Electric Company's new stations and power plants, illustrating his paper with views of some of the recently completed buildings designed by the company's engineering department, Frederick H. Meyer and Willis Polk & Co.

Martinez Building

Henry Shermund, Mills building, San Francisco, has prepared plans for an attractive class "C" store and apartment house to be erected in Martinez for Gus Weiss of that city at a cost of $45,000. Building will have pressed brick front. There will be fourteen apartments and four stores.

Architect for Richmond School

In addition to work announced in the August Architect and Engineer, James T. Narbett, the Richmond architect, has plans under way for a two-story frame and stucco apartment house to be erected in Martinez for Frank Prosser of Richmond. Cost $10,000. Mr. Narbett has also completed plans for a frame store building and bakery in Richmond for Angello Elefther, and a one-story office building in Martinez for the Pacific Gas and Electric Company.

At a meeting of the Richmond board of education, Saturday evening, Aug. 28th, Architect Narbett was selected to design the new Pullman school.

Plans call for sixteen class rooms and a large assembly hall, of which a four-room unit, including all toilet and heating arrangements, will be erected at this time.

Mr. Narbett is also preparing plans for remodeling the present store building of the L. M. LaSelle Co. at Martinez, the addition of several stores and the building of a second story, covering a total area of 100x92, approximate cost $10,000. All new work is to be reinforced concrete and frame.

Henry Ford and the Architects

Members of the profession will watch with interest the outcome of the case of Chicago architects suing Henry Ford, automobile ambassador extraordinary and minister plenipotentiary to the hoi polloi (struggling masses), because he rejected plans for a $500,000 dwelling and said the cost was too high (according to a press report). He is quoted as saying to the architect that he intended to spend only $275,000 on the residence. This shock could not have caused the Ford company delay in deciding on the $50 profit-sharing checks to purchasers during another year.

Fresno Architects Have House Work

Messrs. Swartz & Swartz, Rowell building, Fresno, have completed plans for a two-story and basement frame and plaster residence to be built in Visalia for Mrs. F. Bodden; also a frame and brick veneer residence and garage for Mr. G. B. Chinn, cashier of the First National Bank of Lemoore.

Enjoying San Francisco Exposition

Among the Los Angeles architects who have recently enjoyed a visit to the San Francisco Exposition are Messrs. Allison, Edward C. Taylor, Frank M. Tyler and A. Reif.

Oakland Residences

Chas. W. McCall has made plans for several residences, including one in Crocker Highlands, for John D. McDonald, to cost $6500, and one for E. Armsby to cost about $3500.

Saving Part of the Exposition

Willis Polk's plan for saving part of the Panama-Pacific Exposition, as outlined in correspondence between himself and various officials of the Exposition, in the August Architect and Engineer, bids fair to bear fruit. Details of the plan are now being thought out. Roughly, Mr. Polk's ideas may be summed up as follows:

Acquisition of about four blocks of land under private ownership, occupied by a greater part of the North Gardens. The balance of the gardens, (generally confused in the public mind with the Marina, which is the road immediately adjoining the bay front) and a portion of the site of the California building, is already owned by the Exposition.

Widening of Bay street from Van Ness avenue to the Presidio, embracing the Avenue of Palms, which is co-extensive with this street.

Linking the boulevard thus formed with the Marina and boulevards along bay and ocean.

Acquisition of a strip on Baker street from Bay street to the California building, including a portion of the lagoon fronting the Palace of Fine Arts, which is on government land and can probably be retained on its present site.

Lobos Square, a public park now occupied by a part of the Zone, to be made an integral part of the plan.

South Gardens, Palace of Horticulture and Festival Hall to be retained.

This plan would leave a large area of land between the Avenue of Palms and the North Gardens. Polk believes that the property, which is in the hands of only a few large holders, would be so enhanced in value by the plan that the owners will gladly sell the needed areas at a low figure.

The only way San Francisco can ever approach the ultimate ideal of beautification as presented by the Burnham plan is to do such things as this whenever the opportunity is presented. Eventually these separate improvements will be linked into a comprehensive plan. One of the principal values of the Exposition is the impulse it should give to city planning.

Elks Building

Wm. H. Weeks of San Francisco has prepared plans for a three-story and basement class "C" store and lodge building for the Monterey Lodge of Elks. It will cost $25,000. Mr. Weeks has also completed plans for the Melrose Carnegie library, one of four branch libraries for the city of Oakland. Construction will be reinforced concrete and the cost $45,000.

Work on New San Francisco City Hall

An effort to complete the interior of the new San Francisco City Hall this year will be made by the contractors, Monson Bros., although their contract gives them until March. This was announced after a conference with the Board of Works, which is seeking to expedite the completion of the building. Monson Bros. already are considerably in advance of their contract.

Christian Science Church

Working drawings are practically completed for a brick and stucco class "C" church to be erected in Fresno for the First Church of Christ, Scientist. The edifice will cost $40,000, exclusive of the furnishings, and will seat 900 persons. R. B. Hotchkin of Fresno is the architect.

OBITUARY

Chandler I. Harrison

Chandler I. Harrison, a young architect with a promising future, son of the late Rev. J. K. Harrison, a resident of Berkeley for many years, died recently at the family home, 2159 Vine street, in the College City. Harrison had been in failing health for the last year, since returning from Paris, where he was a student of the Ecole des Beaux Arts. He was obliged to return following the beginning of the war. Harrison was born at Santa Rosa twenty-five years ago. He was a graduate of the Berkeley high school and had since devoted his time to the study of architecture. Harrison was the winner of the traveling scholarship of the Architectural League of the Pacific Coast. He was a member of the San Francisco Architectural Club and was formerly employed in the office of Bakewell & Brown, architects of the new San Francisco city hall.

C. F. Crowell

C. F. Crowell, 58 years old, a prominent Pasadena building contractor, died the early part of August at his ranch at Highland of paralysis. He had been a resident of Pasadena twenty-six years. Mr. Crowell, who was a member of the firm of Crowell & Seward, erected a number of large business buildings and residences in Pasadena, the last of which was the structure occupied by the Austin Biscuit Company on South Fair Oaks avenue. After the completion of this building he retired from business.

John Wright

John Wright, a pioneer architect of San Francisco, died suddenly at the Jubilee Hospital, in Victoria, on Aug. 23rd.

Wright was born in Scotland, May 15th, 1830. He traveled to New York and then to Canada, and later settled in San Francisco, becoming a member of the firm of Wright & Sanders.

His name is identified with such notable public buildings as the two structures at the State Deaf and Dumb Institute in Berkeley, the Napa State Hospital, the Jewish Orphanage and Home, Odd Fellows' Hall, Pioneer Hall, Cooper Medical College, Lane Hospital, the first Pacific Union Club, the Mark Hopkins residence, besides numerous churches, commercial buildings and private residences.

Ralph Warner Hart

The death of Ralph Warner Hart, member of San Francisco Chapter, A. I. A., occurred at the German Hospital in San Francisco, on August 14th. Mr. Hart had been ailing for a year with cancer, but he continued the practice of his profession up to within a short time before his death. He had offices with Henry C. Smith in the Humboldt Bank building. Mr. Hart participated in a number of prominent architectural competitions including the San Francisco City Hall and the Alameda County Infirmary. One of his best efforts was the Odd Fellows' Home at Saratoga.

Women's Club Building

Bliss & Faville of San Francisco are preparing plans for a $100,000 building in the Italian Renaissance style of architecture, for the Women's Athletic Club. It will be erected in Sutter street, between Taylor and Mason, and will be four stories and basement with an assembly hall, gymnasium, plunge and other attractive features. The club has a membership of 1000.

Gas Appliance Manager Injured

Herbert C. Mieville, manager of the Utility Gas Appliance Company, and his wife were seriously injured when a large automobile ran them down at Jones and Bush streets. They were walking to their home in the Empire Court Apartments from the St. Francis.

They were on the sidewalk, but the car ran crazily across Bush street and then bumped over onto the sidewalk. Mieville thrust his wife out of the path of the automobile, but she was knocked to the ground by the mud guards.

Mrs. Mieville had a fractured leg, dislocated collarbone and possible internal injuries. Mr. Mieville had two fractured ribs and contusions.

Two Stockton Buildings

R. E. Wilhoit of the Stockton Savings and Loan Society Bank has purchased a lot 20x75 feet on Main street, Stockton, adjoining the arcade, which is also owned by him, and will construct a modern business block on the site. It is said he will spend upwards of $30,000 on the structure.

On the northeast corner of Weber avenue and California street, Stockton, construction will shortly be started on a two-story class "C" store and club building for Peter Jordan. The plans are being prepared by F. E. Warner, San Joaquin building, Stockton.

Lodge Building for Centerville

A. F. Heide, 46 Kearny street, San Francisco, has prepared plans for a two-story brick building to be erected in Centerville and to contain stores, lodge rooms and hall. The owners are Leonhardt and Hansen, and the cost approximately $10,000.

E. J. Burke, architect of Eureka, has moved from his old offices on F street into larger quarters in the new office building of Josiah Bell, at 432 H street.

Plans and Planes Meet — Architects Visit a Big Lumber Mill

By H. B. KING

THE ARCHITECTS of San Francisco and the Bay Cities have had many pleasant outings of an educational character, but none has exceeded in interest and enjoyment the one taken on Saturday, Aug. 21.

This trip was planned by the Van Arsdale-Harris Lumber Company, Inc., of Fifth and Brannan streets, San Francisco, who successfully piloted by special train a group of seventy-five representative architects to the plant of the C. A. Smith Lumber Company, located at Bay Point, on the Oakland & Antioch Railroad, about forty miles out.

The Van Arsdale-Harris Lumber Company was represented by a number of its officers and salesmen under the leadership of its President, Mr. M. A. Harris, and nothing was left undone toward making the trip a comfortable and memorable one.

The Van Arsdale-Harris Lumber Company is the exclusive San Francisco selling agent for the C. A. Smith Lumber Company's high grade white cedar. The Van Arsdale-Harris Lumber Company is one of the best-known lumber firms in San Francisco, having been in business here for over twenty-five years. It was originally known as Scott & Van Arsdale. The late Hon. Matt. Harris, who was the manager of this company twenty-five years ago, was the father of its present president, Mr. M. A. Harris.

Arriving at Bay Point, the party was taken in charge by Mr. E. U. Wheelock, general manager of the C. A. Smith Lumber Company, who rivalled the "man from Cook's" in the thoroughness of his statistics regarding lumber in general, and white cedar in particular.

While this concern controls and deals largely in Douglas fir (otherwise known as Oregon pine), so also do others, but in Port Orford white cedar they have unusual facilities, their cutting of this wood alone totaling forty million feet a year, or four times that of all other mills combined.

The keynote, therefore, of the demonstration was cedar and its manifold uses, and this lent practical value to the inspection and explanations, as cedar has had here but a limited and rather exclusive use, its possibilities not being fully understood by many architects and builders.

The Port Orford cedar comes from the Coos Bay section, the mill point being Marshfield, Oregon, and the timber growths in Coos, Curry and Douglas Counties, where this company owns or controls a vast acreage totaling many millions of feet.

The cedar trees average about eight sixteen-foot logs to trees of from three to six feet in diameter. This timber is easily worked and so varied are its uses covering so wide a range in sizes that, like the Chicago porker, there is left after working nothing but the noise and the sawdust.

This last product is now being used as a nest covering by the poultry men, owing to its qualities as an insecticide, although they have been warned of the danger of producing woodpeckers instead of chickens as a result of this practice.

The architects would, doubtless, have enjoyed a trip to the lumber camps at Coos Bay, but time prevented this sea journey.

Mr. Wheelock's explanations of the vast holdings of the C. A. Smith Lumber Company in this district lying northwest of Grants Pass, southwest of Eugene, and west of Roseburg, were of interest.

Here the company owns or controls enough Port Orford cedar to insure continuous operation for the next fifty years. This Marshfield plant contains two sawmills, with an annual capacity of 200 million feet and a logging railroad that hauls the logs from woods to water courses.

From Marshfield to Bay Point the company runs two steel steamers (named "Nann Smith" and "Adeline Smith," after two daughters of C. A. Smith) which have a total carrying capacity per trip of four millions of feet of lumber. A kind providence (assisted, doubtless, by Mr. Wheelock's and Mr. Harris' forethought) had so timed it that the "Adeline Smith" had just docked the morning of the architects' visit. This enabled the architects to witness the unloading, a most marvelous operation—whereby 200,000 feet of lumber per hour were caught up by the electrically controlled cranes, and deposited in the original unit packages on trucks running on steel tracks to yard, planing mill and dry kilns.

Each unit package contains about 2500 feet of lumber fastened with iron binders. The electric cranes are the company's own invention and were made by the Cyclops Iron Works, San Francisco.

The distributing plant at Bay Point covers 225 acres and comprises yards, planing mills, dry kilns, blacksmith shop, power plant, docks, etc. At this plant there is carried a stock of lumber, shingles, and lath, amounting to forty million feet, ready for distribution to all parts of the world. The planing mills have an annual capacity of one hundred million feet, and the dry kilns of thirty million feet.

They operate barges from Bay Point, making deliveries to any steamers at San Francisco, and to their own wholesale yard at Oakland. The Tilden Lumber Company, Berkeley, act as local agents for the region "across the bay."

To return to the white cedar: It was explained that through their great facilities and economical handling and working they were enabled to make prices compare favorably with sugar pine and other similar woods, thus broadening its uses until it had become a prime favorite for window frames, mouldings, shingles, sheathing, wall boards, interior finish, gymnasium flooring, closet lining, washing machines, wash boards, clothes chests, crates and boxes, boat deck floors, railroad ties, wharf flooring, mining timbers and for varied manufacturing and industrial uses. By a careful system of sorting no less than eighteen grades are secured, ranging in prices from $9.00 to $120.00 per thousand feet, the average ranging from $20.00 to $45.00.

Cedar has been approved, after thorough tests, as the best boat lumber by the English Navy, and it has already been adopted by the United States Government for pontoons and boats.

The cedar marketed by the C. A. Smith Lumber Company is stamped with the trademark "Good Luck Brand."

The Van Arsdale-Harris Lumber Company, San Francisco, for the convenience of architects and contractors, carry at Fifth and Brannan streets a million feet of cedar in all sizes and grades, so that selection may be made intelligently and orders filled promptly at yard prices by those located in this vicinity. Mr. M. A. Harris invites architects who were not able to be present on the visit to the mill, and all others interested, to call at their office and inspect their line of cedar. He will send an automobile for any who desire to make this visit.

The Polytechnic High School and all the up-to-date San Francisco municipal buildings are finished in white cedar. Also the interiors of St. Patrick's Theological Seminary at Menlo Park, and Encina Hall at Stanford University, the last two, although finished in white cedar twenty years ago, are as good today as when first completed.

The hunger for facts having been appeased, there was another natural craving to be satisfied, and this was met by a sumptuous luncheon served under the trees, al fresco.

Following the collation Mr. T. Paterson Ross was elected chairman and voiced the appreciation of all present of the "yard wide" hospitality of the joint hosts, the Van Arsdale-Harris Lumber Company and the C. A. Smith Lumber Company. Brief speeches were made by Messrs. Wheelock, Harris, Barth, Dickie, Ross and King.

The following architects accepted Van Arsdale-Harris Lumber Company's invitation:

Frank Weber
E. T. Osborn
A. A. Lafranchi
Wm. Herbert
Wm. Watson, Jr.
H. G. Bissell
Harry J. Oser
A R. Denke
A. Goldsmith
L. P. Demartini
Gus Aaron
A. H. Knoll
Thos. Higginson
A. W. Pattiani
E. A. Newmarkel
Hermann Barth
Albert J. Fabre
Welsh & Carey
Jas. J. Welsh
T. Paterson Ross
W. J. Scheibbe
Chas. J. Rousseau
Theo. W. Lenzen
Lewis M. Gardner
Clarkson Swain
J. W. Dolliver
F. H. Martin
H. E. Harris
Thomas Harris
E. P. Antonovich
C. W. Jennings
F. B. Patten
Frederick D. Boese
Fred Boese, Sr.
Henry A. Boese
E. A. Schumacher
W. F. Dunning
Aleck. E. Curlett
Oscar Haupt
Perseo Righetti
G. M. Harrington
G. W. Dickie
Fred B. McNally
O'Brien Bros., Inc.
A. L. O'Brien
Bliss & Faville
E. B. Hurt
Benj. G. McDougall
J. Harry Blohm
Edw. T. Foulkes
M. Mattanovich
L. M. Weismann & Son
A. Coffey
E. A. Coxhead
C. O. Clausen
Spangler & Dean
J. F. Dunn
Geo. W. Kelham
A. W. Cornelius
Henry Shermund
Salfield & Kohlberg
G. A. Wright
Herbert A. Schmidt
Rousseau & Rousseau
Albert L. Lapachet
D. J. Patterson
Henry Gutterson
W. L. Schmolle
A. F. Heide
Norman R. Coulter
John J. Foley
Edgar A. Mathews
E. G. Bolles
Chas. Peter Weeks
William Henry Weeks
Chas. E. Hodges
Frederick H. Meyer
Henry H. Meyers
Evans & Hermann
Henry C. Smith

Experts Examine Hardwood Finish

For several weeks two experts on interior decorating and finishing have been going over the mansion of Mr. H. H. Hart, at Claremont, from cellar to garret, examining the expensive wood finishing in the Alaska millionaire's home. An order for the examination was made by Superior Judge W. M. Conley, during the hearing of a suit of the Fink & Schindler Company, builders, against Hart, for the payment of $9000 alleged to be due for the finishing of the Hart mansion. William T. Veitch, a builder, and Walter Mathews, an architect, were the experts. The plans for the house were made by C. W. Dickey of Oakland.

New Architects

The following have recently been granted certificates to practice architecture in the State of California by the Northern District Board of Examiners:

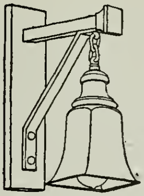
Alben Froberg, 2320A Bancroft Way, Berkeley.

Harry Michelsen, 1106 Mutual Savings Bank building.

George Wagner, 156 Divisadero street.

Another Big Order for Kinnear Company

The Kinnear Manufacturing Company has been awarded the contract to furnish all the fireproof steel rolling doors for Pier No. 22. This makes eleven piers on the San Francisco water front to be equipped with the Kinnear product.



Heating and Lighting

Plumbing and Electrical Work

Artificial Heating

IN ADVOCACY of a proper humidization of the heat supplied to rooms through indirect radiation, Benjamin F. Herr, M. D., publishes an interesting pamphlet in explanation of his contention. Asserting the deleterious effects upon a low vitality of sleeping in a cold room where the system must supply heat to all the air inhaled, Doctor Herr argues in favor of sterilized air supplied from a hot-air furnace at a proper temperature.

In regard to the health, comfort and economy of indirect heating Doctor Herr says:

"All natural laws and conditions prove that comforts from artificial heating are lacking, through the disregard shown towards the moistening of the artificial atmosphere as generated under all conditions, including all methods used in the heating of buildings. All persons agree, that, by the "warm-air" or indirect system of heating, there is a decided lack of required moisture, and this system of heating has been condemned by many persons on account of it. The strongest arguments put forth by the advocates of the direct systems of heating (hot-water and steam) is that they do not have the intense dryness of the atmosphere of the artificially heated rooms as from the indirect system. By a comparison we will prove that there is no difference, and if there is any difference, from a health standpoint it is decidedly favorable to the indirect system. For example, we will take a building with a temperature of 35 degrees inside, which we wish to heat to a comfortable temperature, say, 70 degrees; now at a temperature of 35 degrees we have a relative humidity of 65 per cent., or about 1.46 grains of water to a cubic foot of space, and under either svstem of heating we raise the temperature to 70 degrees by adding 35 degrees of heat, but, under either system there is no moisture added, and unless some system for producing this moisture has been used, there can none be added, for the iron from which the radiators are made is as impervious to moisture as the iron composing the hot-air furnace, and in both cases the heat passes from the iron into the atmosphere to be heated by radiation or convection; thus, at 70 degrees temperature we have equal conditions under both systems of heating. Inside conditions being equal, both systems draw the air supply from the outside; the indirect system by passing outside air through the heating chambers of a furnace which add the required heat units to it previous to passing into the rooms to be heated; the direct system, simply heating the room by the air of the room coming in contact with the heat radiating from the radiator installed in the room and drawing a very small supply of fresh air through the openings of the cracks and crannies of the doors and windows from the outside with no outlet for the vitiated air, accumulating in the rooms from the bodies of the occupants, to escape; proving, that, by the indirect system there is an interchange of air, by the heated air entering the room from other sources, and eliminating the vitiated air by forcing it through the cracks and crannies of the doors and windows to the outside; and by the direct system there is no interchange of air, for there is no source to draw from only through the cracks and crannies of the windows and doors, as shown above, thus cutting off the exit of the impure air, and allowing the accumulated impurities to be heated along with the air which is in the room by coming in contact with the radiating surfaces of the hot radiators."

The following abstract from Doctor Herr's pamphlet on the Artificial Heating of Atmosphere is fairly complete, the omissions being largely tables of weight of vapor and quotations from other authorities.

"In correct artificial heating, atmosphere is taken from the outside at varying temperatures and carried through the heating chambers of a furnace, which adds heat units to it until it is raised to the requisite indoor temperature, and through the required sized flues is distributed through the rooms requiring heat. This is the ordinary hot-air system, called the indirect system.

"Hot water and steam heating, called the direct system of heating, has the heat carried by heated water or steam into each compartment or room of a dwelling or building, by a system of piping starting from a boiler in the cellar or basement and ending in radiators installed within the rooms requiring heat.

The water being heated, or the steam generated in the boiler, is carried to the radiators, and from them the heat is distributed by radiation or convection into the air of the room. Under these systems of direct radiation there is no fresh air distributed throughout the rooms, the only source of supply being the small quantity that may sift through the cracks of the doors and windows. This indoor atmosphere retains all of the impurities, which are being continually augmented by the exhalations from the air passages and skin of the occupants.

"The only process by which this accumulation of foul air may be overcome to some degree is by installing indirect radiators into several rooms of a dwelling and keeping the inside doors of the house open at all times, allowing what little circulation of air there may be; and even with this installation there is a very unequal distribution of the air taken from the outside.

"The indirect radiator mentioned is installed by placing the radiator in the cellar or basement, attached to the ceiling, enclosed by a casing which has an opening communicating with the outside of the building, admitting fresh air, which passes over and through the radiator, and after being heated, through another opening which communicates with the room to be heated. This system of heating must be installed upon the same principle as the hot-air system in order to receive the requisite amount of fresh air. The indirect radiators serving the same purpose as a hot-air furnace, but to a limited degree.

"There is no doubt that the hot-air system of heating is far more perfect than any, from a health and sanitary standpoint; for you have an influx of fresh air heated to a proper temperature, and if the system is properly installed, you will have an equal distribution of heated air throughout every part of the building; where, with the systems of hot-water or steam you simply radiate the heat into the air of the rooms heated, with no influx of fresh air, unless there is a system of ventilation established, or indirect radiators installed in several rooms, and even this latter system will fail to meet the full requirements.

"Either system, under most perfect conditions as installed, fails utterly to meet the required atmospheric condition from a healthful standpoint, even with a perfect system of ventilation, for the simple reason that heat is the only and exclusive element being supplied to the indoor air, thus an atmospheric condition is produced which is abnormal in every sense, for, there is an entire lack of the normal amount of atmospheric moisture, which is an absolute necessity to insure perfect health to the occupants.

"The moment heat is generated, under all of the systems mentioned, there is a destruction of the normal qualities of the atmosphere, as regards health, into which the artificial heat has entered. At all temperatures there are, under normal conditions, certain percentages of moisture which are absolutely necessary for the maintenance of good health, and in all the systems of the artificial heating of houses, this percentage of atmospheric moisture is decidedly lacking.

"The atmospheric moisture carried into the heating furnace from the outside is in a partly saturated condition (carrying a certain percentage of water), which is governed entirely by the outside temperature at the time existing. The amount of water in this atmospheric space depends entirely upon the weight of a cubic foot of saturated aqueous vapor at the existing temperature, which is designated by the term, 'Percentage of Relative Humidity.'

"Investigations have proven that, the higher the degree of temperature, which increases the capacity for water, the greater will be the weight of a cubic foot of saturated aqueous vapor; therefore, by the addition of heat to the colder outside atmosphere entering the building, there must also be an additional amount of vapor added to overcome the deficiency existing between the weight of a cubic foot of saturated aqueous vapor as received into the furnace from the outside, and the weight of a cubic foot of saturated aqueous vapor raised, by the addition of heat units to the higher indoor temperature to produce a normal condition of the latter. * * *

"The difference between the true atmospheric relative humidity (aqueous vapor) and moisture is that the relative humidity is a gas, the quantity depending entirely on the temperature, where the moisture is fine particles of water, the droplets being so small as to be invisible, and is carried in the atmosphere regardless of the temperature, which effects it slightly, if any. The former is obtained by introduction into the heat a vapor of water colder than the heat generated, which it absorbs to such an extent as to separate the molecules of the vapor, driving them apart as it were, leaving each one independent of the other and floating about in the heat as a gas, called Aqueous Vapor, thereby combining with the heat, filling space independent of the air. While the latter (moisture) is a union of these molecules forming droplets of water which float about regardless of the temperature, gradually falling through the air and eventually depositing themselves upon the furniture and the floors of the rooms, wetting everything they come in contact with. Previous quotations have proven this to be a fact based upon natural conditions and controlled by certain laws. * * *

"There is but one way to obtain this aqueous vapor, and that is by the heat

State, County and Municipal Engineering

Good Roads—Water—Sewers —Bridges—Fire Protection

Maintenance of Concrete Pavements

The following recommendations as to proper methods of maintenance of concrete roads, given by Cement World, are based on a survey of the results of up-to-date practice in various parts of the country:—

(1) The imperfection to be repaired should be thoroughly cleaned by brushing until all loose particles have been removed.

(2) If the imperfection extends through the pavement and exceeds 6 in. in breadth or diameter, the sides should, after cleaning, be painted with cement grout, and the cavity filled with concrete of the same mixture and consistency as was used in building the original pavement. If a replacement, the excavation should be backfilled with gravel, well tamped, and the concrete properly reinforced. The repaired portion should be cured by being kept moist for at least four days, and protected from traffic until thoroughly hardened.

(3) When a hole does not extend through the pavement, but exceeds ½ in. in depth, it should be carefully cleaned and dried, and then painted with hot tar. The hole is then filled with stone. Several sizes should be carried by the repair gang, the object being to use in any given hole a size of stone large enough to reach nearly from the bottom of the hole to the surface, but never to use stone exceeding 2½ in. in diameter. Where large sizes of stone are used, voids should be carefully filled with smaller sized stone and the whole tamped or rolled into place. Hot tar is then poured over the patch, gauging the quantity so that the tar will be absorbed without any large excess.

(4) Holes less than ½ in. deep, cracks less than 1 in. wide, and expansion joints from which the filler has wholly or partly disappeared, should be cleaned, dried, and filled a little above level with hot tar, on the surface of which gravel or granite, from ⅛ in. to ¼ in. in size, should be spread from a shovel.

(5) Refined coal tar should be used, having a specific gravity not less than 1.18 nor more than 1.25 at 77 deg. Fah. The tar should be heated to from 225 deg. Fah. to 250 deg. Fah. at the time of application, and may be applied by means of conical-shaped buckets with openings at apex, or by using a sprinkling can. Sand or screenings graded from ⅛ in. to ¼ in. should be spread over the surface, before the tar has cooled enough to prevent the sand from becoming firmly embedded therein to form a permanent wearing surface.

Artificial Heating

(Continued from page 114)

entering into the colder droplets of water, and is governed by the law just quoted; nature follows this law to the exclusion of all others; therefore it is necessary to supply the artificially generated heat with a watery vapor or mist colder than itself, and in particles small enough, that, when the heat enters into them, the expansion will be great enough to separate the molecules of the water sufficiently to overcome the affinity they have for one another, and when this has been accomplished we have aqueous vapor, or, a gas, as each molecule is independent of its neighbor." * * *

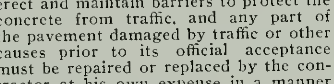
Specifications for Concrete Pavements

Some interesting points in the specifications for concrete pavements, written by M. M. O'Shaughnessy, City Engineer of San Francisco, and recently adopted by the Board of Supervisors, follow: The concrete is of 1:2:3½ mixture. After mixing, the concrete is deposited rapidly in successive batches; the concrete is deposited to the required depth and for the entire width of the pavement in a continuous operation between transverse and longitudinal joints without the use of intermediate forms or bulkheads. In case of a breakdown, concrete must be mixed by hand to complete the section or to an intermediate transverse joint placed at the point of stopping work. Any concrete in excess of that needed to complete a section at the stopping of work is not to be used in the work. Longitudinal joints filled with ⅛ in. of prepared felt are constructed between the curb and the pavement on each side of the roadway, and along the center line where the roadway exceeds 25 ft. in width. Transverse expansion joints are constructed in straight lines at right angles to the center line of the roadway for the full width of the pavement and at intervals not exceeding 25 ft. The surface of the pavement is sprayed with water as soon as the concrete is sufficiently hardened to prevent pitting and is kept wet until a sand covering is placed. As soon as this can be done without damaging the concrete, the surface of the pavement is covered with a layer of sand at least 1 in. thick, and covering kept moist for at least 10 days. The pavement is not to be opened for traffic for a period of at least 20 days after being laid. The contractor is required to maintain the sand covering for a period of at least 10 days and must erect and maintain barriers to protect the concrete from traffic, and any part of the pavement damaged by traffic or other causes prior to its official acceptance must be repaired or replaced by the contractor at his own expense in a manner satisfactory to the engineer.

Spring Floor for a Ball Room

The specifications for the ball room should tell "G. N. S.," North East, Pa., whose inquiry appeared in a recent issue of the paper, just what to do. If he has no specifications it is extremely difficult to tell what is required. Some time ago I put a spring floor in a dance hall 39x52 feet in size, which gives entire satisfaction. I used three trussed beams 39 feet long, laid 13-foot joists on these and put in two rows of bridging to a bent. The bridging was dressed 2x4-in. stuff put in edgewise. The floor was doubled, the top one being laid diagonally.

The beam was trussed on the under side as indicated in the accompanying sketch, where B represents a piece 2 feet



long with a plate of iron on the bottom. The shores C C are hinged so they could be raised out of the way. When used for dancing the girder A is crowned about an inch, which raises the shores from the bottom support so they dance up and down, guarding against any accident. Solid timber is better than built-up. When the floor is unequally loaded as in the case with a live weight, undulations are developed until a person on the under side would think the floor would come down. There are two 1-in. rods used to each beam. The beams should be 10x12 inches and the joists 2x10 inches. If these are placed 18 inches on centers it will be sufficiently close for all practical purposes.

If a great deal of spring to the floor is wanted, a spring may be put in between A and B with a plate of iron under A, for the spring to work upon. If the room below is to be used for a hall or store room the material may be planed.—D. P. B. in Building age.

Why Is a Barrel the Unit of Cement Measure?

HERE is something worth considering. It is hard to discard old terms for new, but it is frequently worth a little wrenching to uproot an old idea and make way for a new one. A reader of Concrete writes:

The Standard Specifications for Portland cement, under General Conditions provide that:

A bag of cement shall contain 94 lbs. of cement net. Each bbl. of Portland cement shall contain four bags.

The 400-pound barrel originated at the time when all of our Portland cement came from abroad and was actually packed in barrels. When we began to make Portland cement in this country we put it up in barrels weighing 400 pounds gross. Later, when, as a matter of package conservation, we began to put it up in sacks, we ascertained the net weight per barrel and divided it by four.

As will be seen from the specifications, the official unit of quantity is the bag or sack which must contain 94 pounds of cement. This being the standard unit of quantity as well as the unit in which nearly all cement is actually handled, why not make our prices, contracts, invoices, bills of lading, etc., read sacks or bags instead of barrels? In other words, why not price cement in cloth 35 cents per sack gross instead of $1.40 per barrel gross, and in paper 27½ cents per bag gross, instead of $1.10 per barrel gross?

In tracing a quantity of cement from the time a quotation is made until the empty sack has been returned it will be seen that the figures are frequently converted from barrels to sacks, and sacks to barrels.

A price is made and accepted. The order calls for barrels but when it is sent to the mill, barrels are converted into sacks and sacks are loaded into the car. In making out the invoice, however, the sacks are converted into barrels but when the consignee receives the car he converts the barrels on the invoice to sacks to check out the contents of the car. When the dealer's customer buys 10 barrels of cement his order is converted to sacks and 40 sacks are delivered but in invoicing the material the sacks are converted into barrels and the invoice calls for 10 barrels. The customer then changes this to sacks to make it correspond with the actual delivery.

When the sacks are emptied the word "barrel" seems to get out of our vocabulary and instead of calling "four empty sacks" "one empty barrel," the sacks are called by their right name.

Why should not prices, orders, contracts, invoices, bills of lading, etc., correspond with our goods? This change may seem quite formidable and it would involve a change in the habit of thought of some people, principally the manufacturers of cement, but against the inconvenience of a few hundred people, we will have the convenience of hundreds of thousands of engineers, architects, inspectors, dealers, contractors, bookkeepers, clerks, farmers, teamsters, etc.

Let some of these interested architects, engineers, contractors and others say what they think of the proposed change.

Denison Block Company in New Offices

Denison Block Company has moved from the Ochsner building to 920 Forum building, Sacramento, into larger and more modern offices. The company is now represented in San Francisco and bay territory by Mr. R. E. G. Keene, who, for the present, will have his headquarters with the General Contractors' Association, 110 Jessie street, San Francisco. The company reports a steady increase in business throughout its territory.

The Growth of An Idea

By H. B. KING.

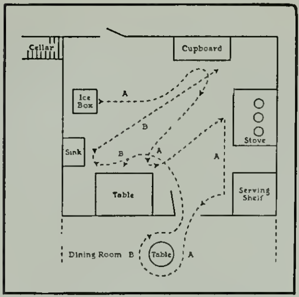
IT WAS about a dozen years ago when the writer came across a rather unique advertisement in a woman's magazine. It described a clever device by which the various articles which were usually scattered over all parts of a kitchen—on hooks, in drawers, on shelves, and even on the floor—were assembled together in one cupboard, which also served as a china closet, mixing table and cutting board. The device struck him as worthy of the attention of even a Yankee, and he took a long trip to a small Hoosier town to see this contrivance for himself. Reaching New Castle, Indiana, he wended his way to the Kitchen Cabinet Factory, and there met the inventor, J. F. S. McQuinn. The interest of that visit and the writer's enthusiasm in the newly invented device still remain with him, and the steady march forward of the Hoosier

The Hoosier Kitchen Cabinet

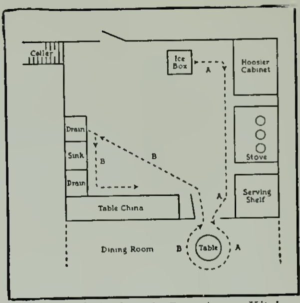
Cabinet (until now it has 800,000 delighted users) seems to him to be a success in what he has had some small part. The cabinet shown him appeared to be a marvel of completeness, and yet, when the writer examines the latest model, he wonders at his interest in so primitive an affair as the original cabinet. During these dozen years other kitchen cabinets have come on the market and it has kept this pioneer article in this line spurred on to continued activity and alertness in the effort to keep ahead of all followers and imitators.

In later years the subject of Efficiency has received wide attention and a race of Efficiency Experts has sprung into existence. Factories, offices, shops and stores have had the scientific measuring stick applied and great economy of time and increase in results thus secured. The Kitchen has not escaped this new influence and the Hoosier Cabinet Company has not only applied these modern ideas in improving its own device, but it has started a campaign of education for builder and user, in the whole line of Kitchen Efficiency, covering not only the cabinet, but the entire arrangement of the housekeeper's work room. These ideas are so practical that architects and others all over the United States are seeking information about model kitchens, the same as they have done previously about modern factory buildings and model tenements. To the architect, "Economy of arrangement" has had, especially in apartment houses, reference to the best locations for garbage chutes, dumb waiters, flumes, windows, light shafts, etc. The location of sink, refrigerator, kitchen cabinet and the range was a minor matter. In determining upon the kitchen cabinet, the architect would ordinarily fix the price at $15 each and leave it to the carpenter to enclose a space with pine boards, properly veneered, containing a number of shelves, hooks and drawers. The result was generally something far removed from a scientific pantry. The architect is beginning to realize that it is better to have "a cupboard with brains," where worry will be removed and cooking enjoyed, rather than dreaded. This result is secured by the Hoosier Kitchen Cabinet, which, while it costs a few dollars more, secures to the housekeeper for the small expenditure an extra leisure hour for every day of the year. The whole subject of kitchen efficiency seemed to the San Francisco Architectural Club to be worthy of the attention of its members, and at a recent meeting Mr. O. K. Brown, the Pacific Coast manager of the Hoosier Cabinet Company, was invited to address them on this subject. Mr. Brown's remarks were so full of valuable suggestions that we print portions of his speech herewith:

In the great industry of building today, the one greatest word, as in every other industry, is EFFICIENCY. Kitchen Efficiency means the planning of a kitchen in which the hostess can do the greatest number of the daily tasks with the least expenditure of effort on her part, and walking is the one most tiring part of the kitchen work. Great waste in time and labor occurs when the different working points that comprise the kitchen equipment are not properly grouped in relation to each other. By this is meant the refrigerator, or cooler, the range, sink and cabinet in which the supplies and tools are kept. The tools such as pots, pans, cutlery used in preparing the meal should be kept in the cabinet, and these should be within reach of the worker in the same range of each, as the supplies to be used, and should be combined in one systematically arranged compartment, commonly called the Kitchen Cabinet, or Kitchen Dresser. The things needed



Floor plan of Applecroft Experiment Kitchen before it was arranged scientifically. Note the confused network of steps resulting from inconvenient equipment wrongly placed. a. Preparing. b. Clearing away.



Floor plan of Applecroft Experiment Kitchen properly arranged and equipped. Notice saving of steps and time both in preparing and clearing away a meal. a. Preparing. b. Clearing away.

should be within quickest reach. This can be made possible by the proper grouping of the utensils needed, within reach of the stool, which is now almost universally a part of every kitchen outfit. The stove should be as near as possible to the cabinet to save steps when food is ready for cooking, and to make it possible to keep an eye on the article cooking, while another is being prepared. Everything should be as handily placed as the drawing instruments on your drafting table within easy reach. If possible provide a hood over the range. At least have the kitchen well ventilated. Gas and kitchen odors are the causes of many of the headaches so common to women.

In many kitchens it is not possible to have the range alongside the cabinet. If not, let them be as near each other as can be. The nearer the better. Likewise the sink. These three should be so grouped as to cause as little walking back and forth as possible. Good light is fully as important as to have the working equipment properly spaced, but always keep in mind that the shorter the distance between the cabinet and the stove, the more steps you save the hostess. It is well to provide a serving table or shelf between the stove and the dining-room door to accommodate the strainer, serving trays and other tools used in preparing the meal. If space permits, provide shelves or hooks within easy reach of this serving table. These may be arranged so they can be enclosed. These are days of small kitchens, and this is because the grouping of the above named equipment is such as to be in proper relation to each other. When possible the sink, stove and cabinet should be grouped so that the three are within easy reach of each other. When this is not possible the nearer this arrangement the better, but above all the stove and cabinet should be within easy reach, if the sink must be at a distance. The sink should be as near the dining room as possible. It saves steps in clearing up after meals. When this is not to be had, but is fixed elsewhere by necessity, let the line from the dining room to the sink be unobstructed.

Dish washing can be lightened greatly by a proper arrangement of the drain-board in relation to the sink, and should be on the left side, so the work can be divided into three operations, viz:

1—Scraping and stacking the dishes.
2—Washing and wiping the dishes, and
3—Putting away all dishes.

By putting the drain on the left you avoid passing each dried dish through the right hand, which contains the towel. This saves several minutes each washing. It is customary to provide a china closet in the dining room. If this is done, no space is needed in the kitchen except for the kitchen set of dishes used in the little home breakfast and luncheon. If the dishes are kept in the kitchen provision should be made for them near the sink, preferably on the left of it and near the dining room. This makes it convenient and less walking when the table must be set for the meals.

Mrs. Christine Frederick, whose ideas are the foundation for this reasoning, says that dishwashing can be made scientific and taken out of the drudgery class. Tests made by her showed that washing fifty dishes may be reduced from 30 to 20 minutes, a saving in time and labor of one-third.

From investigations made by the Hoosier Company, in measuring the possibilities of the market for portable cabinets, that approximately 250,000 portable kitchen cabinets are made and sold in the United States every year. This output is divided between thirty-five factories who make them, and the competition created has brought this particular kitchen commodity to a state of perfection in scientific arrangement that, like the automobile of today, would not have been thought possible a few years ago.

The virtue of the Hoosier Cabinet is that it brings within reach any one of several hundred articles without disturbing the others. It is virtually a true labor-saving device and a marvel of convenience and practical usefulness. The housekeeper who used to say, "I am just tired to death standing on my feet all day," can now sit on a comfortable stool and have all her ingredients and implements at her fingers' end. The Hoosier Cabinet has no frills, no experiments, no guess work, but everything is the result of forethought and scientific knowledge. It is made of seasoned oak, waterproofed and steamproofed and will outlast the building in which it is installed. It has the ball bearing castors and nickel-plated door fasteners and hinges.

To illustrate the thoroughness of its equipment, we might mention that it has a bill file, cook book holder, clock-faced want list, twine holder, money box, and large linen drawers. All these conveniences are in addition to the full complement of condiment cupboard, cutlery racks, package shelf, canned goods shelf, china closet, pot and kettle cupboard, extension metal table, cutting board, full set of labeled glass tea, coffee and spice jars, flour sifters, rolling pin rack, pocket for pans and covers, etc. Surely the renting value of an apartment will be largely increased by installing one of these modern outfits and the architect is short-sighted who will neglect so economical a method of securing the favor of the woman of the household.

Concrete for Churches

Reinforced concrete is often used to advantage in church construction, and in some parts of Europe there are even examples of entire buildings being erected, such as the Cathedral of Poti, in Russia. Another use is for adding towers or spires in order to complete the unfinished church. It often happens that a church remains for a long time without a tower or belfries, and these are built at a latter date.

In order not to add an unduly heavy load on the already existing foundation, reinforced concrete has an advantage over stone work, and is besides less expensive. A good example is found in the Cathedral of Tunis, which was recently completed by putting on two high belfries in reinforced concrete, and these make up a good architectural ensemble with the former stone work.—Scientific American.

Residence Work

Chas. F. Mau, Jr., of Oakland has prepared plans for a two-story frame residence to be built in San Lorenzo for J. T. Marlin. Mr. Mau will also build a house for himself on Grand avenue, Oakland.

Bolt Nut That May Revolutionize a Big Industry

THROUGH the enterprise of Mr. J. H. Burnett, pioneer foundry man of Fresno, and one of the best-known iron and steel fabricators on the Pacific Coast, there will shortly be placed upon the American market a safety bolt that bids fair to revolutionize present methods of locking bolts and nuts. Heretofore, devices intended to accomplish a positive locking connection have failed most dismally. The nuts would stay in place for a little while—maybe a month or two, but more likely only for a few days, then gradually, through constant vibration, they would loosen, and in so doing, very frequently cause a breakdown or accident. These so-called accidents oftentimes are attributed to "defective material," when, as

Mr. J. H. Burnett

a matter of fact, a loose nut is the real cause.

Mr. Burnett, with his many active years in the foundry game, often thought how valuable a good dependable locking device would be. So, when he had an opportunity to investigate an invention along this line, by Mr. George Eckman of Marshalltown, Iowa, he acted without waste of time. Models were manufactured and put on exhibition at the Panama Pacific International Exposition in San Francisco, with the result that they won immediate recognition. A silver medal was sufficient encouragement for Mr. Burnett to get busy. He purchased outright all patents and manufacturing privileges.

There was no trouble securing abundant financial backing and it is announced that very shortly thousands of these bolts will be turned into the waiting market from factories in the East and on the Coast. It should prove to be one of the greatest industries of the day, for the field of operation is practically world-wide.

It would be difficult, indeed, to accurately estimate the volume of consumption of this safety device. Wherever a bolt or nut of any size at all is used it will be in demand. Wherever you find machinery, railway equipment, automobiles, engines, farm implements, motors, etc., the perfected "Johnny Bolt" will be needed.

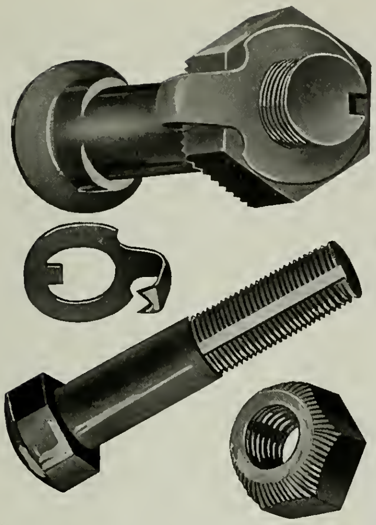
Mr. Burnett has already spent nearly two months in the East, where he went with his vice-president and sales-manager, Mr. Henry Clark, to arrange for the manufacture of the bolt and nut-lock. The trip is proving highly satisfactory and, as already stated, no time will be lost in putting the device upon the market. For a month past the Fresno plant has been kept busy supplying samples and answering inquiries. Many of the latter have come through the publicity that has been given the device at the Exposition. Several foreign countries have written for particulars and agency rights have been requested from all parts of the world.

During Mr. Burnett's absence in the East the Fresno plant was left in full charge of Mr. C. L. Pugh, secretary and treasurer of the J. H. Burnett Iron Works, Inc. Mr. Pugh, who is Mr. Burnett's son-in-law, has worked up from the foot of the ladder and the fact that he was permitted to carry on the business unaided during his father's stay in the East shows how highly his services are regarded. Mr. Pugh has been given an interest in the firm and his many friends will undoubtedly be greatly pleased to hear of his deserved promotion. They regret only that it did not come sooner.

The accompanying illustrations give a good idea of how the safety bolt operates.

The invention consists of the bolt itself, a nut one side of which is serrated and a bowed spring. As will be noticed from the accompanying illustrations, the bolt has a slot extending the entire length of the threaded portion, while the bowed spring has a projecting tongue and wings at the other end. In this way it is pointed out the nut can be locked in any desired position.

In use the nut is placed on the bolt with the serrated side toward the head and is turned up as much as is necessary. The bowed spring which is the real locking member is placed over the end of the bolt with the tongue fitting in the slot. The opposite end of the spring is then forced over the surface of the nut so that it engages with the notches. To take off the nut the spring is raised out of engagement by sliding a screwdriver between it and the surface of the nut. It is then slipped



Three views of a recently developed nut lock showing it assembled and the three parts composing it

off, after which the nut is removed in the usual way. The use of this slotted construction, it is emphasized, enables the nut to be locked at any point without necessity for readjustment.

Oil Paints for Concrete Floors

Instances are on record where oil-pigment paints have been effectively used to stop the dusting of cement floors brought about by abrasion. If the floor has been freshly laid and is damp, the possibility of lime reaction (saponifying the oil in the paint) may be removed by first treating the surface with a solution of tinted zinc sulphate as a primer.

Boiled linseed oil, sometimes mixed with Chinese wood oil, may be used as the liquid portion of the paint. These oils have a remarkable binding action when applied to a cement surface. When mixed with pigment, they form paints which are eminently suited as first coaters for cement floors. The first coat will dry rapidly and form a dense surface. Over this may be applied a second coat, and, if a high gloss surface is desired, a portion of varnish may be added to this final coat.

In a laboratory built three years ago for experiments in connection with the paint industry, the cement floors were treated in the manner above described, one week after the concrete was in place. The zinc-sulphate primer was used only upon the damp areas. The floors have since been subjected to much abrasion from constant

walking and the moving of heavy apparatus. Oils and chemicals of various kinds have come in contact with the floors, and soap and water have been used upon them very often for cleaning purposes. After three years' service, the floors have not dusted and have never required repainting. The paint films are still in good condition. This service record would tend to show that placed Portland cement may be made dust-proof, wear-proof, and highly desirable as a flooring material, by the application of oil paints.

A Scotch Highball

Mr. A. H. McDonald, Pacific Coast manager of Meurer Bros. Co., manufacturers of metal roof coverings, is nothing if not generous. He has ever a soft spot in his heart for the architect. Just mention to him that you are a member of the Architectural Profession, and the whole Meurer establishment is at your disposal and he may even hand over the keys. Recently he has prepared a souvenir for the architects in the shape of an Anchor Ventilator (which he says is the only practical and efficient ventilator carried in stock on the Pacific Coast). This souvenir, it is true, is of reduced size, but who knows what he may fill it with in the shape of Perfectos, etc. Anyway, write, wire, telephone, or call upon him, and then breathlessly await the result.

A Progressive Firm

Robert W. Hunt & Co. are now making arrangements for increasing their laboratory facilities in connection with their Los Angeles office by the addition of considerable physical and chemical equipment. The physical laboratory equipment will be increased by the addition of a two hundred thousand pound Riehle tensile and compression machine. Several minor additions in the way of improving their present equipment for physical testing will also be made, particularly for road work. The chemical laboratory equipment will be increased with a complete, up-to-the-minute equipment for the testing and examination of asphalt, road oil, crude oil and all its components.

A Factory Agency in Good Hands

MR. R. W. FOYLE, factory agent for the Invincible Vacuum Cleaner, 416 Harriet street, San Francisco, reports a fine record of successful installations, nearly 100 in number. These include some of the best new buildings, including schools, hotels, apartment houses, factories, residences, etc. Among these may be mentioned the following:

Polytechnic High School, San Francisco.
High School, Eureka.
Polytechnic High School, Oakland.
Santa Cruz Grammar School.
Lockwood School, Oakland.
Park and Division School, Oakland.
Jefferson School, Oakland.
Emerson School, Oakland
Jas. D. Phelan's residence, Santa Clara county.
Fred Talbot's residence in San Leandro.
A. Fatjo's residence, Pacific avenue, San Francisco.

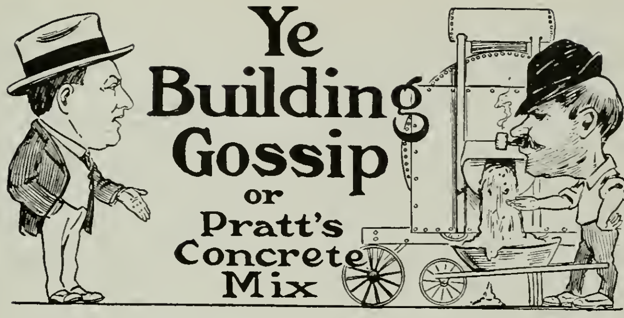
Two new uses for vacuum cleaners have been found by Mr. Foyle. One of these is the use by a leading oil company for cleaning inside of drums by air suction. The other is by the Sperry Flour Company for fighting weevils, and it is said no weevil can escape. This cleaner is equally well adapted for manufacturers of food stuffs, bakeries, or for exterminating decayed matter, insects, etc., which otherwise might gather in inaccessible places, and thus make perfect sanitation impossible.

The Invincible Vacuum Cleaner is sold directly to plumbers, heating engineers, contractors, etc., who do their own installing. This machine appeals, therefore, in a peculiar way to those sub-contractors who like "a square deal."

Obituary: The Old "Law of 1872"

The "law of 1872," so-called, which has been a plague to the architects of California for many years, is now wiped off the statutes. The bill repealing this antiquated statute which required school trustees to advertise for plans for buildings and compelled successful architects to give a bond of $5000 guaranteeing the cost of a building, went into effect Aug. 10. School trustees are now free to choose an architect as they please. They can select one and proceed with the development of plans or they can have a competition.

The "law of 1872" probably served a useful purpose when it was enacted, but it did not fit present day conditions. It did not furnish the public any real protection against graft or fraud in building, but it was frequently invoked to wreak a spite or cloak an evasion of some moral obligation or responsibility. The repeal of the law was brought about largely through the efforts of the Southern California Chapter of the American Institute of Architects, which delegated the missionary work to Messrs. J. E. Allison and J. C. Austin, to whom a voice of thanks is due.



AMERICAN BUILDERS' week
* * *
IS OCT. 18th to 23rd.
* * *
THERE WILL be
* * *
A BIG parade.
* * *
PRIZES FOR the best floats.
* * *
$100.00 WILL be paid
* * *
BY THE parade committee
* * *
FOR THE float
* * *
HAVING THE largest
* * *
NUMBER OF pretty girls.
* * *
WE WILL have a float
* * *
SHOWING HOW we
* * *
LOAD SAND at Marysville,
* * *
OUT OF the Yuba River.
* * *
WE MIGHT have
* * *
SOME BATHING girls,
* * *
AND TRY to win
* * *
THE $100.00 prize.
* * *
IT WOULD be
* * *
A GOOD ad. for
* * *
PRATT BUILDING Material Co.

Large Plastering Contracts

Hermann Bosch of San Francisco has been successful in landing during the past year a number of good-sized contracts, including the following:

United States Sub-Treasury building, San Francisco.
Wigwam theatre, San Francisco.
St. Joseph's church, San Francisco.
Drum power house, San Francisco.
Pierce-Arrow garage, San Francisco.
Auditorium, Bakersfield.
W. H. Crocker residence, Hillsboro.

The work on last-named includes the decorative ceiling in the ball room, which is regarded as a masterpiece. Mr. Bosch has gained a good reputation among owners and architects for high class work at low prices, and he is winning increased favor with the profession daily.

Gold Medal for Bowser

S. F. Bowser & Co., manufacturers of the well-known Red Sentry gasoline pumps, have been awarded a grand prize and gold medal at the Panama-Pacific Exposition. The award was based upon quality of material and workmanship—skill and ingenuity displayed in invention, construction and application—magnitude of the business represented, and length of time engaged in that business. It is a broad tribute to Bowser superiority and the qualities of permanent success that are back of Bowser equipment.

The semi-monthly organ of the Bowser Company (date of August 10) is devoted almost exclusively to the Exposition, many attractive half-tones of the Exposition buildings being shown. Speaking of the success of the fair the paper says:

> The Panama-Pacific International Exposition has been pronounced by visitors from far and near to be an unqualified and unequaled success. Recently the management stated in the press that it would close absolutely free from any debt, which is an epoch in the history of expositions, and this in spite of the world war and business conditions. It simply confirms the judgment of the management and their business ability, which makes all awards of more value.

Many Buildings Supplied With Reinforcing Steel

The following is a partial list of the buildings, located in San Francisco and vicinity, for which Messrs. Woods, Huddart & Gunn have supplied the reinforcing steel bars and fireproofing mesh:

Eight-story hotel, Mason street, near Eddy.

Mt. St. Joseph's Orphanage, 18th and Railroad avenue.

Three-story warehouse for Lewis Packing Company, Columbus avenue and Chestnut street.

Eleven-story sugar refinery building for Western Sugar Co.

Five-story apartment house, Ellis street, near Leavenworth.

Four-story apartment house, Post street, between Van Ness avenue and Polk street.

Bath house for City of San Francisco, 19th and Angelica streets.

Foundation for Juvenile Detention Home, City of San Francisco.

Carnegie Library, 24th and Bartlett streets.

Addition to Letterman General Hospital, Presidio.

Foundation for St. Monica's Church, 23rd avenue and Geary street.

Seven-story apartment house, Eddy street, near Ellis.

Terminal Garage, Sacramento and Drumm sts.

Lane Hospital, Sacramento and Webster streets, all in San Francisco.

Gantry Crane runways for Western Fuel Co., Howard's Wharf, Oakland.

Addition to Oakland Bank of Savings, 7th and Union streets, Oakland.

Dixon High School, Dixon, Cal.

Woodland Grammar School, Woodland; Woodland Primary School, Woodland.

West Berkeley Intermediate School, Berkeley.

Claremont School, Oakland.

A Courteous Solicitor

To the Editor: About two months ago a young man called at this office, stating that he had been employed in the water heater business in other cities, and asked for employment. We started him out soliciting business and are very well satisfied with his services. It was particularly gratifying to us to receive the enclosed letter, which you may print if you see fit.

Yours very truly,

PITTSBURG WATER HEATER CO. OF CAL.

San Francisco, Cal., August 4th, 1915

Pittsburg Water Heater Company,
237 Powell Street,
San Francisco.

Dear Sirs:—This is not an order for one of your heaters, but simply a word of appreciation of the courteous manner in which your estimable firm's name was presented to me by Mr. A——.

In the daily routine of housework, one finds it necessary to answer the ring of numberless solicitors, gentlemanly and otherwise, and certainly one cannot help but feel well disposed toward a company whose commendable policy of courtesy is so well carried out by its representatives.

(Signed) Housekeeper.

Highest Bidder Awarded Normal School Contract

(From the Improvement Bulletin)

There is excitement in the building fraternity of Nebraska over the action of the state normal board in awarding the contract for the construction of the auditorium at the Kearney normal school to the highest bidder, instead of the lowest, as is customary. The angered contractors are talking of organizing a state association "to eliminate a lot of abuses to which the contractors are now subject, to provide an information bureau for the trade, to provide a collection bureau and a legislative body that would systematically look after the interests of the contractors in the legislature." Among the contractors who are greatly interested in the movement for a state association are President Toms, Secretary Shelley and Ex-President Grant Parsons and Ray Gould, all of the Omaha Builders' Exchange. The state association is to be patterned somewhat after the Master Builders' Association of Iowa, with headquarters at Des Moines. The name suggested is the Nebraska Contractors' Protective Association. One digest of its objects follows:

To secure strict observance of the building code in Omaha.

Prevent contractors from drawing specifications.

Compel permits to be taken out when construction work starts.

Prevent discrimination of city building officers in favor of certain architects.

Eliminate the "plan peddler."

Simplex Rotary Oil Burner's Advancement

The policy of the American Standard Oil Burner Co. (manufacturers of the "Simplex" oil burner) in standardizing the mechanical construction of their machine so that the five sizes can be offered at the one price, is attracting wide attention. To secure a full size "Simplex" rotary oil burner of latest Model, for $250, seems almost impossible—but modern machinery and inventive skill has made this possible. Their exhibit in the Palace of Machinery, P. P. I. E., is now complete and inspection is invited by all interested.

Mr. A. J. Beecher, President of the American Standard Oil Burner Co., has just returned from a trip in the Northwest, where he established a branch house in Seattle at 111 Seneca street, under charge of J. C. Moore, a well-known Consulting Engineer.

He Was Loyal

"Tim," said one of them, "did yez hear about Casey?"

"I did not," was the reply. "What about Casey?"

"Why, Casey was drowned."

"Not Tim Casey, of the Board of Works, in the name o' God?"

"It was the same."

"But Casey could swim like a duck."

"Yis, yis, and he did schwim. He kept it up for eight hours. But, poor Casey! He had to quit! He belonged to the union."—Wasp.

County Awarded Contract on Irregular Bid

Los Angeles County recently competed with private cement manufacturers for the contract to furnish the city public service department with 7500 barrels of cement, intending to furnish the cement from the Monolith cement plant. The county's bid was not accompanied by the check or bond required by the advertisement. This would, in the case of an ordinary bidder, have been sufficient and well taken ground for not considering the bid—had it been a private bidder, the bid would not have been read at all. Yet in spite of the bid being irregular—or irresponsible?—the contract was entered into, involving an expenditure of approximately $13,125.

Does the fact that it was the county which submitted the irregular bid relieve the city from requiring a certified check required of all the other bidders? We cannot see how the courts could uphold such unsound and unfair doctrine. If the court does sustain the legality of the contract as entered into, it will set a precedent likely to cause considerable trouble in the future. Should it declare the contract legal, what is to hinder a corrupt board of city or county officials from accepting an irregular bid from any favored private bidder when it desires, as is sometimes suspected on good grounds, to award a contract to him and shut out all other competitors?

The question which the courts have been asked to decide in the injunction suit to restrain the city from accepting the bid and to declare the contract void, is of considerable interest to all bidders on public work or supplies. The principle at stake, as applied to private parties bidding on public work, involves an already too extended willingness on the part of public officials to accept bids from irresponsible bidders who evade the spirit of the requirement that they should submit with their bid either a certified check or a responsible bond guaranteeing good faith.—Southwest Contractor.

Says Strike Will Soon Be Ended

Adolph Pernu, president of the California Granite Company, predicts that the granite cutters' strike, which has been on now for several months, will be settled within the next week or ten days. Pernu expects the workers to accept practically without modification the offer of the employers.

Dissolve Partnership

Doyle & Patterson, architects, Portland, Oregon, have dissolved partnership. A. E. Doyle will continue the practice of architecture, with offices in the Worcester building, Portland, and W. B. Patterson will resume the practice of architecture in Portland on January 1, 1916.

Current Prices of Building Materials

These quotations furnished by reliable San Francisco and Los Angeles dealers

(Names and addresses will be supplied upon request.)

SAN FRANCISCO PRICES

Common Red Brick, $9.00 per M, ex. cars.
No. 1 Pressed Brick, $35.00 to $40.00 per M; Wire cut, $35.00 per M.
No. 1 Red Pressed Brick, $20.00 to $30.00 per M.
Red Stock Brick, $14.00 to $16.00 per M.
California Portland Cement, C/L $2.30 per bbl.; L.C.L. $2.55 per bbl.
White Cement: Atlas, $6.00; Medusa, $6.00 per bbl.
Sand and Gravel mixed, 70c per ton, F. O. B. cars.
Sand (washed, screened river sand) 65c per ton, F.O.B. cars.
Bank Sand, $1.00 per cu. yd.
Roofing Gravel, $1.40 per ton.
Crushed Rock or Gravel, 75c per ton.
Red Roofing Tile, $22.00 to $25.00 per square, laid.
Brick Lime, $1.35 per bbl., C/L.
Finish Lime, $1.50 per bbl., C/L.
Hardwall Gypsum Plaster, $11.00 per ton, carload; 1150 per ton, ex. warehouse.
Oregon Pine, Rough Common, 1 x 3 to 1 x 10, $13.00.
Oregon Pine, Rough, 2 x 3 to 2- 12, $15.00.
Oregon Pine 1 x 4 T. & G. Flooring, No. 1, $31 per M; No. 2, $28; No. 3, $24.
Oregon Pine T. & G. Ceiling, No. 1 and 2 mixed, $26 to $28.
Redwood, Rough Common, 1 x 4 and up, $20.00.
Redwood, Rough Common, 2 x 3 to 2 x 10, $20.00 to $22 00.
Redwood Rustic, No. 1, $35.00; No. 2, $32.00.
Redwood Ceiling, No. 1, $29.00; No. 2, $26.00.
Redwood Shingles, No. 1, $2.40 full count.
Red Cedar Shingles, Star-A-Star, $2.40 full count.
Pine Lath, $2.40 per M.
Metal Lath, 13 to 25c per yd., according to quality.
1 x 3 Oak Flooring, Q. S. Clear, $116.00 per M; Select $75.00 per M.
½ x 2½ Oak Flooring, Q. S. Clear, $96.00 per M; Select, $74.00 per M.
1 x 3 Maple Flooring Clear, $71.00 per M; Clear White, $85.00 per M.
White Lead in Oil, 8¼c per lb.
Dry Red Lead, 8c per lb.
Boiled Linseed Oil, 74c gal. Raw Linseed Oil, 72c gal.
Turpentine, per gallon, 63 to 70c in bbls.
Dry Shellac, 35c per lb., variable.
Hyloplate Blackboard, 25 to 35c per foot, installed.
Composition Flooring, 25 to 30c per foot, laid.
Genuine Slate Blackboards, 40 to 50c per foot, erected.

LOS ANGELES PRICES

Common Red Brick, No. 2, $4.50 per M.
Clinker Brick, $9.00 per M.
Pressed Brick, $35.00 per M.
Enameled Brick, $65.00 per M.
Red Roofing Tile, $12.00 and $15.00 per square (not laid).
White Cement, $6.00 per bbl.
Portland Cement, $2.30 per bbl.
Lime, $1.50 to $1.75 per bbl.
Hardwall Plaster, per ton, $9.90 ex. whse.
Oregon Pine, Rough Common, 1 x 3 up, $19.00 to $22.00 per M.
Oregon Pine, Rough Common, 2 x 3 up, $17.00 to $21.00 per M.
Oregon Pine Flooring, 1 x 4, No. 1, $40.00; No. 2, $35.00; No. 3, $22.50 per M.
Oregon Pine Ceiling, 1 x 4, No. 1, $36.00; No. 2, $31.00.
Redwood, Rough Common, $20.00 to $24.00.
Redwood Rustic, No. 1, $38.00; No. 2, $33.00 per M.
Redwood Ceiling, 1 x 4, No. 1, $33.00; No. 2, $28.00 per M.
Redwood Shingles, 4 bdls. to M, No. 1, $2.25; No. 2, $1.75.
Red Cedar Shingles, 4 bdls. to M, Star-A-Star, $2.75.
Pine Lath, 1½ in. x 4 ft., $3.25 per M; 1⅝ in. x 4 ft. $3.65 per M.
White Lead in Oil, 8½c per lb.
Red Lead, dry, 8½c per lb.
Raw Linseed Oil, bbls., 65c gallon.
Boiled Linseed Oil, bbls., 65c gallon.
Turpentine, bbls., 63 to 70c. gallon.
Crushed Rock and Gravel, $1.65 per yard.
Sand, 85c per yard.

SACRAMENTO PRICES

Common Brick, $7.00 per M, C/L.
Pressed Brick, Wire Cut, $30.00 per M, C/L.
Portland Cement, $2.40 per bbl. carloads.
Crushed Rock and Gravel, 85c per ton, ex. cars.
Sand, $1.00 yd. on cars.
Roofing Gravel, $1.50 per ton.
Lime, $1.35 bbl.
Hardwall Plaster, $13.00 per ton, ex. whse.

STOCKTON PRICES

Common Brick, $7.75 per M, del.
Face Brick, Wire Cut, $31.00 per M C/L.
Cement, $2.40 per bbl., C/L.
Crushed Rock and Gravel, 90c ton.
Sand, 90c.
Roofing Gravel, $1.50 per ton.
Lime, $1.35.
Hardwall Plaster, $13.00 ex. whse. per ton.

FRESNO PRICES

Common Brick, $9.50 per M, del.
Face Brick, Wire Cut, $35.00 per M, C/L.
Cement, $2.84 per bbl., C/L.
Crushed Rock and Gravel, $1.35 per ton.
Black Face Brick, $25.00 per M—F. O. B.
Sand, $1.00 per yd., del.
Roofing Gravel, $1.85 per ton.
Lime, $1.50 bbl.
Hardwall Plaster, $14.00 per ton, ex. whse.

BAKERSFIELD PRICES

Common Brick, $9.00 per M, del.
Face Brick, Wire Cut, $37.00 per M, C/L.
Cement, $2.77 per bbl., C/L.
Crushed Rock and Gravel, $1.80 per ton.
Sand, $1.00 per yd., del.
Roofing Gravel, $2.00 per ton.
Lime, $1.50 per bbl.
Hardwall Plaster, $15.00 per ton, ex. whse.

NORTHERN CALIFORNIA POINTS

Common Brick, $11.00 per M, del.
Face Brick, Wire Cut, $35.00 per M, C/L.
Cement, $2.65 per bbl.
Crushed Rock and Gravel, 85 to 90c per ton, C/L.
Sand, $1.00 per yard.
Roofing Gravel, $1.50 per ton.
Lime, $1.40 bbl.
Hardwall Plaster, $14.00 per ton, ex. whse.

Fess Co's New Oil Burner

The Fess System Co., after working for many months on the problem of producing a moderate priced oil burner, which would combine many of the advantages of their old burners with a low selling price, announce "The Fessco." This new burner retails at $100 without pump, or $150 complete, and it is claimed is adapted for ordinary commercial and industrial uses. It can be furnished in sizes to supply from one to four burners, with an oil burning capacity of from one-half to five gallons per hour. The mechanism of the "Fessco" is unique and yet most simple. The air is produced by a motor driven fan which produces six ounces air pressure, and the oil is applied at 2 to 15 pound pressure—the oil and air mixing as they pass through the burner. This type of burner is bound to supplant the old style of steam and compressed air and water, as better results are obtained and it ensures more thorough mixing of oil and air, with simpler control.

The burner as a rule requires only one-third horse-power motor (although larger size is supplied when necessary for additional burners). The equipment for supplying the oil and air is securely mounted on a heavy cast iron base and can be located at any point within 100 feet of range or heater. The needle valve gives simple control and all parts are easily cleaned.

The Fess System Co. offer a full year's guarantee, making any repairs which may be necessary within this period or refunding the purchase price if the burner does not work satisfactorily for the purpose for which it is installed.

American Builders' Week Now Close at Hand

The recent announcements that the various branches of the building industry of San Francisco have joined forces to celebrate American Builders' Week from October 18th to 23rd, 1915, calls to mind certain additional interesting facts, which are otherwise likely to escape the attention of the visitor to the Golden State.

The Exposition covers an area of 625 acres, 184 acres had to be reclaimed from marsh and tide lands by the construction of sea-walls, and the making of a hydraulic fill. On this site has been constructed a beautiful living Exposition city complete, up-to-date and in working order in every detail, with its own sewer system, garbage disposal plant, water works, wharves, docks, slips, railways, roads, gas and electric lighting system, high pressure fire protection system with latest motor-driven apparatus and manual and automatic fire alarms and automatic sprinklers, distribution systems for heat, air, gas, and steam, a compressed air and refrigeration circulation, etc.

THE IMPORTANCE OF COMPLETE ELECTRICAL SPECIFICATIONS.

ELECTRICITY is the only widely used commodity that has decreased in price during the last decade. With the reduction has come great improvements in the design of all electrical products and large increases in the uses and applications of electricity.

The changes have been so rapid that even a Specialist has difficulty in keeping up to date. Due to these changes the importance of complete practical electric wiring specifications as a means of correcting some adverse condi tions cannot be overestimated.

Unless electrical specifications are complete and rigid it is a difficult matter to select the most favorable bid—as price is the only basis considered.

Reliable contractors using only good material and doing excellent work, frequently lose a contract from this cause, then the extra work, misunderstandings and exceeded appropriations amount to much more than the thought and time necessary to make them complete.

Owners of all types of buildings realize often too late that insuffcient provision was made for necessary electrical conveniences; statistics show twenty-five per cent. additional to original contract price expended before building is occupied and fifty per cent. additional after building is occupied. Much of this could be eliminated with a lower ultimate cost to the owner if the electrical specifications were complete and the appropriation for electrical work increased sufficiently to compensate for the advances made in this branch of the industry. Less than three per cent increase over present total building costs will be enough as an average.

The co-operation of all architects, builders, owners, manufacturers and contractors is necessary and this condition is rapidly materializing with beneficial results to all.

To cite an instance of this cooperation the GENERAL ELECTRIC COMPANY maintains a building equipment department and specialists in all their local offices for the purpose of giving personal attention, gratis, to requests for complete, special or standard electrical specifications covering any specific building project.