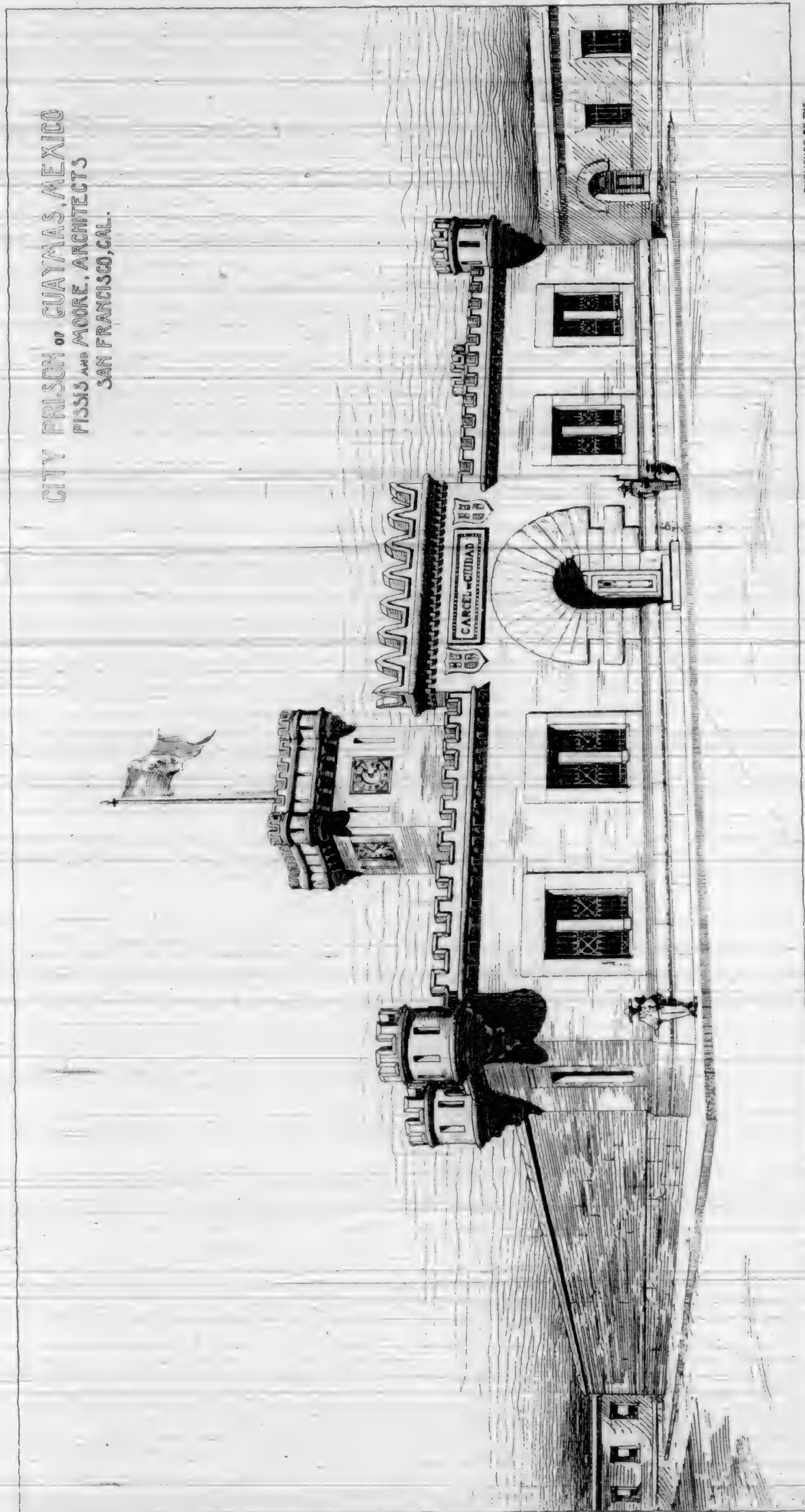
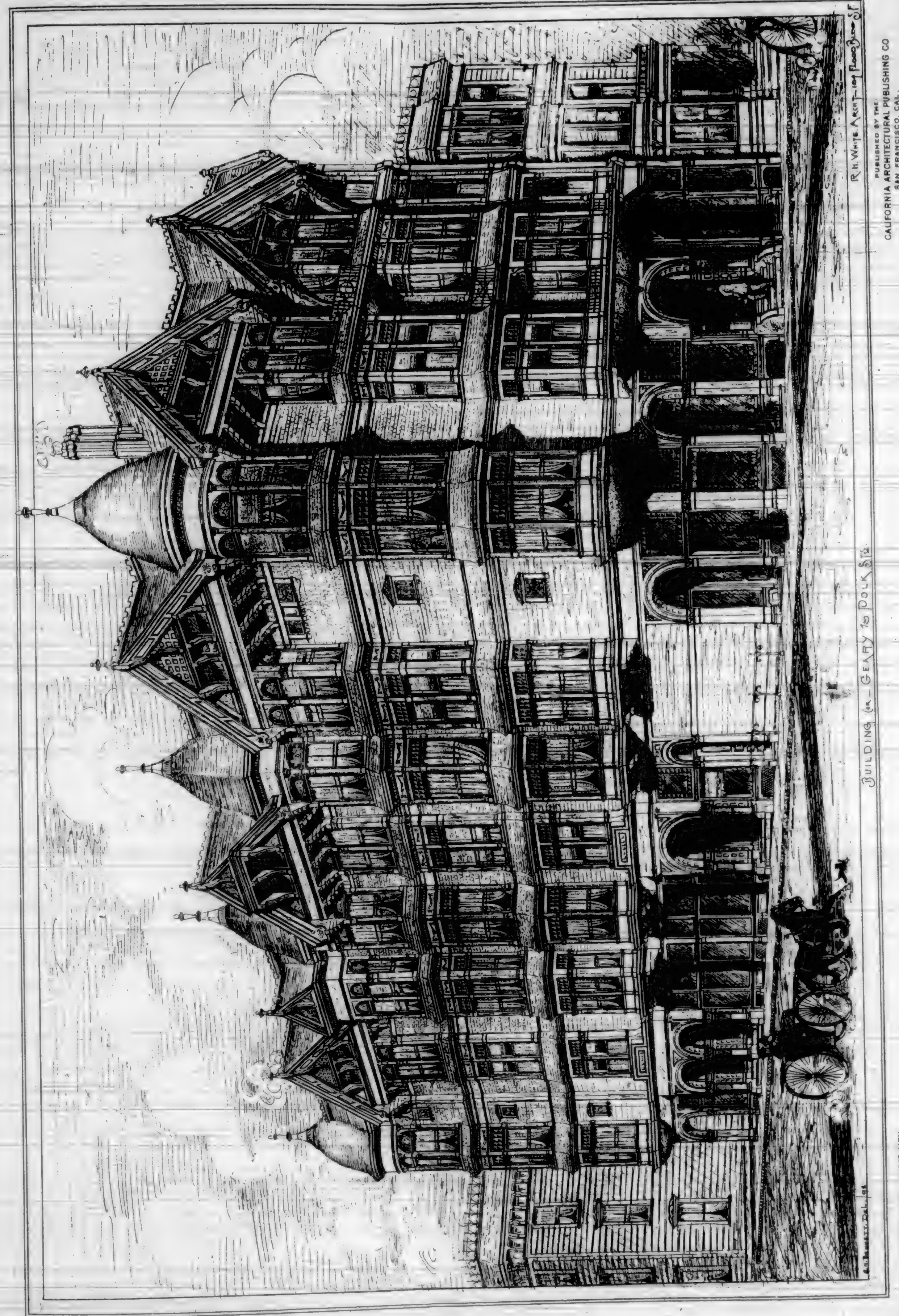


CITY PRISON OF GUAYMAS, MEXICO
FISCH AND MOORE, ARCHITECTS
SAN FRANCISCO, CAL.



BRITTON & REY PHOTO. LITH.

PUBLISHED BY THE
CALIFORNIA ARCHITECTURAL PUBLISHING CO.
SAN FRANCISCO, CAL.



BRITTON & REY PHOTO. LITH.

BUILDING FOR MR. GEARY & POLK, S.F.

PUBLISHED BY THE
CALIFORNIA ARCHITECTURAL PUBLISHING CO.
SAN FRANCISCO, CAL.



JULY 1892.

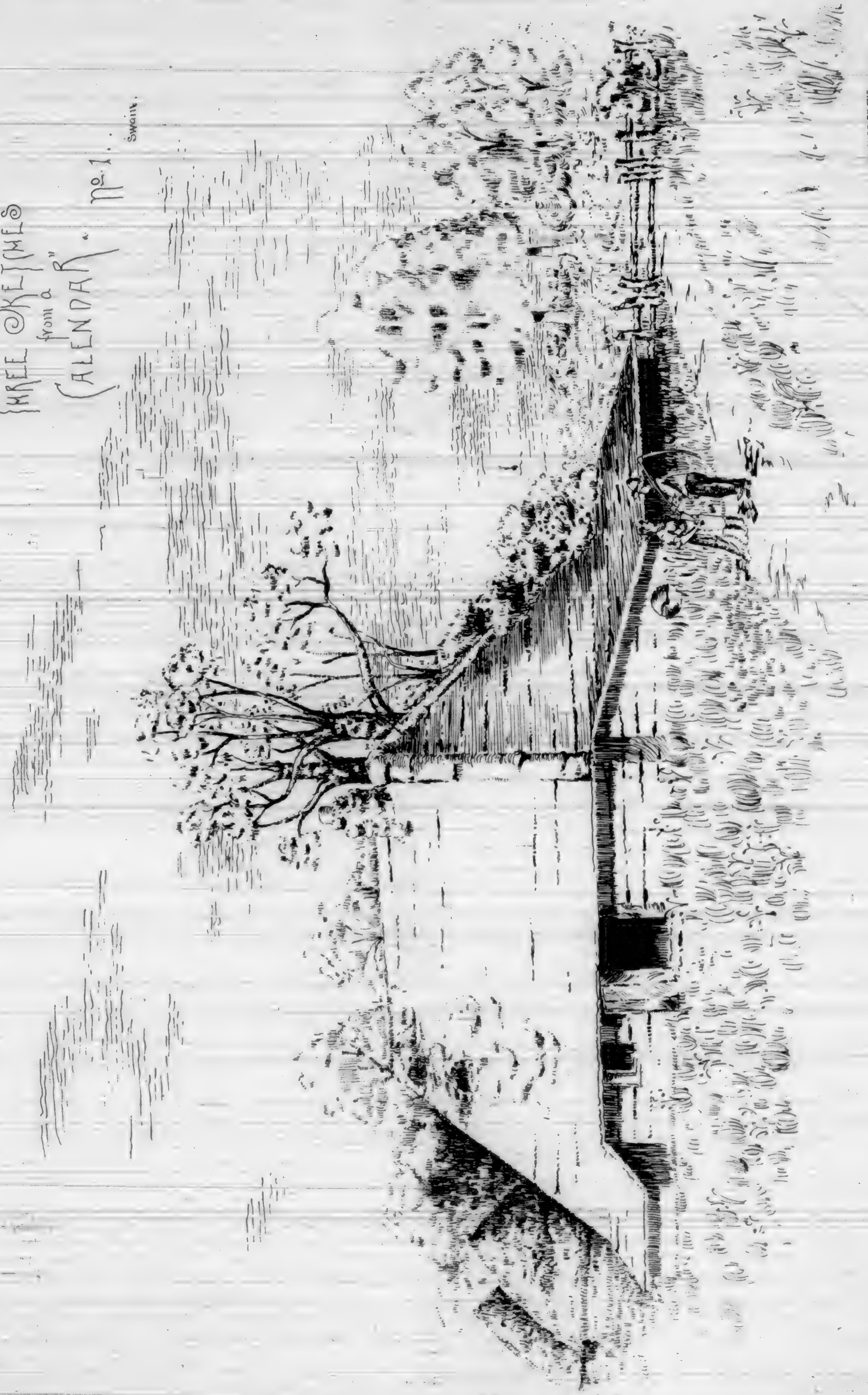
VOL. XIII. NO. 7.

THE CALIFORNIA ARCHITECT-BUILDING NEWS.

THREE SKETCHES
from a
CALENDAR.

No. 1.

SWOON.



PUBLISHED BY THE
CALIFORNIA ARCHITECTURAL PUBLISHING CO.
SAN FRANCISCO, CAL.

BRITTON & REY PHOTO LITH.

NOTICE OF MEETINGS.

SAN FRANCISCO CHAPTER, AMERICAN INSTITUTE OF ARCHITECTS, meets second Friday of each month at 408 California street.

GEO. H. SANDERS, Pres. OLIVER EVERETT, Vice-Pres.
H. T. BESTOR, Sec. JOHN M. CURTIS, Treas.

TECHNICAL SOCIETY OF THE PACIFIC COAST, meets first Friday of each month at Academy of Sciences Building.

JOHN RICHARDS, Pres. L. WAGONER, Vice-Pres.
OTTO VON GELDERN, Sec. GEO. F. SCHILD, Treas.

CALIFORNIA ELECTRICAL SOCIETY, meets the first and third Monday evenings of each month at the Academy of Sciences Building.

GEO. P. LOW, Pres. C. O. POOLE, Vice-Pres.
W. I. CROSETT, Sec. O. BROOKS, Treas.

MASTER PAINTERS' ASSOCIATION OF THE PACIFIC COAST.

E. M. GALLAGHER, Pres. H. G. JARMAN, Sec.

THE Semi-annual Reunion and Banquet of the San Francisco Chapter of the American Institute of Architects was held on Thursday, the 7th inst.

All architects were invited to participate whether members of the Chapter or not.

The "Menu Cards" were all hand pen work prepared by Mr. Daniel Polk. Each card had a different sketch and they presented a unique appearance.

Letters were read from those who were unable to attend.

Mr. Geo. H. Sanders as president of the Chapter made the opening remarks, congratulating the profession upon the progress of architecture during the fifty years of its growth on the Pacific Coast.

He claimed that we have sufficient native latent talent for all future requirements, and that it should be placed under some systematic training at as early a period as possible. He stated at some length, the benefits that would be likely to follow from a Winter exhibition of architectural drawings and art work having a special adaptation to architectural design.

He also mentioned the proposition for forming an Architectural Club, the membership of which may be broad enough to include architects, sculptors, decorators, and all workers in architectural art work, and furthermore it was proposed to include amateurs and patrons of such works. A club of this breadth could establish classes of instruction on a more extended scale than a more limited membership would allow. This idea and project of a "Club", Mr. Sanders stated, had been formulated in conjunction with Mr. Willis Polk.

The president then introduced Mr. Wm. Curlett as Master of Ceremonies.

As a preliminary to his remarks, Mr. Curlett quoted the maxim, "Perfection is out of the question but excellence can be gained by hard work," and then stated that without unrelenting study and work no excellence can be obtained.

His remarks were appropriately pointed to the subject as

he introduced the different speakers.

Mr. Geo. W. Percy then presented the awards.

1st Silver Medal to MR. SAMUEL C. BENSON, he having received first mention six times out of eight competitions for the year 1890. This student was distinguished for the delicacy, beauty and artistic quality of whatever he undertook.

2nd. Silver Medal to MR. H. J. VAN VLACK, he having received the greatest number of 2nd mentions and the final prize for the best pen and ink drawing from photograph for the year 1890.

3rd. Bronze Medal to MR. LINDEN BREE, he having received first mention for the best pen and ink drawing from photograph for 1891.

3th. Certificate of honorable mention to MR. CONRAD A. MEUSDORFER, he having received one first mention for pen and ink drawing for 1891.

Mr. Percy then gave the students a brief outline of the history of architecture and of special lines of study, as laid down by eminent authorities, and to which it was desired to call their attention.

Mr. Theo. Lenzen made some old time remarks, and Mr. Albert Pissis was gratified that so much interest was exhibited in the future welfare of the profession. Mr. Jas. E. Wolfe gave an early history of the architecture of San Francisco, and stated that in 1853, the toll gate leading to the Mission Dolores was placed at or very near the locality of the building in which we were then holding our festivities. Mr. L. R. Townsend was pleased to think that the architects should be able to "draw a full house" when so many were away on vacation trips. Mr. J. H. Littlefield made some remarks on the amplitude of speech, architecturally considered, and Mr. Edw. Kolofrath responded to the "dinner" question. Mr. M. G. Bugbee spoke on the subject of "Modern Architecture", and Mr. H. T. Bestor considered the "Press in Architecture".

Mr. Oliver Everett and Mr. Edw. Burns both treated the dining-room from the æsthetic and art side of the question. There were several present of whom we did not get the names. At eleven o'clock all hands joined in "Auld Lang Syne" and the company dispersed.

LEGAL DECISIONS.

From a large number of Legal Decisions of the higher Courts of the different States of the Union, we select and publish in this column, such as appear applicable to this section of the country.

RELEASE OF LIENS BY CONTRACTOR.—A stipulation by a contractor, "to release and discharge the house from the operation of all liens for material furnished or work done in the construction of the same," is not a waiver of the lien so as to prevent a subcontractor enforcing a lien for lumber and woodwork before final settlement between the contractor and owner, *Schroeder v. Galland*, 19 At. Rep. 632, 134 Pa. St. 277 distinguished. It is no defense to such lien in Pennsylvania that the aggregate amount of the liens entered against the building, together with the cost of completing the same, exceed the contract price, if the materials furnished were of the quantity and quality needed for its construction.

Taylor v. Murphy, Supreme Court of Pennsylvania, 23 At. Rep. 1134, 112 C.



TALKS ON LAW.

BY the earlier conquests and during the settlement of a Country, order and law develop and become a part of its civilization. The growth of law and architecture are so interwoven that the history of one becomes the history of the other. America has at different periods had portions of its territory under the influence of different nations which have left certain peculiarities in the earlier architecture that are not easily understood without a history of the settlement of these sections. To obtain a concise history of the settlements made by the different nations is of material aid to the student of the architecture of this Continent. In addition to the legal aspect of the question the student will be interested in the "Talks on Law" by Mr. Wm. C. Sprague, who has by a systematic research given a clear history of the law, with a brevity seldom met with.

THE GROWTH OF AMERICAN LAW.
By Wm. C. SPRAGUE, Esq.

To obtain an adequate idea of the law of any country, one must travel to its sources and follow its growth from its very beginning. Let us pursue this method in a few studies on the growth of our law. In the first place the seeds of American jurisprudence were transplanted from the old world. The navigators, explorers, missionaries, reformers, gold seekers of the very earliest days, brought to our shores along with their intense desire for conquest, for individual gain, for the glory of their sovereigns, and for religious freedom, the customs and laws of the homes they left and adopted them in the new world so far as they were fitted to their circumstances and their environment. The English brought with them the priceless heritage of the common law of England, and the French and Spanish brought the principles and codes built upon the foundations of the civil law—the law of Rome.

Of the early explorers succeeding Columbus, there was Juan Ponce de Leon, who landed in 1513, near St. Augustine, in Florida, in search of the Fountain of Youth; in 1520, Spanish ships touched the coast of Carolina; in 1521 the territory now known as Texas, New Mexico and California became a part of a great province attached to Spain by the con-

quest of her great explorer, Cortez. De Soto, another Spaniard, led a party from Florida across the country to the Mississippi in 1542. In 1584-5, Sir Walter Raleigh sent two expeditions to North Carolina. A Spanish settlement was made at St. Augustine, 1565. Jamestown, Virginia, became the first English settlement in 1607. New York (New Netherlands), in 1613, was settled by the Dutch, and Plymouth, Massachusetts, by the English in 1620. La Salle explored the Great Lakes and the Mississippi in 1682, the French establishing settlements at Kaskaskia and Arkansas Post in 1685, and Mobile and Vincennes in 1702. Thus England, Spain and France divided among themselves the great continent of North America. Spain got the Southern, England the Central, and France the Northern portion.

The discoveries thus made vested the new lands in the sovereign. His title was that by discovery grounded upon the three following ideas: The Christian nation that discovers a heathen land owns it to the exclusion of all other Christian nations. This nation to complete its title must within a reasonable time, occupy and use this land. The native inhabitants are only the occupants of the land and not its owners.

For over one hundred years from the discovery, by Columbus no settlement deserving of more than passing mention was made in the new world by the English. Many and feeble attempts were made, fearful hardships endured, heroic efforts put forth, but in vain. Raleigh's and Drake's efforts were unsuccessful. The Spanish settlements were more successful, and for a clear reason. Spain looked upon her explorations as means toward extending her dominion. She looked forward to another great Roman Empire. Her explorations were, in a sense, official, and once a post was planted, high officers of State with large salaries were annexed to it, thus drawing patronage, wealth and population. It was otherwise with the English. In nearly every case colonization and exploration was private enterprise; if unsuccessful drawing in its wake individual suffering and loss, but if successful, resulting in little indeed to the individual but everything to the crown. Left thus to their own resources, English colonies in America had a precarious existence for the first one hundred and fifty to two hundred years, leading one writer to say of the British colonists as late as the end of the seventeenth century, "they were robbers and pirates on a large scale."

BUSINESS MOSAICS.

Geo. H. Tucker, manufacturer of galvanized iron cornices, and other ornamental work in sheet metal; also of the "Hayes Patent" skylights, etc. See advertisement on page xxii.

The Pullman Sash Balance using Aluminum Tape is by degrees displacing the older system of cords and weights. Lately we inspected some old sashes which had been re-hung with this new balance and found them to work either up or down very easily, and to remain where left. In fact, they were under perfect control. The appliance is neat and attractive in appearance, effective in use, and has been in use a sufficient length of time to demonstrate its durability and merits. Interested parties should send to C. A. Maydwell, general agent for Pacific Coast, 132 Market street, San Francisco, Cal.

Portland Cement of the best quality is of great importance. Where brick work is laid up with a good quality of cement, it is considered earthquake-proof. As the science of manufacture becomes better understood, better qualities of the finished product may be found in the market. Messrs. Girvin, Baldwin & Eyre, at 307 California street, San Francisco, Cal., are now importing several brands of the best quality of Portland Cement. See advertisement on page xiv.

Mantels and interior finish for first-class work for banks, offices, etc., are furnished by Wm. Bateman, 411 Mission street, San Francisco, Cal.

Wire work for Aviaries is coming into use for suburban and country estates where many ornamental wire structures are contemplated. The West Coast Wire Works, Trowbridge & Son, 13 and 15 Spear street, San Francisco, Cal., make a specialty of this class of work, together with all kinds of wire work.

The future points to an advance in the iron manufacturing interests on this Coast. The troubles in the Eastern Centers of manufacture will turn the tide backward toward this section of the country. We would particularly call attention to the Western Iron Works at 123 and 125 Beale St., San Francisco, Cal. This company contracts for all kinds of wrought iron and steel work for buildings from anchors to beams and girders of the largest size.

This firm is too strong to have a couple of months dull times drive them out of the market. They have business energy to back them.

The J. L. Mott Iron Works, has issued a new catalogue and price list of Cast and Wrought Iron, Brass, Bronze and Nickel-plated Stable, Cattle and Piggy Fittings. The plans and suggestions shown are of a nature to be useful for the Architect and Builder of such structures. The sanitary problems are worked in accordance with the latest scientific knowledge of the subject. The designs are artistic and present a beauty of finish hitherto unknown in such work. The designs and arrangements shown are the result of years of experience in this line of manufacture as improved from time to time by suggestions from practical experience. Every architect who has not already done so, should inform himself by addressing the agent. See advertisement on page viii.

The San Francisco Gas Light Co. has introduced so many gas cooking and heating stoves that the old style of wasteful coal stove is being rapidly displaced. It has been demonstrated that the pleasant open fire is more economical with gas than with coal. At present new buildings with any pretensions to modern conveniences provide for open gas fires.

In the new building in course of erection for Mrs. Anna Donahue on Market street, Chas. I. Havens, Architect, outlets have been left for gas connections for open gas fires in the grates. As arranged in this case either open fires or close heaters can be used as desired.

Galvanized Steel Laundry Tubes are being used in many of the modern houses. They are light and tough, the corners rounded and easily cleaned, and do not foul and sour with use. Geo. H. Tay & Co., 612 to 620 Battery St., San Francisco, are the manufacturers.

A correspondent in the *American Machinist* says: If engineers, machinists and millwrights in general and pipe-fitters in particular knew of the good qualities of graphite, I dare say there would be ten times the demand for it. Its lubricating qualities are questioned only by the impractical and it is this quality alone that sounds its key note, so to speak. Let me describe a few of what I consider its most important uses. As above stated its primary object is lubrication and it is to this fact we must credit good pipe joints and cool bearings. In making pipe cement, (or as I would term it, pipe smear), it is not necessary to use the best oil or grease, as it is the Graphite and not the body in which it is suspended, that makes the mixture valuable and the joint perfect. I use the drippings from line shaft bearings, caught in the ordinary way and mix it with the best Ticonderoga flake Graphite so that it can be applied with an ordinary sash tool.

During the past three years I have used about fifteen or twenty pounds of dry Ticonderoga flake Graphite for pipe joints, cylinder heads, piston rod packing, etc.

Bolts, smeared with Graphite mixed as above, I have unscrewed after having been in the dampest places for upward of two years, or more, proving the anti-rusting qualities of Graphite. To cool hot bearings put it on as thick as it will mix with oil. Almost any oil or grease will answer but don't use poor Graphite.

The Bostwick Steel Lath seems to have distanced all other sheet iron lath in this vicinity. They have lately increased their facilities and are prepared to furnish their superior lath in any quantities. The superiority of this lath is at once apparent. The openings form a very strong key to hold the mortar in place, while the mortar that passes through the interstices partially covers the back of the lath, thereby forming a fire resisting material. See advertisement on page xvi.

W. T. Garratt & Co. is one of the oldest manufacturing establishments on this coast. This firm has in the market an efficient and noiseless pump especially adapted for elevators, electric motors and gas engines. This firm also furnishes bronze work of all kinds, both high and low reliefs for gates, doors, railings, hinges, etc., for cemetery work; also copper, brass and iron pipe, tubing and fittings of every description.

Patent Chimneys are a standard feature in house construction in San Francisco and the neighboring cities and towns. The Stevens Patent Chimney is one that has withstood the test of time. See advertisement on page xvii.

Another importing house has come over to American made Tin Plate for roofing and other use. Merchant & Co., of Philadelphia, are now furnishing tin roofing plates of a superior quality, each plate being guaranteed. These plates are made by a continuous process. The best quality of steel sheets in large rolls are put in at one end, run through a scouring machine, thence through a tining bath, and then scoured. A course through a tern bath gives the final coating, and then they are cut, assorted and packed. This is one continuous operation from the sheet steel to the finished product ready for the roofer.

This company furnishes copper, tin or other metal tiles for roof and wall work. These tiles give a beautiful effect to towers or high pitched roofs. The Star Ventilators furnished by them are of practical utility. See advertisement on page xxi.

The re-opening of the works of the Hydraulic Pressed Brick Company last month marks a period in the brick architecture of San Francisco. The works are situated near Vallejo where the Company has an abundance of material well adapted to the manufacture of pressed bricks. The hard clay and shale is first carried to and stored in sheds where it air slaks, dries and crumbles. It is then put into a course crusher and thence run through a finer crusher, sifted and bolted, and the resulting fine flour clay dust is conducted through the moulding and pressing machine where it is first pressed from below and then from above with a pressure of 2,000 lbs. to the inch. The bricks are now taken to the kiln and packed for burning. The kiln is continuous, but divided into eighteen compartments by open arches. Each compartment holds one day's work, or 35,000 bricks. As we inspected the kiln the conclusion was forced upon us that the economic system upon which this company is working will revolutionize the general opinion that brick is so much more expensive than frame. The daily capacity of the machine and kiln is 35,000 extra quality of stock and pressed bricks, and so nearly automatic that forty men constitute the working force. Architects and builders will find it to their advantage to look into this matter.

TENDERS TO BE RECEIVED.

Treasury Department, Office Supervising Architect, Washington, D. C., July 14th, 1892. Sealed Proposals will be received at this office until 2 o'clock P. M. on the 28th day of August, 1892, and opened immediately thereafter, for all the labor and materials required for the erection and completion of the buildings for the U. S. Quarantine Station, at San Diego, California, in accordance with the drawings and specification, copies of which may be had at this office or the office of the Superintendent, San Diego, California.

Each bid must be accompanied by a certified check for a sum not less than 2 per cent. of the amount of the proposal. The right is reserved to reject any and all bids, or to waive any defect or informality in any bid, if it be deemed in the interest of the Government to do so. All proposals received after the time stated will be returned to the bidder. Proposals must be enclosed in envelopes, sealed and marked, "Proposal for the erection and completion of the buildings for the U. S. Quarantine Station, at San Diego, Cal." and addressed to,

W. J. EDBROOKE,
Supervising Architect.

Treasury Department, Office Supervising Architect, Washington, D. C., July 2, 1892. Sealed proposals will be received at this office until 2 o'clock P. M. on the 2d day of August, 1892, and opened immediately thereafter, for all the labor and material required for the excavation, foundations, cut stone and brick work, iron and wood floor and roof construction, roof covering, approaches, etc., for the U. S. Post Office building at Fort Dodge, Iowa, in accordance with the drawing and specification, copies of which may be had on application at this office or the office of the Superintendent at Fort Dodge, Iowa.

Each bid must be accompanied by a certified check for a sum not less than 2 per cent. of the amount of the proposal. The right is reserved to reject any or all bids and to waive any defect or informality in any bid, if it be deemed in the interest of the Government to do so. All bids received after the time stated will be returned to the bidders. Proposals must be enclosed in envelopes, sealed and marked, "Proposal for the Excavation, Foundations, Cut Stone and Brick work, Iron and Wood Floor and Roof Construction, etc., for the U. S. Post Office Building at Fort Dodge, Iowa," and addressed to,

W. J. EDBROOKE,
Supervising Architect.

CITY BUILDING NEWS.

Baker and Greenwich. To build except painting and plumbing; owner, Otto Kaiser; architects, Martens & Coffey; contractor, J. J. O'Brien; cost, \$3,700; signed, June 20; filed, June 22; payments, \$840, enclosed; \$840, brown mortar on; \$840, completed; \$840, 35 days.

Battery near Pacific. Plumbing and gas-fitting; owner, Jas. G. Esler; architect, H. A. Schulze; contractors, Wm. S. Snook & Son; cost, \$3,480; signed, June 11; filed, June 18; payments, 75 per cent. as work progresses; 1st day of each month; balance, 35 days.

Broadway near Franklin. Painting, graining, etc.; owner, J. H. & M. J. Hatch; architect, Jas. E. Wolfe; contractor, J. F. Sullivan; cost, \$1,130; signed, June 4; filed, June 7; payments, 75 per cent. of value of work done when exterior is primed; 75 per cent. of value of work done when interior is primed and exterior has received two coats of paint; 75 per cent. completed; 25 per cent. 35 days.

Brosman and Guerrero. Frame building; owner, Mary S. Hodgkins; architect, Jno. T. Kidd; contractor, W. A. Secor; cost, \$2,700; signed, June 18; filed, June 18; payments, \$400, first floor joists on; \$300, enclosed; \$300, brown mortar on; \$500, completed; \$700, 35 days.

Buchanan near Union. Two-story frame; owner, P. H. Murphy; architect, C. M. Rousseau; contractor, H. C. Bigge; cost, \$1,000; signed, June 16; filed, June 18; payments, \$750, frame up; \$750, brown mortar on; \$750, completed; \$750, 35 days.

Bush and Chelsea Place. Lathing and plastering; owner, Jas. Cochran; architect, P. R. Schmidt; contractor, F. Coughlin; cost, \$1,000; signed, May 24; filed, June 7; payments, 1st day of each month 75 per cent. as work progresses; balance, 35 days.

Bush and Chelsea Place. Hydraulic elevator; owner, Mrs. M. W. Newman; architect, P. R. Schmidt; contractors, W. H. Birch & Co.; cost, \$2,675; signed, June 9; filed, June 16; payments, \$1,000, 1/2 work done; \$1,000, completed; \$675, 35 days.

California and Broderick. Brickwork; owner, Methodist Episcopal Church; architects, Perry & Hamilton; contractor, Waldemar Tharp; cost, \$5,703; signed, April 11; filed, June 13; payments, 75 per cent. as work progresses; 1st Saturday of each month; balance, 35 days.

California near Drumm. Pile foundation; owner, Luning Co.; architects, Cuykendall & Coxhead; contractors, Darby, Laydon & Co.; cost, \$7,400; signed, June 14; filed, June 15; payments, 75 per cent. as work progresses, 1st day of each month; balance, 35 days.

California and Sansome. Brick terra-cotta work, etc.; owner, Mutual Life Insurance Co. of N. Y.; architect, Clinton Day; contractor, J. S. McCarthy; cost, \$60,884; signed, June 8; filed, June 13; payments, \$8,000, walls built to top of fourth story; \$10,000, walls built to top of belt course over sixth story; \$10,000, walls built to main cornice; \$10,000, all exterior and fire walls finished; \$12,684, completed, with rebates or extra charges; \$17,490, 35 days.

California near Octavia. Carpenter work, etc.; owner, Anna D. Miner; architect, Samuel Newsom; contractor, A. Jackson; cost, \$6,000; signed, June 20; filed, June 20; payments, 75 per cent. as work progresses; balance, 35 days.

Cherry near Jackson. Frame residence; owner, Jas. B. Batten; architect, Willis Folks; contractor, R. P. Frazier; cost, \$4,170; signed, June 13; filed, June 14; payments, \$1,000, frame up; \$1,000, brown mortar on; \$1,120, completed; \$1,050, 35 days.

Clay near Frederick. Alterations and additions; owner, V. J. Dufrance; architect, Chas. M. Rousseau; contractor, Louis Medus; cost, \$2,650; signed, May 31; filed, June 2; payments, \$602, enclosed; \$602, brown mortar on; \$602, completed; \$604, 35 days.

Crocker Building, 2d floor. Office fittings; owner, Equitable Life Assurance Co.; architect, A. Page Brown; contractors, Miller & Hamilton; cost, \$1,900; signed, May 25; filed, June 1; payments, 75 per cent. when completed; balance, 35 days.

Day near Church. Carpenter, brickwork, etc.; owner, Elizabeth Cavanaugh; architect, Edward Burns; contractor, Greenwood Contracting Co.; cost, \$3,680; signed, June 6; filed, June 7; payments, \$925, frame up; \$925, brown mortar on; \$925, completed; \$905, 35 days.

Douglass near 17th. Frame house; owner, L. Kenney; contractors, Marcuse & Remick; cost, \$1,150; signed, June 2; filed, June 16; payments, \$288, frame up; \$288, brown mortar on; \$288, completed; \$280, 35 days.

Drumm near California. Brick and stonework; owner, H. Braunschweiger; architects, Kenitzer & Kollhoff; contractor, Adam Miller; cost, \$11,240; signed, June 4; filed, June 6; payments, \$2,500, 2d story joists in place; \$3,000, fire wall complete; \$2,940, completed; \$2,900, 35 days.

Duncan near Church. Alterations and additions; owner, Henry Wendt; architects, Martens & Coffey; contractor, M. Laffens; cost, \$1,955; signed, June 11; filed, June 13; payments, \$550, enclosed, outside finish on and partitions set; \$745, completed; \$400, 35 days.

Eddy and Leavenworth. Four-story frame; owner, Julius Platshek; architect, J. G. Hult; contractor, S. T. Crawford; cost, \$19,150; signed, June 17; filed, June 17; payments, \$1,250, foundation walls up, and 1st story studding and 2d floor joists on; \$2,000, enclosed and roof boards on; \$2,500, rough plumbing in and brown mortar on; \$3,000, plastered and glazing except store windows done; \$1,302.50, interior and exterior finish on; \$1,250, completed; \$1,787.50, 35 days.

Filbert near Buchanan. Two-story frame; owner, Josephine L. Lattie; architect, Emile Depierre; cost, \$1,815; signed, April 21; filed, June 3; payments, \$400, frame up; \$300, brown mortar on; \$300, plastered and standing finish on; \$300, completed; \$450, 35 days.

Fillmore near Bush. Carpenter work, tinning, etc.; owner, J. L. Franklin; architect, Wm. Curlett; contractor, John Miron; cost, \$7,825; signed, June 13; filed, June 16; payments, \$1,000, second story frame up; \$1,000, roof on; \$1,368.75, outside finish on; \$1,500, partitions set; \$1,000, completed; \$1,950.25, 35 days.

Fillmore near Bush. Lathing, plastering and centers; owner, J. L. Franklin; architect, Wm. Curlett; contractor, Thos. Bodkins; cost, \$1,700; signed, June 15; filed, June 22; payments, \$300, brown mortar on; \$675, completed; \$425, 35 days.

First Ave. bet. Fulton and McAllister. Two-story frame; owner, Paul Ritter; contractor, Jacob Schuler; cost, \$2,285; signed, May 26; filed, June 27; payments, 75 per cent. as work progresses; balance 35 days.

Folsom and 7th. Three-story building; owner, Jennie W. Cushing; architect, A. W. Pathart; contractors, Childs & Chatham; cost, \$15,925; signed, June 13; filed, June 21; payments, \$2,500, frame up; \$2,000, enclosed and chimneys built; \$2,000, lathed, brown mortar on and window frames set; \$2,000, plastered; \$3,425, completed; \$400, 35 days.

Fourteenth near Howard. Three-story frame; owner, J. Johnson; architects, John & Balezynski; contractors, Schutt & Kreeker; cost, \$7,800; signed, June 6; filed, June 7; payments, \$2,000, frame up; \$1,950, brown mortar on; \$1,950, ready for painter; \$1,900, accepted.

Franklin near Sacramento. Alterations and additions; owner, I. W. Hellman; architect, Clinton Day; contractor, C. Chisholm; cost, \$28,900; signed, June 13; filed, June 15; payments, \$3,675, frame and chimneys built; \$5,400, rough plumbing in, lathed and brown mortar on; \$3,000, plastered; \$7,625, plumbing completed; \$1,975, completed; \$7,225, 35 days.

Franklin near Vallejo. Carpenter work; owner, Alex. Warner; architect, E. A. Herman; contractors, White Bros.; cost, \$7,270; signed, June 9; filed, June 11; payments, 75 per cent. as work progresses, 1st and 15th day of each month; balance, 35 days.

Genry, No. 36, and California, No. 573. Alterations; owner, The Luning Co.; architects, Townsend & Wyneken; contractor, J. W. Wessinger; cost, \$3,500; signed, June 9; filed, June 9; payments, \$2,000, completed; \$1,500, 35 days.

Green near Stockton. Concrete and artificial stone work; owner, A. Demartini; architect, Wm. Mosser; contractor, Geo. Goodman; cost, \$1,067; signed, May 25; filed, June 3; payments, 75 per cent. as work progresses; balance 35 days.

Green and Union. Three-story frame; owners, A. Demartini and J. Cavanaro; architect, Wm. Mosser; contractor, John J. Dunn; cost, \$7,340; signed, June 20; filed, June 20; payments, \$1,065, frame up to second floor including second story joists; \$1,065, enclosed; \$1,065, brown mortar on; \$1,065, plastered, rear platforms and front finished; \$1,065, completed; \$1,825, 35 days.

Greenwich near Laguna. Two-story frame; owner, Jacques Lassus; architect, Chas. M. Rousseau; contractors, Miron & Gardner; cost, \$2,375; signed, June 1; filed, June 2; payments, \$748, enclosed; \$743, brown mortar on and front finished; \$743, completed; \$746, 35 days.

Hartford St. One-story cottage; owner, Chas. Steinbring; contractors, Petterson & Person; cost, \$2,300; signed, June 1; filed, June 13; payments, \$550, frame up; \$550, brown mortar on; \$550, completed; \$550, 35 days.

Jessie near 6th. Alterations and additions; owner, Thos. Reid; architects, Shea & Shea; contractor, J. J. O'Brien; cost, \$2,900; signed, June 14; filed, June 14; payments, \$725, house moved, raised and new frame up; \$725, plastered; \$725, completed; \$725, 35 days.

Jersey near Castro. Three one-story cottages; owner, Cal. Investment Association; contractor, W. H. Mead; cost, \$4,200; signed, June 13; filed, June 17; payments, \$900, frame up; \$900, brown mortar on; \$1,200, completed; \$1,200, 35 days.

Jones and McAllister. Cast and wrought iron work; owner, Hibernia Savings and Loan Society; architects, Pissis & Moore; contractor, Henry Ralston; cost, \$1,092; signed, May 20; filed, June 6; payments 75 per cent. 1st and 15th day of each month as work progresses; balance, 35 days.

Market near Tenth. Brick building; owner, Isabella Alice Clark; architect, Clinton Day; contractor, T. H. Day; cost, \$49,000; signed, May 31; filed, May 31; payments, \$4,850, 1st tier of joists set; \$2,183, 2d tier set; \$6,480, 4th tier set, \$6,000, roof ready for tinning; \$6,255, plastered, tinned and floored; \$11,648, completed; \$12,475, 35 days.

Market near 17th. Three-story frame; owner, Geo. R. Monroe; architect, Geo. H. Kerr; contractor, Wm. Campbell; cost, \$14,450; signed, May 26; filed, June 2; payments, \$1,000, enclosed; \$1,000, brown mortar on; \$1,000, painted and plastered; \$450, completed; \$1,000, 35 days.

Masonic Ave. near Waller. To build; owner, C. Allison; architect, W. H. Little; contractor, E. W. Lewis; cost, \$1,385; signed, May 25; filed, May 31; payments, \$207.75, frame up; \$207.75, enclosed; \$207.75, brown mortar on; \$207.75, standing finish on; \$207.75, completed; \$46.25, 35 days.

Mission near New Montgomery. Brick work; owner, E. H. Kittredge; architect, Chas. Geddes; contractors, Richardson & Gale; cost, \$20,000; signed, June 11; filed, June 13; payments, \$5,000, walls ready for 1st floor joists; \$4,000, walls ready for 3d story joists; \$3,000, walls ready for 5th story joists; \$3,000, completed; \$5,200, 35 days.

Mission near New Montgomery. Carpenter work; owner, E. H. Kittredge; architect, Chas. Geddes; contractor, A. Jackson; cost, \$20,200; signed, June 11; filed, June 13; payments, \$1,500, second floor joists set and iron posts up ready for brick work; \$3,000, fourth floor joists secured; \$3,000, roof on, floors laid and windows in; \$2,500, brown mortar on outside finished and stairs up; \$2,150, completed; \$5,000, 35 days.

Mission St. Pier No. 2. To build bridge; owners, J. Rosenfeld & Sons; contractor, S. F. Bridge Co.; cost, \$5,555; signed, May 20; filed, June 11; payments, 50 per cent. when material is on the ground; 25 per cent. completed; 25 per cent. 35 days; \$51 added to the cost for each pile driven.

Mission near 16th. Store and flats; owner, Edward Hawthorne; contractor, W. C. Robinson; cost, \$1,700; signed, June 2; filed, June 7; payments, \$800, frame up; \$800, enclosed, gas and water pipes in; \$800, plastered; \$800, carpenter work done; \$300, completed; \$1,200, 35 days.

Mission near 17th. Alterations and additions; owner, Adolph Morris; contractors, Droge & Munster; cost, \$5,000; signed, June 6; filed, June 7; payments, \$850, 1st story studding set, \$950 brown mortar on; \$950, plastered; \$950, completed; \$1,270, 35 days.

Mission St. No. 2,314. To build; owner, A. Rafetto; contractors, Toer & Massa; cost, \$2,735; signed, May 12; filed, June 13; payments, \$410.35, brickwork and excavation finished; \$410.35, skeleton put on; \$410.35, brown mortar on; \$410.35, completed; \$83.75, 35 days.

Natoma near 9th. Alterations and additions; owner, P. Foley; architect, H. R. Schmuckert; contractor, Jas. Larkin; cost, \$1,800; signed, June 13; filed, June 15; payments, \$450, roof on; \$450, brown mortar on; \$450, completed; \$450, 35 days.

O'Farrell near Devisadero. Three-story frame; owner, Seymour Gabriel; architects, B. McDougall & Son; contractors, G. Petersen and A. Olson; cost, \$9,500; signed, June 22; filed, June 23; payments, \$800, brick walls and 1st tier of joists in; \$800, frame up; \$1,400, rustic on, shingled, cornice up, rough plumbing in and ready for lathing; \$2,300, plastered and one coat of paint on; \$900, interior finished, painted and outside platforms complete; \$900, completed; \$2,355, 35 days.

O'Farrell near Fillmore. Two-story frame; owner, Mrs. H. A. McLean; cost, \$1,000; signed, June 1; filed, June 2; payments, \$300, frame up; \$700, brown coated, \$550, plastered; \$550, completed; \$1,000, 35 days.

Oregon and Drumm. Two-story brick building; owner, J. G. Fair; architect, H. A. Schulze; contractors, Riley & Leane; cost, \$18,000; signed, June 8; filed, June 11; payments, 75 per cent. as work progresses, 1st day of each month; balance, 35 days.

Oregon and Drumm. Two-story brick; owner, Jas. G. Fair; architect, H. A. Schulze; contractors, O'Connell & Lewis; cost, \$8,400; signed, June 13; filed, June 22; payments, 75 per cent. as work progresses, 1st day of each month; balance, 35 days.

Oregon and Drumm. Two-story brick; owner, Jas. G. Fair; architect, H. A. Schulze; contractor, Wm. Cronan; cost, \$1,800; signed, June 18; filed, June 22; payments, 75 per cent. as work progresses, 1st day of each month; balance, 35 days.

Oregon and Drumm. Cast iron work; owner, Jas. G. Fair; architect, H. A. Schulze; contractor, Henry Ralston; cost, \$5,450; signed, June 15; filed, June 22; payments, 75 per cent. as work progresses, 1st day of each month; balance, 35 days.

Pacific near Hyde. Three-story flat; owner, Jas. Lomelino; architect, W. C. Dickerson; contractor, John Strand; cost, \$14,100; signed, June 18; filed, June 21; payments, \$800, frame up; \$1,200, enclosed and brown mortar on; \$1,100, completed; \$1,000, 35 days.

Pacific Ave. near Broderick. Alterations and additions; owner, Clara E. Cunningham; architect, Clinton Day; contractor, C. Chisholm; cost, \$10,100; signed, June 6; filed, June 7; payments, \$2,500, sheathed and roof ready for tile; \$2,000, brown mortar on and house primed; \$3,075, completed; \$2,525, 35 days.

Page and Clayton. Two-story frame; owner, C. Knickerbocker; contractor, Frank Williams; cost, \$2,200; signed, June 14; filed, June 18; payments, \$2,200; 35 days.

Park Ave. near City Hall Ave. To build; owner, Eliza Baum; architects, Townsend & Wyneken; contractor, J. H. Wilson; cost, \$2,300; signed, June 14; filed, June 14; payments, \$500, wall ready for ceiling joists; \$800, brown mortar on; \$800, completed; \$800, 35 days.

Park Road near Park Hill Ave. Carpenter, brick and mill work; owner, Sister M. Orielle; architects, Shea & Shea; contractor, Hugh Foote; cost, \$1,150; signed, May 25; filed, May 27; payments, \$965, frame up; \$965, enclosed and roof on; \$965, tanks in position and outside finish on; \$965, completed; \$1,288, 35 days.

Pennsylvania Ave. near Colusa. One-story frame; owner, Michael Daly; contractor, J. F. Coleman; cost, \$1,350; signed, June 4; filed, June 6; payments, \$200, frame up and rustic on; \$200, enclosed; \$200, plastered; \$400, completed; \$550, 35 days.

Pierce near Turk. Frame cottage; owner, Emma J. Smith; architect, A. J. Barnett; contractor, John Miron; cost, \$1,000; signed, June 9; filed, June 16; payments, \$475, roof boards and rustic on; \$475, brown coat and outside finish on; \$475, completed; \$475, 35 days.

Post near Powell. Carpenter, stairwork, etc.; owner, A. Aronson; architects, C. R. & J. M. Wilson; contractor, J. R. Whalen; cost, \$8,941; signed, May 31; filed, May 31; payments, \$1,500, roof ready for tinning; \$1,500, brown mortar on; \$2,000, inside finish on; \$1,705.75, completed; \$2,255.25, 35 days.

Post near Powell. Cast wrought iron work, etc.; owner, A. Aronson; architects, C. R. & J. M. Wilson; contractor, C. Ferris; cost, \$11,400; signed, May 31; filed, May 31; payments, \$2,000, basement walls up and columns set; \$2,000, May 31; payments, \$4,850, 1st story walls up; \$1,000, 3d story walls up; \$1,000, 4th story walls up; \$500, firewalls up; \$500.50, completed; \$2,800.50, 35 days.

Powell near Sacramento. Three-story frame and alterations; owner, Washington Nevins; contractors, Childs & Chatham; cost, \$5,000; signed, June 1; filed, June 2; payments, \$433, old house moved and finished; \$1,120, building enclosed; \$1,121, brown mortar on; \$1,121, completed; \$1,265, 35 days.

Pacific near Powell. Two-story frame; owner, Mrs. H. Dunn; architects, John & Balezynski; contractor, Peter Johnson; cost, \$2,655; signed, June 6; filed, June 6; payments, \$500, frame up; \$500, enclosed and partitions set; \$500, plastered; \$475, accepted; \$600, 35 days.

Rincon Place and Harrison. Carpenter work and excavations; owner, Charles Chaffers; contractors, McLeod & McLain; cost, \$3,373; signed, May 21; filed, June 3; payments, \$843, frame up; \$843, brown mortar on; \$843, completed; \$844, 35 days.

Sacramento near Hyde. Excavation, brick and patent chimney; owner, Ed. Walsh; architects, Shea & Shea; contractors, Martin Fenell & Son; cost, \$1,272; signed, June 11; filed, June 13; payments, \$800, foundations complete; \$572, chimneys finished; \$100, completed.

Sacramento near Hyde. Two-story frame; owner, Ed. Walsh; architects, Shea & Shea; contractor, Geo. Weismann; cost, \$14,150; signed, June 9; filed, June 13; payments, \$2,344, frame up and rafters on; \$2,344, brown mortar on; \$2,344, hard finish on; \$2,355, completed; \$3,113, 35 days.

Sacramento near Maple. Frame cottage with basement; owner, John L. Ballant; contractors, S. C. Murrey & Co.; cost, \$1,540; signed, June 16; filed, June 21; payments, \$300, frame up; \$400, brown mortar; \$400, completed; \$400, 35 days.

Sacramento near Pierce. Alterations and additions; owner, Benjamin Moore; architect, Fred B. Wood; contractor, Robert Currier; cost, \$6,007; signed, June 13; filed, June 16; payments, \$1,200, grading, carpenter work on Sacramento street front completed, rear building moved and raised, lot graded and brick work done; \$1,250, frame of new house up and roof on; \$1,250, outside completed, brown mortar on and building primed; \$1,250, completed; \$1,727, 35 days.

Sacramento near Yerba Buena. Three-story frame; owner, W. Nielson; architects, John & Balezynski; contractor, F. L. Hansen; cost, \$3,285; signed, June 17; filed, June 18; payments, \$1,000, frame up; \$950, floors laid and partitions set; \$1,000, plastered; \$1,000, completed; \$1,255, 35 days.

Scott near Geary. Painting of interior; owner, Board of Education; architect, T. J. Walsh; contractor, J. M. Sindlinger; cost, \$1,075; signed, June 1; filed, June 1; payments, 75 per cent. of work done on 1st and 15th day of each month; balance, 35 days.

Seventh and Folsom. Three-story frame; owner, Mrs. J. Cushing; architect, A. W. Pathart; contractors, Childs & Chatham; cost, \$15,923; signed, June 13; filed, June 15; payments, \$2,500, frame up; \$2,000, enclosed and chimneys built; \$2,000, brown mortar on and window frames set; \$2,000, plastered; \$8,425, completed; \$4,000, 35 days.

Sixth Ave. near Clement. Frame cottage; owner, W. L. Ferguson; contractor, W. H. Mead; cost, \$1,400; signed, June 13; filed, June 17; payments, \$300, frame up; \$300, brown coated; \$400, completed; \$400, 35 days.

Sixteenth Ave. near Post. One-story and basement; owner, C. Buckley; architect, J. J. Clark; contractor, W. J. B. Warner; cost, \$1,485; signed, June 13; filed, June 13; payments, \$750, enclosed; \$750, brown mortar on; \$750, completed; \$750, 35 days.

South Park near 3rd. Three-story frame; owner, N. K. Masten; contractor, Caspar Zwickler; cost, \$6,900; signed, May 25; filed, June 2; payments, \$1,057, enclosed; \$1,057, brown mortar on; \$1,057, plastered and outside finish up; \$1,089, completed; \$1,450, 35 days.

Stanyon near Page. Two-story frame; owner, Frederick Hess; architect, S. Hatfield; contractor, A. W. Smith; cost, \$3,075; signed, June 2; filed, June 4; payments, \$950, enclosed; \$950, brown mortar on; \$950, plastered; \$955, accepted; \$1,270, 35 days.

Stewart near Mission. Alterations and additions; owner, Jas. McKenna; architect, D. E. Mellis; contractors, Darby, Laydon & Co.; cost, \$1,075; signed, May 28; filed, June 3; payments, 75 per cent. when pile driving has been completed on adjoining lot; 25 per cent. 30 days.

Stuart near Mission. A pile foundation; owner, P. M. Partridge; architect, D. E. Mellis; contractors, Darby, Laydon & Co.; cost, \$4,000; signed, May 28; filed, June 3; payments, 75 per cent. 30 days after date of this contract according to work done; 25 per cent. 35 days.

Stewart near Mission. Concrete work; owner, P. M. Partridge; architect, D. E. Mellis; contractors, Ransome & Cushing; cost, \$1,775; signed, June 1; filed, June 3; payments, 1st day of each month 75 per cent. as work progresses; balance, 35 days.

Stewart near Mission. Carpenter work; owner, P. M. Partridge; architect, D. E. Mellis; contractor, Thos. H. Day; cost, \$10,130; signed, June 1; filed, June 3; payments, 1st day of each month 75 per cent. as work progresses; balance, 35 days.

Stevenson near 4th. Alterations and additions; owner, Jas. Westall; architect, Wm. Curlett; contractor, Wm. Linden; cost, \$3,149; signed, June 22; filed, June 23; payments, \$500, brick work done and rising done; \$500, roof on; \$500, brown mortar on; \$500.75, completed; \$575.25, 35 days.

Sunnyside, block 42, lot 42. Carpenter, brick work, etc.; owner, Wm. Ingarten

The Union is a staunch friend to the interests that tend to build up and develop this section of the Coast. The section around and back of Sacramento is especially adapted for manufacturing. We shall touch upon this subject again in the future.

ARCHITECTS AND STEAM PLANTS.

AN engineer says: "I wonder why it is that architects, in their plans and specifications for office and other large buildings, pay such little attention to adequate accommodations for the steam plant. I have in mind a building recently completed in this city, of magnificent proportions and splendidly finished, having everything within its walls that modern ingenuity has devised for the convenience of office men, yet when the building was fairly under way and the proprietors began to look around for their steam equipment, they had to entirely change their plans in that particular, for the reason that the space allotted for the engine room would not permit them to carry out their original designs. The room was too cramped altogether, and instead of putting in one or two large engines with capacity sufficient to furnish the power required, they were compelled to place nearly four times that number of a different type of engine, small enough to fit in the small apartments set aside for that purpose. Now, isn't that all wrong? Why, it looks like some of these architects do not regard the steam plant as at all worthy of consideration in making their calculations, yet nothing is more important, for light, heat and transfer facilities are dependent upon it, and if these do not work right and give satisfaction to the occupants, the building will lose its reputation for good management, and untenanted rooms will be the consequence. The sooner this fact is recognized by our architects the better, and the sooner will they become entitled to the good regards of all those who in one way or another are interested in the efficiency and proper arrangement of the steam plant."—*Age of Steel.*

SCOPE AND HISTORICAL DEVELOPMENT OF THE SCIENCE OF "TIMBER PHYSICS."

BY B. E. FERNOW, CHIEF OF FORESTRY DIVISION.

Continued from page 65.

WHENEVER human knowledge in any particular direction has grown to such an extent and complexity as to make it desirable for greater convenience and better comprehension to group it, correlate its parts, and organize them into a systematic whole, we may dignify such knowledge by a collective name as a new science or branch of science. The need of such organization is especially felt when a more systematic progress in accumulating new knowledge is contemplated. In devising, therefore, the plans for a systematic and comprehensive examination of our woods it has appeared desirable to establish a system under which is to be organized all the knowledge we have or may acquire of the nature and behavior of wood.

To this new branch of natural science I propose to give the name of "timber physics," a term which I have used first in my Report for 1887, when, in devising a systematic plan of forestry science, the absence of a collective name for this class of knowledge became apparent.

While forest biology contemplates the forest and its components in their *living condition*, we comprise in timber physics all phenomena exhibited in the *dead material* of forest production.

The practical application of timber or wood for human use, its technology, is based upon the knowledge of timber physics, and under this term we comprise not only the anatomy, the chemical composition, the physical and mechanical properties of wood, but also its diseases and defects, and a knowledge of the influences and conditions which determine structure, physical, chemical, mechanical, or technical properties and defects. This comprehensive science, conceived under the name here chosen, although developed more or less in some of its parts, has never yet been dignified by a special name, nor has a systematic ar-

range of its parts been attempted before. It comprises various groups of knowledge derived from other sections of science, which are neither in themselves nor in their relations to each other fully developed.

While plant physiology, biology, chemistry, anatomy, and especially xylotomy, or the science of wood structure, are more or less developed and contribute toward building up this new branch of science, but little knowledge exists in regard to the interrelation between the properties of wood on one side and the modifications in its composition and structure on the other. Even the relation of the properties of various woods, as compared with each other, and their distinct specific peculiarities is but little explored and established. Less knowledge still exists as to the relation of the conditions which surround the living tree to the properties which are exhibited in its wood as a result of its life functions. Suppositions and conjectures more or less plausible preponderate over positive knowledge derived from exact observation and from the results of experiments. Still less complete is our knowledge in regard to the relation of properties and the methods and means used for shaping or working the wood.

The close interrelation of all branches of natural science is now so well organized that I need not remind my readers that hard and fast lines cannot be drawn, whereby each field of inquiry is confined and limited; there must necessarily be an overlapping from one to the other. Any system, therefore, of dividing a larger field of inquiry into parts is only a matter of convenience; its divisions and correlations must be to some extent arbitrary and varied, according to the point of view from which we proceed to divide and correlate.

There are two definite and separate directions in which this branch of natural science needs to be developed, and the knowledge comprised in it may be divided accordingly. On one side it draws its substance largely from the more comprehensive fields of botany, molecular physics, and chemistry, and on the other side it rests upon investigations of the wood material from the point of view of mechanics or dynamics. In the first direction we are led to deal with the wood material as it is, its nature or appearance and *condition*; in the second direction we consider the wood material in relation to external mechanical forces, its *behavior* under stress.

The first part is largely descriptive, concerned in examining gross and minute structures, physical and chemical conditions and properties, and ultimately attempting to explain these by referring to causes and conditions which produce them. This is a field for investigation and research by the plant physiologist in the laboratory in connection with studies of environment in the forest. The second part, which relies for its development mainly upon experiment by the engineer, deals with the properties which are a natural consequence of the structure, physical condition, and chemical composition of the wood as exhibited under the application of external mechanical forces. It comprises, therefore, those studies which contemplate the wood substance, with special reference to the uses of man, and forms ultimately the basis for the mechanical technology of wood or the methods of its use in the arts.

The correlation of the result of these two directions of study as cause and effect is the highest aim and ultimate goal, the philosophy of the science of timber physics. Timber physics, in short, is to furnish all necessary knowledge of the rational application of wood in the arts, and at the same time, by retrospection, such knowledge will enable us to produce in our forest growth qualities of given character.

Conceived in this manner it becomes the pivotal science of the art of forestry, around which the practice both of the consumer and producer of forest growth moves.

The first part of our science would require a study into gross and minute anatomy, the structure of the wood, form, dimensions, distribution, and arrangement of its cell elements and of groups of structural parts, not only in order to distinguish the different woods, but also to furnish the basis for an explanation of their physical and mechanical properties. We next would class here all investigations into the physical nature or properties of the wood material, which necessarily also involves an investigation into the change of these

properties under varying conditions and influences. A third chapter would occupy itself with the chemical composition and properties of woods and their changes in the natural process of life, which predicate the fuel value and durability as well as the use of the wood in chemical technology.

Although, philosophically speaking, it would hardly seem admissible to distinguish between physical and mechanical properties or to speak of "mechanical" forces, for the sake of convenience and practical purposes it is desirable to make the distinction and to classify all phenomena and changes of non-living bodies, or bodies without reference to life functions, into chemical, physical, and mechanical phenomena and changes. As chemical phenomena or changes, and therefore also conditions or properties, we class, then, those which have reference to atomic structure; as physical phenomena changes and properties, those which refer to and depend on molecular arrangement; and as mechanical (molar) changes and properties those which concern the masses of bodies, as exhibited under the influence of external forces, without altering their physical or chemical constitution.

There is no doubt that this division is somewhat forced, since not only most or all mechanical (as here conceived) changes are accompanied or preceded by certain alterations of the interior molecular arrangement of the mass, but also many physical phenomena or properties, like density, weight, shrinkage, having reference to the mass, might be classed as mechanical; yet, if we conceive that physical phenomena are always concerned with the "quantity of matter in molecular arrangement" and with the changes produced by interior forces, while the latter are concerned rather with the "position of matter in molecular arrangement" and with changes under application of exterior forces, the distinction assumes a practical value.

Our conception of these distinctions will be aided if we refer to the physical laboratory as furnishing the evidence of physical phenomena, and to the mechanical laboratory as furnishing evidence of mechanical phenomena.

These latter, then, form the subject of our second or dynamic part of timber physics, which concerns itself to ascertain mainly by experiment, called tests, under application of the laws of elasticity, the strength of the material and other properties which are exhibited as reactions to the influence of applied stresses, and those which need consideration in the mechanical use of the material in the various arts.

Having investigated the material in its normal condition, we would necessarily come to a consideration of such physical and chemical conditions of the material as are abnormal and known as disease, decay, or defects.

Finally, having determined the properties and their changes as exhibited in material produced under changing conditions or differing in physical and structural respects, it would remain the crowning success and goal of this science to relate mechanical and physical properties with anatomical and physiological development of the wood substance.

THE SUBLIME AND BEAUTIFUL.

By Edmund Burk.

Published about 1753.

PART I.—NOVELTY.

THE first and the simplest emotion which we discover in the human mind, is Curiosity. By curiosity I mean whatever desire we have for, or whatever pleasure we take in, novelty. We see children perpetually running from place to place, to hunt out something new: they catch with great eagerness, and with very little choice, at whatever comes before them; their attention is engaged by everything, because everything has, in that stage of life, the charm of novelty to recommend it. But as those things, which engage us merely by their novelty, cannot attach us for any length of time, curiosity is the most superficial of all the affections; it changes its object per-

petually, it has an appetite which is very sharp, but very easily satisfied; and it has always an appearance of giddiness, restlessness and anxiety. Curiosity, from its nature, is a very active principle; it quickly runs over the greatest part of its objects, and soon exhausts the variety which is commonly to be met with in nature; the same things make frequent returns, and they return with less and less of any agreeable effect. In short, the occurrences of life, by the time we come to know it a little, would be incapable of affecting the mind with any other sensations than those of loathing and weariness, if many things were not adapted to affect the mind by means of other powers besides novelty in them, and of other passions besides curiosity in ourselves. These powers and passions shall be considered in their place. But whatever these powers are, or upon what principle soever they affect the mind, it is absolutely necessary that they should not be exerted in those things which a daily and vulgar use have brought into a stale uninteresting familiarity. Some degree of novelty must be one of the materials in every instrument which works upon the mind; and curiosity blends itself more or less with all our passions.

PAIN AND PLEASURE.

It seems then necessary towards moving the passions of people advanced in life to any considerable degree, that the objects designed for that purpose, besides their being in some measure new, should be capable of exciting pain or pleasure from other causes. Pain and pleasure are simply ideas, incapable of definition. People are not liable to be mistaken in their feelings, but they are very frequently wrong in the names they give them, and in their reasonings about them. Many are of opinion that pain arises necessarily from the removal of some pleasure; as they think pleasure does from the ceasing or diminution of some pain. For my part, I am rather inclined to imagine that pain and pleasure, in their most simple and natural manner of affecting, are each of a positive nature, and by no means necessarily dependent on each other for their existence. The human mind is often, and I think it is for the most part, in a state neither of pain nor pleasure, which I call a state of indifference. When I am carried from this state into a state of actual pleasure, it does not appear necessary that I should pass through the medium of any sort of pain. If in such a state of indifference, or ease or tranquillity, or call it what you please, you were to be suddenly entertained with a concert of music; or suppose some object of a fine shape, and bright, lively colors, to be presented before you; or imagine your smell is gratified with the fragrance of a rose; or if without any previous thirst you were to drink of some pleasant kind of wine, or to taste of some sweetmeat without being hungry; in all the several senses, of hearing, smelling, and tasting, you undoubtedly find a pleasure; yet if I inquire into the state of your mind previous to these gratifications, you will hardly tell me that they found you in any kind of pain; or, having satisfied these several senses with their several pleasures, will you say that any pain has succeeded though the pleasure is absolutely over? Suppose, on the other hand, a man in the same state of indifference, to receive a violent blow, or to drink of some bitter potion, or to have his ears wounded with some harsh and grating sound; here is no removal of pleasure; and yet here is felt in every sense which is affected, a pain very distinguishable. It may be said perhaps, that the pain in these cases had its rise from the removal of the pleasure which the man enjoyed before, though that pleasure was of so low a degree as to be perceived only by the removal. But this seems to me subtilty that is not discoverable in nature. For if, previous to the pain, I do not feel any actual pleasure, I have no reason to judge that any such thing exists: since pleasure is only pleasure as it is felt. The same may be said of pain, and with equal reason. I can never persuade myself that pleasure and pain are mere relations, which can only exist as they are contrasted; but I think I can discern clearly that there are positive pains and pleasures, which do not at all depend upon each other. Nothing is more certain to my own feelings than this. There is nothing which I can distinguish in my mind with more clearness than the three states, of indifference, of pleasure, and of pain. Every one of these I can perceive without

any sort of idea of its relation to anything else. Caius is afflicted with a fit of the colic; this man is actually in pain; stretch Caius upon the rack, he will feel a much greater pain; but does this pain of the rack arise from the removal of any pleasure? or is the fit of the colic a pleasure or a pain, just as we are pleased to consider it? * * *

OF THE SUBLIME.

Whatever is fitted in any sort to excite the ideas of pain and danger, that is to say, whatever is in any sort terrible, or is conversant about terrible objects, or operates in a manner analogous to terror, is a source of the sublime; that is, it is productive of the strongest emotion which the mind is capable of feeling. I say the strongest emotion, because I am satisfied the ideas of pain are much more powerful than those which enter on the part of pleasure. Without all doubt, the torments which we may be made to suffer are much greater in their effects on the body and mind than any pleasures which the most learned voluptuary could suggest, or than the liveliest imagination, and the most sound and exquisitely sensible body, could enjoy. * * * But as pain is stronger in its operation than pleasure, so death is in general a much more affecting idea than pain; because there are very few pains, however exquisite, which are not preferred to death: nay, what generally makes pain itself, if I may say so, more painful, is, that it is considered as an emissary of this kind of terrors. When danger or pain presses too nearly, they are incapable of giving any delight, and are simply terrible; but at certain distances, and with certain modifications, they may be, and they are, delightful, as we every day experience. The cause of this I shall endeavor to investigate hereafter. * * *

IMITATION.

The second passion belonging to society is imitation, or, if you will, a desire of imitating, and consequently a pleasure in it. This passion arises from much the same cause with sympathy. For as sympathy makes us take a concern in whatever men feel, so this affection prompts us to copy whatever they do; and consequently we have a pleasure in imitating, and in whatever belongs to imitation merely as it is such, without any intervention of the reasoning faculty, but solely from our natural constitution, which Providence has framed in such a manner as to find either pleasure or delight, according to the nature of the object, in whatever regards the purposes of our being. It is by imitation far more than by precept that we learn everything; and what we learn thus, we acquire not only more effectually, but more pleasantly. This forms our manners, our opinions, our lives. It is one of the strongest links of society; it is a species of mutual compliance, which all men yield to each other, without constraint to themselves, and which is extremely flattering to all. Herein it is that painting and many other agreeable arts have laid one of the principal foundations of their power. And since, by its influence on our manners and our passions, it is of great consequence, I shall here venture to lay down a rule, which may inform us with a good degree of certainty when we are to attribute the power of the arts to imitation, or to our pleasure in the skill of the imitator merely, and when to sympathy, or some other cause in conjunction with it. When the object represented in poetry or painting is such as we could have no desire of seeing in the reality, then I may be sure that its power in poetry or painting is owing to the power of imitation, and to no cause operating in the thing itself. So it is with most of the pieces which the painters call still-life. In these a cottage, a dunghill, the meanest and most ordinary utensils of the kitchen, are capable of giving us pleasure. But when the object of the painting or poem is such as we should run to see if real, let it affect us with what odd sort of sense it will, we may rely upon it that the power of the poem or picture is more owing to the nature of the thing itself than to the mere effect of imitation, or to a consideration of the skill of the imitator, however excellent. Aristotle has spoken so much and so solidly upon the force of imitation in his Poetics, that it makes any further discourse upon this subject the less necessary. * * *

To be Continued.

MYTHOLOGY.

AMAZONES or AMAZONIDES, a nation of famous women who lived near the river Thermodon in Cappadocia. All their life was employed in wars and manly exercises. They never had any commerce with the other sex; but, only for the sake of propagation, they visited the inhabitants of the neighbouring country for a few days, and the male children which they brought forth were given to the fathers. According to Justin, they were strangled as soon as born, and Diodorus says that they maimed them and distorted their limbs. The females were carefully educated with their mothers, in the labors of the field; their right breast was burnt off that they might hurl a javelin with more force, and make a better use of the bow; from that circumstance, therefore, their name is derived (*a non, uaza mamma*). They founded an extensive empire in Asia Minor, along the shores of the Euxine, and near the Thermodon. They were defeated in a battle near the Thermodon, by the Greeks; and some of them migrated beyond the Tanais, and extended their territories as far as the Caspian sea. The-myseya was the most capital of their towns; and Smyrna, Magnesia, Thyatira, and Ephesus, according to some authors, were built by them. Diodorus, I. 3, mentions a nation of Amazons in Africa, more ancient than those of Asia. Some authors, among whom is Strabo, deny the existence of the Amazons, and of a republic supported and governed by women, who banished or extirpated all their males; but Justin and Diodorus particularly support it; and the latter says, that Penthesilea, one of their queens, came to the Trojan war on the side of Priam, and that she was killed by Achilles, and from that time the glory and character of the Amazons gradually decayed, and was totally forgotten. The Amazons of Africa flourished long before the Trojan war, and many of their actions have been attributed to those of Asia. It is said, that after they had subdued almost all Asia, they invaded Attica, and were conquered by Theseus. Their most famous actions were their expedition against Priam, and afterwards, the assistance they gave him during the Trojan war; and their invasion of Attica, to punish Theseus, who had carried away Antiope, one of their queens. They were also conquered by Bellerophon and Hercules. Among their queens, Hippolyte, Antiope, Lampeto, Marpesia, etc., are famous. Curtius says, that Thalestris, one of their queens, came to Alexander, whilst he was pursuing his conquests in Asia, for the sake of raising children from a man of such military reputation; and that after she had remained thirteen days with him, she retired into her country. The Amazons were such expert archers, that, to denote the goodness of a bow or quiver, it was usual to call it Amazonian.

Near Marysville they have discovered a mine of hydraulic lime and near by a body of silicious earth, and a company has been formed to manufacture cement.

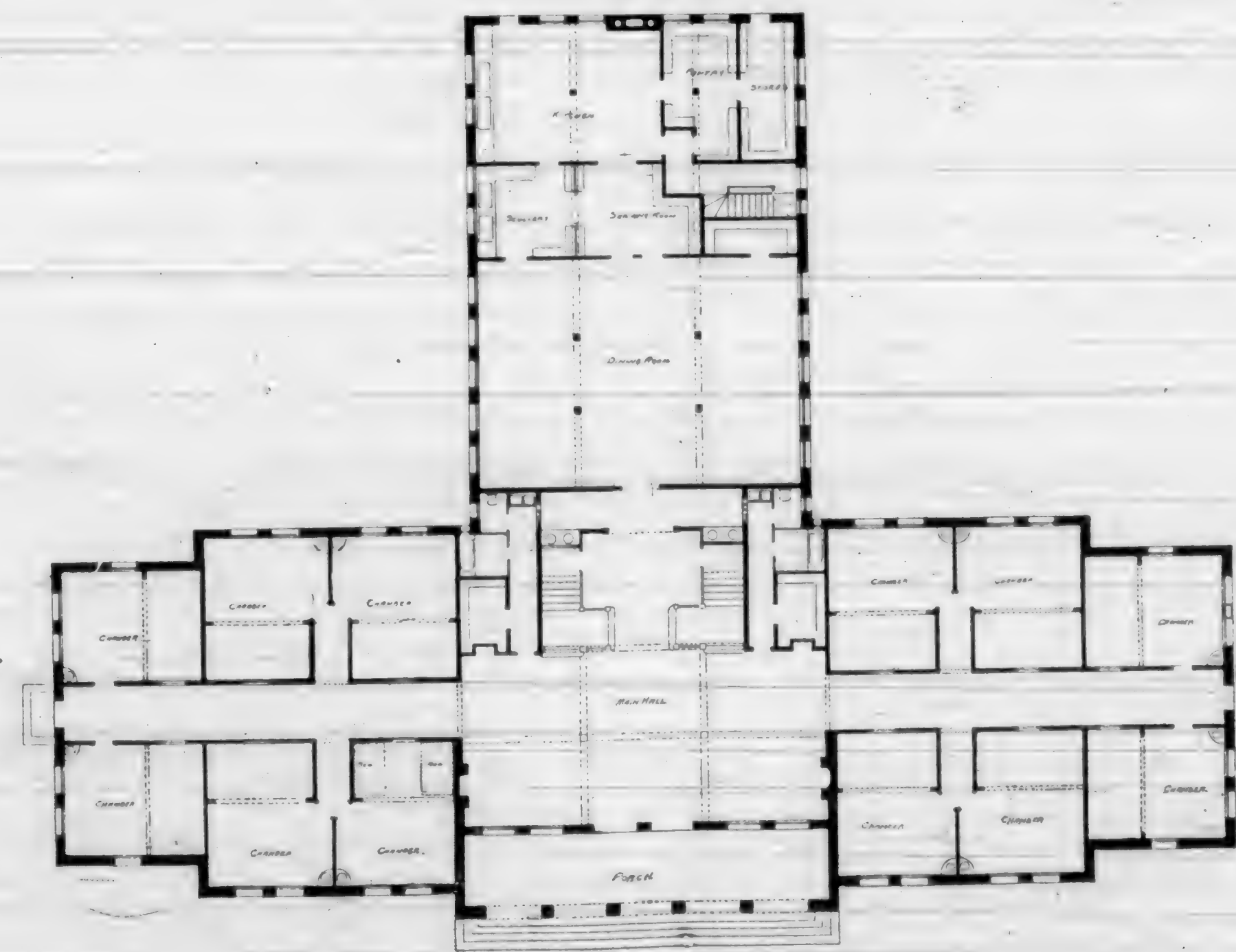
In territorial area the United States ranks third. Great Britain controls 8,557,000 square miles of territory, Russia, 8,452,940 miles, and the United States, counting Alaska, 3,580,242 miles.

The new labor law of New Jersey went into effect in July. It provides that fifty-five hours shall constitute a week's work, and it makes Saturday afternoon a holiday. On other days ten hours is a working day.

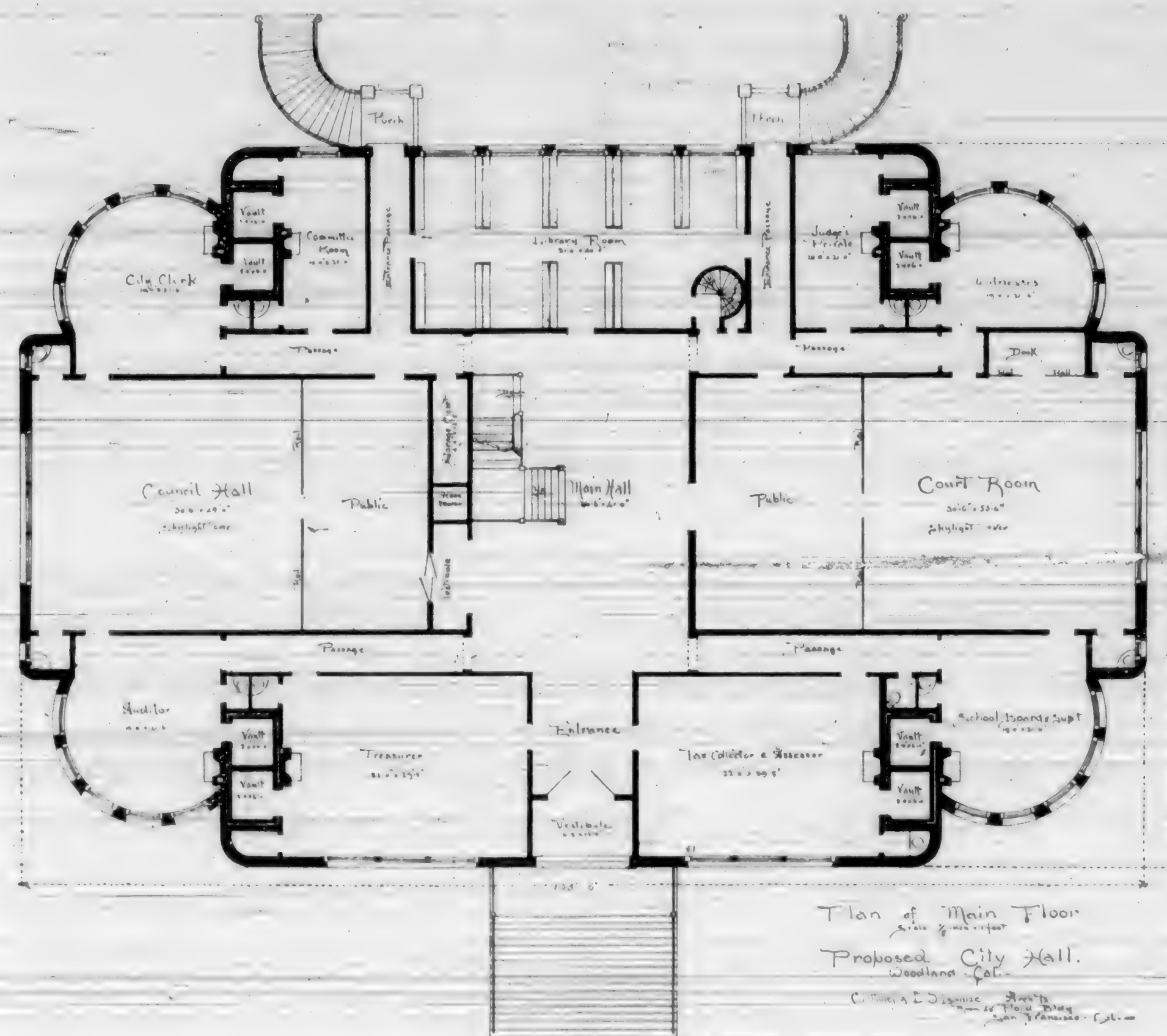


SECOND FLOOR PLAN.

THE plans herewith show the general arrangement of the main and second floors of Roble Hall, Girls' Dormitory, lately erected at the Stanford University, and will accommodate eighty pupils. This building is built of concrete and was erected and finished complete within ninety days from the order to prepare the plans. This is working with a rapidity unusual in buildings of such dimensions.



FIRST STORY PLAN.



PLAN OF CITY HALL, WOODLAND.



The management of this journal desires to extend a cordial invitation to all architects on this coast and elsewhere to contribute designs for publication.

Drawings should be made with perfectly black lines on a smooth white surface. Good tracings, if made with black ink, answer the purpose.

The designs selected will be published without charge. All drawings, whether accepted or not, will be returned to their authors, who must bear express charges both ways.

THE sketch No. 2 of a building and landscape was worked out by Mr. Clarkson Swain. These sketches are three in number and so picturesquely delineated as to furnish artistic ideas to designers for rural buildings.

The remaining sketch will appear in a later number.

THE New City Hall at Woodland, Cal., is from designs by Messrs. Colley & Lemme, Architects, San Francisco.

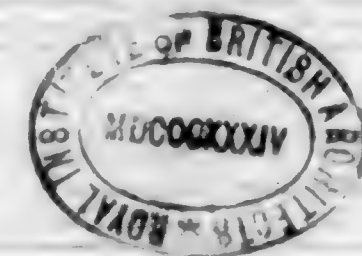
THE design for the residence in course of erection for D. B. Jackson, Esq., is by Mr. Wm. H. Armitage, Architect, of this city.

ROBLE HALL, Stanford University.—The building "Roble Hall" (Oak Hall) or Girls Dormitory is built on the grounds of the Leland Stanford, Jr., University at Palo Alto, and is situated immediately north of the central quadrangle. The building is 175 feet long by a depth of 118 feet, is three stories high and will accommodate 80 pupils, besides the usual attendants.

The exterior walls are built of concrete, colored yellow to match the stone of the other buildings and built in a manner similar to the museum building of the University, the greatest piece of concrete building construction of modern years. The roof is covered with metallic shingles in imitation of the old tile work of early California buildings.

The floors throughout are finished with wax, the building being finished in a most thorough manner.

The dormitory was erected and ready for occupancy within 90 days from the time the order was given to prepare plans. Messrs. Percy & Hamilton, Architects, San Francisco.



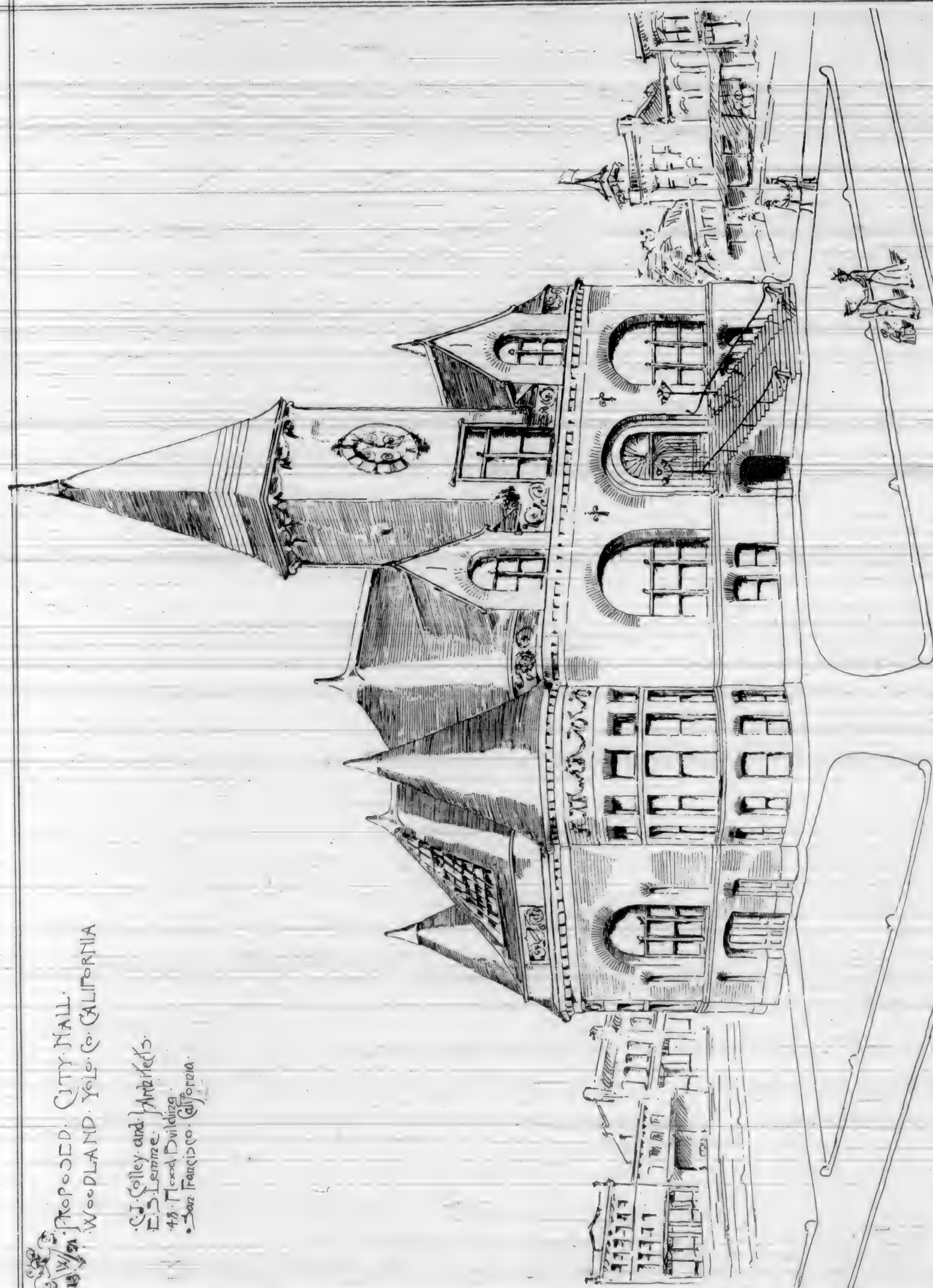


GIRLS' DORMITORY - PERCY & HAMILTON, ARCHT.
LELAND STANFORD JUNIOR UNIVERSITY.
PALO ALTO, CAL.

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PROPOSED CITY HALL.
WOODLAND, YOLO CO. CALIFORNIA

C. J. Colley and J. Antkowiak
ES. LEVIN
433 Third Building
San Francisco, California

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THREE SKETCHES
from a
ALEXANDER.
No 2.

Swain.

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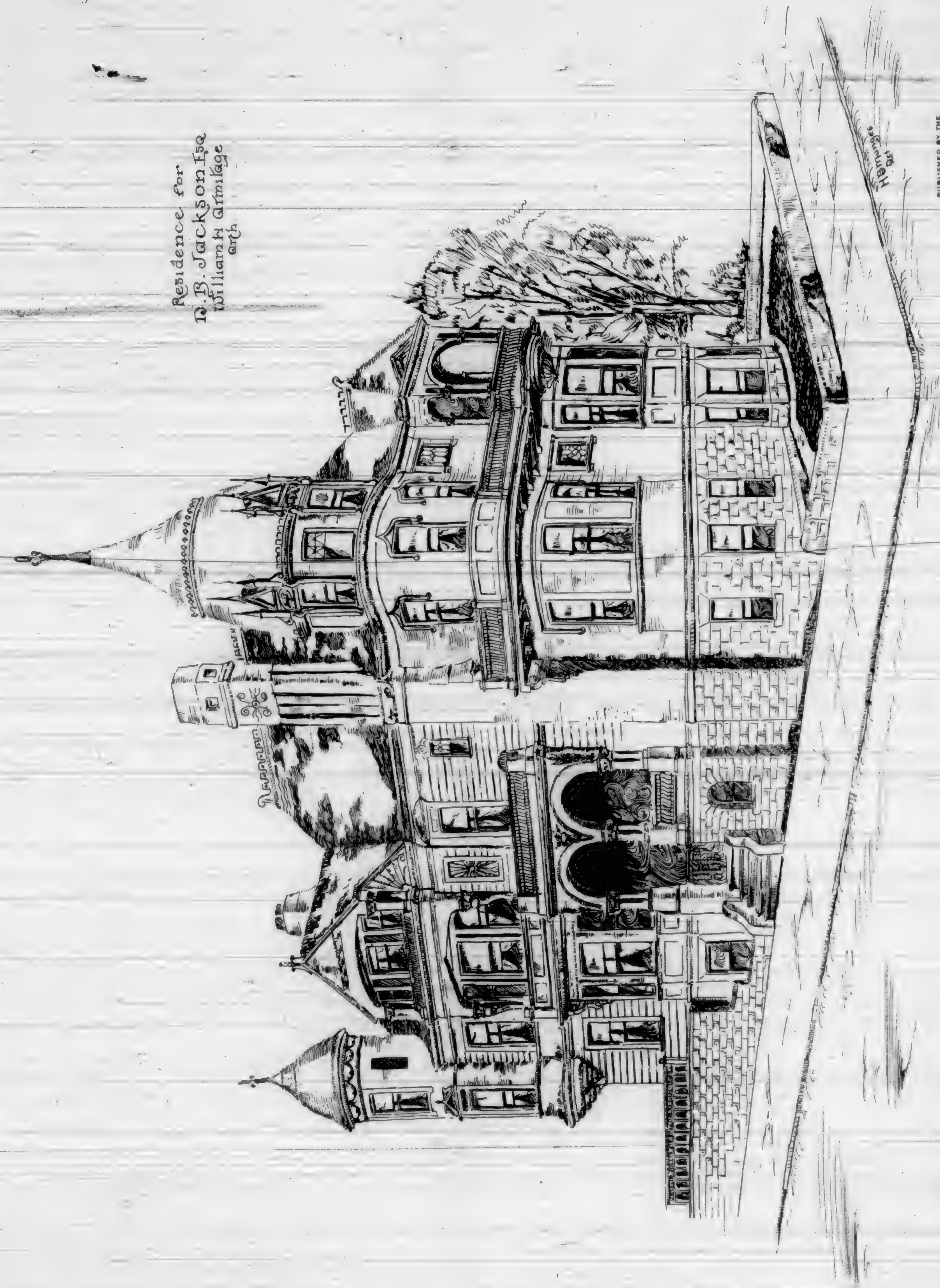
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