



through certain well defined lines of study in the art and science of Architecture.

If through the isolated position of our section of the country we have not accomplished all we could have wished, yet it has been the endeavor to animate the student of art and to direct him by some well directed and persistent effort on his own part to attain the requisite skill to render his ideas in pictorial expression as a medium for the conveyance of his thoughts to others.

Your committee on classes herewith submit the following report on the drawings and models made by the students during the year 1892, and placed on exhibition at the rooms of the Chapter.

The Students' Classes have been under the immediate supervision of Mr. Geo. H. Sanders, the President of the Chapter, and it is in a great measure due to his untiring zeal and painstaking care that the classes have advanced to its present state of vitality and promises to overcome all obstacles. The studies in free hand drawing from the "flat" the "model" or from "nature" have been directed by the president through his personal attention in the class room.

The modeling class has been under the instruction of Mr. V. A. De Prose, and the exhibit shows that the pupils have worked with an enthusiasm and artistic feeling which is highly commendable. That the almost imperceptible undulations of the lines and surfaces have been so closely following in the models is proof that the instructor has succeeded in gaining the hearty co-operation of the students in the work.

CLASS IN DRAWING.

1st mention—Mr. Linden Bree. His second years course, comprising a series of nine subjects that have been worked out during a period of one year. Each subject shows a gradual improvement over the previous one, the first example being a leg, and the last a heavily draped figure. These drawings show a greater degree of excellence than any others on exhibition.

2d mention—Mr. E. Blankenberg. His third year, five subjects exhibited. The foliated capital is an excellent piece of work. The color subject, autumn leaves, is well done and shows an artistic feeling. This series of drawings shows that the pupil has natural gifts that with a little more concentration and persistency would bring out some superior work.

3d mention—Mr. H. E. Harris. His second year; two subjects are represented, a large "torso" and a large nude figure. These drawings show that the pupil has set his standard beyond the ability to execute, the attempt is praiseworthy when sufficient time and study is used to work out the details in a thorough manner. The trials in this case argues well for future success.

4th mention—Mr. J. H. Applegarth. His second year; five subjects are presented, hands, feet and legs. They are well executed, the outlining is clean and clearly defined, which, with a little more time and persistent energy applied

to the finishing touches would have shown to better advantage.

5th mention—Miss Eda Menzel. Four months' work in preliminary studies; profiles and hands. The outlines and shading has been done with a degree of care and study which promises exceedingly good results in the future.

6th mention—Miss Belle McCuaig. Four months' study in profiles and shading. The outlines as done by this pupil show fairly well, and with study may bring good results.

THE MODELING CLASS.

1st mention—Mr. C. A. Meusdorffer. A grape leaf after nature. All the veins and undulating surface of the natural leaf is shown with precision and care.

2d mention—Mr. H. J. Van Vlack. A "Renaissance" scroll, after model, the contour being well relieved and the lines sharp and clean.

3d mention—Miss Eda Menzel. A leaf scroll, after model, and worked out with spirit and delicacy.

4th mention—Mr. H. Hobart. A seraphine head, from a plaster cast, also a girls hand after a life cast.

5th mention—Mr. Lloyd B. Brown. A "Renaissance" scroll, from the cast.

6th mention—Mr. H. Meyers. Model of ears after a life cast.

After disposing of routine and new business the Chapter adjourned.

MUNICIPAL GOVERNMENT OF BERLIN.

FROM our contemporary, *Fair Play*, we take the following description of some points of interest in the municipal government of Berlin. There is much food for thought in this article, and much that might with advantage be adopted by other cities.

Berlin is the best-managed city in the world, and its city fathers regulate the style of the buildings which shall be put up. You can't build a dog kennel without showing a design of it at the City Hall, and no man can put up a signboard on his own house until he has shown a diagram of it and has gotten the permission of the Government. You can't put down a pavement in front of your house without a permit, and the Government watches your building and insists that you make your walls just so thick, and the ceilings must be of a given height and the fronts must be of a uniform pattern. In building the house you are not allowed to litter the street with your bricks and mortar, and all the materials for building must be kept inside of the lot.

You have to fence off the street while the building is going on, and when your house has reached the height of the second story you must build a roof over the sidewalk to prevent the bricks or mortar falling on those passing below. The building is done much better than with us, and much more economically. Nearly all the mortar is mixed at one place, and there is a mortar company here which sells the mortar ready mixed to the builders, and which carries it about in iron wagons, and delivers it just where it is needed. There is no reason why such a company might not make money in the cities of the United States. This Berlin establishment is paying dividends of 25 per cent on its capital, and it sells its mortar like coal, at so much per wagon load or per ton.

I don't know how much New York runs behind every year, but there is scarcely a city in the United States that is not increasing in debt; Consul General Edwards tells me that Berlin makes a profit of 5,000,000 marks or \$1,250,000 every year over all her expenses. The city here owns two-thirds of the gas stock and it sees that its people have good light. There are gas lamps on the corners of every street, and the posts are of a tasteful pattern. Each lamp has four burners and the lamps are so aided by reflectors from above that there power is doubled. The posts are higher than

ours, and some of them have argand burners. It is the same with fire insurance.

The city insures its own buildings, and it is against the law for another insurance company to give out policies on buildings. The city, in the first place, sees that the buildings are properly put up and that the protection against fire is of the best character, and it then makes every man take out an insurance policy to prevent loss in case of fire. The insurance stock is good, and the city, of course, makes money by it. The only other insurance companies of Berlin are those which insure life and personal property. You can have your furniture insured by a private company, but the police are likely to step in and see that you don't overinsure it. All foreign insurance companies have to own enough city bonds to guarantee any losses which their subscribers might sustain. The Equitable, the New York Life and other American companies have offices here and they do quite a large business.

The streets are well kept. Berlin is fast becoming a city of asphalt, and you can drop your handkerchief almost anywhere and pick it up without soiling. The city takes care of its own sewers, and it has a number of farms on its outskirts over which these street-sweepings are scattered by the paupers of the city. The sewage is pumped out of the sew-



A COUNTRY RESIDENCE.

ers on to the farms, and thus the land has become the most fertile in Germany. A large part of the cleaning of the streets is done by boys who get something like twenty-five cents a day and who are at work on every block gathering up the dirt as it comes, and on a wet day scrubbing off the streets with rubber hose. These boys sometimes work in gangs, and a half a dozen of them will take up a street and push the dirt on to the sewers, leaving the road as clean as though it had been scrubbed. If these scrubbing are done at night clean sand is scattered over the street to prevent horses or men from falling. The whole city, in fact, is run in the interest of the people and of health and beauty, rather than in the interests of politicians. It costs more than 2,000,000 marks a year to keep the streets clean. There are 700 street cleaners. The civil service rules obtain even as to these boys, and their wages are raised after they have been working on the streets for three years.

The buildings are kept as clean as the streets. Every man has to wash down his house so often, and it is against the law to put up bill boards or to paste posters on the houses. When Buffalo Bill was here he was almost crazy because he could not get any place to plaster up his big posters of his "Wild West" show. The only arrangement by which posters can be put up is in connection with round sheet iron tubes, which are on the corners of the streets and which are about fifteen feet high and of the diameter of a hoghead. They are especially for the pasting of big bills. They are not unsightly and on them you find the theater advertisements and business posters. Within the last few months the Urania company has been putting up advertis-

ing pillars all over the city, after a plan which forms perhaps the best advertising scheme in existence. These pillars are about fifteen feet high and they are by no means unornamental. They are as big as a flour barrel, but are octagonal in shape, and they are the most valuable guide that any city can have.

These advertising pillars are connected with the observatory of the city, and there is a clock on each of them that always gives the correct time. Above the clock there is a star showing the points of the compass, so that you can tell the directions from any place you may happen to be. Below this star there is a globe which moves by machinery and which tells you the positions of the stars from day to day. Besides this stands the clock, which has four round disks in different sides of the pillar. One of these gives the time at Berlin. Another gives the world time and a third shows how the earth stands in the solar system from day to day. Below this, with shades throwing an electric light upon them at night, are places for advertisements, which are in frames under glass. These revolve every minute and mixed up with the advertisements are tables of information about the city.

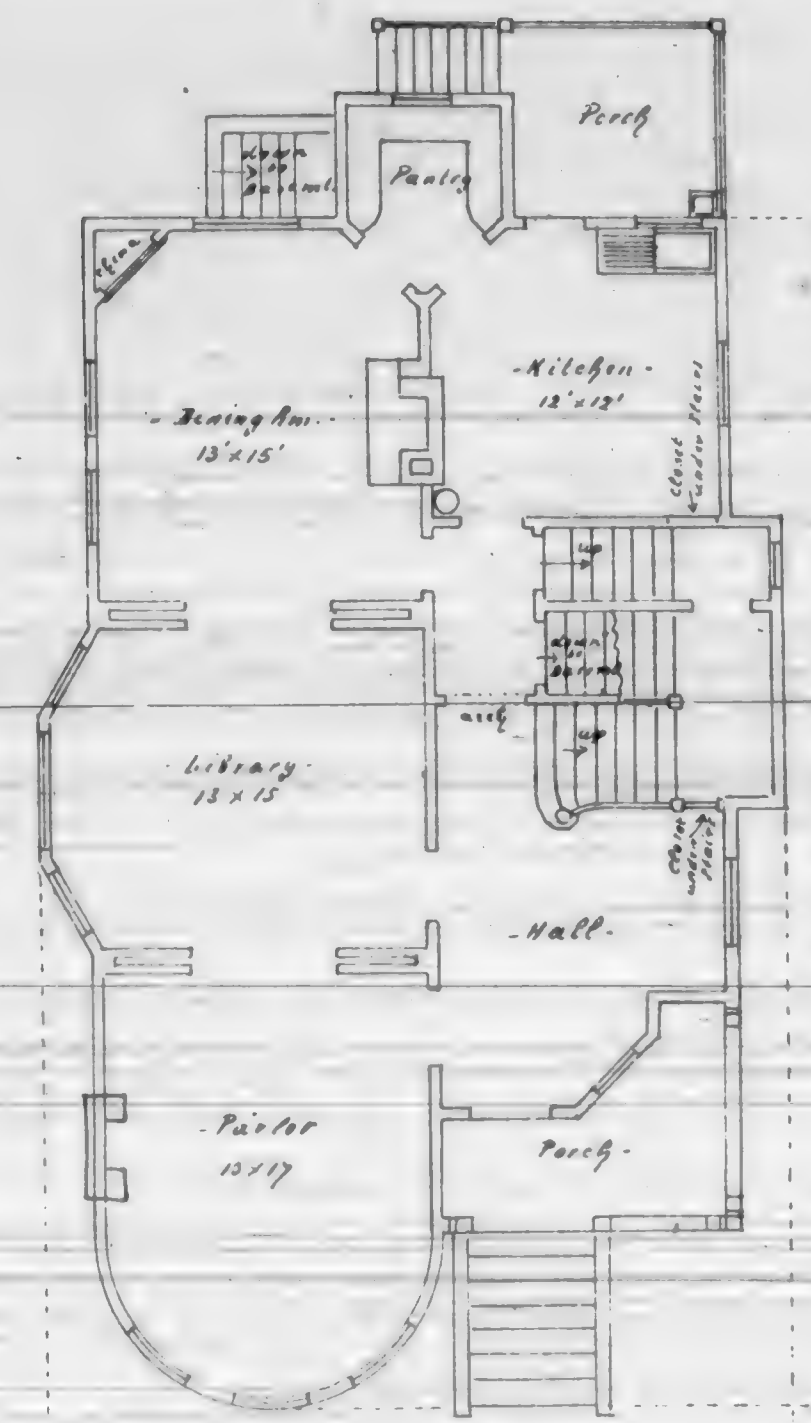
In one of the plates below them there is the time of the trains leaving the city by all the roads, and another plate shows you the condition of the barometer, the thermometer, and of the humidity of the air from hour to hour and keeps a record of it. Upon these pillars you can always find the nearest police station and the nearest branch post office, and there is a little plan of the section of the city in which the pillar stands, with the streets plainly marked, so that by going to one of these you can always find just what you want without asking questions. I do not know the cost of these advertising pillars but as new ones are being rapidly put up I judge they must be profitable. Such other street advertising as is done is with the sandwich men or by dodgers. You find men distributing bills everywhere and there are plenty of grotesquely dressed figures carrying bill boards. The people advertise very well in the

newspapers, and manage to make their wants well known without defacing the buildings.

They tax you here on your income, and they get at your income by looking at your style of living. It is generally estimated that a man spends one-third of his income for house rent, and as I paid 150 marks for rent they estimated that I made 450 marks a month. If I had had better rooms I would have paid more tax, and if a man lives in fine style here he cannot evade taxation. Every man who makes more than \$105 a year here is taxed on his income, and everything under the sun in Berlin pays a tax of some sort or other.

One of the curious institutions of the city is an intelligence office, as it might be called, where records of passports are kept, and where you can go and find out just where any man or woman is stopping. If John Smith, who owes you a bill, moves to another part of Berlin to escape you, you have only to go to this office, and by paying a few cents you will get a report which will tell you just where he has lived in the city and where you may find him at present. There is no chance for a man to escape or hide here, for the argus eyes of the government are always upon you.—*The Press*, New York.

A RAID ON INDECENT WIRES. ANTHONY COMSTOCK (Rushing into an electric light office)—"Where is that naked wire?" The office boy faints.—"*Popular Electric Monthly*."



First Floor
PLAN OF COUNTRY RESIDENCE.

LEGAL DECISIONS.

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

WHAT CONSTITUTES NOTICE OF MECHANIC'S LIEN.—A statement in a lien notice that claimant agreed to furnish the contractors certain windows, doors, etc., for a building, without specifying the quantity in any way, or that the same were all the doors, windows, etc., used in the construction of the building, does not give the owner sufficient notice.

Tacoma Lumber and Manfg Co. v. Wolff, Supreme Court of Wash. 31, Pac. Rep. 753, 57.

MECHANIC'S LIEN FOR MATERIAL USED IN PUBLIC IMPROVEMENTS.—Under an act which provides that one claiming a lien for material furnished, etc., towards the performance of any public improvement by the city of New York, shall file a notice of his lien, with the comptroller and with the head of the proper department, stating the amount of his demand after deducting all just credits and off-sets, and also "that the work was done or materials were furnished to the contractor," and they were actually performed or used in the execution of the contract with the city," a sub-contractor who willfully and fraudulently misrepresents in his notice of a lien the amount which is due him, by including therein a large quantity of material which he knows to have been rejected by the contractor and not used in the work, is not entitled to a lien for the portion of the materials actually used in the execution of the contract.

Goodrich v. Gillies, Supreme Court of New York, 21 N. Y. S. 400, 156.

INNOCENT ALTERATION OF CONTRACT WILL NOT AVOID SAME.—Where one contracted to purchase a saw mill of another and paid a portion of the purchase price down, afterwards bringing action to cancel the contract, and to recover the amount paid there under, claiming that the seller had lowered the dam which regulated the supply of water to the mill about thirty-four inches, in consequence of which the power of the mill was reduced about one-half; that the seller had been compelled to do this by an abutting owner, whereas he had represented to the purchaser that he had a clear right to maintain the dam at its height at the time of making the contract, and it being shown that the dam was not lowered more than six inches, and that the seller had informed the purchaser at the time of making the contract that he might have to lower it that much, the purchaser was not entitled to be released from his contract. The contract for the sale of the mill included all the

lumber in the mill yard, at a certain rate per thousand feet, but as at the time of executing the contract no measurement of the lumber had been made, it was agreed that blank spaces should be left in the contract, and when the amount had been ascertained and agreed on, it should be entered therein. Thereafter, the purchaser measured the lumber and informed the seller of the amount, and some time later the seller made another inventory, and reported the amount to his attorney, who had the contract, and the attorney at the request of the seller, inserted therein the amount of his measurement, which was larger than that found by the purchaser. It appeared that there were several piles of lumber which the purchaser did not count, and the seller understood that the purchaser intended that he should finish the estimate, and then enter the amount. The seller's act was not such a willful alteration of the contract as would render it void.

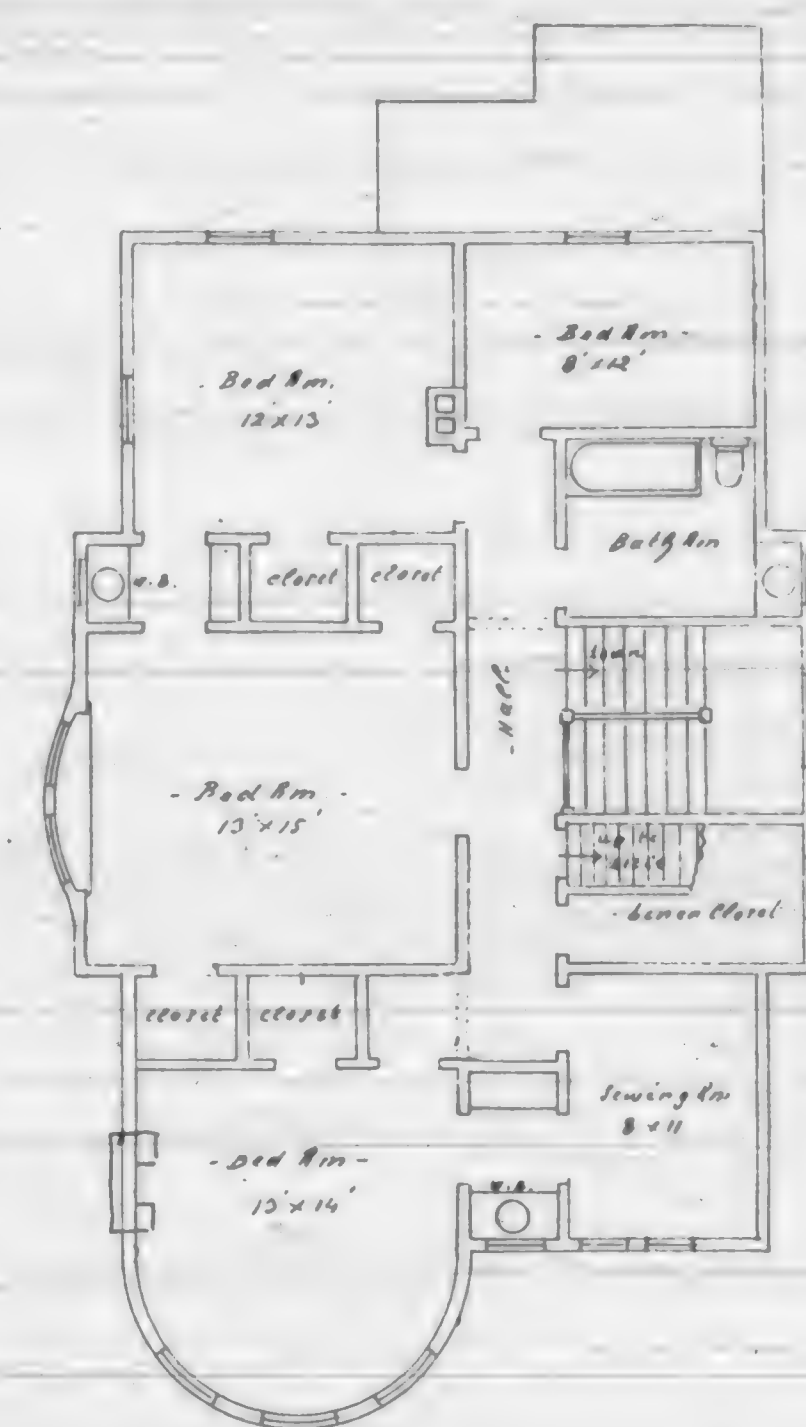
Cline v. Goodale, Supreme Court of Ore. 31 Pac. Rep. 956, 333.

WHEN CONTRACTORS' SURETIES ARE NOT LIABLE.—The lien of a material man for materials furnished certain building contractors, by him, cannot be enforced against persons who entered into the original building contract merely as sureties that the contractor would turn over the building to the owner when complete, free from liens; the material also being charged to the contractors, and furnished solely on their credit. Lien notices must be recorded or filed for record; and where a notice was filed which was invalid, because there was no notarial seal attached to the affidavit thereto, no subsequent proof could be made as to any material fact to render such notice valid, and make it relate back to the time it was filed. Where parties enter into a trial on the merits of the case, without any objection, or demand to have the case tried by a jury, they cannot appeal or raise such objection.

Stetson and Post Mill Co. v. McDonald, Supreme Court of Wash. 32 Pac. Rep. 108.

CITIES CANNOT DESTROY WOODEN BUILDINGS WITHOUT PROCESS OF LAW.—It is not a part of the functions of a city government to enforce the terms of an agreement by forcible measures without process of law. So where a wooden building is maintained in defiance of a city ordinance and in derogation of the terms of the permit granted by the city for its erection, the city government has no power to enforce the terms of the permit by destroying the building without process of law, and a restraining order will be granted the owner until the final hearing and determination of the cause.

Northern Pac. R. R. Co. v. City of Spokane, U. S. Circuit Court, Washington, 52 Feb. Rep. 428, 103.



Second Floor
PLAN OF COUNTRY RESIDENCE.



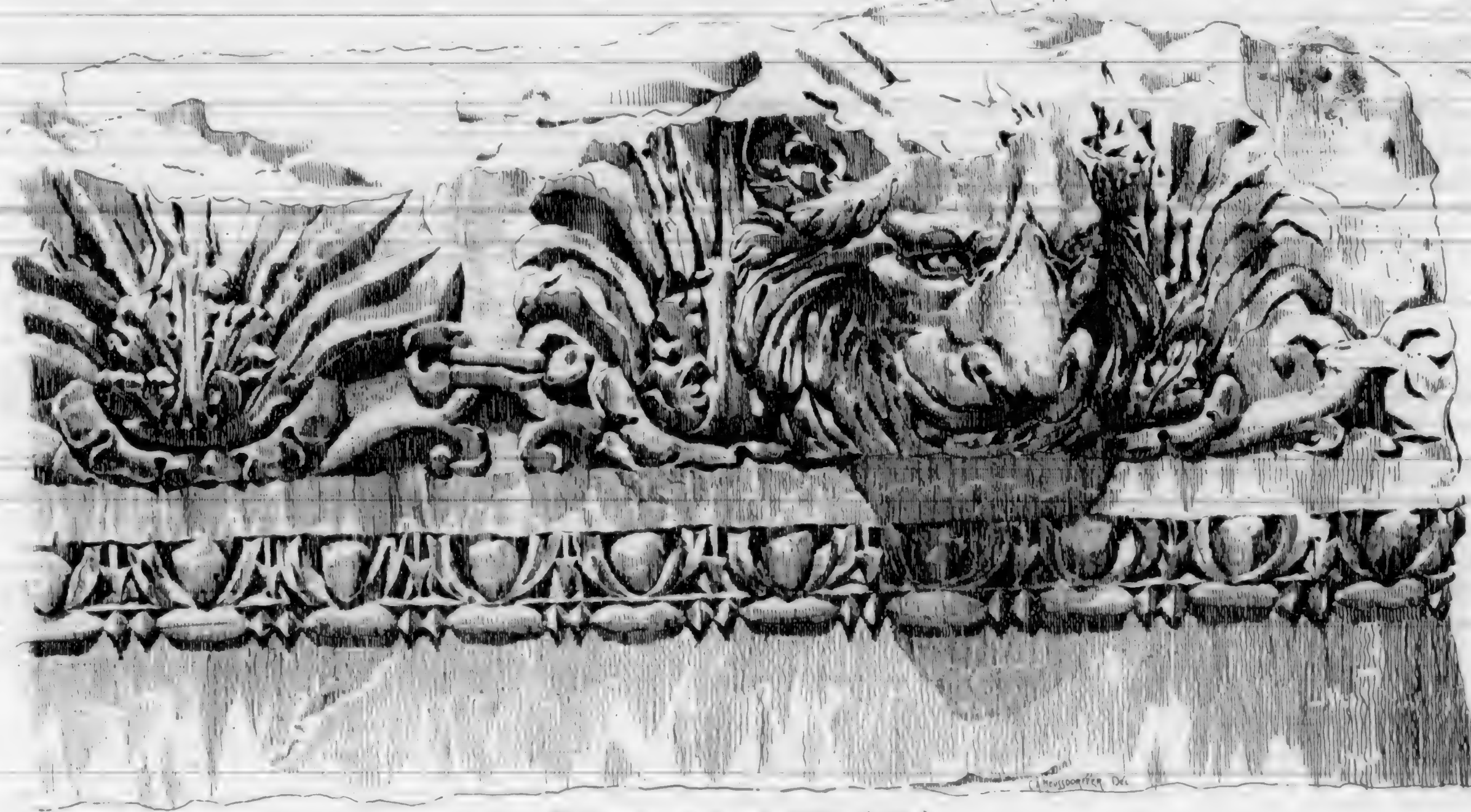
The State of Washington is to have a Capital Building to be erected at Olympia. The last legislature passed the bill which Governor McGraw has recently signed.

The Santa Rosa Board of Education have called an election for April 29th, to vote on the proposition to issue bonds for \$30,000, for school purposes. It is proposed to build new school buildings.

The orange and banana fiend is now getting in his work on pavements. Now is the time for the Supervisors to make it a misdemeanor to do such.

New and valuable deposits of onyx and opals have been recently discovered near Colfax. The onyx is reported to be of a varied and rich color, and large blocks free from seams may be taken out.

The auger that bores a square hole consists of a screw auger in a square tube, the corners of which are sharpened from within, and as the auger advances, pressure on the tube cuts the hole round.



EXISTING - REMOVED OF A PORTICO. (ROME.)

BUSINESS MOSAICS.

Commercial Fire Dispatch Co.—This is a new convenience for the commercial men, bankers and manufacturers, though as it has been established and in successful operation for the last three years it can hardly be called new. The city has been districted in such a manner that they are enabled, by their efficient messengers to notify their subscribers of a fire within a few moments after the alarm is given. At the main office of the company, 61 Flood Building, details of the workings will be given.

A bridge is to be built across the Sacramento river, near Anderson, for the Shasta railroad.

Mr. J. J. Jones, the genial manager of the Westminster Slate Company is in the city at the present time. Since his arrival here he has sold several hundred squares of slate to the principal roofers here and has convinced them of the superior quality of the Westminster Slate and the facilities for the prompt delivery of orders. Further information and particulars can be had of Mr. W. A. Jones who is the local agent for the company.

A. H. Johnson's Automatic Perspective Machine has grown to be a necessity in the office of the architectural draughtman. By the use of it much time and labor is saved and there is no possibility of making mistakes. The construction of this machine is exceedingly ingenious and it accomplishes a marvelous amount of work and is highly recommended by all who have used it.

Chicago City Council has passed an ordinance limiting the height of buildings to 130 feet.

The Sturts Burglar Alarm is superior to all other alarms on account of the simplicity of its construction. New devices are hard to introduce but this alarm having merit will undoubtedly make its way to the front ranks the more it becomes generally known. For further particulars apply at the office of the company, room 15, Thurlow Block, San Francisco.

Messrs. Coppieters & Mockel, manufacturers of Art and Metal novelties wish to call the attention of our readers to their advertisement on page vii.

Fifty-one metals are now known to exist; four hundred years ago, only seven were known.

The Joseph Dixon Crucible Co. has at last been awarded space in the Columbian Exposition—a space 25x28 feet in the Mines Building for a general exhibit of graphite productions such as crucibles, lubricating graphite, graphite axle grease, plumbago facings, graphite machine and railway grease, Dixon's stove polish, silica-graphite paint, core wash, electro-typing graphite, graphite cylinder oil, graphite specialties for electrical and other work, etc.

The cost of the Capitol at Washington has exceeded \$30,000,000.

A new glazed tile for partitions, etc., has been put on the Market by Messrs. Gladding, McBean & Co., the well known manufacturers of terra-cotta work for buildings. These partition tiles are glazed on both faces and when set in cement will form a wall having all the desirable qualities as a fire-proof or sanitary partition. This firm also makes a superior quality of glazed bricks, which improvement will recommend them for use in many places. For foundations, setting and backing for kitchen ranges their superiority over those in common use is at once apparent.

The Mott Iron Works still lead in their specialties. See advertisement on page v.

AT THE PHOTOGRAPHER'S.—“One more question, sir, before you begin.” “Well madam? “Is it possible to distinguish real stones from false ones on the photo?”—*Wilson's Photographic Magazine.*

If you are in need of rubber, corrugated matting, hose reels or any kind of fire protective supplies call on Frank McAllister, No. 24 Beale street.

A new sleeping car has a space between the sections to allow the occupant of the upper berth to get in by the end and avoid disturbing any one in the lower berth.

Inlaid Floors.—Messrs. Kenney & Wells, 422 Sutter street are the coast agents of J. W. Boughton's Parquet Floors, Wood Carpets and Wainscoting, which have won such an enviable reputation throughout the country. Mr. Boughton began manufacturing Inlaid Floors over twenty-five years ago and now has the largest and most complete factory in the world.

Besides floors, Messrs. Kenney & Wells carry a large line of Mirrors, Frames, Pictures, and manufacture Fret work and Grills. They have lately been awarded all the inlaid floors in the Mutual Life Insurance Co's. building corner Sansome and California street. Branch office 408 and 410 Twelfth street, Oakland.

CITY BUILDING NEWS.

Alcazar Theatre. An electric elevator; owner, M. H. De Young; architect, Wm. Patton; contractors, Otis Bros.; signed, March 21; filed, March 28; cost \$5,000.

Bay, Powell and Mason. All work to build; owner, A. Meringo; architect, W. H. Baylis; contractor, W. N. Nelson; signed, March 28; filed, March 28; cost \$2,343.

Baker near Washington. To build; owner, J. A. Hosmer; contractor, Phillip Rive; signed, April 10; filed, April 10; cost \$2,925.

Broderick near Jackson. Carpenter, Mason and plastering; owner, E. P. Paddock; architects, Smith & Freeman; contractor, Jas. Mix; signed, March 4; filed, March 7; cost \$5,785.

Butte and York. Two-story frame; owner, Cornelius Eagan; architects, Laver & Mulaney; contractor, H. P. Conrady; signed, March 8; filed, March 9; cost \$3,200.

Broadway near Van Ness. Alterations to a two-story house; owner, Mary E. Leonard; architect, E. A. Herman; contractor, Joe Ogie; signed, March 15; filed, March 16; cost \$2,315.

Broadway near Laguna. Three-story frame; owner, Jane C. Burnett; contractor, S. C. Bozzell; signed, April 1; filed, April 6; cost \$3,000.

California and Powell. Grading and concrete work; owner, F. L. Parker; architect, G. A. Boardwell; contractor, W. R. Patterson; signed, March 10; filed, March 10; cost \$2,075.

California near Webb. Alterations, etc., to bank building; owner, San Francisco Saving Union; architect, Wm. Curlett; contractors, Smilie Bros.; signed, March 16; filed, March 16; cost \$178,890.

California and Powell. To build; owner, F. L. Parker; architect, Geo. A. Boardwell; contractor, J. J. Boyle; signed, April 6; filed, April 7; cost \$10,340.

California and Webb. Taking down old walls, all excavations, brick, terra-cotta, cutting openings for windows, resetting vaults, etc.; orig.-contractors, Smilie Bros.; architect, Wm. Curlett; sub-contractor, E. Mitchell; signed, April 7; filed, April 8; cost \$30,750.

Church near Ridley. One-story and basement; owner, E. F. Leonard; contractor, Jas. Campbell; signed, April 7; filed, April 7; cost \$2,030.

Clay street, No. 409. Alterations and additions; owner, Estate of Agnes Bowler; architects, Mathison & Howard; contractor, W. I. Forde; signed, March 27; filed, March 28; cost \$1,655.

Devisadero near California. Two-story frame; owner, M. Spiro; architect, P. A. Slott; contractors, Wheeler & Warner; signed, March 7; filed, March 13; cost \$1,880.

Eddy near Scott. Frame building; owner, R. C. Dawes; architect, Jno. Marquis; contractor, Jno. Strand; signed, March 2; filed, March 6; cost \$3,035.

Eighth and Brannan. One-story brick warehouse; owner, Alvinza Hayward; architects, Percy & Hamilton; contractor, Jno. McCarthy; signed, March 15; filed, March 18; cost \$19,084.

Eleventh and Bowie Ave. To build; owner, Patrick McTamney; architect, John T. Kidd; contractor, W. E. Bailey; signed, March 3; filed, March 4; cost \$1,445.

Eleventh Ave. near Pt. Lobos Ave. One-story cottage; owner, Mich'l. D. Williams; contractor, Nelson & Marshall; signed, March 21; filed, March 23; cost \$1,400.

Ellis and Larkin. To build; owner, Cuth Hennebery; contractor, Houston Bros.; signed, March 15; filed, March 20; cost \$4,820.

Ellis and Webster. Additions to house; owner, Methu Robe; contractors, Cook & Patterson; signed, March 20; filed, March 21; cost \$1,400.

Ellis near Polk. Alterations; owner, Philip Hessler; architect, Chas. M. Rousseau; contractor, L. B. Schmidt; signed, April 6; filed, April 6; cost \$1,175.

Ellis near Mason. Grading, supporting, underpinning all adjoining buildings, concrete stone and brickwork; orig.-contractors, Mahoney Bros.; owners, Y. M. Christian Assn.; architect, A. Page Brown; sub-contractors, McGowan & Butler; signed, April 8; filed, April 10; cost \$50,739.

Eugenia near Mission. Two-story frame; owner, L. G. Fitzgerald; architect, Oliver Everett; contractors, Lundy & Gillogley; signed, March 21; filed, March 21; cost \$1,570.

Fell and Masonic Ave. To build; owner, M. B. Sturges; architects, Salfeld & Kohlberg; contractor, Wm. Plums; signed, March 3; filed, March 8; cost \$4,225.

Fell near Lyon. To build; owner, Isador Zellerbach; architect, A. J. Barnett; contractor, Jno. Ogie; signed, March 22; filed, March 24; cost \$10,000.

Folsom near 17th. Two-story frame; owner, M. Silseovich; architect, C. E. Corrigan; contractors, W. and C. L. Hinkle; signed, March 18; filed, March 27; cost \$2,675.

Fulton near Lyon. To build; owner, Howard Morton; contractor, W. W. Rednall; signed, April 5; filed, April 8; cost \$3,100.

Geary near Laguna. Alterations and additions; owner, M. De Smith; contractors, Godin & Beaudet; signed, March 21; filed, March 23; cost \$1,237.

Guerrero near Fifteenth. To build; owner, Sophie Mendel; architects, Martens & Coffee; contractor, F. Weinreich; signed, Feb. 20; filed, March 4; cost \$3,500.

Guerrero near Nineteenth. Three-story frame; owner, Fred Meyer; architect, C. I. Havens; contractor, Robert Currie; signed, March 2; filed, March 4; cost \$8,140.

Hayes near Lyon. Two-story frame; owner, M. McGowan; architects, Copeland & Pierce; contractors, Towle & Broadwell; signed, March 4; filed, March 8; cost \$1,395.

Hayes near Lyons. Carpenter work; owner, M. McGowan; architects, Copeland & Pierce; contractor, Geo. Healing; filed, March 8; signed, March 4; cost \$1,400.

Hayes near Webster. Carpenter work; owner, D. Ross; architect, J. F. Kenna; contractor, T. W. Arnold; signed, March 23; filed, March 25; cost \$3,720.

Hayes near Webster. Carpenter work of a two-story flat; owner, D. Ross; architect, J. F. Kenna; contractor, T. W. Arnold; signed, March 23; filed, March 25; cost \$2,250.

Harrison and 1st. Alterations and repairs; owner, Geo. M. Ahorns; architect, H. Gellfuss; contractor, F. Kiatt; signed, March 10; filed, March 11; cost \$1,330.

Harrison near 21th. To build; owner, G. A. Gaeteke; contractor, Caspar Zwierlein; signed, April 6; filed, April 8; cost \$2,100.

Howard near Fourteenth. Alterations and additions; owner, A. W. Bode; architect, Chas. M. Rousseau; contractor, John Miron; signed, April 4; filed, April 6; cost \$2,800.

Howard near Valencia. Two-story frame; owner, Jno. F. Boyd; architects, B. McDougall & Son; contractors, P. J. & M. Brennan; signed, March 16; filed, March 21; cost \$17,555.

Jones near Geary. To build; owner, Geo. W. Morgan; architect, W. H. Armitage; contractor, Wm. J. Field; signed, March 18; filed, March 20; cost \$7,100.

Kearney near California. Wrought iron work; four-story brick; owner, E. L. Heuter; architect, H. Gellfuss; contractors, P. H. Jackson & Co.; signed, March 2; filed, March 7; cost \$2,200.

Kissling near Twelfth. Two-story frame; owner, Jane T. Dowling; architect, Julius E. Kraft; contractor, Daniel Powers; signed, March 15; filed, March 16; cost \$2,110.

Leavenworth near Lombard. One-story frame; owner, F. Ballhaus; contractor, Peter Johnson; signed, April 10; filed, April 10; cost \$1,500.

Lombard near Gough. Story and basement; owner, Peter Michelette; architect, C. R. Wilson; contractor, P. Antonilli; signed, March 14; filed, March 15; cost \$3,300.

Lyon near Washington. To build; owner, Mrs. M. E. Verleger; architects, Pissis & Moore; contractor, Jas. Geary; signed, March 9; filed, March 22; cost \$3,000.

Market near Eighth Street. Plumbing, gas-fitting, etc., and sewer work to four-story brick; owner, Louis Schoenberg; architect, Chas. M. Rousseau; contractors, S. Ickelheimer & Bros.; signed, April 5; filed, April 6; cost \$1,025.

Masonic Cemetery. Granite and marble work of a Mausoleum (except cement and concrete work of foundation or floors, etc.); owner, N. W. Cole; architect, Jas. E. Wolfe; contractor, A. McLennan; signed, April 7; filed, April 8; cost \$3,719.

McAllister and Devisadero. Two-story frame and attic; owner, H. Braunschweiler; architect, C. W. Kenitzer; contractor, Adam Miller; signed, March 21; filed, March 23; cost \$15,300.

McAllister and Devisadero. Brick and iron work; owner, A. Miller; architect, C. W. Kenitzer; contractors, T. Hoek & Son; signed, March 23; filed, March 25; cost \$2,250.

Mission near 23d. Grading; owner, Emma Mangels; architect, H. Gellfuss; contractor, J. O. Sullivan; signed, March 28; filed, March 29; cost \$2,444.

O'Farrell near Jones. All work to build; owner, Alice Pease; architect, T. J. Welsh; contractor, H. Jacks; signed, March 28; filed, March 29; cost \$2,285.

O'Farrell near Scott. To build four flats; owner, A. Pastene; architects, Coffey & Lemme; contractors, Mix & Hope; signed, March 6; filed, March 8; cost \$2,285.

Oregon and Front. Carpenter work, etc.; to add two stories; owner, Jas. G. Fair; architect, H. A. Schulze; contractor, J. B. Gonyeau; signed, March 7; filed, March 23; cost \$3,250.

Oregon and Front. Brick, iron and terra-cotta work; owner, Jas. G. Fair; architect, H. A. Schulze; contractors, Riley & Loane; signed, March 7; filed, March 22; cost \$3,821.

Post near Grant Ave. Alterations and additions; owners, H. Liebes & Co. architects, John & Balczynski; contractors, Schutte & Kreeker; signed, April 4; filed, April 7; cost \$18,566.

Post street, No. 2112. Alterations; owner, Wm. Kaiser; architects, Salfeld & Kohlberg; contractor, H. Rohling; signed, March 1; filed, March 8; cost \$1,530.

Prosper between 16th and 17. Two-story frame; owner, Otto Baman; contractors, Peterson & Persons; filed, March 10; signed, March 4; cost \$2,500.

Sacramento near Devisadero. Two-story frame and moving; owner, A. and R. A. Polson; contractor, C. H. Wedgwood; signed, March 7; filed, March 9; cost \$1,530.

Sacramento near Drumm. All work for a brick building; owner, D. Roth; architect, Townsend & Wyneken; contractor, J. H. Wilson; signed, March 15; filed, March 15; cost \$10,550.

Sansome and Washington. Sidewalks, lights, etc.; owner, I. Franks; architects, Wright & Saunders; contractors, Leibert & Hoffman; cost \$2,500.

Sixth near Jessie. Iron, steel, brick, cement and artificial stone work, etc.; owner, estate of E. L. Goldstein; architect, I. E. Kraft; contractor, R. Ringrose; signed, April 6; filed, April 8; cost \$1,364.

Sutter and Mason. Brick and stone; owner, S. Weber; architects, Pissis & Moore; contractors, Riley & Loane; signed, March 8; filed, March 18; cost \$23,497.

Sutter and Mason. Iron work; owner, S. Weber; architects, Pissis & Moore; contractors, O'Connell & Lewis; signed, March 15; filed, March 18; cost \$14,974.

Scott and Green. All grading; owner, A. C. Soule; architect, Fuller Claffin; contractor, J. E. Carey; signed, Jan. 28; filed, March 18; cost \$4,735.

Spruce and Washington. Inside finish; owner, O. D. Baldwin; architect, Samuel Newsum; contractor, West Coast Furniture Co.; signed, March 16; filed, March 18; cost \$5,787.

Seventeenth near Valencia. Granite, brick, concrete, etc., to two-story building; owner, Mission Parlor N. S. G. W.; architects, Shea & Shea; contractors, M. Fennell & Son; signed, March 8; filed, March 20; cost \$3,187.

Sanchez near 23d. Two-story building; owner, H. D. Matheson; architect, R. H. White; cost \$4,500.

Seventeenth near Valencia. Carpenter and iron work; owner, Mission Parlor N. S. G. W.; architects, Shea & Shea; contractor, Wm. W. Ackerson; signed, March 8; filed, March 23; cost \$11,432.

Seventeenth near Valencia. Painting; owner, Mission Parlor N. S. G. W.; architects, Shea & Shea; contractor, Ed. Hartman; cost \$875.

Seventeenth near Valencia. Plumbing; owner, Mission Parlor N. S. G. W.; architects, Shea & Shea; contractors, Newman & Mills; cost \$925.

Seventeenth near Valencia. Three-story frame; owner, Harriet Choyinski; architect, Ed. Burns; contractor, Ed. Rohling; signed, March 6; filed, March 6; cost \$5,250.

Sharon near 15th. Two-story frame; owners, T. McGrath and wife; architect, Ed. Mooney; contractor, Jno. T. Kidd; signed, March 10; filed, March 13; cost \$2,500.

Sharon near 15th. Two-story frame; owners, J. Crampton and wife; architect, Ed. Mooney; contractor, Jno. T. Kidd; signed, March 10; filed, March 14; cost \$2,500.

Sacramento St., No. 22 and 27. Alteration and repairs; owner, H. T. Holmes I. Co.; contractor, L. C. Murry & Co.; signed, March 14; filed, March 15; cost \$4,187.

Sanchez and 17th. Three-story building; owner, J. J. Hickey; architect, J. J. Clark; contractor, Wm. Linden; signed, March 16; filed, March 16; cost \$5,300.

Trent Ave. near 24th. Cottage; owner, Chas. H. Feldbusch; contractor, Wm. Hebing; signed, March 21; filed, March 22; cost \$2,000.

Turk and Buchanan. Four three-story frame buildings (except excavations, concrete and cement work); owner, H. F. Fortman; architects, John & Balczynski; contractors, Gray Bros.; signed, April 8; filed, April 8; cost \$3,850.

Twenty-first near Dolores. Two-story frame; owners, T. F. Williams and wife; architect, C. H. Skidmore; contractor, Douglass O'Connor; signed, March 7; filed, March 8; cost \$3,400.

Vandewater near Mason. Carpenter work on brick work; owner, Fontana & Co.; architect, J. Kraft; contractor, H. Holzenberg; signed, March 2; filed, March 4; cost \$3,200.

Vandewater near Mason. Brick and concrete work; owner, Fontana & Co.; architect, J. Kraft; contractor, C. Wagner; signed, March 2; filed, March 4; cost \$3,300.

Vallejo near Devisadero. Frame dwelling; owner, E. Rochat; architect, Clinton Day; contractors, Ingerson & Gore; signed, March 1; filed, March 6; cost \$9,720.

Vicksburg near 23d. A cottage and stable; owner, Earnest Hoffman; architect, Ed. Vogel; contractor, Wm. Linden; signed, March 27; filed, March 27; cost \$1,818.

Walter and Taylor. Three-story frame; owner, C. Brizzolara; architect, E. Deperre; contractors, L. Cuneo & Co.; signed, March 27; filed, March 28; cost \$8,000.

Welster near Golden Gate Ave. Two-story frame; owner, Geo. Shaffer; architects, John & Balczynski; contractors, Schutte & Kreeker; signed, March 27; filed, March 28; cost \$3,775.

ALAMEDA COUNTY.

Block A, lot 12. Two-story frame; owner, C. T. Baker; architect, S. A. Bordwell; contractor, J. J. Boyce; signed, March 17; filed, March 22; cost \$3,319.

Bowditch near Durant Ave., Berkeley. To build; owner, B. Carrington; contractor, R. Wenk; signed, April 5; filed, April 7; cost \$1,600.

Central Ave. near Hight. Five-room cottage; owner, H. H. Hagewald; contractors, Marcuse & Remmel; signed, March 20; filed, March 23; cost \$1,535.

C. P. R. R. Right of Way. Two-story frame building; owner, 23d Ave. and 14th L. I. Co.; architects, Colligan & Lassen; contractors, E. P. McGowan and J. Laughlin; signed, Feb. 4; filed, March 19; cost \$5,350.

Eighteenth and 8th Ave., Oakland. Two-story frame; owner, E. B. Hill; contractor, C. E. Nichols; signed, March 11; filed, March 15; cost \$2,912.

Forty-fourth near Grove. To build; owner, J. E. McElarth; contractor, W. M. Campbell; signed, April 5; filed, April 6; cost \$1,400.

Grand near Railroad Ave. One-story frame building; owner, J. H. Alders; architect, F. P. Fischer; contractors, D. Straub & Son; signed, March 17; filed, March 21; cost \$1,800.

Linden near 24th, Oakland. Six-room cottage; owner, E. A. Beers; contractor, A. D. Coplin; signed, March 17; filed, March 18; cost \$1,650.

Moss Tract, block F, lot 7, Brooklyn. To build; owner, T. D. Newsum; architects, J. J. & T. J. Newsum; contractor, W. H. Higgins; signed, March 23; filed, April 3; cost \$1,300.

Ninth near Chestnut, Oakland. Two-story frame; owner, L. Messinax; architects, Townsend & Wyneken; contractor, J. Mussoletti; signed, March 14; filed, March 15; cost \$2,080.

Pacific near Walnut Ave. Three-story frame; owner, Capt. A. H. McElreath; architect, F. P. Fischer; contractor, D. Straub; signed, March 15; filed, March 15; cost \$1,800.

Park near Dayton. Two-story frame; owner, A. W. Ward; architect, T. Claffin; contractor, R. M. Murray; signed, March 20; filed, March 24; cost \$6,068.

Parn near Dayton Ave. Two-story frame; owner, K. D. Field; architect, T. C. Chaplin; contractors, R. Knox & J. G. Cook; signed, March 10; filed, March 20; cost \$6,945.

Sixteenth near Fruitvale Ave. Two-story frame; owner, J. A. Jones; contractor, A. W. Pattiani; signed, March 18; filed, March 20; cost \$2,908.

Seventh near Henry, Oakland. Alterations and additions; owner, Mrs. M. Walsh; architect, E. Childs; contractor, J. Irwin; signed, Feb. 15; filed, March 15; cost \$1,653.50.

Seventh Ave. and 22d street, Oakland. Two-story frame; owner, Mrs. W. B. Smith; architects, Percy & Hamilton; contractor, C. L. Lombard; signed, 18; filed, March 21; cost \$2,000.

Send P's Court near R'd Ave. Five-room cottage; owner, C. T. Hoffmann; contractors, Marcuse & Remmel; signed, Feb. 10; filed, March 13; cost \$1,500.

Taylor and Sixth. Three cottages; owner, J. E. Seigfried; contractors, Marcuse & Remmel; signed, March 25; filed, March 25; cost \$3,615.

Twenty-seventh near 19th Ave., Oakland. One-story frame; owner, H. H. Beach; contractor, A. W. Pattiani; signed, March 22; filed, March 24; cost \$2,459.

Thirty-fifth near Grove, Oakland. Two-story frame; owner, K. McDonald; architect, J. J. Clark; contractor, J. R. Robinson; signed, March 14; filed, March 20; cost \$2,195.

Twenty-sixth near 14th, Brooklyn. To build; owner, S. Bonfield; contractor, T. C. Bignami; signed, Feb. 11; filed, March 13; cost \$1,562.

Verdi near Railroad Ave. Five-room cottage; owner, F. E. Baker; contractors, Marcuse & Remmel; signed, March 6; filed, March 25; cost \$2,325.

Weber near Central Ave. One-story cottage; owner, W. T. Chipman; architect, Wm. Levinson; contractor, R. Christenson; signed, March 21; filed, March 22; cost \$2,700.

The California Architect and Building News.

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SAN FRANCISCO, CAL., U. S. A.

VOLUME XIV.

MAY 20th, 1893.

NUMBER 5.

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4 inch.....	6 00	16 00	30 00	52 00
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6 inch.....	9 00	24 00	45 00	78 00
7 inch.....	10 50	28 00	52 50	91 00
8 inch.....	12 00	32 00	60 00	104 00
9 inch.....	13 50	36 00	67 50	117 00
10 inch.....	15 00	40 00	75 00	130 00
11 inch.....	16 50	44 00	82 50	143 00
12 inch.....	18 00	48 00	90 00	156 00
13 inch.....	19 50	52 00	97 50	169 00
14 inch.....	21 00	56 00	105 00	182 00
15 inch.....	22 50	60 00	112 50	195 00
16 inch.....	24 00	64 00	120 00	208 00
17 inch.....	25 50	68 00	127 50	221 00
18 inch.....	27 00	72 00	135 00	234 00
19 inch.....	28 50	76 00	142 50	247 00
20 inch.....	30 00	80 00	150 00	260 00
21 inch.....	31 50	84 00	157 50	273 00
22 inch.....	33 00	88 00	165 00	286 00
23 inch.....	34 50	92 00	172 50	299 00
24 inch.....	36 00	96 00	180 00	312 00
25 inch.....	37 50	100 00	187 50	325 00
26 inch.....	39 00	104 00	195 00	338 00
27 inch.....	40 50	108 00	202 50	351 00
28 inch.....	42 00	112 00	210 00	364 00
29 inch.....	43 50	116 00	217 50	377 00
30 inch.....	45 00	120 00	225 00	390 00

ESTABLISHED 1879. NOW IN THE FOURTEENTH YEAR. INCORPORATED 1880.

W. J. CUTHBERTSON, President. OLIVER EVERETT, Secretary.

Remittances should be in the form of postal orders, payable to THE CALIFORNIA ARCHITECTURAL PUBLISHING COMPANY, and all communications addressed to the office of the Company, 408 California Street, San Francisco, Cal.



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THIS journal is prepared to take charge of rendering perspective drawings in pen and ink or color. Charges will depend on size and kind of drawing wanted.

Upon receipt of plan and elevations, with a description of what is wanted, we will submit our estimates for the performance of the work.

A National Gallery of History and Art is a matter of importance to every citizen of America and more especially to students of architecture and art. On Saturday evening the 6th inst, the San Francisco Chapter of the American Institute of Architects, gave a reception in the parlors of the Palace Hotel to Mr. Franklin W. Smith, a retired Boston merchant, who on account of an inherent predilection for architecture, has by constant study and oft repeated visits to European countries familiarized himself with the conditions of the arts and their needs, has conceived the magnificent project of a National Museum of History and Art. He proposes to establish at Washington, D. C., a vast series of courts and corridors constructed on the side of Observatory Hill, arranged in historical sequence to contain collections, replicas and original examples of architecture, painting and sculpture, each in its appropriate environment so that each art and industry may be traced from the beginning to the present day.

These collections and examples to be illustrated by the most notable specimens of art placed in their proper connection and explained in that connection by lecturers who are to be appointed by the various universities, and who shall be selected in accordance with a carefully formulated programme for the benefit of visitors.

This is not a substitution, but a preparation for travel by those who can afford that greater luxury. In a word the proposition embraces a rearranged and improved South Kensington on a vastly enlarged scale.

THE use of cast iron soil and waste pipes for buildings has brought forward the question of the merits of the cast iron pipe with leaded and packed joinings in comparison with the wrought iron pipe with screw joints. It has been contended that cast iron pipes were not sufficiently flexible to prevent breakage by the vibratory motion by wind or other causes.

The article on another page, by J. B. Crockett, descriptive of an experience with a 24-inch cast iron gas main, shows that cast iron pipes where joined with lead packing may be moved and its direction changed to a considerable extent without breaking. The general conditions and results are of especial interest to architects and we invite their attention to the subject.

OUR article in last month's issue of this Journal on "Wiring of Buildings for Electric Lights," was written by an expert in that line and will well repay a careful reading and study of the subject. We cannot ignore the fact that electricity is destined, before many months, to be the coming light; therefore, buildings in course of erection, or in contemplation should be arranged for the most effective work in that line the present state of knowledge will warrant.

SANITARY SCIENCE.

To the Editor of the California Architect.

HAVING occasion to be in Oakland the other day taking in the many improvements and otherwise now going on in that thriving burg, I, being interested in things Architectural, looked over most of the plans of the new school-buildings about to be started there, and was grieved to see that those having the say in the matter have turned back from the ideas most progressive in sanitary science—and have attempted to apply rules appropriate for the Eastern States to buildings here on the Pacific Slope. In, I believe all of these buildings, we find the basement cumbered up with latrines and urinals. The basement, which above all should be kept sweet and clean. The latest and best method, when they have to be placed in the building, is to place all these necessary nuisances on the top of the building so that evil gases may disseminate themselves in the upper atmosphere without having to pass through the stratas of breathable air.

What excuse have we then for men in these latter days who with ample yards and grounds around their buildings persist in placing the latrines in the basement.

This comes in great part from the habit of Californians of having no faith in themselves, but putting their trust in eastern teachers, forgetting that they of all are the worst possible guide for us western people. In the east with their frost and snow they are compelled to put their conveniences where they may be kept warm and where their water pipes may not be broken with frost and so that their children may not endanger their noses and ears by having to go out into the death-dealing air. But the conditions here are totally different and generally the rule ought to be to do exactly the opposite to what they do in the east, and you will be more often right than wrong.

In this climate the latrines and urinals of a public building such as a school house should by all odds be kept entirely separate from the occupied building. A covered walk there should be for rainy weather and the edifices devoted to the purpose under consideration ought to be made as architectural as can be. I believe it is, and if not ought to be, a law of

Ethics that it is not necessary to emphasize a disagreeable thing for the sake of absolute truth, and there need not be anything about these separate buildings to indicate their use, as all the occupants of the building can be made acquainted with that without it being advertised on the building itself.

Such being the case I cannot conceive of one good reason why these conveniences should be put in the basement especially when the fresh air furnaces are there too, and if there is I would very much like to have it given; and it seems to me that a little more consideration on the part of those having authority might lead them to undo what they have done and start on a more scientific and humanitarian basis.

STROLLER.

AN EXPERIENCE WITH A 24-INCH GAS MAIN.

BY J. B. CROCKETT, MEM. TECH. SOC.

[Read March 8, 1893.]

USUALLY, large engineering operations, such as any class of construction work, are attended with a certain amount of pleasurable anticipation, as the plans are being perfected, and a degree of pardonable pride as the final results are contemplated; but once in a while we are confronted with engineering emergencies that require more skill and watchfulness for successful handling, yet are totally devoid of any of these compensations. This paper deals with one of the last.

What is now known as the Potrero Station of the San Francisco Gas Light Company, was built from 1869 to 1871. It is situated on the Bay Shore, and is bounded by Georgia, Humboldt, and Sierra Streets on the land sides.

The situation of the plant is favorable, with one exception, that the extreme southern part of the City is isolated from the large gas-consuming districts, by water-ways and marshes, extending westward far into the city. To provide an outlet for the gas made at these works, and avoid crossing Channel Creek, or the mud flats which mark the former boundaries of old Mission Bay, it became necessary to lay a twenty-four-inch cast iron main from the works to a point crossing Kentucky street at Solano street, thence over the high hills to the west to Mission street, and thence in a northerly direction down the hill to the marsh at Santa Clara avenue.

The pipe was laid beneath the surface of the marsh on Santa Clara avenue, from Missouri to De Haro streets, a distance of 1,424 feet, then in a northerly direction, 510 feet, to Center street. From Center street the large main enters the heart of the City through Ninth street, and is there connected with the ramification of pipes which supply the city with gas.

Where the pipe crosses the marsh on Santa Clara avenue, it was laid with about three feet cover of earth, and to all appearances on as good foundation as many other gas mains in the city. At this place the ground was below the official grade, from two feet at the highest, to eighteen feet at the lowest points, but at the time the pipe was laid, no other nor more desirable location was available, nor could the ultimate grading of these streets be anticipated. On a sunny day, with the pipe snugly laid in the marsh, Santa Clara avenue was like a peaceful valley, but after notice was served that the streets in the vicinity were to be graded, it proved to be a veritable "slough of despond." The first notice was the intention to grade Santa Clara avenue from Missouri to Carolina streets, and the intersecting streets. This covered four blocks or about twelve hundred feet of the twenty-four-inch main, and it became necessary to uncover and raise it before the filling was begun.

Before proceeding with a description of the raising of this large pipe, I want to lay stress upon the fact that this pipe

was the main artery of the city's gas supply, which was constantly under pressure, and through which over three-fourths of all the gas supplied by the San Francisco Gas Light Company was drawn. This was previous to the building of the new works at North Beach, and there was no substitute of any kind for it.

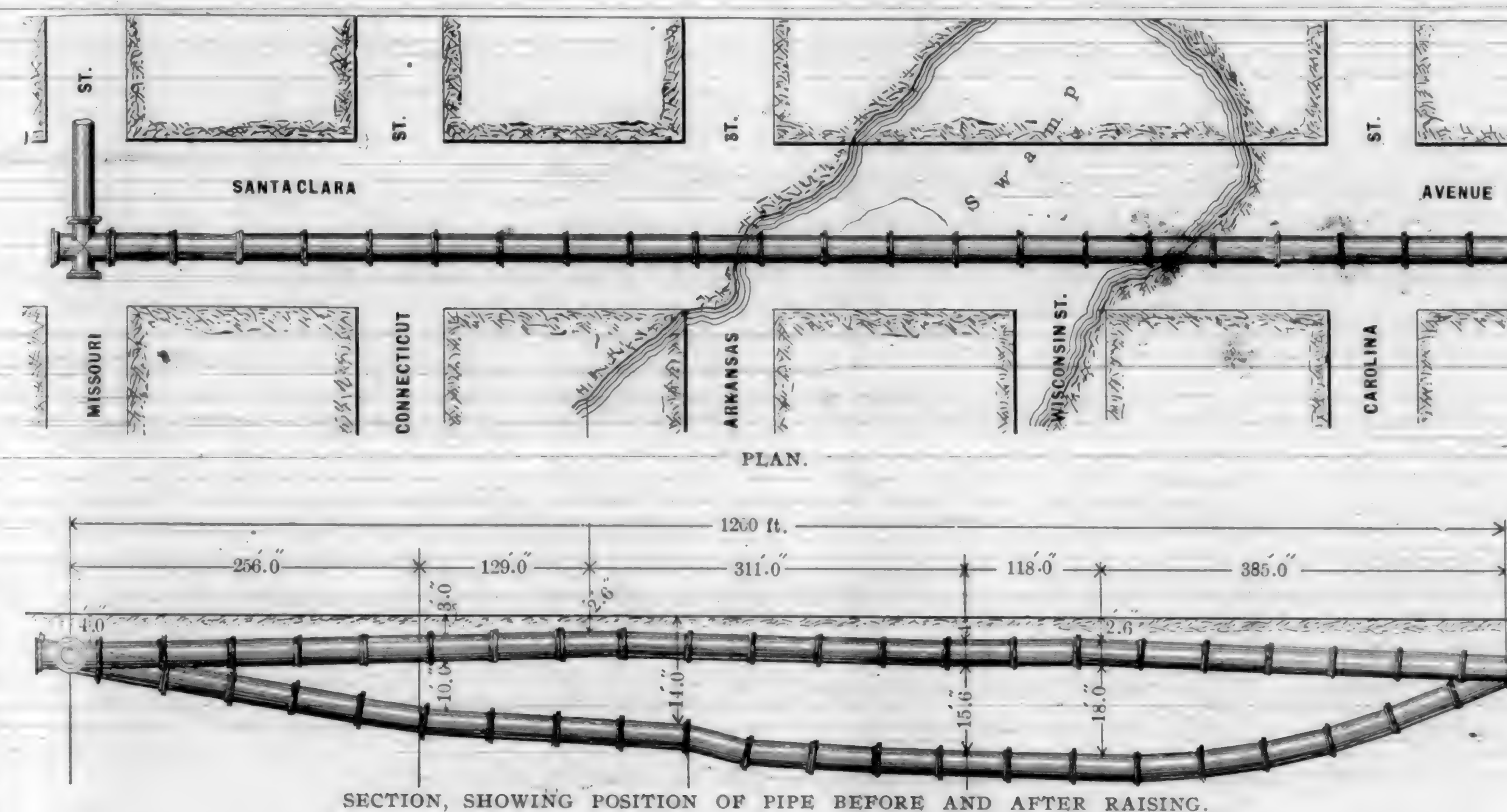
On December 16, 1890, work was commenced raising the pipe on Santa Clara avenue, between Mission and Carolina streets. It was necessary to raise the main without cutting or breaking it, and its success depended in a great measure on its flexibility due to lead joints. Had the joints been of cement, as they are almost uniformly made in Eastern cities, the rigidity of pipes and joints would, without doubt, have caused a break, or perhaps many serious breaks, but with about one hundred lead joints, $4\frac{1}{4}$ inches deep and half an inch thick, it became possible to raise the main without a fracture.

The first section to be raised, weighed about 260,000 pounds, and the method employed in raising it was as

and twelve feet wide at the bottom. They were made of 8x8-inch uprights with a sill underneath, and a cap at the top of the same dimensions, and braced diagonally by pieces 2x10-inches on each side. After the completion of the trestles, all the other supports, including the house frames used for raising, were removed, and apparently nothing remained to be done but to fill in the street with solid filling. The pipe had been raised without accident of any kind, all the joints had been re-caulked where they had drawn, and the permanent supports were amply strong.

The filling of the street was commenced immediately after the pipe was raised. This was done by taking the rock from the hills east and south of the fill, and transporting it in cars to the dump. This work was done by a contractor for the city.

As fast as the street was filled to grade, a gang of men kept the twenty-four-inch pipe uncovered, and all went well until the fill reached the corner of Santa Clara avenue and Arkansas street, when, on Saturday April 11, 1891, at



follows: The pipe was first uncovered, the trench extending to the bottom of the main, and at intervals of 12 feet of its entire length, house mover's frames were placed on each side, one above another, to the desired height. A 12x12-inch timber was placed across these tiers of frames, passing over the pipe just behind each joint. Heavy chains were passed around the pipe, back of each heel, and what is known as a two-inch "holder screw," was hooked to each chain and passed through a hole in the timber above. On the upper surface of the timber was an iron washer, and on this rested the large nut on the thread of the holder screw.

After taking up the slack on each chain, a man was detailed with a wrench to each screw, and at a signal from the foreman each man took one turn of the wrench, and the pipe was gradually raised. As the main was raised from the marsh, a gang of men was employed in blocking under it, to prevent its falling in case of the accidental breaking of any part of the lifting machinery, until finally, when it was raised to the desired height, or about three feet below the official grade of the street, the pipe was temporarily supported by house frames. Seven hundred and eighty of these frames, each $2\frac{1}{2}$ feet high, were used in raising and supporting the pipe.

The next step was the permanent support of the pipe previous to the filling of the street. This was done by constructing a series of wooden trestles, five feet wide at the top

eleven o'clock P. M., the northerly side of the street began to slide toward the north, carrying the pipe and its supports with it. The main settled four feet and slid to the north three feet, and the wooden trestles were canted over in the direction of the slide.

A gang of men was immediately put to work shovelling the rock and earth away from the trestles to remove the pressure against them, and to distribute the material under the pipe. The following day a number of teams were employed to cart the material from the face of the dump, and to spread it along the line of the pipe, under and on each side of it. The object in thus carting the rock was to distribute evenly the load on the marsh, and gradually raise the whole street to the level of the pipe, instead of keeping up to the street grade, and presenting a steep face at the dump. Carting rock was continued until we had filled in solid under the pipe and had built a cartway about nine feet wide on each side of the pipe, level with the bottom of it. This required the handling of five thousand loads of stone. As the stone was hauled ahead and loaded on the marsh, the street continued to settle, carrying the pipe with it.

Four days after this first trouble, the crossing of Arkansas street commenced to settle very rapidly, and in fifteen minutes the street had gone down four feet. The large body of rock settling in the mud, raised the surface of the

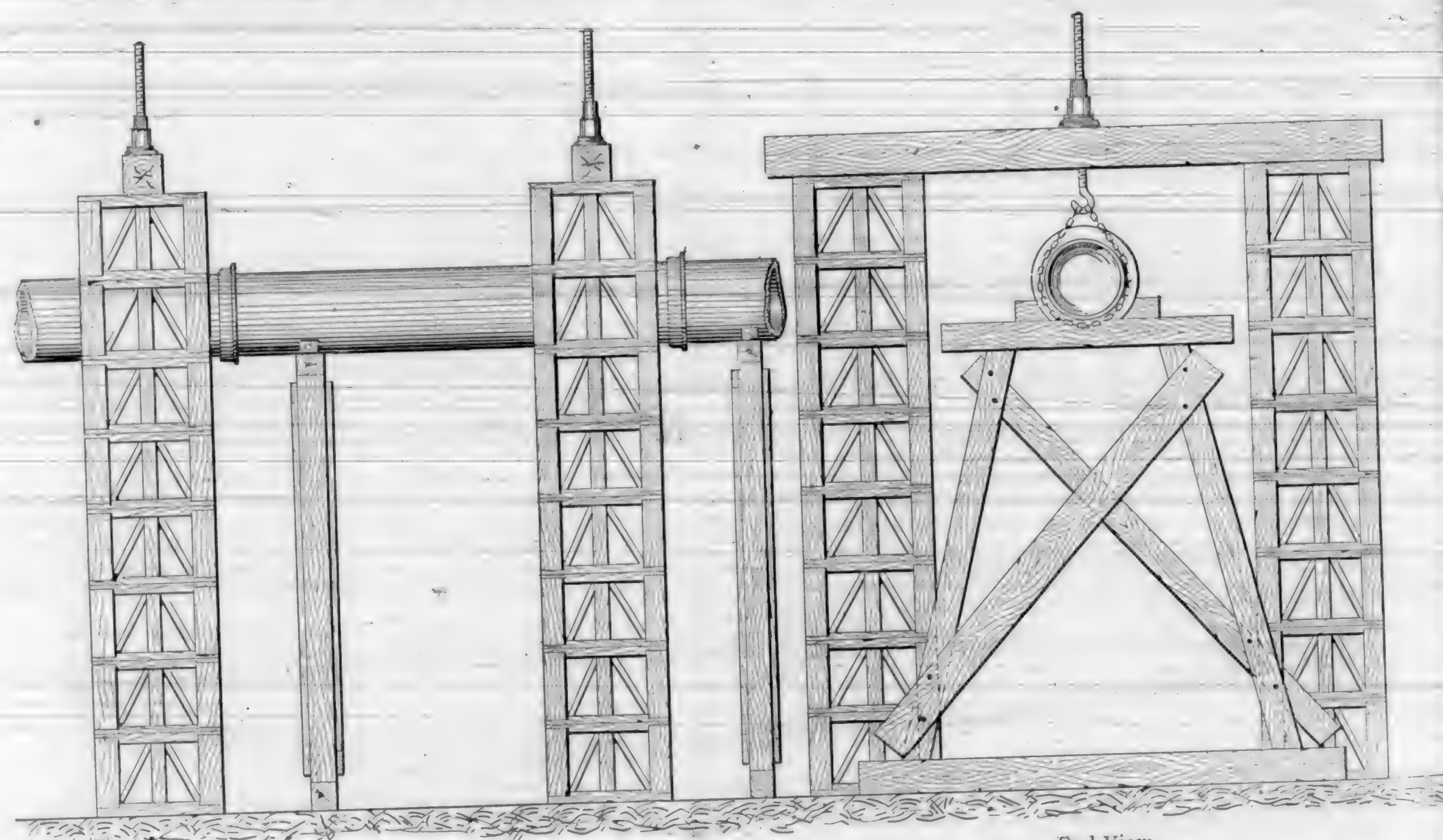
marsh at a point about one hundred feet north of the street, about five feet high, and opened a crevice a foot wide. This was a natural consequence of the displacement of mud by the heavy fill of stone, but why over half of the filled street should slide bodily toward the north, at the same time, and where and when it would bring up were perplexing questions? To ascertain the exact nature of the underlying strata of the marsh, and solve at least one of these problems, we caused soundings to be made in lines ninety-six feet long, extending from south to north, at right-angles to the pipe, by driving a half-inch iron bar into the ground. The crust of the marsh was found to be fairly firm to a depth of three feet, consisting of a sort of marl.

At the northerly side of the street, after passing through the crust, the bar sank into nineteen feet of soft mud, and then reached hard bottom. At the middle of the street the bar went down through seven feet of the same mud, while

wedges, we arranged to keep the pipe in its place, until May 1st when another settlement occurred, opening long fissures in the fill, and raising the surface of the marsh to the north about nine feet, and at the same time opening several long cracks nearly two feet wide. This was the most trying period of the whole undertaking, and as a safeguard I laid a line of twenty-inch pipe on the surface of the marsh, south of Santa Clara avenue, and cut the twenty-four-inch pipe between Missouri and Arkansas streets, and at Carolina street, and put in T's twenty-four by twenty.

This was done so that in the event of the construction of the twenty-four-inch main, we could, by making short connections with the twenty-inch main, provide a way to deliver gas to the city temporarily. Fortunately, however, this new line was never used, but its presence was a source of relief.

The last serious settlement occurred on May 15, 1891.



Side View
STRUCTURE SHOWING FIRST MANNER OF LIFTING AND SUPPORTING PIPE.

on the south side there were but two feet and six inches of the mud under the crust of the marsh. The stratum underlying this mud was an extremely hard clay.

These soundings explained to my satisfaction the cause of the body of rock sliding towards the north. The surface of the marsh was nearly level, but the thick body of soft alluvial mud was resting on a subterranean side hill of hard clay, sloping toward the north with a trend of fourteen degrees, and as the rock fill sank into the mud it slid, mud and all, down the slope of the hard bottom.

The soundings also explained the sudden and spasmodic settling of the fill. The three feet of firm crust over the marsh offered a resistance to the load of rock piled upon it, until the load was sufficient to overcome the resistance, when the crust broke, letting the entire fill settle from four to five feet at a time.

After the second settling of the pipe it was necessary to resort again to the house frames for raising it, as the wooden trestles had sunk into the marsh and were almost useless. After raising the pipe with screws to the proper height, jack screws were used for forcing it laterally toward the south, back into proper line. By continuous wedging under the pipe, using in all about ten car loads of wooden

when 12x12-inch timbers, thirty feet long, were placed under each length of pipe, back of the joints, and the end of the timber towards the north was blocked up about two feet higher than the south end. With this precaution we were enabled to keep the pipe wedged up in place, although it was a constant source of worry and annoyance, until the rock fill had found a bottom on the hard clay and the street was brought to grade. At the crossing of Arkansas street, which was the worst part of the marsh, the main was raised at the beginning sixteen feet, and the sum of all the settlement at that point, was fourteen feet, that is, the entire fill settled into the marsh a distance of fourteen feet, so that it was necessary to raise the pipe in all, thirty feet, to maintain it at the sixteen-foot level.

The contractor continued filling in, until July 31, 1891, and the average amount of material dumped each day, from May 1st to July 31st, was twenty-three train loads of nine cars each, or about two hundred and seven cubic yards per day. As the contractor completed filling the street to grade, the pipe was kept uncovered, and a 12"x12" timber was placed across each length of pipe, resting on blocking and wedges, chains were passed around the pipe and holder screws were used for sustaining it. For months it was

necessary to keep careful watch of the pipe, and men patrolled its entire length day and night, driving wedges and taking up the slack on the chains, wherever needed. In fact, during all this time Santa Clara avenue became one of the company's telephone stations, and for a while was the one most frequently used.

Finally, in November, 1891, the street had stopped settling, the timbers and screws were removed, and after carefully tamping the earth under the pipe, the trench was filled. Early in October, 1891, notice was received of the intention to grade Santa Clara avenue west from Carolina street, and as the twenty-four-inch main extended west as far as De Haro street, (304 feet) it was necessary to raise it out of the marsh. At De Haro street the pipe turns at a right-angle, and extends to Centre street, (510 feet), and it was necessary to raise the entire 814 feet an average of about eight feet in height.

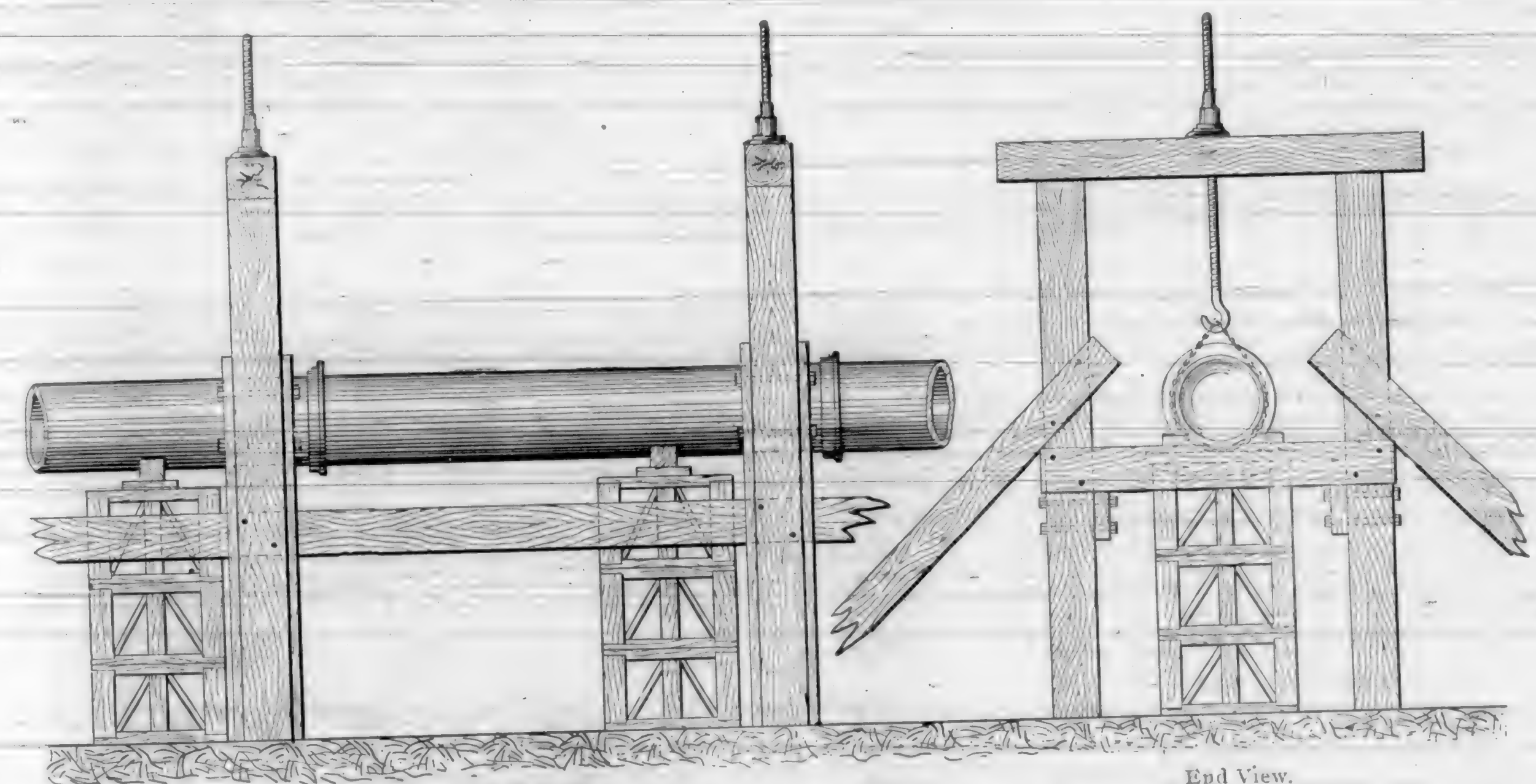
A pile structure was built to raise and sustain the pipe. Sixteen-inch piles, fifty feet long, were driven through the

drawing apart, iron bands were bolted around it at the corner, and these bands connected on each side by rods with turn-buckles.

After the pipe was raised and supported, the 12"x12" caps were removed and the tops of the standard piles were sawed off below the grade of the street. As the street was filled, the pile structure stood the strain of the street settling, but there was little or no lateral thrust, as the clay under the marsh was nearly level at this point, and the fill did not slide.

This piece of work was not subject to any of the unfavorable conditions that so seriously affected the first part of the work. In fact, the method employed to raise the first section would have been successful in raising the second section; but it is doubtful if any wooden structure would have withstood successfully the various forces exerted to overthrow it, at the crossing of Santa Clara avenue and Arkansas street.

[Taken by permission from the transactions of the Technical Society of the Pacific Coast.]



Side View.
STRUCTURE SHOWING SECOND MANNER OF LIFTING AND SUPPORTING PIPE.

marsh into the hard clay bottom. These piles were spaced twelve feet apart, and were five feet from the pipe on each side. Ten feet outside of each standard pile a brace pile was driven and sawed off two feet from the ground. On each side of the standard piles, extending down to the brace piles, were diagonal braces 4"x12". Caps 12"x12" were placed over the main, resting on the top of the standard piles, and a screw passed through a hole in the middle of each cap. The pipe was raised as before described.

When the pipe reached the proper grade, waling pieces 4"x12" were bolted on the inside face of the standard piles, and across these were placed two planks 4"x12", on edge, resting on the waling pieces and bolted through the piles. The pipe rested on these 4"x12" cross pieces, and was prevented from rolling by pieces of 4"x4". The entire wooden structure was securely bolted together.

The standard piles were for raising and permanently supporting the pipe, and the brace piles and the diagonal braces were to withstand any side thrust caused by sliding of the marsh.

One of the difficult features of this piece of work was the bracing of the right-angle in the main, at the corner of Santa Clara avenue and De Haro streets. This was accomplished by driving ten piles around the T at the corner, and by a system of diagonal braces. To prevent the pipe from

TO ARCHITECTS.

INVITATION to make plans is extended to Architects generally, for a Stone and Brick Building to be erected at De Coto, 26 miles from San Francisco, to be used as an Orphanage for the Masonic Widows' and Orphans' Home.

The Building to have a capacity for the accommodation of one hundred orphans and twenty-five widows.

Cost not to exceed \$60,000.

Plans to be submitted to us by July 13, 1893, at 2 P. M., Masonic Temple, San Francisco.

The Board of Trustees reserve the right to reject any or all plans.

For further particulars apply to

G. L. Spear, Chairman,
Jacob Voorsanger,
Albert Hanson.

Spudkins, who has been refused by eleven girls, says he thinks of becoming a photographer, because he is so successful in producing negatives.—*Philadelphia Record*.



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 California Home at Glen Ellen, Sonoma County, for the care and training of feeble-minded children, is by Messrs. Copeland & Peirce, architects, of this city.

THE Perspective sketch of a residence for Geo. R. Sanderson on Jackson street is by architect C. I. Havens.

THE Japanese M. E. Church to be built on Pine street in this city, is by Maxwell G. Bugbee, architect.

CONCRETE AND TWISTED IRON.

AS USED AT THE STANFORD JR. UNIVERSITY, PALO ALTO, CALIFORNIA.

THE distinctive features of the Stanford Jr. University relate not alone to the course and methods of training, but as well to the character of the buildings which have been erected. The style of architecture is modeled after the low, tile-roofed, abode structures of the mission period. The buildings first erected were of hewn stone, massive, costly and enduring. The later edifices are upon the same general plan, but are also unique and peculiar in mode of construction. They are monolithic, being moulded, walls, floors and roofs of artificial stone or concrete, with the addition of iron rods as an element of supporting strength for the floors.

The real problem of successful architecture clearly lies not so much in a choice of material as the proper use of materials common to all structures. Essentially the same elements enter into the construction of all important edifices. The great difference is in the way these are handled; whether the articles in question are used in their natural condition, or shaped and fitted by art, modified by preparation or manufacture, to meet the taste and means of the designer.

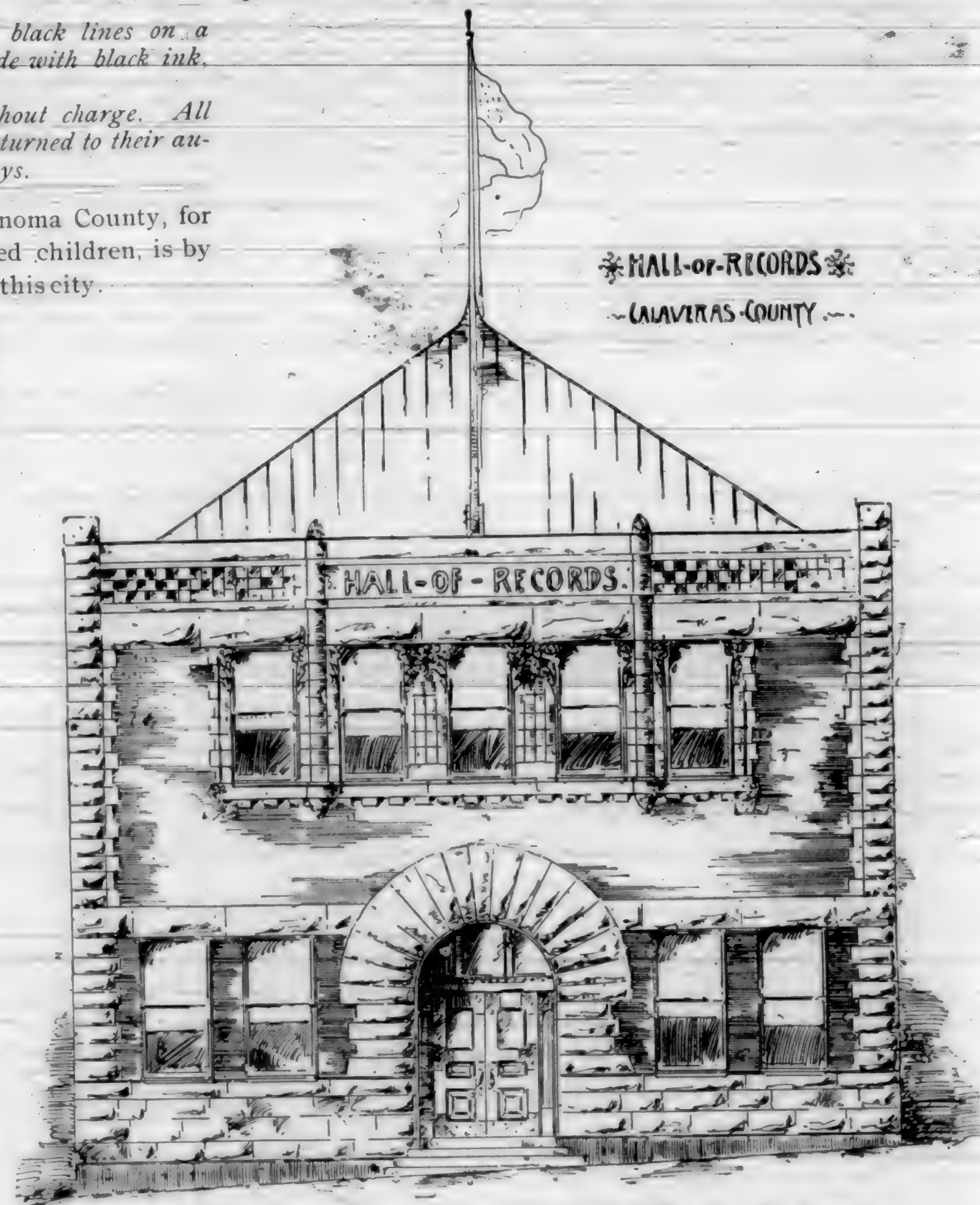
Buildings of stone are conceded to be most enduring, and to best resist climatic changes, but they have been the most costly, where the granite or marble has to be transported from the quarry and dressed by hand for use in the walls. The same materials, broken in fragments, and again united by machinery with cement, and utilized in the form of monolithic (single stone) structures of concrete, prove cheaper, and, as use has demonstrated, more enduring, and resist heat better than natural stone.

Such structures are not new, but have heretofore been too massive and imposing. There was needed some device by which floors of stone need not be of excessive weight. In the construction of the new Museum Building and Girls' Dormitory at Palo Alto, this final problem seems to have

been solved by a method first introduced upon the bay of San Francisco, which in effect utilizes the principle of the suspension bridge in every separate floor beam.

The floors, though formed of single slabs of artificial stone, are light and graceful in design, though capable of supporting great weight. This requisite strength has been secured by means of bars of twisted iron imbedded within the mass, whereby the tensile strength of the iron—firmly held in place by the surrounding concrete—supports the floor.

The common iron floor beam can be depended upon to the safe limit only of its lateral or transverse strength. Were it possible to use the same weight of iron as a suspension rod,



WILLIAM MOOSER, ARCHITECT.
SAN FRANCISCO, CAL.

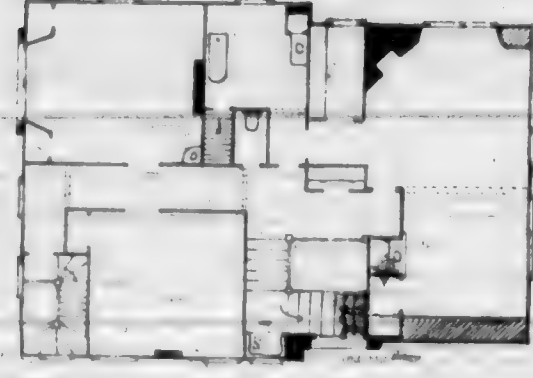
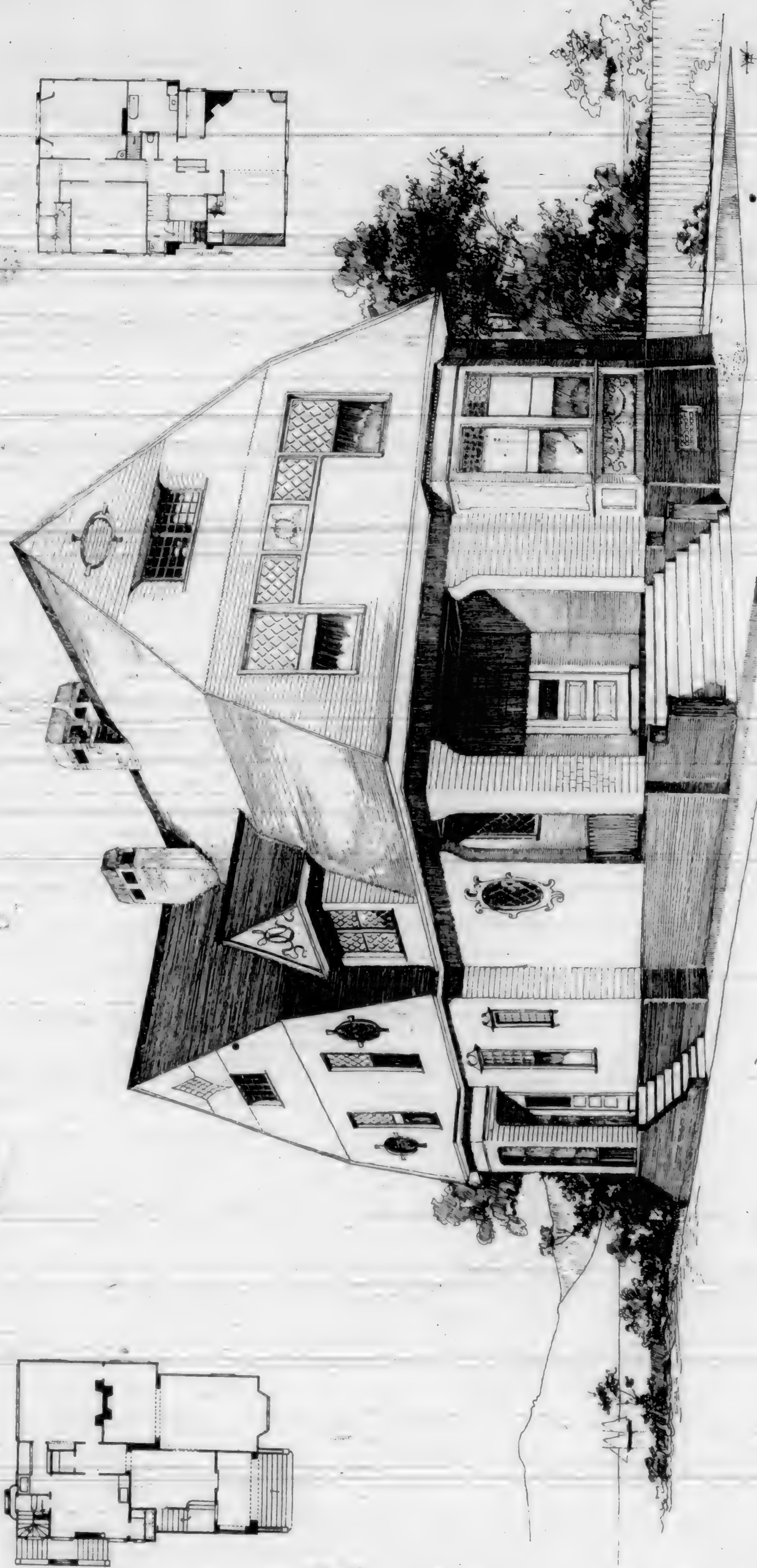
the safe limit would be the cohesive or tensile strength, which is about three times as great. In other words, a floor can be sustained by a suspension rod one-third the weight of the lateral beam. To break a beam by overloading, it is necessary to separate the particles forming the lower chord of the beam, by tension, or to disintegrate the upper member by compression. Incorporating the twisted bar in the lower portion of the beam, it acts as a suspension rod, and being firmly held at every point, the weight is distributed over the length of the bar. The iron thus imbedded is also safe from corrosion and protected against fire, enduring with the concrete, which hardens as the years pass.

There is yet another feature of large interest here. It has been demonstrated that bars of iron, twisted while cold, and left awhile before use, have their cohesive strength increased fifty per cent. The one-third weight is thus again reduced, showing that less than one-fourth the weight of iron affords equivalent strength.

May not this departure at least indicate somewhat the character of the ideal building of the future?



PERSPECTIVE: SKETCH:
 CLAVENS ARCHT.:
 J. FLOOD: PLDG: ST:

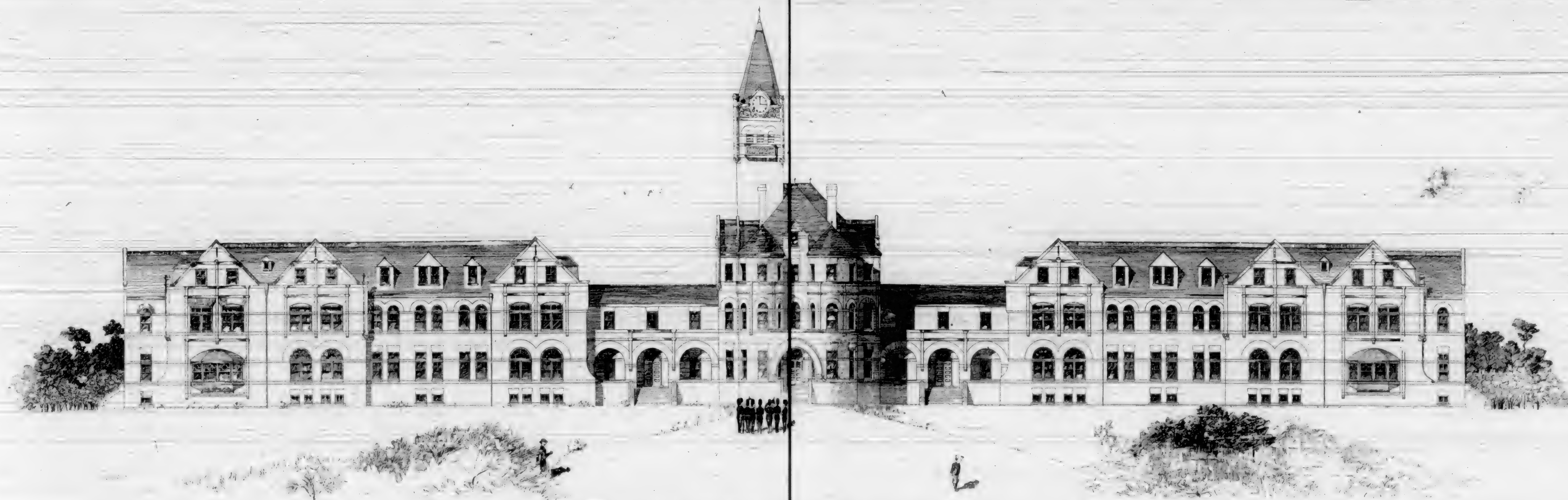


CALIFORNIA ARCHITECT & BUILDING NEWS
 SAN FRANCISCO.

BRITON & REY PHOTO LITH.

VOL. XIV No. 5, MAY 1893.





CALIFORNIA ARCHITECT & BUILDING NEWS
SAN FRANCISCO.

CALIFORNIA HOME FOR THE CARE AND TRAINING
OF FEEBLE-MINDED CHILDREN
COPELAND AND PERCE ARCHITECTS 126 KEARNY ST. S.F.

VOL. XIV No. 5. MAY 1893.



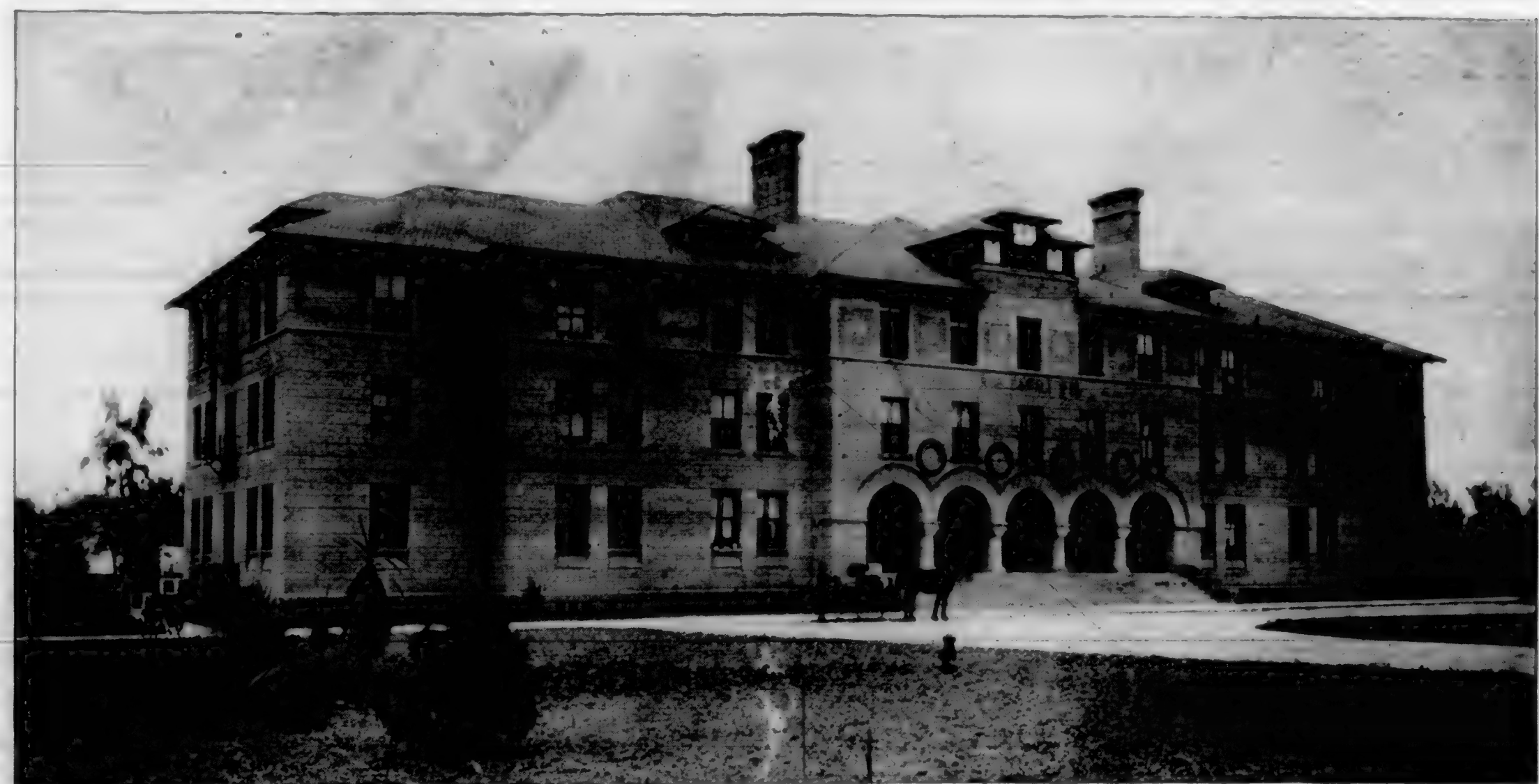
MUSEUM BUILDING, LELAND STANFORD JR. UNIVERSITY, PALO ALTO, CAL., PERCY & HAMILTON, ARCHITECTS.



INTERIOR OF DOME, MUSEUM.



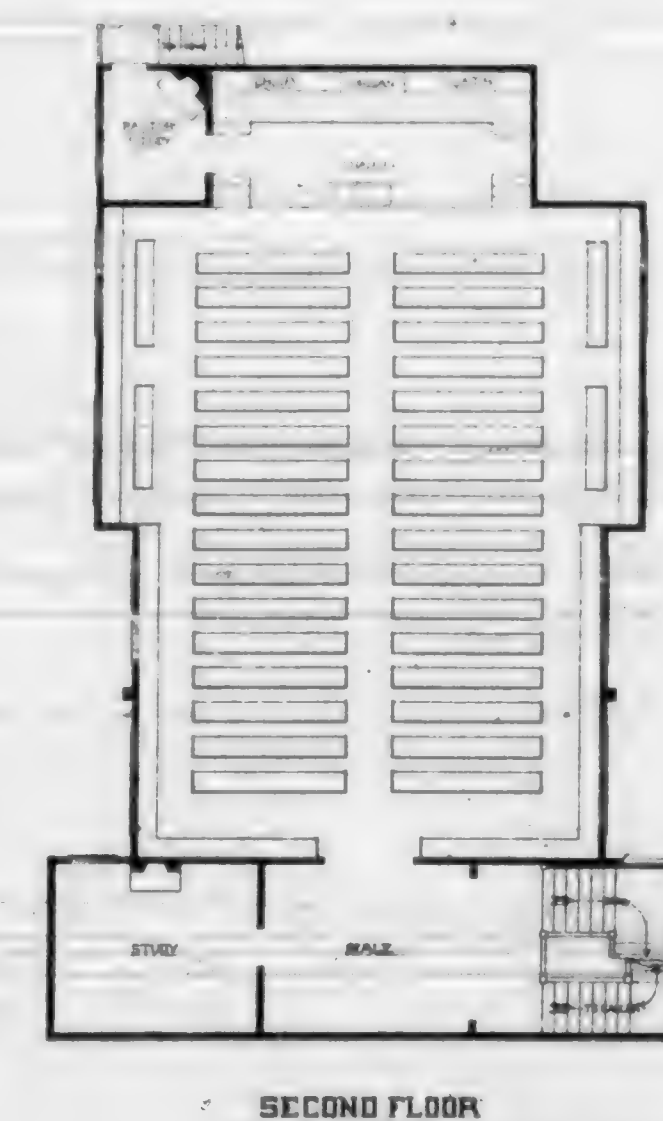
INTERIOR OF WING, MUSEUM.



GIRLS' DORMITORY, PALO ALTO, PERCY & HAMILTON, ARCHITECTS.



JAPANESE M. E. CHURCH.
SAN FRANCISCO, CAL.



EACH MAN HAS A SHARE.

WE clip the following from the *Examiner*. N. O. Nelson of St. Louis is President and General Manager of the N. O. Nelson Manufacturing Company of St. Louis, Mo., and Edwardville, Ill. Mr. Nelson became imbued with the idea that the settlement of the differences between employer and employee lay in the direction of co-operation. He arranged to have his theories carried into practice.

"At our works near Edwardville, Ill.," he said, "there are about 450 men employed, and at the end of every quarter each one of them, from the manager down to the smallest apprentice, gets his share of the profits. This averages eight per cent on the wages per annum ever since we put the system into force.

"Lilliane is in every respect a model village. We bought 125 acres of ground, erected substantial buildings for our factories and laid off the town, not with square blocks, but on the park idea, with winding roads and grassy lawns. In our village we have a co-operative store where the men and their families trade. They pay the current retail price for everything purchased, but at the end of every three months the books are balanced and the profits thus shown are divided among the purchasers in proportion to the amounts they have paid in. These dividends amount to from twelve to fifteen per cent a year and are so many amounts saved to the men who work. Besides this we have a hall where school and church are held and a free kindergarten is maintained during several months of the year. We have free baths, electric lights, modern water works and a circulating library. During the winter there is a course of lectures delivered for the men, and some of the best lecturers of the country are engaged. Last winter we had Edward Everett Hale and men of his class.

"To employees who desire homes we sell them one-third of an acre of ground at two dollars a front foot and erect a cottage for them at cost. This is all paid for in installments, the sum not amounting to more each month than the rent of a cottage in a city.

"Ours is essentially a corporation colony, and the only one of its kind this side of the Atlantic. It makes, I think, a superior class of workingmen, and that it encourages men to apply themselves was shown when we reduced the working hours from ten to nine hours without a reduction of wages and without any decrease in the amount of material turned out."

MUNICIPAL LODGING-HOUSES.

THE sanitary section of the New York Academy of Medicine at its meeting, Feb. 1st, discussed the subject of municipal lodging-houses. Since June, 1886, a law has existed authorizing the Commissioners of Charities and Correction to establish such shelters, where a night's lodging and a breakfast might be had, in exchange for work. Any lodger refusing the work might be committed for vagrancy. Dr. Henry E. Crompton made a telling report on the police-station lodging-rooms, usually in basements, where seventy or eighty men may be herded together, in a reeking atmosphere. Mr. Jacob A. Riis gave a chapter from his own experience as a poor immigrant boy. He said:

"I speak of what I know when I speak against these places. Let us have the clean and honest free municipal lodging-houses. Experience in other cities has shown that when such places are established the tramps leave the city. Boston has them, and now we have Boston's tramps. Philadelphia has them, and we have Philadelphia's tramps. The tramp loves the free police lodging-house, but the municipal lodging-house, where he must work for his lodging and breakfast, that he loathes and detests."

Decisive action was determined upon; if necessary, through the grand jury, to compel the commissioners to act, in view of the probability of a return of the cholera next summer.

In this connection it may be well to note that the secretary of the Charity Organization Society of London has recently written a letter to the *London Times*, protesting that the Salvation Army Shelters are doing more harm than good; they underbid the cheap public lodging-houses, and are without sanitary or police inspection. "The shelters are not at all, or in a very minute degree, elevating or regenerating their inmates. They are deceiving men into coming to London with a hope of obtaining employment, which must in most instances be frustrated. They are not preventing pauperism. They are for very many men what it was always anticipated that they

must be, portals to the Poor Law. All the misdirected and superficial charitable sentiment that has gone to establish these shelters has, after all, affected nothing, unless it be this—that it has proved once more that philanthropy without discretion is not an ennobling but a degrading force in society."—*The Churchman*.



ALLEGORICAL STATUE FOR THE CALIFORNIA WORLD'S FAIR BUILDING, RUPERT SCHMID, SCULPTOR.

NOTICE OF MEETINGS.

SAN FRANCISCO CHAPTER, AMERICAN INSTITUTE OF ARCHITECTS, meets second Friday of each month at 408 California street.
GEO. H. SANDERS, Pres. W. J. CUTHBERTSON, Vice-Pres.
OLIVER EVERETT, Sec. JOHN M. CURTIS, Treas.

TECHNICAL SOCIETY OF THE PACIFIC COAST, meets first Friday of each month at Academy of Sciences Building.
C. E. GRUNSKY, Pres. CHARLES D. MARX, 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.
MAX CASPARI, Sec. H. T. BESTOR, Treas.

THE regular monthly meeting of the San Francisco Chapter of the American Institute of Architects was held on the evening of the 13th inst.

Among the members present was the Honorable John M. Curtis. The subject of legislation on matters of interest and importance to the architectural and building interests, was discussed, and the effect of past and probable results of prospective laws considered from various points of view.

The committee charged with tendering a reception to Mr. Franklin W. Smith, reported that they had successfully fulfilled their duty, and a pleasant evening in the parlor of the Palace Hotel had resulted. Mr. Smith entertaining and instructing his auditors on the subject of the proposed National Museum of History and Art.



COUNTRY RESIDENCE.



A practical hand book relating to the construction and management of steam and power pumping machines by William M. Barr, member American Mechanical Engineers. With upwards of two hundred and sixty engravings, covering every essential detail in pump construction. Philadelphia, I. B. Lippincott Company, 1893.

This volume of nearly 450 pages, printed on excellent paper and illustrated with many drawings. Cannot fail to be of great use to any one contemplating the erection of works for pumping purposes, as it appears to cover the ground completely and the description of the various pumps, with the illustrations make every device understood at a glance. A good index adds greatly to the value of any

book, and in this respect nothing more could be desired. Price \$5.00.

LOGARITHMIC TABLES by Prof. George William Jones of Cornell University. Fourth edition.

We have here in a convenient form, printed on good paper, with clear type, a book that must commend itself to every engineer, while the student in mathematics will find in the tables a very clear and comprehensive review that cannot fail to interest as well as instruct.

THE FORTNIGHTLY REVIEW—This always welcome magazine makes its appearance for April full of interesting reading, among others, a review of the Poems of Louise Chandler Moulton will particularly please American readers, as it is seldom an English writer will rank our own authors as favorably as this review does, when he compares "The House of Death," as not unworthy of being ranked with the work of Mrs. Browning and Miss Rossetti.

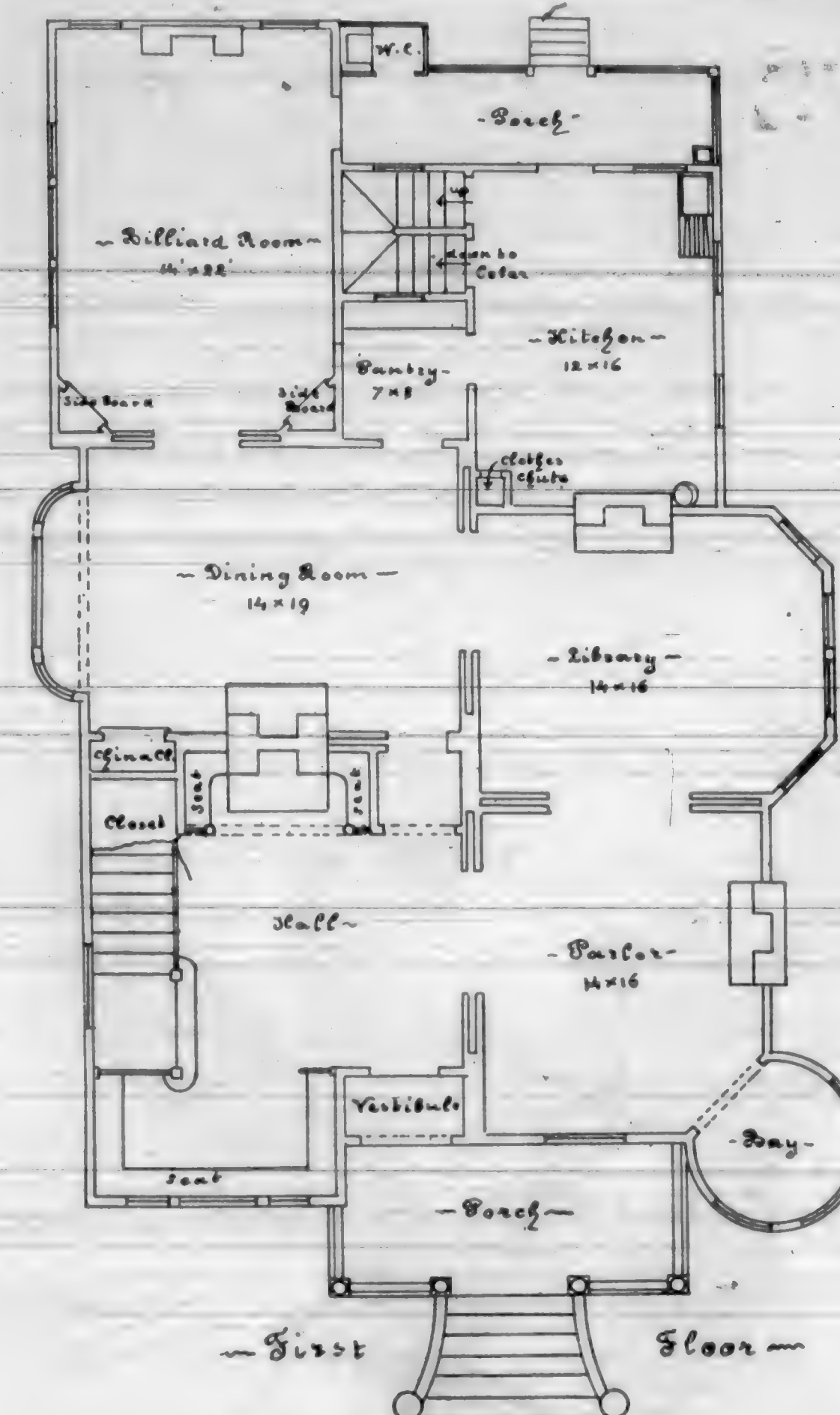
The concluding article upon the "Alleged Dangers of the

Manufacture of White Lead" will be sure to interest architects.

LIPPINCOTT'S Magazine for May contains a complete novel by Rosa Nouchette Carey called "Mrs. Romney". Mrs. Gertrude Atherton supplies a short but appreciative account of the American sculptress Miss Beveridge, while Prof. Haupt discourses on "Colonel Pope and Good Roads".

TENDERS TO BE RECEIVED.

Treasury Department, Office Supervising Architect, Washington, D. C., May 9th, 1893. Sealed proposals will be received at this office until 2 o'clock P. M. on the 13th day of June, 1893, and opened immediately thereafter, for all the labor and materials required for Wharf, Buildings, etc., at the U. S. Quarantine Station, Diamond Point near Port Townsend, in accordance with drawings and specification, copies of which may be had at this office or at the office of the Superintendent at Port Townsend, Washington. 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 proposals received after the time stated will be returned to the bidders. Proposals must be enclosed in envelopes sealed and marked, "Proposal for Wharf, Buildings, etc., at the U. S. Quarantine Station, Diamond Point near Port Townsend, Washington," and addressed to Jeremiah O'Rourke, Supervising Architect.



PLAN OF COUNTRY RESIDENCE.

LEGAL DECISIONS.

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

STIPULATION AGAINST MECHANICS' LIEN.—A provision in a building contract that the owner will not be in any manner accountable for any loss or damage that may happen to the work, or for any of the materials, and that the contractor shall alone be responsible for all accidents, injuries, damages, or hurt to any person or property, does not prevent the contractor or sub-contractor from filing a lien.

Nice v. Waller, Supreme Court of Penn. 25 At. Rep. 1065, 67.

MECHANICS' LIENS BY MATERIAL MEN.—Where the statute provides that where the building contract is void because it is not recorded, the materials furnished shall be deemed to have been furnished at the personal instance of the owner, and the material man shall have a lien for the value thereof, and materials used in the construction of a flume were furnished before the contract for the construction thereof was recorded, the material man is entitled to a lien against the flume for the value thereof.

Giant Powder Co. v. San Diego Flume Co. Supreme Court of Cal., Feb. 7, 1893, 32 Pac. Rep. 172, 86.

SUFFICIENCY OF LIEN ACCOUNT.—A lien account is sufficiently itemized which describes the windows, sash and all classes of materials sold, with great particularity, except as to price, which appears at the foot of the account, showing the whole amount due at the price agreed upon, since the account contains sufficient information to enable anyone to ascertain whether the price of the materials was reasonable, and whether the materials entered into the construction of the building.

Bardwell v. Anderson Supreme Court of Montana, Feb. 6, 1893, 32 Pac. Rep. 285, 63.

STATUTORY MEANING OF "TRIVIAL IMPERFECTION".—Under the statute which provides that every person, save the original contractor, claiming a lien, must, within thirty days after the "completion" of the building, file his lien, but that any "trivial imperfection" in the construction shall not be deemed such a lack of con-

pletion as to prevent the filing of the lien, a lien filed before the doors of a house were hung, the plumbing finished, the closets and bathroom completed, ventilators placed, and mouldings put in, is premature, and cannot be enforced, as such things are not "trivial imperfections" but are necessary to be done to effect a completion of the building.

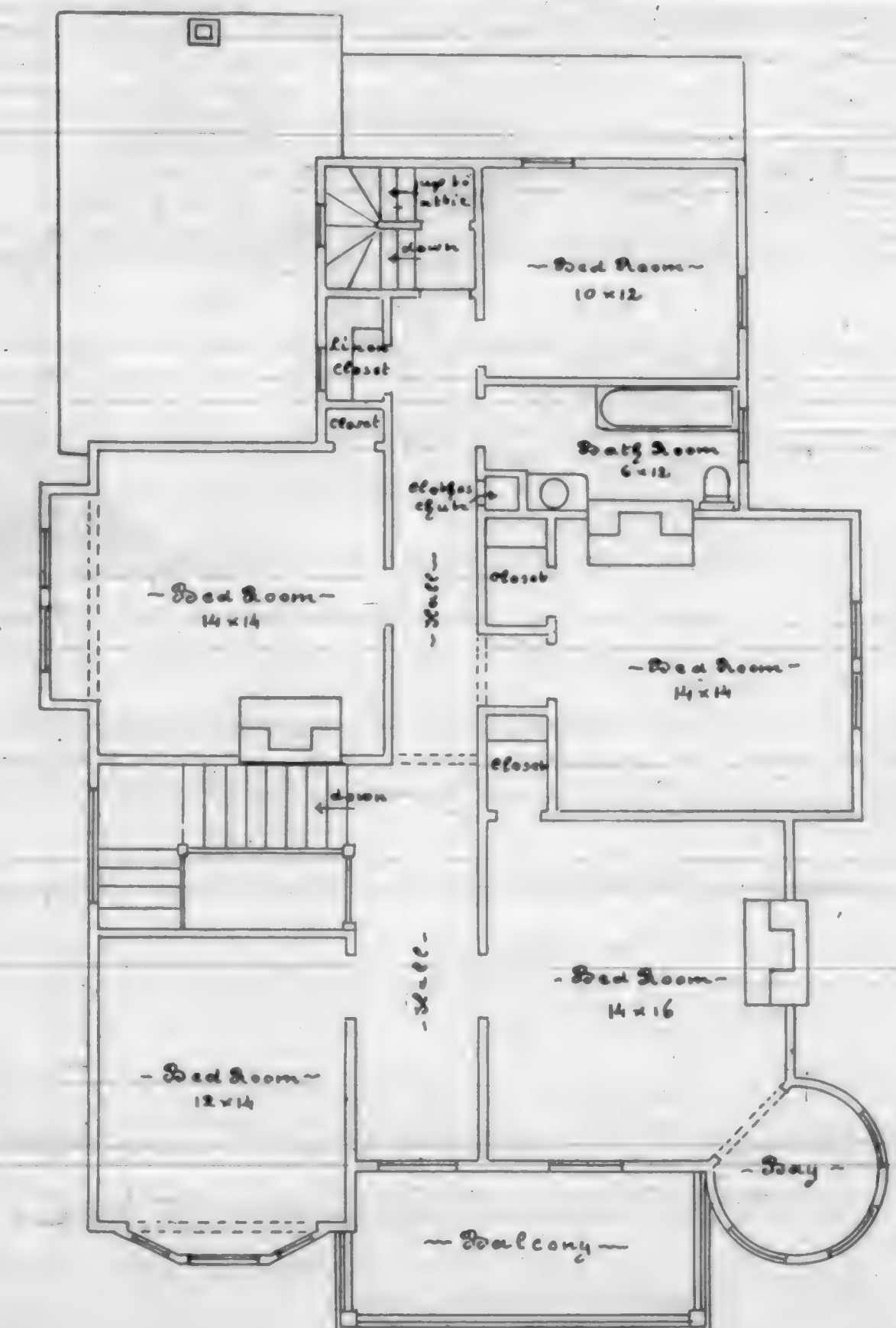
Schallert-Gauahl Lumber Co. v. Sheldon, Supreme Court of Cal. Feb. 9, 1893. 32 Pac. Rep. 235, 109.

MATERIAL FOR ROW OF BUILDINGS IS AS IF FOR ONE BUILDING.—Where material is supplied continuously under one entire contract, to be used in the erection of several buildings on contiguous lots owned by the person to whom it is supplied, and the whole supply is made, the material man has the right to a lien on all the buildings, and need not show how much material was used in each building. The contract in such case is one and relates to the row as an entirety, and not to the particular buildings separately, and the whole row is a building, within the meaning of the law, from being united by the parties in one contract as one general piece of work.

Maryland Brick Co. v. Spilman, Court of Appeals of Maryland, 25 At. Rep. 297, 132.

INSUFFICIENT DESCRIPTION OF PROPERTY SUBJECTED TO LIEN.—Under the statute providing that a notice of a material man's lien shall give a correct description of the property sought to be charged, but that any error or mistake in the description shall not affect the validity of the lien, provided that the property may be identified by the description, a notice of a lien particularly describing lot No. 14, of a certain survey as the lot to be charged, is not sufficient to create a lien on lot No. 13 on the same survey. Nor will the fact that the notice referred to the lot as the lot on which there were certain frame buildings and outhouses, constitute a sufficient identification as such description might apply to any lot on which such buildings stood, even though it appears that there were no buildings on lot No. 14, while there were such on No. 13. Where, in an action on an account against the contractor of a building, and to foreclose a material man's lien, against the owner, the complaint states a cause of action on the account a judgment that the claimant take nothing because no cause of action was stated against the owner, will be so modified as to include in its operation only the owner sued.

Goodrich Lumber Co. v. Davie, Supreme Court of Mont. Feb. 6, 1893, 32 Pac. Rep. 282, 213.

Second Floor
PLAN OF COUNTRY RESIDENCE.

BUSINESS MOSAICS.

Cienega Lime in quantities to suit the trade, E. L. Snell, sole agent, 12 Hayes street, also lath, hair, nails, plaster, cement, fire-brick and fire-clay.

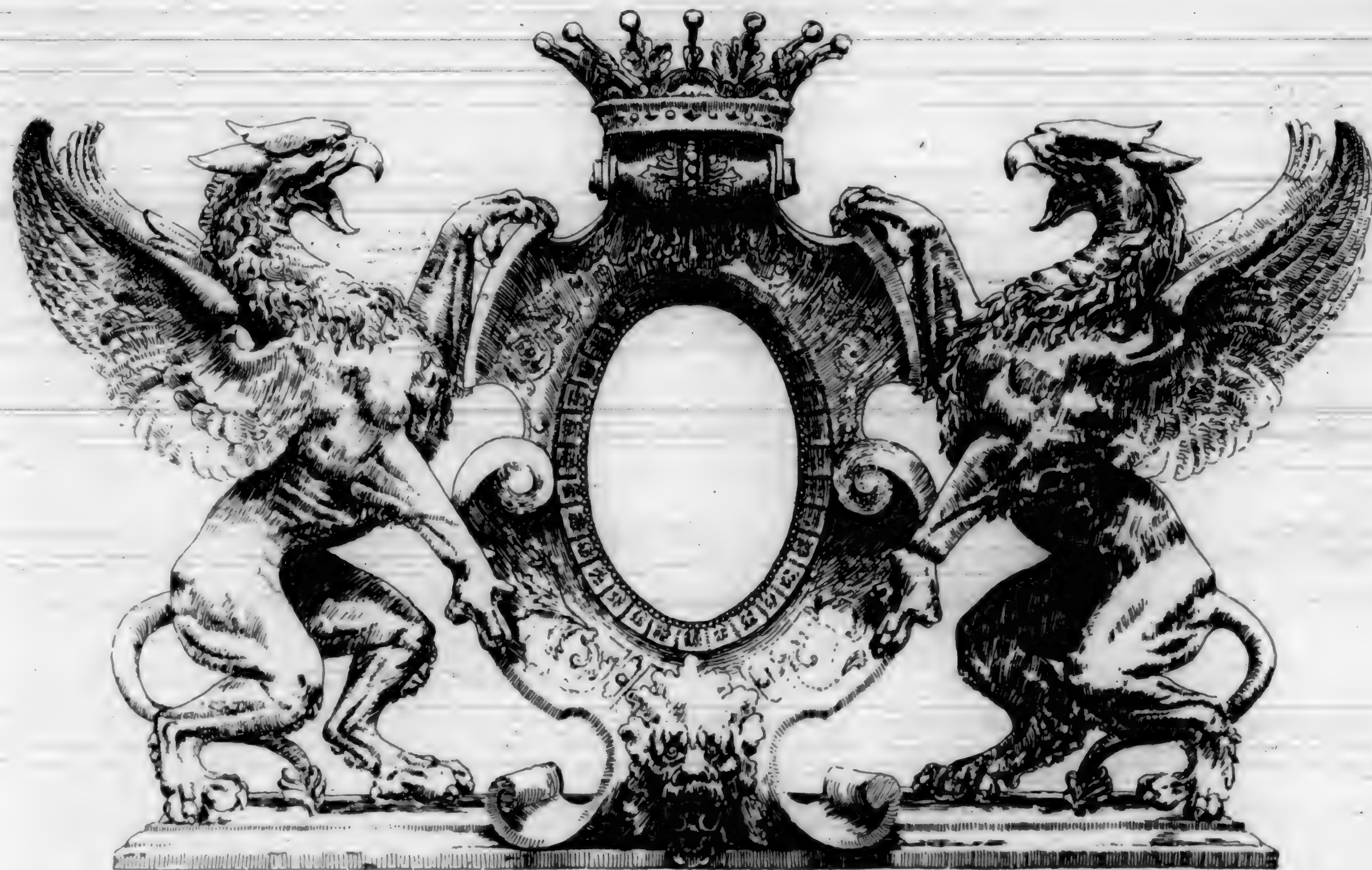
The perpendicularity of a tall monument is affected by the rays of the sun. It leans away from the luminary, owing to the expansion of the side on which the rays fall.

Steam, Hot water and Hot Air Heaters of every description can be had at Geo. H. Tay & Co's., 610 to 620 Battery street. They guarantee perfect heating combined with economy of fuel. Send for one of their new illustrated catalogues.

The Pullman Sash Balance Company have reason to congratulate themselves upon the success of their Sash Balance in San Francisco when they can announce the business has doubled in this city during the last year, and that the constant demand requires their works to be run night and day. The Crocker residence is fitted with this admirable contrivance and is giving perfect satisfaction.

The following firms in this city carry a good stock of these balances:—G. F. Eberhard & Co., 23 Davis street, as well as Miller, Sloss & Scott, also Dunham, Carrigan & Hayden.

The first wrought-iron pipe was made by Morris, Tasker & Co., Philadelphia, about the year 1841.



Swain-Del

If you have any old silver that needs plating take it to E. G. Denniston of 653 and 655 Mission street, where you will be sure of getting the best of work done and at moderate prices.

Four cent fare has been adopted by all street railways in Cleveland, Ohio, with two exceptions.

Paraffine Paint.—When such good authority as Chief Engineer Holmes endorses anything in this line people are safe who want to preserve their foundations in following such advice. The following from the *Daily Call* speaks for itself:

"Chief Engineer Holmes of the Board of Harbor Commissioners states that the piling at Tiburon prepared with paraffine paint about five years ago is still in a remarkable state of preservation. The method of coating mentioned will be recommended to the board."

Modern Architecture. VISITOR—What is that heavy, gloomy looking building over there? RESIDENT—That is a theatre and pleasure resort. VISITOR—And what is the graceful, airy, gothic structure to the right? RESIDENT—That is the jail.—*Chicago News.*

The Hydraulic Press Brick Company of Vallejo, Cal., would respectfully call the attention of the building public to the fact that they are manufacturing a superior article of Press Brick, which they are selling at the same prices as mud brick. Architects and contractors are especially invited to call at the office of the company, 132 Market street, room 16, and examine the brick.

A Pennsylvania inventor has devised a pair of eye-glasses with a mirror mounted so as to reflect objects in the rear of the wearer, but offering no obstacle to direct forward vision through the lens.

The J. L. Mott Iron Works, in this issue on page V, show what they claim is an Indestructable Faucet. The following is an extract relating to same from Minutes of Proceedings of the Institute of Civil Engineers of Great Britain:

"Although modern water-fittings leave much to be desired, they are generally excellent as compared with those of the past; but the desire for cheapness in first cost is still the cause of much waste and subsequent expense. Testing and stamping by the Water Authorities when properly performed, is the only way known to the author of maintaining a sufficiently high standard. The interests of different trades

make it practically impossible in large communities to confine the plumbers to the use of fittings of a single type, and, indeed, with one exception, no single type of domestic water-fittings can be said to be manifestly better than another. That exception is certainly a notable one. By the invention of Lord Kelvin there is one practically imperishable water-tap, on a new but now well-proved principle, without fibrous or organic washer of any kind. These taps are extensively used, though they cannot be produced at the lowest prices; but where introduced, they entirely remove the constant nuisance and cost of leaking washers.

CITY BUILDING NEWS.

Alcazar Building. Adding a fifth story; owner, M. H. De Young; architect, Wm. Putton; contractor, Peter Crickton; signed, March 25; filed, March 30; cost \$50,400.

Alabama. Alterations, etc.; owner, Andrea Ricotti; contractors, L. Cuneo & Co.; signed, April 11; filed, April 11; cost \$2,450.

Arlington near Mateo. Cottage; owner, Mrs. E. Mengula; contractor, John L. McLachlin; signed, May 1; filed, May 2; cost \$1,100.

Army near Sanchez. Hydraulic elevator; owner, S. A. Leslie; architect, S. Hatfield; contractor, J. A. Campbell; signed, March 16; filed, March 18; cost \$1,875.

Augusta and Boutwell. Barn, shed and fence; owner, D. W. Ervin; contractor, H. J. Ervin, Jr.; signed, March 23; filed, March 23; cost \$1,500.

Baker near Greenwich. Two-story frame; owner, Jos. Merani; architect, E. Depierre; contractor, Jos. Mazzali; signed, April 2; filed, April 2; cost \$2,000.

Baker near Washington. To build; owner, J. A. Hosmer; contractor, Philip Rive; signed, April 10; filed, April 10; cost \$2,925.

Boyce near Pt. Lobos Ave. To build; owners, Jas. J. and M. Denely; contractor, Wm. Plant; signed, May 3; filed, May 8; cost \$1,375.

Broadway near Kearny. Excavations, concrete, brick and chimneys; owner, A. G. Delmonte; architect, E. Depierre; contractor, M. Buzzini; signed, April 1; filed, April 3; cost \$1,015.

Broadway near Laguna. To build; owner, Jane C. Burnett; contractor, S. C. Buzzell; signed, April 1; filed, April 6; cost \$3,000.

Broadway near Kearny. To build; owners, A. & G. Delmonte and G. Roscelli; architect, E. Depierre; signed, April 20; filed, April 25; cost \$3,150.

Bryant near Langton. To build; owner, Emma Lolor; architect, Chas. Geddes; contractor, Todd Boone; signed, April 24; filed, May 2; cost \$3,970.

Block near Western Addition. Grading; owner, N. T. Coulson; contractor, Geo. E. Bowers; cost five cents per cubic yard.

Bush and Pierce. Alterations; owner, Julius Van Vleet; contractor, A. J. Kellner; signed, April 23; filed, April 28; cost \$1,515.

California and Powell. Two three-story buildings; owner, Frank L. Parker; architect, G. A. Boardwell; contractor, J. J. Boyle; signed, April 6; filed, April 7; cost \$10,240.

California and Powell. Painting two three-story frames; owner, Frank L. Parker; architect, Geo. A. Boardwell; contractor, F. L. Poland; signed, April 20; filed, April 20; cost \$1,000.

California and Powell. Two three-story buildings; owner, Frank L. Parker; architect, Geo. A. Boardwell; contractor, A. B. Bordwell; signed, April 10; filed, April 10; cost \$1,630.

California and Taylor. Masonary and marble work; owner, C. P. Huntington; architect, J. D. Isaacs; contractors, Ruffino & Bianchi; signed, March 30; filed, March 30; cost \$1,915.

California and Webb. Tearing down walls, etc.; owner, San Francisco Savings Union; architect, Wm. Carlett; contractor, Robert Mitchell; signed, April 7; filed, April 7; cost \$39,750.

Carl near Stanyan. To build; owner, Thomas Lundy; architect, T. J. Welsh; contractor, James J. O'Brien; signed, March 28; filed, March 28; cost \$14,300.

Castro near 18th. Two-story frame and stable; owner, H. F. Stolz; architect, H. Gellfuss; contractor, A. Lawson; signed, April 12; filed, April 12; cost \$2,868.

Chestnut near Buchanan. Grading; owner, Eliza B. Buckler; contractor, Geo. E. Bowers; cost four cents per cubic foot.

Church near Ridley. A cottage; owner, E. F. Leonard; contractor, Jas. Campbell; signed, April 7; filed, April 7; cost \$2,030.

Church near 27th. To build; owner, Wm. Swalve; architects, Townsend & Wyneken; signed, April 26; filed, April 26; cost \$1,300.

Clay near Cherry. To build; owner, Peter McHugh; architects, Shea & Shea; contractor, Allen McDonald; signed, April 20; filed, May 4; cost \$2,100.

Clementina near 19th. Alterations, etc.; owner, John Regan; contractor, John Sandeen; signed, March 21; filed, April 1; cost \$1,675.

Devisadero near Vallejo. Two-story and basement; owner, Laura A. Hoerber; architect, C. W. Kenitzer; contractors, Schutte & Kreeker; signed, April 24; filed, April 24; cost \$7,194.

Douglass near 16th. Two-story frame; owner, Christ Ruhland; contractor, Casper Zwielerlein; signed, May 2; filed, May 3; cost \$2,300.

Douglass near 22d. One-story and basement; owners, Chas. W. Dammes and wife; architect, Oliver Everett; contractor, D. H. Matheson; signed, April 28; filed, April 28; cost \$1,650.

Ellis near Polk. Alterations; owner, Philip Hessler; architect, C. M. Rousseau; contractor, L. B. Schmid; signed, April 6; filed, April 6; cost \$1,175.

Ellis near Mason. Grading, brick and stone; owner, Y. M. C. A.; architect, A. Page Brown; contractors, McGowan & Butler; signed, April 8; filed, April 8; cost \$50,720.

Eric near Mission. Two-story frame; owner, Mary McAuliff; architect, C. I. Havens; contractor, C. E. Danshee; signed, April 5; filed, April 5; cost \$2,900.

Florida near Santa Clara. Two-story frame; owner, Mrs. R. A. Ledgley; contractor, F. W. Kern; signed, April 11; filed, April 11; cost \$2,570.

Fourteenth near Sanchez. Two two-story flats and three two-story frame buildings; owner, Henry Arty; architect, C. W. Kenitzer; contractor, Adam Miller; signed, April 24; filed, April 25; cost \$4,427.

Fourteenth near Church. Two-story frame; owner, F. W. Kernerleber; architect, H. Gellfuss; contractor, A. Lawson; signed, April 23; filed, April 28; cost \$3,700.

Franklin near Fell. Raising and removing three frame buildings; owner, Mrs. C. M. Berger; architect, Oliver Everett; contractor, J. J. O'Brien; signed, May 6; filed, May 6; cost \$1,412.

Fulton near Lyon. Two-story frame; owner, Howard Morton; contractor, W. W. Rednell; signed, April 3; filed, April 5; cost \$3,100.

Fulton near Scott. Alterations, etc.; owner, Otto Berman; architect, Edw. Burns; contractor, John McCann; signed, April 14; filed, April 17; cost \$2,675.

Geary and Gough out to ocean. Laying pipes for salt water; owner, Olympic Salt Water Co.; architect, E. E. Mills; contractors, Williams, Beiser & Co.; signed, March 30; filed, April 4; cost \$16,032.

Golden Gate Avenue near Buchanan. Three-story frame; owner, Alex McKay; architect, R. H. White; contractor, J. B. McKenzie; signed, March 27; filed, April 1; cost \$6,840.

Golden Gate Ave. near Fillmore. Two-story frame; owner, Cathie Wilton; architect, R. H. White; contractor, Thos. Rendell; signed, April 23; filed, April 24; cost \$4,330.

Great Highway near B. Engine pit, concrete walls, engine foundation; owner, Olympic Salt Water Co.; architect, D. E. Melliss; contractors, Ramsome & Cushing; signed, May 4; filed, May 5; cost \$10,300.

Green and Buchanan. Plastering for six houses; owner, E. A. Sanders; contractor, J. C. Connor; signed, May 2; filed, May 3; cost \$1,625.

Green and Buchanan. Brick work; owner, E. A. Sanders; contractor, W. H. Williams; signed, April 6; filed, April 20; cost \$1,200.

Haight near Devisadero. Three flats complete; owner, Louis Friedlander; architect, J. F. Kenna; contractors, Currie & Loomer; signed, March 30; filed, March 31; cost \$4,597.

Harrison near 24th. To build; owner, Gustave A. Gaetcke; contractor, C. C. Zwielerlein; signed, April 6; filed, April 6; cost \$2,100.

Hattie near 18th. To build; owner, Jno. J. Kelly; contractor, David Ross; signed, April 28; filed, May 1; cost \$1,650.

Howard near 14th. Alterations; owner, A. W. Bode; architect, C. M. Rousseau; contractor, John Miron; signed, April 4; filed, April 6; cost \$2,800.

Ivy Avenue near Buchanan. To build; owner, Jane A. Ingalls; architects, Shea & Shea; contractors, Ridout & Rodd; signed, April 24; filed, April 25; cost \$2,865.

Jackson near Devisadero. Two-story frame; owner, C. J. Wingerter; architect, A. C. Lutsens; contractor, Wm. Legeier; signed, April 19; filed, April 21; cost \$10,915.

Jackson and Octavia. Two-story addition; owner, Emil Sutro; architect, H. Gellfuss; contractors, Schutte & Kreeker; signed, May 5; filed, May 5; cost \$1,945.

Kittling near 12th. To build; owner, Lewis Cella; architect, M. J. Welsh; contractor, John Sandeen; signed, May 1; filed, May 2; cost \$2,315.

Laguna and Chestnut. Grading; owner, Jerome English; contractor, Geo. E. Bowers; signed, April 13; filed, April 18; cost \$600.

Leavenworth near Lombard. One-story frame; owner, F. Ballhaus; contractor, Peter Johnson; signed, April 10; filed, April 10; cost \$1,500.

Lombard and Webster. Grading; owner, J. M. Wood; architect, C. S. Tilton; contractor, Geo. E. Bowers; signed, April 10; filed, April 18; cost \$500.

Main No. 121 and 123. Carpenter, mill, mantels, brick, glass, etc.; owner, Pelton Water Wheel Co.; architect, Samuel Newson; contractor, Geo. R. Lang; signed, May 2; filed May 3; cost \$1,800.

Market and City Hall Ave. One-story brick; owner, John J. O'Farrell; architects, Shea & Shea; contractor, Jas. Cochran; cost \$9,000.

Market near 8th. Plumbing a four-story brick; owner, Louis Schoenberg; architect, C. M. Rousseau; contractors, S. Ickelheimer & Bros.; signed, April 5; filed, April 6; cost \$1,625.

Market near 8th. Sidewalks and iron four-story brick; owner, Louis Schoenberg; architect, C. M. Rousseau; contractor, Geo. Reichley; signed, April 11; filed, April 11; cost \$2,026.

Market near 8th. Four-story brick building; owner, Louis Schoenberg; architect, C. M. Rousseau; contractor, Geo. Reichley; signed, March 29; filed, March 31; cost \$14,975.

Market and Ecker. One-story frame; contractors, A. J. McNeill & Co.; signed, April 10; filed, April 10; cost \$2,300.

Mason near Eddy. Carpenter work for six-story brick; owner, S. Silverberg; architects, Salfeld & Kohlberg; contractor, W. Plums; signed, April 12; filed, April 15; cost \$11,140.

Mason near Eddy. Iron work; owner, S. Silverberg; architects, Salfeld & Kohlberg; contractors, O'Connell & Lewis; signed, April 12; filed, April 15; cost \$3,300.

Mason and Eddy. Brick work and mantels; owner, S. Silverberg; architects, Salfeld & Kohlberg; contractor, Adam Grant; signed, April 12; filed, April 15; cost \$3,300.

Masonic Cemetery. A mausoleum; owner, N. W. Cole; architect, J. E. Wolfe; contractor, A. MacLennan; signed, April 7; filed, 7; cost \$3,719.

McAllister near Frederick. Cottage and stable; owner, Louis Gross; architect, E. A. Hermann; contractors, Peterson & Olson; signed, May 4; filed, May 6; cost \$2,485.

Mississippi near Solano. Two-story flats; owner, W. S. Young; architect, W. C. Dickerson; contractor, Jno. Sandeen; signed, April 27; filed, April 28; cost \$2,625.

Mission near 22d. Two three-story frame; owner, Mrs. E. L. S. Mangels; architect, H. Gelfuss; contractor, F. W. Kern; signed, April 12; filed, April 12; cost \$19,370.

Mission and 23d. Painting; Mrs. E. L. S. Mangels; architect, H. Gelfuss; contractor, Aug. Fick; signed, April 12; filed, April 12; cost \$2,000.

Mission and 23d. Plumbing; owner, Mrs. E. L. S. Mangels; architect, H. Gelfuss; contractors, Striegel & Ponder; signed, April 12; filed, April 12; cost \$3,465.

Mission and 23d. Plastering; owner, Mrs. E. L. S. Mangels; architect, H. Gelfuss; contractor, A. O'Brien; signed, April 12; filed, April 12; cost \$2,633.

Mission near 5th. Brickwood, glazing, etc.; owner, Emma Lolor; architect, Chas. Geddes; contractor, Thomas H. Day; signed, April 7; filed, April 28; cost \$5,440.

Mission near 5th. Cast iron, dead lights, etc.; owner, Emma Lolor; architect, Chas. Geddes; contractors, O'Connell & Lewis; signed, April 7; filed, April 28; cost \$2,550.

Mission near 5th. Brick, wood and stone work; owner, Emma Lolor; contractors, Richardson & Gale; signed, April 7; filed, April 28; cost \$17,898.

Mission near 5th. Wrought iron work; owner, Emma Lolor; architect, Chas. Geddes; contractor, P. H. Jackson & Co.; signed, March 31; filed, April 29; cost \$2,375.

Montgomery street No. 131. Alterations; owner, J. A. Goell; architect, Oliver Everett; contractor, Ralph Carey; signed, April 21; filed, April 21; cost \$2,255.

Montgomery near Leidesdorff. Iron work, etc.; owner, Selby Smelting Works Co.; architect, John Marquis; contractors, J. C. Roberts & Co.; signed, April 24; filed, May 1; cost \$1,462.

Moss street, bet. Howard and Folsom. To build; owners, Thomas and Mary A. Gaway; architects, Townsend & Wyneken; contractor, G. Massolotti; signed, April 24; filed, April 25; cost \$5,150.

Oak near Fillmore. To build; owner, Adam M. Bratscher; architect, Fred. P. Robin; contractor, W. A. Muller; signed, May 3; filed, May 4; cost \$6,690.

O'Farrell near Webster. Plumbing two three story buildings; owner, C. Gehret; architect, W. H. Arncliffe; contractors, R. Doyle & Son; signed, April 10; filed, April 10; cost \$3,548.

O'Farrell near Jones. Plumbing; owner, Alice Pease; architect, T. J. Welsh; contractor, P. F. Ward; signed, April 15; filed, April 17; cost \$1,090.

Page near Webster. Two-story frame; owner, Wm. Wertsch; architect, H. Gelfuss; contractor, Henry Rohling; signed, May 3; filed, May 5; cost \$4,252.

Page and Schrader. To build, except foundation, plumbing and painting; owner, John Witt; architect, F. P. Rabin; contractor, R. Rechenbach; signed, May 8; filed, May 8; cost \$9,800.

Pine near Scott. Two-story frame; owner, P. H. McVey; architects, C. J. Colley & E. S. Lemme; contractors, Jas. Mix and J. W. Hope; signed, April 22; filed, May 2; cost \$3,765.

Point Lobos Ave. near 5th. Two-story and basement; owner, J. Marsden; contractor, Chas. Murcell; signed, April 25; filed, April 25; cost \$3,225.

Post and Grant Ave. Carpenter work for two stories; owner, H. Liebes & Co.; architects, John & Balczynski; contractors, Schutte & Krecker; signed, April 4; filed, April 7; cost \$18,566.

Post near Grant Ave. Stone and terra-cotta work; owners, H. Liebes & Co.; architects, John & Balczynski; contractors, Richardson & Gale; signed, April 26; filed, April 27; cost \$5,940.

Post near Dupont. Patent plastering; owners, H. Liebes & Co.; architects, John & Balczynski; contractors, Pacific Patent Plaster Co.; signed, April 22; filed, April 27; cost \$3,385.

Post near Dupont. A frame dwelling; owners, H. Liebes & Co.; architects, John & Balczynski; contractors, Duffy Bros.; signed, April 10; filed, April 10; cost \$3,000.

Polk near Green. Two-story frame; owner, Mrs. M. D. Blackstaff; architects, Shea & Shea; contractor, F. W. Kern; signed, April 17; filed, April 18; cost \$3,059.

Sacramento near Powell. To build; owner, J. H. Jacoby; architects, Salfeld & Kohlberg; contractor, John McLead; signed, April 24; filed, April 25; cost \$5,197.

Sacramento near Prospect Place. To build, sub-basement and attic building; owner, The Women's Occidental Board of Foreign Mission of Presbyterian Church; architect, Geo. A. Bordwell; contractor, W. R. Peterson; signed, May 3; filed, May 8; cost \$4,012.

Sacramento near Prospect. Carpenter work; owner, The W. O. B. of F. M. of Presbyterian Church; architect, Geo. A. Bordwell; contractor, John J. Boyle; signed, May 5; filed, May 8; cost \$2,150.

Sacramento near Prospect. Same as above; plumbing, gas fitting, etc.; contractor, H. Williamson; signed, May 5; filed, May 8; cost \$1,028.

Second Ave. near Clement. A cottage; owner, Chas. F. Lundberg; contractor, C. E. Danshee; signed, April 12; filed, April 12; cost \$2,119.

Shotwell near 23d. Two-story frame and stable; owner, Jacob Gengnagel; architect, H. Gelfuss; contractor, W. A. Muller; signed, April 19; filed, April 19; cost \$3,040.

Sixteenth near Dolores. Millwork complete; owner, R. P. Brennan; architect, T. D. Welsh; contractor, Andrew Wilkie; signed, April 25; filed, May 2; cost \$1,740.

Sixth near Jessie. Iron, brick and concrete; owners, E. and E. L. Goldstein; architect, J. E. Kraft; contractor, R. Ringrose; signed, April 6; filed, April 6; cost \$1,364.

Steiner near Union. To build; owner, August Lacroix; architect, Wm. Mooser; contractor, M. S. Yerxa; signed, March 22; filed, March 31; cost \$2,537.

Shotwell and 19th. Lathing, plastering, etc. (for ten tenements); architect, H. T. Bestor; orig-contractor, Henry Behrens; sub-contractor, Daniel Dillon; signed, April 26; filed, April 26; cost \$1,350.

Tremont Ave. near Waller. To build; owner, Annie F. Dearborn; architects, B. Dougal & Son; contractor, Ivory Wells; signed, May 3; filed, May 3; cost \$2,575.

Turk and Larkin. Carpenter, mill and hardware work for stores and flats; owner, Luning Co.; architects, Coxhead & Coxhead; contractors, Milburn & Gallagher; signed, April 12; filed, May 1; cost \$16,881.

Turk and Larkin. Brick, concrete, etc.; owner, Luning Estate Co.; architects, Coxhead & Coxhead; contractors, Richardson & Gale; signed, April 13; filed, April 13; cost \$11,930.

Turk and Hyde. Two-story frame; owner, Mrs. M. K. Plummer; contractor, J. T. Grant; signed, April 24; filed, April 29; cost \$3,825.

Turk and Buchanan. Four three-story frames; owner, Henry F. Forman; architects, John & Balczynski; contractors, Gray Bros.; signed, April 8; filed, April 8; cost \$3,850.

Twentieth near Folsom. To build; architect, W. O. Banks; contractor, Ralph Carey; signed, April 25; filed, May 2; cost \$2,535.

Valencia near 17th. To build; owner, Mrs. J. Breen; architect, Jas. P. Brady; contractor, Jas. E. Mooney; signed, April 28; filed, May 2; cost \$7,777.

Waller and Schrader. To build; owner, Solomon Cohn; architect, M. J. Welsh; contractor, Brooklyn Planing Mill Co.; signed, April 20; filed, April 20; cost \$5,042.

ALAMEDA COUNTY.

Alameda Ave. near Willow. Two-story frame; owner, E. A. and Jennie Vining; contractor, G. W. Pattani & Co.; signed, April 18; filed, April 20; cost \$2,950.

Caroline near Central Ave. Two-buildings, brick work, carpenter work; owner, J. C. Seigfried; contractors, Marouse & Remmel; signed, April 17; filed, April 20; cost \$3,950.

Cedar and Henry, Berkeley. Carpenter work; owner, Clara M. Crichton; contractor, C. T. Lombard; signed, April 22; filed, April 24; cost \$2,525.

Chestnut near 8th, Oakland. Two-story; owner, E. F. Fernandez; architect, T. J. Welch; contractor, T. R. Bassett; signed, April 13; filed, April 18; cost \$4,400.

Everett near Lincoln Ave. One-story frame, except mantels; owner, J. Knowland; architect, G. A. Bordwell; contractor, C. H. Foster & Son; signed, April 19th; filed, April 20; cost \$2,087.

Fallen street, Oakland. To build; owner, Thos. P. Hogan; contractor, C. S. Bannard; signed, April 27; filed, April 27; cost \$1,425.

Fifty Associates Tract, lot 9, block B, Oakland. Plumbing, tinning, brickwork, plaster and painting; owner, John Williams; signed, April 17; filed, April 19; cost \$1,280.

Linden Vista Terrace, Oakland. Two-story frame; owner, E. A. Heron; contractors, A. W. Pattini & Co.; signed, April 25; filed, April 25; cost \$1,900.

Linda Vista Terrace. To build; owner, E. A. Heron; contractors, A. W. Pattini & Co.; signed, April 25; filed, April 25; cost \$3,778.

Linda Vista Terrace, Oakland. Two-story frame; owner, E. A. Heron; architect, E. Childs; contractors, W. T. Veitch & Bro.; signed, April 25; filed, April 26; cost \$7,088.

Ninth near Harrison, Oakland. To build; owner, C. Terry; contractor, D. S. Brehant; signed, April 15; filed, April 17; cost \$6,650.

Rose Ave. near Piedmont Ave., Oakland. To build; owner, D. M. Little; contractor, J. V. Embury; signed, April 17; filed, April 26; cost \$1,700.

San Pablo Ave. near 22d, Oakland. To build; owner, J. M. Driscoll; architect, Howard Burns; contractor, P. F. Nelson; signed, April 18; filed, April 19; cost \$4,752.

Sixth near Broadway, Oakland. Alterations and additions; owner, H. Davis; architect, E. Childs; contractor, W. H. Butson; signed, April 27; filed, April 28; cost \$2,259.

Twelfth near 15th, Oakland. Seventeen-room two-story building; owner, M. E. Bacon; architect, T. L. Williams; contractor, T. A. Brown; signed, April 11; filed, April 17; cost \$3,200.

Twelfth near Webster, Oakland. Three-story brick; owner, N. P. Perrin; architects, J. J. & T. J. Newson; contractor, T. M. McLahan; signed, April 18; filed, April 21; cost \$3,200.

Washington near 11th, Oakland. Carpenter work, etc.; owner, F. W. Schultz; architect, C. Mau; contractors, Herbert & McLeod; signed, April 28; filed, April 28; cost \$11,637.

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A MONTHLY JOURNAL DEVOTED TO THE ARCHITECTURAL INTERESTS OF THE PACIFIC COAST.

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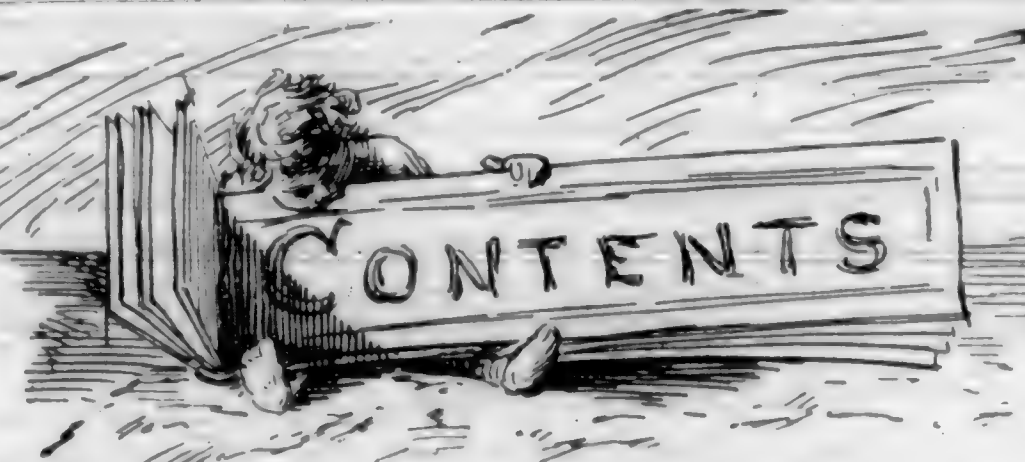
INCORPORATED 1890.

NOW IN THE FOURTEENTH YEAR.

W. J. CUTHBERTSON, President.

OLIVER EVERETT, Secretary.

Remittances should be in the form of postal orders, payable to THE CALIFORNIA ARCHITECTURAL PUBLISHING COMPANY, and all communications addressed to the office of the Company, 408 California Street, San Francisco, Cal.



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THIS journal is prepared to take charge of rendering perspective drawings in pen and ink or color. Charges will depend on size and kind of drawing wanted.

Upon receipt of plan and elevations, with a description of what is wanted, we will submit our estimates for the performance of the work.

IN 1867, Frederick Law Olmstead in his report to the committee on outside lands recommended that the panhandle entrance to Golden Gate Park be extended to Market street, and that the blocks of land between Franklin street and Van Ness avenue and extending from Market street to the Bay be converted into a boulevard. This

would have created a magnificent shaded drive through the residence parts of the city, increased the value of the adjacent lands enough to, in a great measure, compensate for the cost of the improvement, and at the same time, and most important of all, formed a most effective barrier across the path of a great conflagration which some day will sweep its way, fanned by a westerly wind, from Lone Mountain to the Bay. Such a conflagration was threatened this month, but owing to the fortunate circumstance of their being several vacant lots surrounding the scene of the fire, the department succeeded in confining it within the limit of the three blocks attacked, and the dozen or more buildings burned is the price paid for this warning.

To have carried out the recommendations of Mr. Olmstead at the time they were made, would have been a simpler matter than at present, in view of the comparative small value of the land twenty-five years ago, and the fewer improvements that would have had to be demolished. Even now, it would be true economy, notwithstanding the immense expenses that would have to be incurred, if some such measures could be taken to protect the different sections of the city from the danger of fires starting at distant points, for once let a fire get beyond the control of the department, it will burn its way to the Bay, and we will have passed through an experience like that of Chicago and of Boston. Then regrets will be of no avail; but let us at least hope that if we have not been wise enough to profit by the bitter experience of our sister cities, we will at least have the foresight to lock the stable door after the horse has been stolen, and when our new city is springing from the ashes of the present, that a wiser policy will provide against the obvious dangers of building an entire city of wood without effective precautions against the danger of its total destruction by fire.

THE announcement of the World's Congress of Architects, to be held next August at Chicago, should be a hint to the Architects of this Coast, to take some action without more delay, in order to be well represented at that Congress.

TO ARCHITECTS.

THE Committee that has charge of the erection of the Masonic Widows' and Orphans' Home desire to make public the following additional information governing the competition:

Invitation to make plans is extended to Architects generally for a stone and brick building to be erected at Decoto, twenty-six miles from San Francisco, to be used for the Masonic Widows' and Orphans' Home.

All plans must be delivered at the Masonic Temple, San Francisco, by July 13, 1893, at 2 P. M.

The Board of Trustees will be the sole and exclusive judges of the excellence and suitability of the plans submitted and reserve the right to reject any or all plans; no compensation will be made for rejected plans, and they will be returned to their respective owners after the final decision of the Board of Trustees.

Plans must show one elevation. A longitudinal and transverse section all drawn to the scale of eight feet to one inch.

A perspective view of the building is to be furnished, the scale to be eight feet to one inch; the plane of the picture to be taken at nearest corner of building.

A *bona fide* estimate of the cost of construction must be submitted by the Architect, which must not exceed sixty thousand dollars (\$60,000).

The building to have a capacity for the accommodation of one hundred orphans and twenty-five widows.

The plans not to contain a dining-room or kitchen, it being the intention of the Board of Trustees to erect a wooden building for that purpose.

The main building to be so designed as to admit of additions.

The general plans to be drawn in either pencil or ink, all sections hatched, no coloring, but the perspective may be shaded or colored.

For further particulars apply to,

Gustavus L. Spear,
Jacob Voorsanger,
Albert Hansen.

AS an argument in favor of the use of electricity as a native power for traveling cranes may be cited the crane built by the Yale & Towne Manufacturing Company, at the Columbian Exposition. The Machinery Hall is divided in three bays, each covered by an electric traveling crane, the above named crane occupying the central bay. The crane has been in active and constant operation day and night, handling the heavy materials and installing exhibits since the middle of December, 1892, and not only has it done its own work in the most thorough and satisfactory manner, but has been engaged in handling the exhibits for the side bays, pending the starting of the cranes covering those portions. The great success with which this powerful crane has done its work is ample demonstration of the value of the use of this new motive power properly applied to correct design and excellent workmanship, and would seem to conclusively prove that the electric traveling crane, is the crane not only of the future but of the present.—*Engineering Magazine*.



ROCCO WORK.

STRENGTH OF HORIZONTAL BEAMS.

BY CALVIN BROWN, C. E.

ANY horizontal straight beam, whether of one piece or framed of several pieces, as in a truss, usually called a girder, or compounded of cement, concrete, bricks, etc., and metallic ties or rods, and employed for sustaining a load, is subjected by such load to a force or strain which operates with two distinct results. This is plainly illustrated in the breaking of a stick held by its ends and bent downwards or upwards. If bent downwards the upper portion will be compressed as shown by its bulging in the middle part, while the lower portion will be stretched. If bent upward the reverse of this result will occur, the bulge taking place on the lower surface and the stretching on the upper surface. The following diagram shows these results, in a somewhat exaggerated manner, on a loaded beam supported on its ends and supposed to be loaded at its middle, which position is the one we have here to consider:

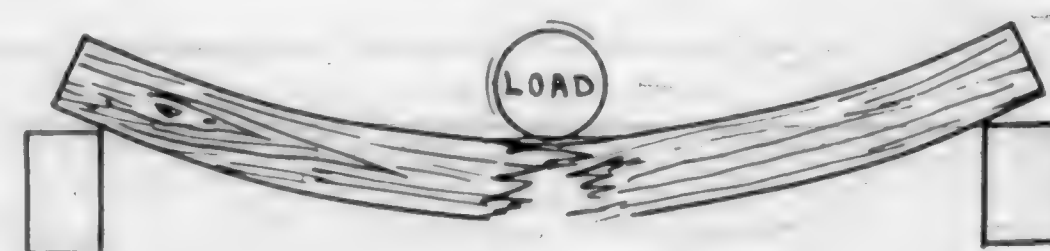


FIG. 1.

It will be understood that any load upon the beam acts upon its upper portion with an effort to crush its particles together, this being technically termed the "compressive force," while on the lower position it operates with a tendency to stretch or separate its particles, which accordingly is distinguished as the "tensile force."

These forces extending downward and upward in the beam, reach their operating limit at a longitudinal boundary between its upper and lower surfaces termed the "neutral axis" where of course neither force operates.

The position of the neutral axis has been a subject of much study by the most eminent mathematicians, but its difficulty of determination lies in our want of knowledge of the ratio of compressibility and extensibility in any substance; were the one equal to the other the neutral line

would be in the centre of gravity of the beam; but such equality, so far as experiments have shown, does not exist. Professor George B. Airy, F. R. S. Astronomer Royal, has given with very labored analysis and formulæ perhaps the best theory of the strains in the interior of beams. The following diagrams illustrate by means of curves the directions in which compression and tension act through the beam, according to his theory, with their numerical values, which are seen to be equally balanced at exactly opposite points, and which indicate the application of the theory to a perfectly homogeneous beam, which probably cannot be assumed to practically exist. It will moreover be seen that the intersection of the curves representing the direction of the opposite strains, lies in the centre of the beam thus locating the plane of the neutral axis in that centre.

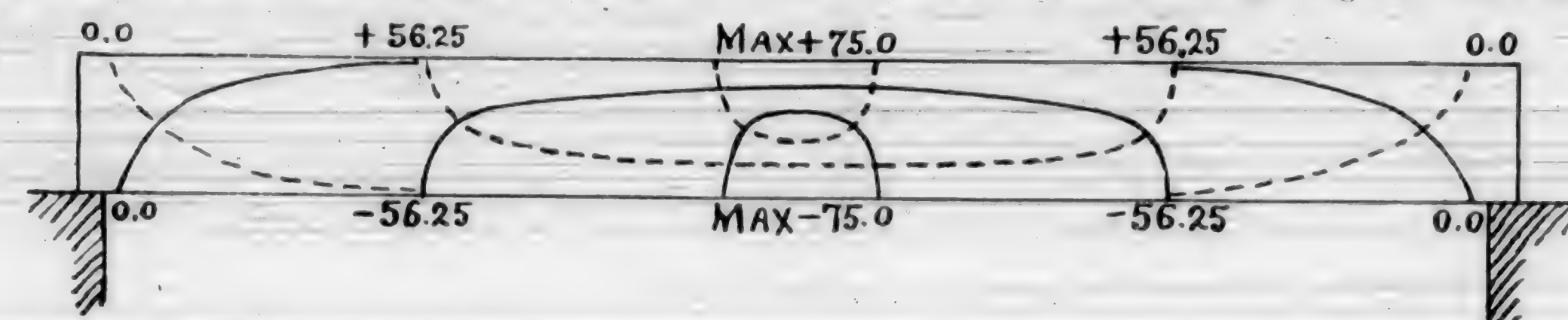


FIG. 2.

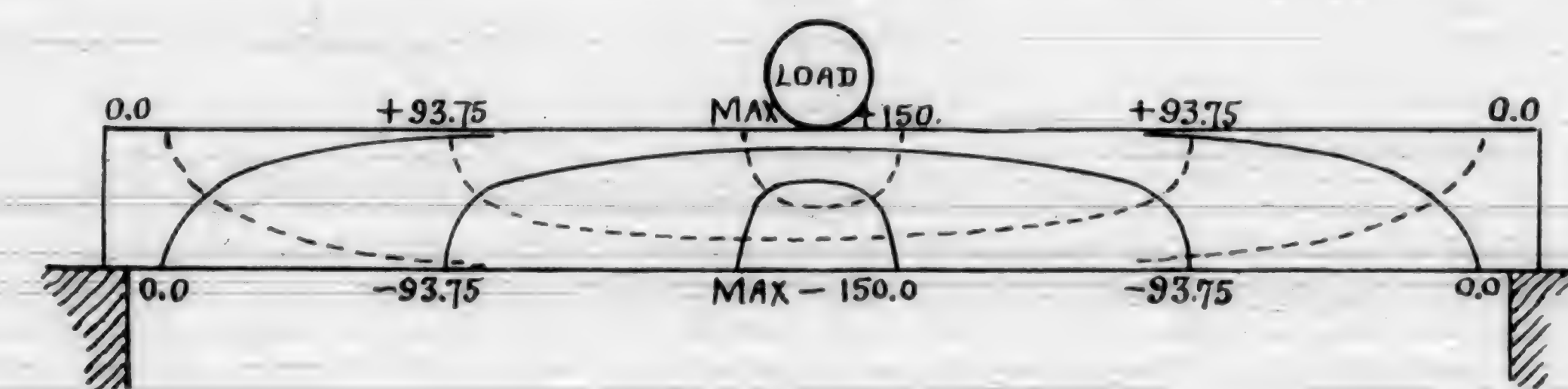


FIG. 3.

The continuous curves indicate the direction of thrust or compression; the dotted lines indicate the direction of pull or tension. The figures denote the measure of the strain. —+— meaning compression, and — meaning tension. These diagrams, Figs. 2 and 3, show that the strains upon a beam, indicated by the numerals, originate at the ends where they are 0, to their maximum effect at the middle and of course are thus progressive.

However useful might be an absolute rule for the determination of the position of the neutral axis for ascertaining the strength of a beam, and its proportions for any service required of it, it is not likely to be found by any a priori theory, since no two beam substances are alike in the extent of their resisting powers, nor can any two samples even of the same substance be assumed with certainty to be exactly alike in this respect. Our only resource therefore, for obtaining a guiding rule is by experimenting upon these various substances, ascertaining an average relative indication of their strength values, and combining this element, termed a constant, with the general laws of the strength of beams, which are for transverse pressure or loads.

Directly as the breadth

Directly as the square of the depth

Inversely as the length

or placing these ratios together it is expressed as follows:

$$\frac{\text{breadth} \times \text{depth}^2}{\text{length}}$$

This gives only the general relation of the strength of a beam of any substance to its dimensions and of course is no direct rule for its application—it must therefore be combined with the constant for the especial substance or material of which the beam is composed. Now this constant is the average weight which is found by experiment to break a sample of the material of given dimensions chosen at con-

venience, and the student may find in any published work on the strength of materials, tables of these constants for every substance employed for beam purposes. If we call this constant *S*, and combine it with the foregoing, we shall get the breaking weight or ultimate strength of the beam.

$$\text{breadth} \times \text{depth}^2 \times S = \text{breaking weight.}$$

span or length between bearings

Perhaps it may be desirable to express this formula in ordinary language for the merely practical man. "Multiply the breadth of the beam in inches by the square of the depth in inches and this product by the constant found in the tables for the material used, then divide this total product by the length in feet between the supports at the ends—the quotient will be the breaking weight." To elucidate this

still further take an actual beam, say 12 inches square and 12 feet between its supports at the end, and of Oregon Pine, whose constant may be assumed at 700.

Then $\frac{12 \times 144 \times 700}{12} = 100,800$ pounds or 50 1-5 tons breaking weight, the load being applied to the middle of the beam and not distributed over its length, in which latter case the breaking weight would be double. Of course it will be understood that in practice, only such an allowance from this breaking load must be taken as circumstances may dictate for a safe permanent load, and in this allowance one-half of the weight of the beam should be taken into the account.

In finding the constants above referred to, the ends of the samples experimented upon were left free or loosely upon their supports when the breaking weights were applied—should these ends be fixed, the ratio of strength would be nearly or quite one-half greater, as shown by experiments made by Lieut. Denison of the English service, which fact indicates that in a beam with fixed ends, the action of the compressive and tensile forces are to a certain extent thus resisted.

The above considerations involving the general principles of beams, meaning by this term all structures supported at their ends, or at points by posts, columns or piers, and employed for sustaining loads, imply in their construction and application the observance of certain practical details wherein

their safety and economy as well as strength, are essentially concerned. The history of such structures shows the countless forms in which they have been employed, from the simple stick of timber to the elaborate lofty bridge truss spanning wide rivers and deep canyon, and while it exhibits many splendid examples of scientific construction it also reveals many disastrous failures resulting from various causes in which a want of knowledge of true principles too often appeared.

Leaving out the consideration of a shearing tendency produced at the points of support by a distributed over load, and confining our discussion to the operation of a load concentrated at or near the middle of a beam, we have seen that in a single straight horizontal beam the conditions for sustaining a load consist in the resistance of the material in its upper portion to the compressive action and in that of its lower portion to the tensile or stretching action of the load. To counteract these effects, which is the same thing as giving additional strength to a beam, the truss system is applied; but without undertaking to go into all the details theoretical and practical of this device, since its general construction is well known, it is here only necessary to mention one essential condition of its application not so generally understood as it ought to be, especially by so-called practical builders. The purpose of the truss is to add a tensile resistance to the beam, supposing the compressive resistance to be afforded by its own material intrinsically—therefore in order that as large a portion as possible of the beam should be brought into this particular service, the ends of the truss rods should be secured at points below the plane of the assumed neutral axis and not above it, as is too often seen in practice, from the erroneous supposition that the higher these ends are placed the better would the rods act in a suspensory and therefore more desirable effect. But in such an arrangement it is evident that a lesser portion of the beam is brought into service for compressive resistance to the action of the load, thus losing an essential part of its natural strength and throwing upon the truss rods an unequal share of sustaining duty, and involving larger dimensions for them than would be necessary for a proper adaptation.

The following diagram, Fig. 4, illustrates the principle above set forth, the dotted line showing a vicious, and the full lines a correct position for the ends of the truss rods.

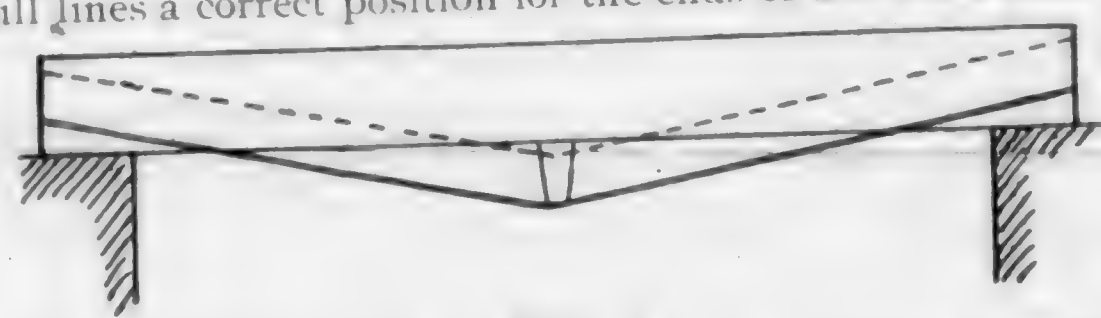


FIG. 4.

The strength given by the most simple method of trussing by iron rods, is shown by Fairbairn to be more than double that of the same sized untrussed beam, depending upon the proper attachment of the rods. It is thus plain that under the law of the strength of a beam being directly as the square of the depth, the truss system obviates the necessity for the employment of such deep and space occupying beams as would be required for the same sustaining power derived from the truss.

It is not the intention in this paper to discuss such beam elements as stiffness or resistance to bending, etc., which are governed by other laws than those above considered, for its purpose is simply a brief and practical exposition of general principles involved in the strength of plain straight beams and other analogous load supporting structures in common use. The discussion of those principles although

applicable, will not therefore be here extended to wrought or cast iron or steel beams or to the more complex trussed girders employed for bridges, wide spanned roofs, floors, etc.

Since the felicitous discovery and manufacture of artificial hydraulic cement, most notably the so called Portland Cement, a new development in load bearing structures has taken place, wherein the extraordinary qualities of this material have been utilized to a wide extent in the erection of entire works and in important details of various buildings, such as foundations, walls, floors, etc., resulting in the grand requisites of economy, durability, strength and efficiency, and an unusual immunity from fire. Bridges of considerable span for railways, aqueducts and ordinary roadways have been successfully constructed with a cheap concrete of this material without the use of any other bond or tie than its own inherent strength, but in these cases, as in the employment of masonry, the arch form with abutments has necessarily to be adopted.

The application of Portland Cement to structures on the straight horizontal beam principle is a comparatively recent practice, extending back about twenty years, more or less, but resulting in that time in a constant progress and mainly through the assiduous study and experiments as well as practical works of Thaddeus Hyatt of New York. It is this system as one of the latest and most important improvements in the construction of buildings which will be now considered, it being understood that although its application is not usual in single or separated beams, in which form however it may be employed, but in solid extended floor or other end and pier supported structures, the same laws and conditions which apply to single beams are operative here.

Applying therefore the same considerations as above noticed, to the case of such cement structures, and considering a single cement beam as involving the same principles existing in a solidly extended and supported work, which is really but a very wide beam, we have first to regard the nature of the material employed, and its necessary combination with other material in order that it may serve its proper functions, which it could not do to any important extent without such reinforcement, except in the arched form as above mentioned.

Thus taking the case of cement beams composed either totally of pure cement mixture or of its conglomeration with other materials, say of sand, gravel, broken stone, etc., constituting a concrete, it is obvious to those acquainted with the granular nature of this composition, that while its compressive resistance may be great enough for all ordinary occasions, yet on account of its comparative brittleness and consequent want of tensile strength, it could not be used for a beam of any considerable length without the application of some means for the compensation of this weaker element. This, therefore, must be supplied in a manner analogous to that of the truss, except that instead of being applied in a bent form and on the outside of the beam, and necessarily connected therewith by end fastenings, it is embedded in the substance of the beam and becomes integral with it.

In Hyatt's system of cement concrete beams this compensation for the natural deficiency of tensile strength, is provided by a series of thin strips or plates of iron or steel embedded in the material of the structure, quite near the bottom, at the place of the maximum tensile strain, such strips being rolled with lateral projections on each side, thus admitting of considerable penetration into the concrete and affording a strong adherence thereto throughout the whole length of the strip or tie, obviating the necessity of

end fastenings as seen in an outside truss rod, and also all tendency of slipping or displacement when the beam is under strain from its load, while at the same time the web or axial part of the strip or tie resists the tensile stretch. In this system it will be understood that the compressive action of the load on the upper portion of the beam is met by the inherent resisting power of the material which from numerous experiments has been found to be from thirty to forty times greater than tensile resistance, depending on the proportion of the cement used in the concrete and the fidelity of workmanship in its mixing and solidifying. Details of manipulation of the concrete might here be given but it is presumed that intelligent workers in this material know the conditions for its proper composition and application.

The strength of beams of concrete as that of other beams, varies according to their dimensions and forms, perfection of workmanship, quality of materials, etc., and upon these elements any degree of efficiency may be obtained. Illustrations of the comparative strength of the simplest form, viz: straight and equal section throughout the length, may be given to show their general adaptation for service, especially in many cases where other structures of equal efficacy and economy could not be supplied. Mr. Thaddeus Hyatt, in a published work has given accounts of his experiments made in England in connection with Mr. David Kirkaldy, proprietor of a large testing establishment in London, and author of a work on the strength of various materials. The different samples of beams prepared by Mr. Hyatt, about fifty in number, were tested by this gentleman who has publicly given his authority for the results.

Without undertaking to exhibit here the numerous cases subjected to trial in these tests, one or two may be selected, not by any means the strongest of the series, but simply as showing the relatively small amount of the cheapest material which was employed for the strength obtained. This was a simple straight equal sectioned rectangular beam, Fig 6, of

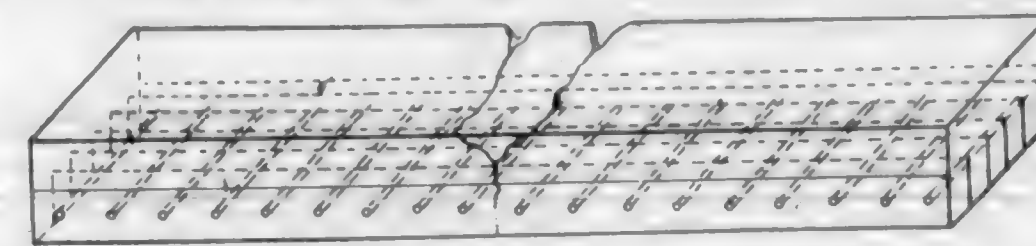


FIG. 5. TIES 4" WIDE.

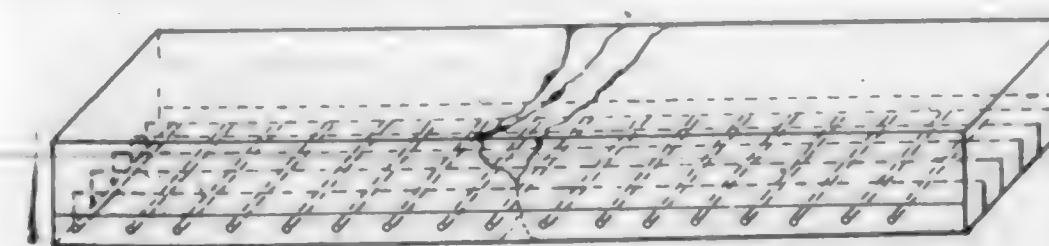


FIG. 6. TIES 2" WIDE.

12"x8" in depth and 6' long, reinforced longitudinally through its whole length by seven strips of thin iron 2" wide by 1-16" thick, through which transversely eighteen wire rods 1/4" diameter were passed, making a sort of grillage; these plates or strips were placed at the bottom of the concrete, their lower edges being exposed; the whole weight of this iron grillage was 21 lbs. The beam was supported at its ends on 6" bearings, thus having a clear span of 5 feet, and was loaded with 16,418 pounds at its middle before it broke, thus sustaining up to that point a load of 3283 lbs. to the square foot upon the span length.

In comparison with the beam just mentioned and to show the additional strength gained by a wider or deeper iron strip, a similar beam, Fig. 5, in all respects was prepared except that the strips or ties were of double or 4" width, with

the same thickness, viz: 1-16". This beam, tested in the same way, bore 23,884 lbs. before it broke, thus showing that double the width of the iron ties, and consequently double the total weight of the grillage, gave nearly 50 per cent more strength. It will be here observed, that the extra cost for obtaining this increased strength is only that of 20 lbs. of sheet iron, the labor and the cost of the concrete being the same in both cases.

These two experiments are remarkable as illustrating the principles on which the metal reinforcement to the concrete should be applied, but at the same time it is to be remarked that in piercing the ties for the cross rods they are weakened, and therefore the substitution of corrugated ties as more recently adopted by Mr. Hyatt, affords a more irrefragable bond to the concrete and of course greater strength to the beam with even less cost.

Passing from these early experiments to those more recently made by Mr. P. H. Jackson who has so extensively applied the Hyatt system in this city in various important works, we may adduce one of those executed by him, in further illustration of the strength of concrete beams as resulting from improved methods of construction. Selecting from several of these, as observed by a number of witnesses, among whom was the writer, a structure of the simplest and cheapest form, we have results which in a remarkable degree show the wide capabilities of the system.

The experiment consisted in subjecting an end supported horizontal slab of combined concrete and thin narrow iron ties to a heavy load in order to see what weight would be required to break it down. This slab was 18' 6" long by 12' wide and 9" uniform thickness, the Hyatt ties being of the corrugated form and their total weight 630 lbs. or about 2 84-100 lbs. per square foot of area. The slab was continuously supported at one end upon a brick wall, and at the other upon two short columns at the corners leaving a clear unsupported space or open span at this end, and also at the sides between the brick wall and the corner columns. A load of 130,000 pounds of pig iron was uniformly distributed upon the unsupported part of the structure, that is between the brick wall and the columns, before it gave way, thus showing a breaking weight of 656 lbs. per square foot of unsustained surface, the breaking being very gradual.

Two other samples varying from each other in the disposition and form of the iron ties, and of somewhat larger area than the above, being of segmental arch construction, with a combination of Hyatt ties and narrow rolled iron girders, were prepared and operated upon by Mr. Jackson, one of them sustaining a weight of 1058 lbs. and the other 1188 lbs. per square foot before breaking—in one of these cases, however, the settlement of one of the supporting columns contributed to the breaking effect. All these samples were supported in the same manner and tested by distributed loads of pig iron.

The intelligent builder will not fail to observe the extended efficiency of concrete structures in the various forms in which they may be made, not only as regards strength and cheapness, but when properly built, in their immunity from fire. The consideration of their fire proof qualities, combined with their smaller cost, shows their adaptation superior to all other systems yet applied to buildings that may be exposed to this source of danger. Wood of course being here out of the question, neither the metals, stone or brick materials, however comparatively secure, can by themselves be economically employed for beams—it is only by their combination with metallic tie rods that they can be

made to serve the purpose, and then in a manner whereby the ties are embedded within the more resistant substance and thus protected from the weakening influence of heat.

The extensive and costly experiments of Mr. Hyatt have proven the efficiency of concrete beams when exposed to the most intense heat, an especial furnace being employed for this test. In these experiments a remarkable coincidence of the law of expansion and contraction of Portland Cement moulded into beam form, with that of iron was discovered, demonstrating the perfect adaptability of the tie for the purpose by its synchronous movement with the substance of the beam and thus always keeping its place. The facility with which these ties can be embedded in the substance of the beam and thus protected from any direct action of fire is obvious.

A peculiarity in regard to the strength of concrete structures remains to be noticed, and this consists in its normal increase with time after the initial set, the maximum not being attained under one or two years, so that whatever may be its degree at first the work never becomes intrinsically weaker by age; of course the judicious builder will see that his work is strong enough at the outset.



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 San Francisco Crematory was designed by architects Pissis & Moore. Though not the first one built on this coast, it is the only one easily accessible from San Francisco.



THE confusion caused by the different gauges in use for measuring the thickness of sheet metal, has been a source of annoyance and expense, ever since the illogical and arbitrary standards were fixed.

Both a congressional committee and an association of iron and steel workers are considering the problem, and the best means of solving it.

Oberlin Smith in the *American Machinist* says:—This whole business could be straightened out by competent authority in fifteen minutes, by abolishing all the present gauges, and simply ordering a new one whose numbers would correspond to the number of thousands of inches represented by each size. This would answer perfectly well for all kinds of wire and sheet metal, as well as for paper, glass, leather and other materials. Special gauges might be made resembling in appearance those now used, or anybody preferring it might use the common pocket micrometer guage both of which would however agree.

It is the result of the earnest efforts of a number of people who are firm believers in cremation, as the most logical and best method of disposing of the bodies of the dead. The auditorium in which the services are held, occupies the main floor; the services over the remains are lowered to the floor below, where the incineration may be witnessed by such of the friends or relatives as may desire to be present.

A building for The Citizens' Real Estate & Investment Co., on the corner of 3d and Aldrich streets, Portland, Oregon, is by Reed Bros., architects of this city, cost \$250,000.

THE Stockton Theatre at Stockton, Cal., is by Wood, Lovell & Claflin of this city.

A design for a cottage is by C. Swain.





Yosemite Theater Bldg
 Stockton Cal
 Wood, Lovell and Clafin
 Theatre Architects
 Rept. 36 Plao Bldg " San Francisco

CALIFORNIA ARCHITECT & BUILDING NEWS
 SAN FRANCISCO

BAYTON & REY PHOTO LITH.

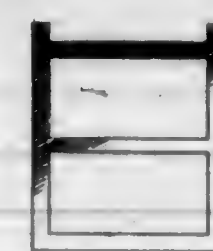
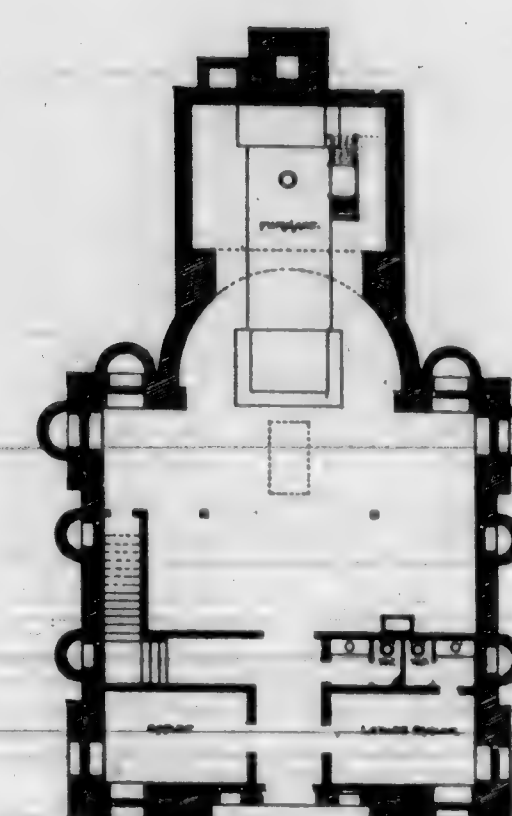
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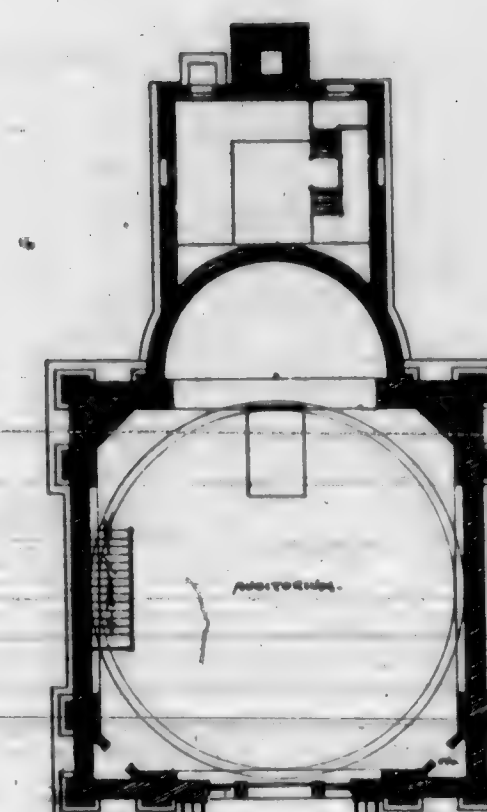


MUTUAL LIFE INSURANCE CO. OF NEW YORK.

CLINTON DAY, ARCHITECT.



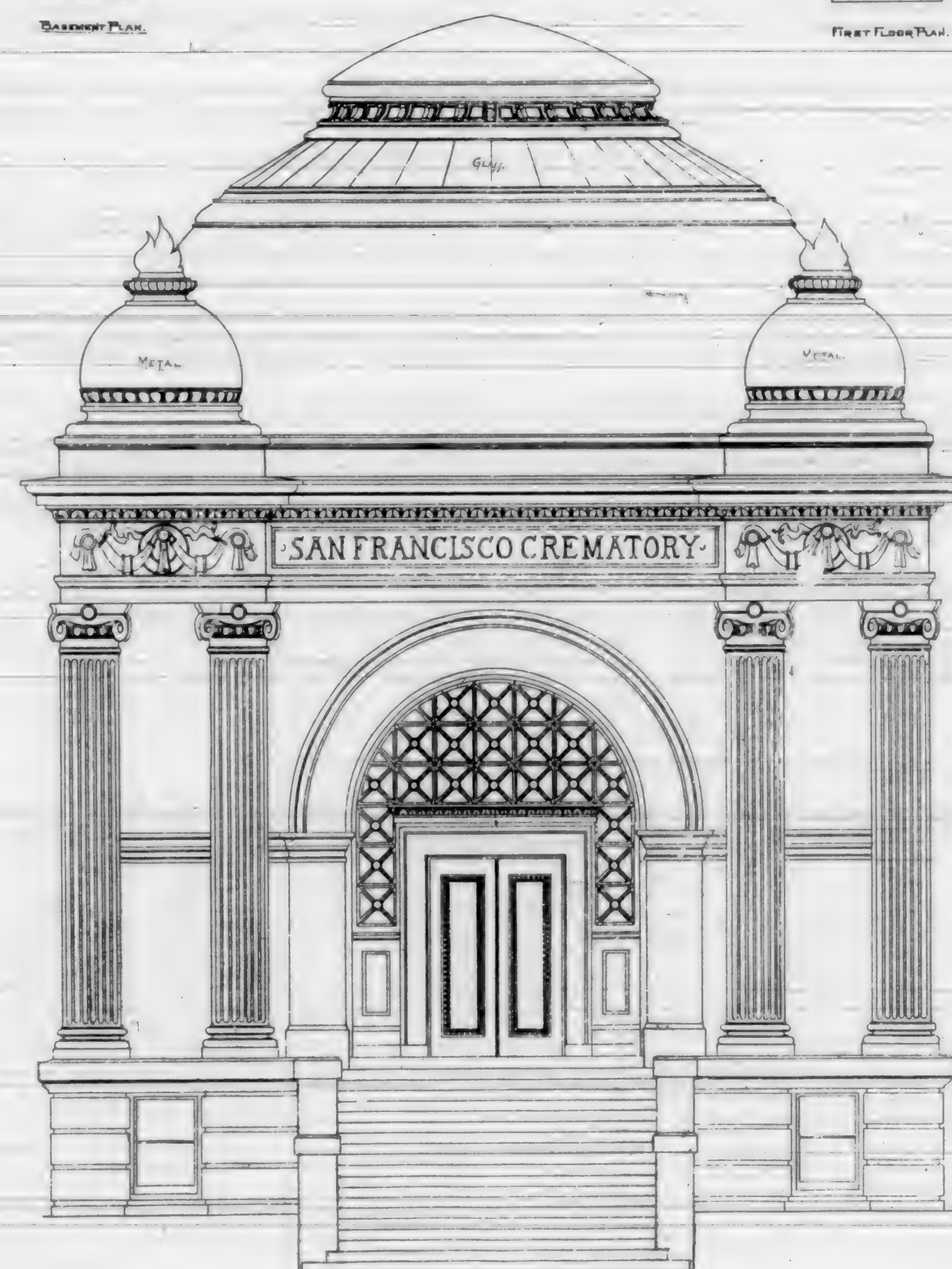
SECTION PLAN

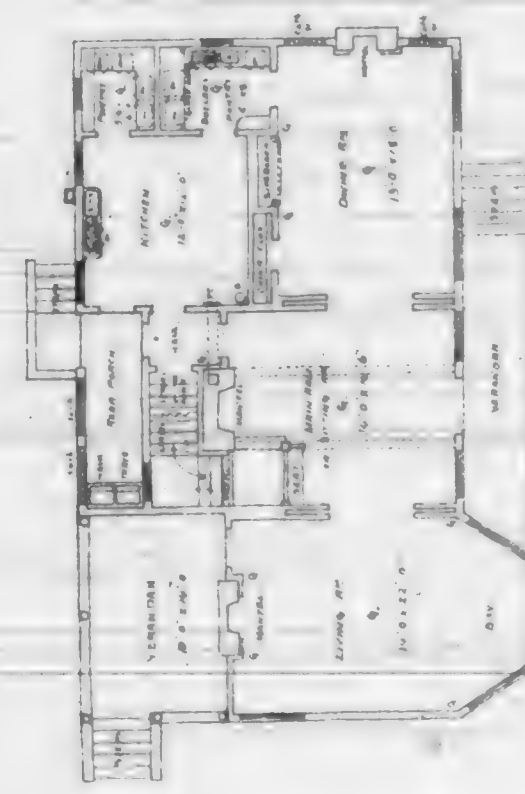


FIRST FLOOR PLAN

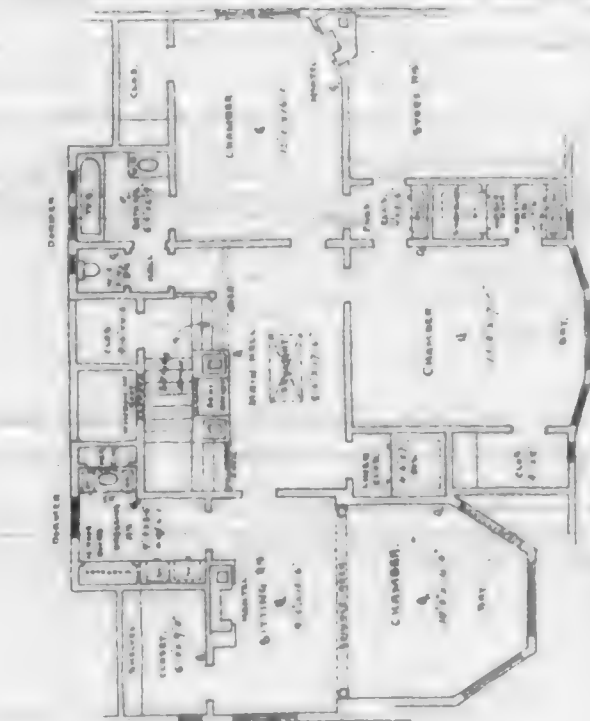
SAN FRANCISCO CREMATORY.

Pissis & Moore - ARCHITECTS.

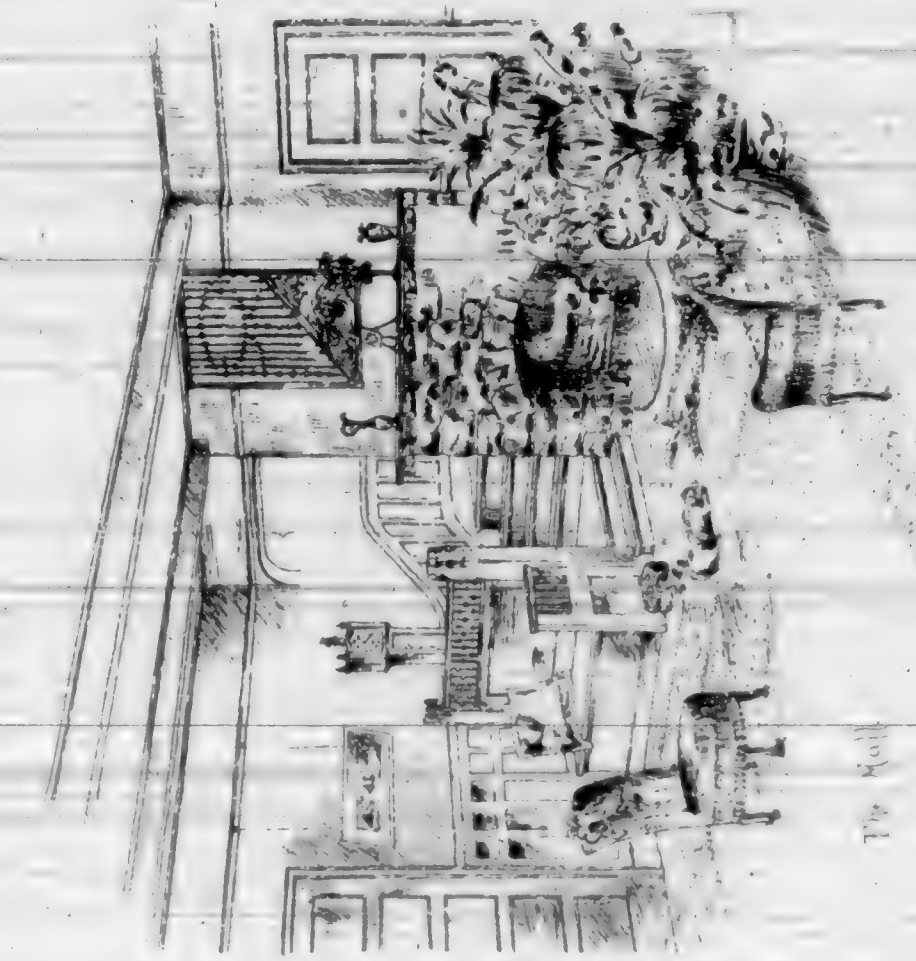




First Floor Plan



Second Floor Plan



Side Elevation



Front Elevation





REVOLUTION IN ELECTRIC HEATING.

IN the advance sheets of consular reports for June we have advices concerning a discovery in the use of electricity for heating purposes, which if in simplicity of method and potency of action as thereby announced, is a clean cut advance in practical electricity. The discovery is attributed to the experiments of two Belgian scientists, who recently applied to the German patent office for patents on a new method of heating, melting and refining metals by means of electrical heat. It was determined before granting the patents to make a practical demonstration of the process. The matter was referred to a disinterested electrical expert at Berlin who announced the process a brilliant success. The apparatus as described consists of a glass or porcelain vase, which may be of any size conveniently adapted to the purpose, provided with a lining of lead connected with a strong conductor of positive electricity. The vase is filled to three-fourths its capacity with acidified water. A pair of iron tongs with isolated handles is attached by a flexible conductor to the negative pole of an electrical current generated by an ordinary dynamo. With this simple and comparatively inexpensive equipment the results as claimed are obtained. The current being switched on, a bar of wrought iron or other metal is taken up with the tongs and plunged into the water in the vase. The water begins to boil at the point of contact, and the immersed portion of the iron rises to a red, then to a white heat, emitting a stream of brilliant white light. In but a short time the iron melts and falls off in bubbles and sparks, the heating process being so rapid that neither the water nor the end of the bar held in the tongs are more than slightly warmed, and the current being switched off, the bar, with its submerged end glowing, may be readily held in the naked hand. In the experiments at Berlin it was estimated that fully fifty per cent of the current was directly utilized, whereas the practical limit of such utility is said not to have hitherto exceeded twenty per cent. The explanation of the process lies in the application of the well-known law that resistance to the passage of an electrical current causes heat. The current passing through the tongs and metallic bar into the water decomposes the latter into its two gaseous elements, oxygen and hydrogen. The oxygen is attracted and gathered on the relatively large surface of the lead lining, producing no noticeable results. The hydrogen, on the other hand, gathers around the immersed portion of the iron bar, which is immediately enclosed with a jacket of hydrogen, which, being a bad conductor of electricity, creates a resistance to the passage of the current, thus developing the heat causing the submerged bar to glow and melt.

This discovery or process if as reported is as yet in too early a stage to define its practical range, or its real commercial value. As far as experiments have so far been made, in the welding of certain metals the success in that direction is said to promise a revolution in methods. The difficulties at present existing in the electrical welding of metals, such as the government of the electrical furnace, and the disadvantages of impurities in metal are said to be overcome by

the newly discovered process. It is further stated that the new method may lead to important results in the hardening and tempering of armor plates and other products of iron and soft steel in which great resistance to penetration or abrasion by friction is required, while preserving the interior tough and fibrous to resist concussion or strain, as in many parts of machinery. Krupp & Co., of Essen, Germany, are experimenting with the new process in the hardening of steel cannon, while this method of producing an intense heat and easily regulated temperature opens up some hitherto impossible achievements in chemistry, as is the production of precious stones by crystalized carbon.

In this, as in the early announcements of all discoveries, there may be much of anticipation to be qualified by actual results, but there can be no question that the facts as reported indicate an interesting deployment of electrical science and research.

FIRE CAUSED BY WATER.

IN two cases destructive fires have been caused by water, says *The Architect and Builder*. In one of these, a flood caused the water to rise high enough in a factory to reach a pile of iron filings. The filings, on contact with the water, oxidized so rapidly that they became intensely heated, and then set fire to the neighboring woodwork, and the building destroyed. In the other case, the water from the engines, during a fire, found its way into a shed containing quicklime, and the heat generated by the slaking of the lime set fire to the shed, and this to other buildings. Quicklime fires, however, are not uncommon. Many vessels carrying quicklime, have probably been burned by the admission of water to the lime through a trifling leak, and no architect or builder needs be told how intense the heat of slaking lime may be. Glass globes, which act as lenses, often set fires, and it has recently been claimed, on high authority, that the convex glasses used in sidewalk-lights are dangerous, and should be abandoned in favor of lights with flat tops. As the convex glasses receive and transmit much more light than the flat ones, particularly in muddy weather, it seems hard to be obliged to give them up, and perhaps a lens might be made, convex on the outside and concave on the inside, the concavity being equal to or greater than the convexity, so that rays of sunlight would either pass through unchanged in direction, or would be dispersed instead of being concentrated, so as to unite the advantages of the convex form with complete security.

INCIDENT TO THE FAIR.

INVESTIGATING WASHINGTON WOOD.

WHERE is a prize in store for all lovers of forestry and botany who have not yet visited the Washington State Building at the World's Fair. In the midst of the great collection of tree sections, botanical specimens and other exhibits from the woods of the state is a good sized section of highly polished lead pencil cedar, just as fragrant as a new box of pencils. The tree shows a diameter of a little over one foot, and the grain of the wood is even and soft, just such as is best suited for lead pencil wood. This specimen has attracted the attention of Moriz Von Hardtmuth, a pencil maker of Austria, who with the aid of an interpreter, has been making careful inquiry about the best way to secure a cargo of this wood for shipment to his factories. This particular tree is not very plentiful in the Puget Sound country, but there are a good many groves on the islands comprising the San Juan archipelago. It was at first supposed to belong to the tribe of cypress, and in consequence one of the islands in that famous group was named Cypress Island on account of the beautiful groves of this valuable wood found on its shores.—*Northwestern Lumberman*.

NOTICE OF MEETINGS.

SAN FRANCISCO CHAPTER, AMERICAN INSTITUTE OF ARCHITECTS, meets second Friday of each month at 408 California street.
 GEO. H. SANDERS, Pres. W. J. CUTHBERTSON, Vice-Pres.
 OLIVER EVERETT, Sec. JOHN M. CURTIS, Treas.

TECHNICAL SOCIETY OF THE PACIFIC COAST, meets first Friday of each month at Academy of Sciences Building.
 C. E. GRUNSKY, Pres. CHARLES D. MARX, Vice-Pres.
 OTTO VON GELDERN, Sec. GEO. F. SCHILL, Treas.

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

GEO. P. LOW, Pres.
 MAX CASPARI, Sec.

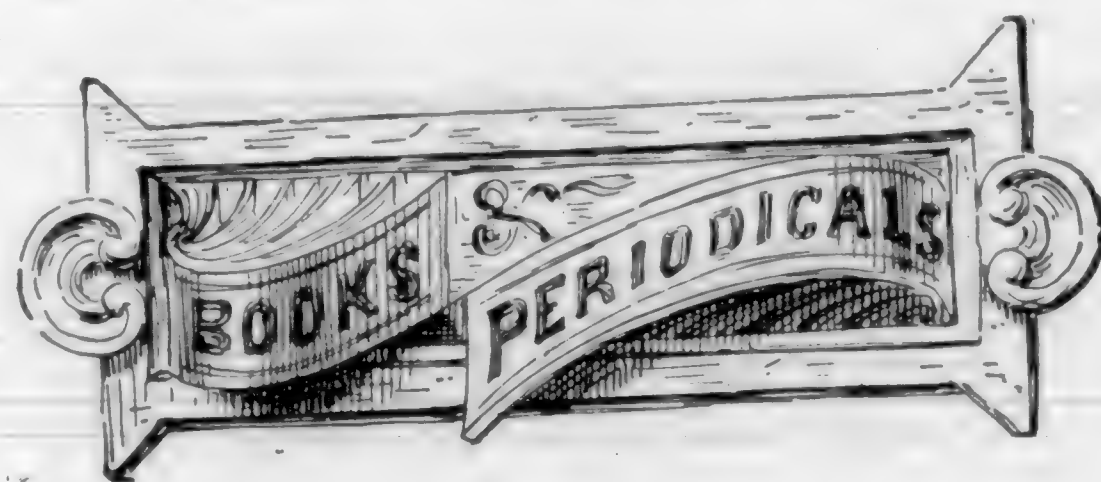
C. O. POOLE, Vice-Pres.
 H. T. BESTOR, Treas.

DEADENING FLOORS.

INSTEAD of loading the floor with plaster for the purpose of deadening sound, a method suggested by a writer in one of the French trade papers is to fill in the space between the boarding and the plastering of the ceiling with shavings, which have been first rendered incombustible by dipping them in a tub of thick whitewash. It is a well-known fact that soft substances in closing air spaces form a good non-conductor of sound, and the writer in the paper referred to is of the opinion that shavings so treated will be found of great service, while this incombustibility adds in no small degree to the fire-resisting properties of the building. When it is desired to disinfect the space between the floor and the ceiling the shavings are saturated with chloride of zinc or the latter may be added to the lime wash.



\$2,500 HOUSE.



The June number of THE ENGINEERING MAGAZINE, still devoted to Industrial Progress, comes to our table so full of good things that our space will not allow us even the mention of tidbits—but refer the reader to the magazine itself.

THE CANADIAN ENGINEER, Vol. 1., No. 1., published at Toronto and Montreal, Canada, is a well printed and well conducted journal, (as far as can be judged by the first number) devoted to the Mechanical Mining and other branches of the Engineering trades. It is thoroughly Canadian in tone, and gives a large amount of Canadian

news, relating to the mechanical, mining and manufacturing interest of Canada. We welcome its appearance among our exchanges.

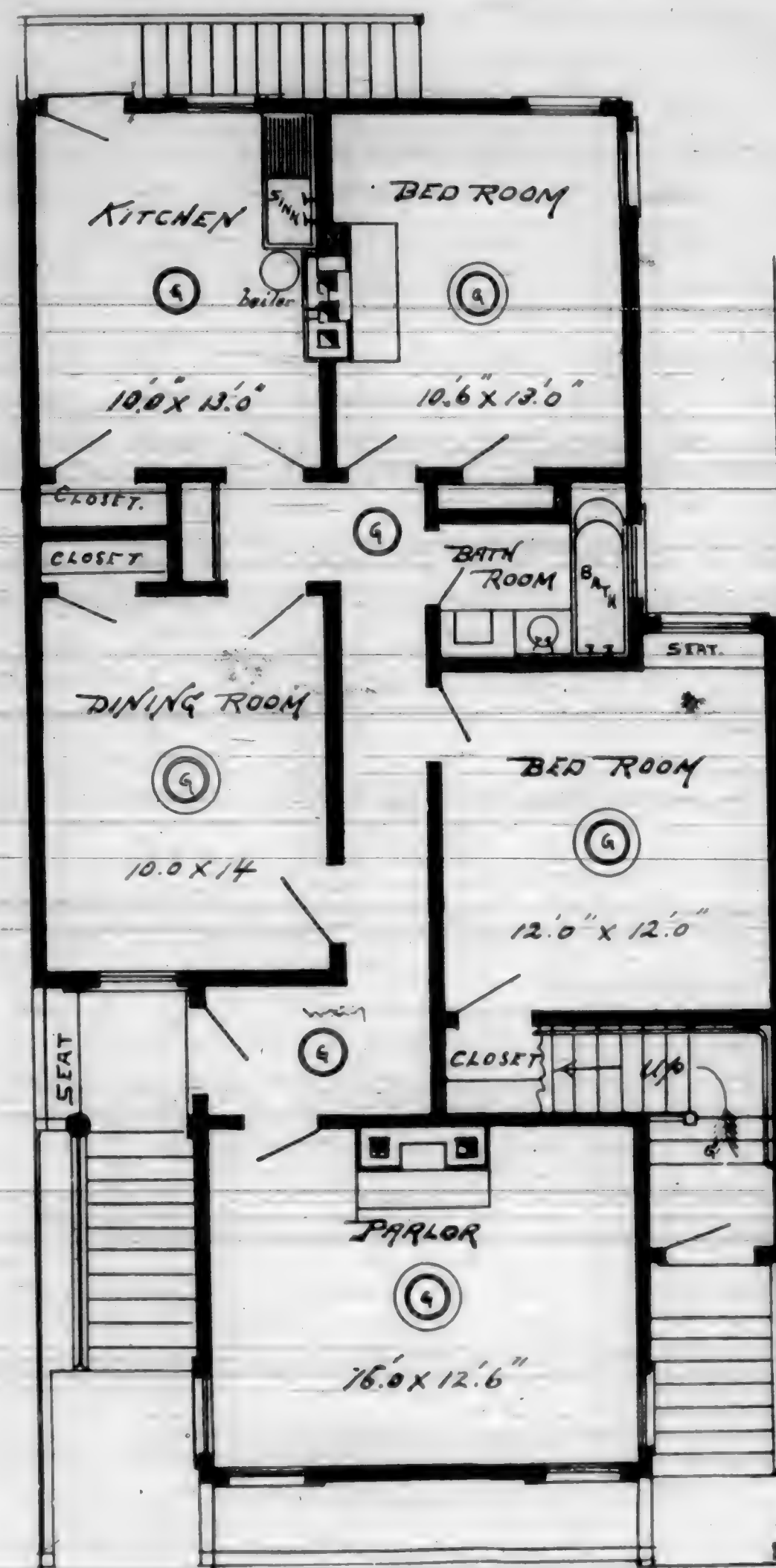
In the WORLD'S FAIR ELECTRICAL ENGINEERING, an illustrated Magazine published in Chicago, will be found in the April number a synoptical index of current Electrical literature which cannot fail to be of interest to the student, as well as to the general public now so generally interested on that subject.

LEND A HAND—A record of progress. Published by J. Stilman Smith & Co., Boston., comes to hand and needs only a list of the editors to be given to insure that there will be found something worth reading. Editors: Edward E. Hale, Mrs. Bernard Whitman, L. E. Dudley, Mary E. Dewey, John Tunis, A. Blair Shaw, M. D., and H. Sidney Everett.

THE SCIENTIFIC AMERICAN comes to hand regularly and is always welcome. According to this authority Tanning by Electricity has been successfully experimented upon in Turin.

THE MECHANICAL NEWS always full of good things in the mechanical line. The June number gives an interesting account of the ingenuity and skill exercised in the imitation of counterfeiting precious stones. Another article on the "Mistaken Idea of Shafting" cannot fail to interest those using power, and if it calls attention in vain, it will be the fault of the millwright who reads and not of the writer of the article.

A false statement is going the rounds of the press to the effect that visitors will not be able to get any water to drink without paying for it. There will be abundance of excellent water free to all who want it. Those who wish to drink mineral spring water, piped to the Exposition grounds from Waukesha, Wis., a hundred miles distant, will have to pay one cent a glass for it.

FIRST FLOOR PLAN.
LEGAL DECISIONS.

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

LIABILITY OF OWNER FOR NEGLIGENCE OF CONTRACTOR.—Where an owner contracts for work to be done on his premises, which is lawful in itself, and, if properly done, is not likely to require any act likely to cause injury, he is not liable for the negligence of the contractor in performing the work.

Roemer v. Striker, Superior Court of N. Y. City, Jan. 18, 1893, 21 N. Y. Supp. 1090. 53.

ACTION FOR FAILURE TO ERECT PARTITION WALL.—In an exchange of lots, the deed recited that, as part consideration, the buyer and the subsequent owners of the lot conveyed, shall have the right and privilege of uniting with and using the south wall "which may be erected," by the grantors on the south part of their lot adjoining on the north, an action for damages for failure to erect such wall, and an amount of unpaid consideration equal to the agreed value of such privilege, could not be maintained since there is no agreement to erect the wall, and hence no breach of contract.

Money v. Peavey, Supreme Court of Mississippi, 12 So. Rep. 334. 106

COMMENCEMENT OF SUIT IN MECHANIC'S LIEN.—Where a lien statement omits part of the land included in the lien the claimant may correct the mistake by filing a correct statement at any time within the period for filing lien statements. Under the statute which declares that the filing of a petition in a court of record, and suing out process thereon, shall be taken and deemed the commencement of a suit, a suit is begun from the time the petition is filed.

South Mo. Lum. Co. v. Wright, Supreme Court of Mo. 21 S. W. Rep. 811. 81.

INDEMNITY OF OWNER FOR DAMAGES TO THIRD PERSONS.—A stipulation in a building contract by which the contractors

assume liability for any damages that may be done to the property or person of any neighbor or passer-by, during the performance of such work is for the protection of the owner, to save him from claims enforceable against him, and does not give a neighbor a right of action against the contractors for the acts of an independent subcontractor, where the owner would not have been liable had such acts been done by the contractors themselves.

French v. Vix, Court of Common Pleas of New York City, 21 N. Y. Sup. 1016, Feb. 6, 1893. 97.

BINDING POWER OF CUSTOMS.—Where an action for mason work at a specified price per perch, is brought, and the dispute is as to the number of perches contained in the work, a uniform, universal, and notorious custom of measurement among masons is binding, though the result of such measurements is greater than the actual contents.

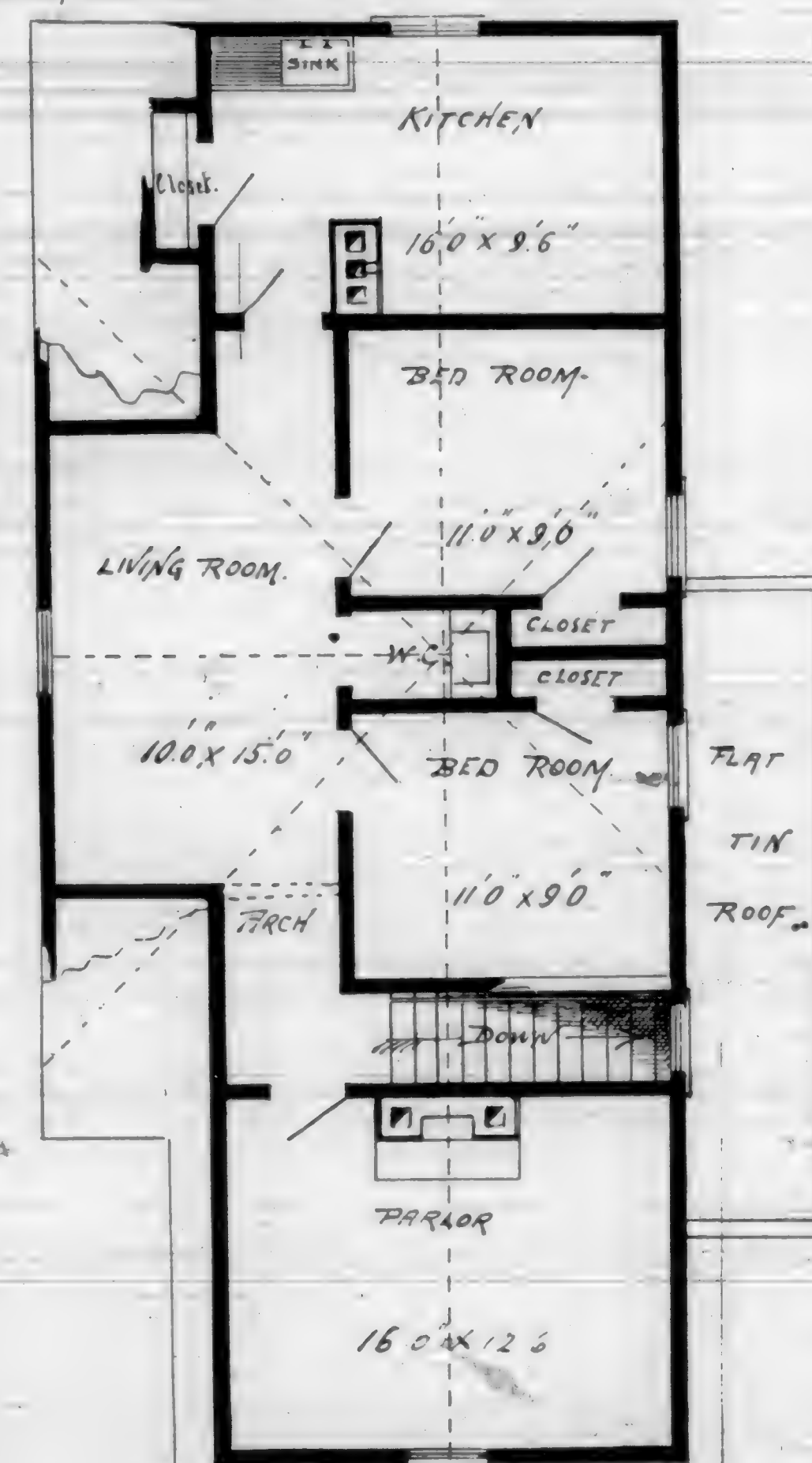
McCullough v. Ashbaidge, Supreme Court of Penn. 26 At. Rep. 10. 59.

ARCHITECTS' CERTIFICATE FOR BUILDING CONTRACT.—Where a building contract provided that the owner should pay the contractor upon the presentation of certificates, signed by the architect, and that the decision of the architect as to the value of extra or deducted work should be final, and the contractor obtained from the architect a certificate showing the respective values of extra and deducted work, stating the balance due from the owner, which certificate the contractor gave back to the architect, who afterwards refused to give him any further certificate, the contractor was entitled to recover said balance from the owner, although he had not presented him with the certificate.

Arnold v. Bonniqne, Supreme Court of Ill. 32 N. E. Rep. 530. 110.

RIGHTS OF LOWEST BIDDER IN BUILDING CONTRACT.—A private person, who has asked for bids from contractors on a house that he intends to construct, is not bound to award the contract to the lowest bidder, but he has a right to inquire into the fitness and skill of the bidders to fulfill the contract. The fact that on the opening of the bids the person letting the contract or his architect said to one of the bidders, "You are the lucky man," is merely a recognition of the fact that he is the lowest bidder, and is not equivalent to awarding the contract to him.

Laskie v. Haveline, Supreme Court of Penn. 25 At. Rep. 886, Jan. 30, 1893. 102.



SECOND FLOOR PLAN.

BUSINESS MOSAICS.

The Misses. Wilson & Kelley of room 45, 6th floor, Mills Building, make a specialty of type writing for architects. Having made a study of this branch of their work they will guarantee satisfaction to their patrons. Do not forget their place, room 45, 6th floor, Mills Building.

Columbus did not make an egg stand on end to confute his opponents. The feat was performed by Brunelleschi, the architect, to silence critics who asked him how he was going to support the dome of the Cathedral of Florence.

We have received from the E. D. Albro Co., manufacturers of veneers at Cincinnati, Ohio, samples of their work in the form of business cards printed on thin veneers, some not thicker than a sheet of note paper; Oak, Maple of various kinds, as well as Birch, making a very pretty souvenir for the World's Columbian Exposition Department of Forestry.

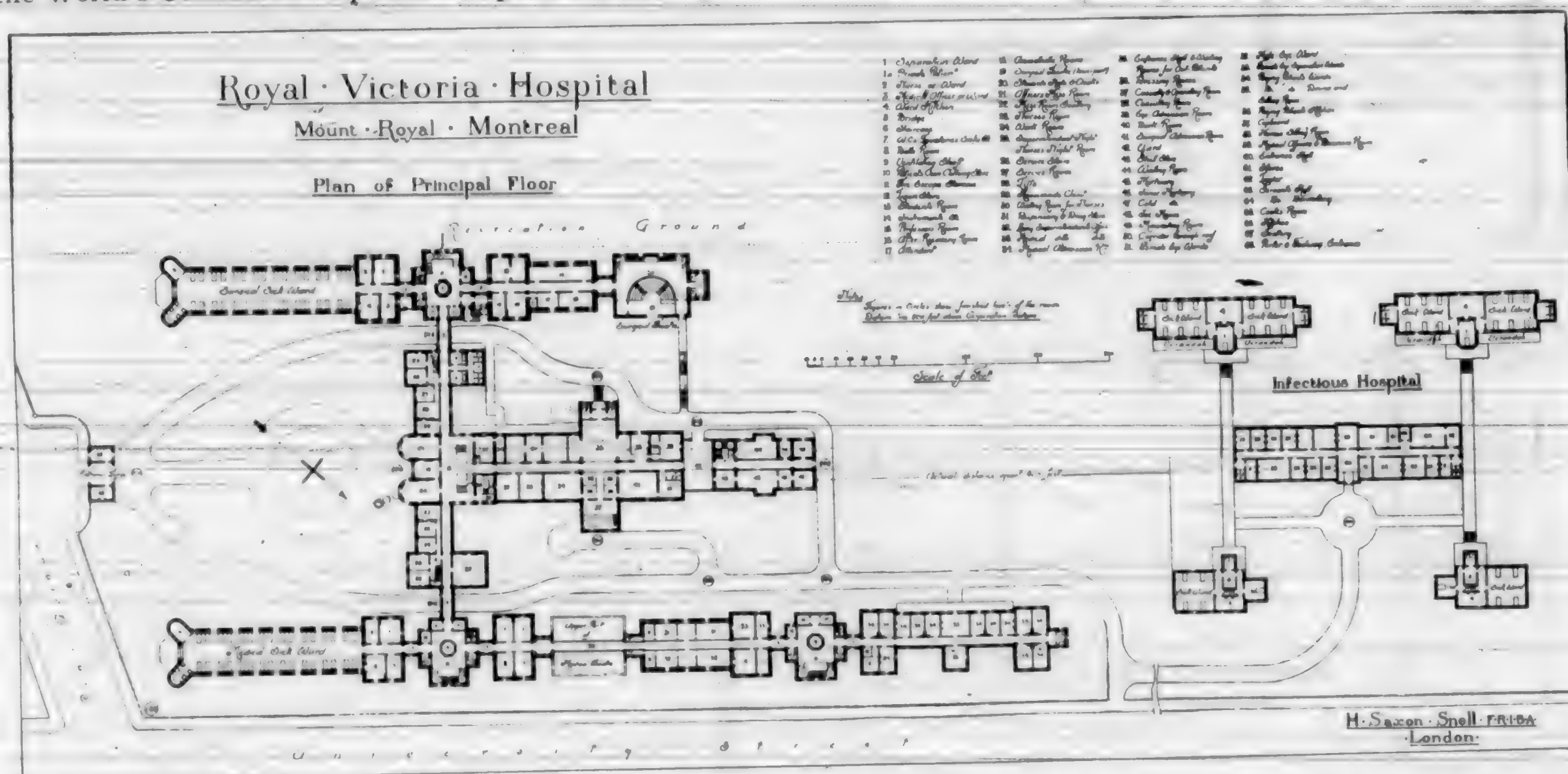
Persons in want of Artificial Stone work should call on George Goodman, 307 Montgomery street. Mr. Goodman's work is well-known for its superior quality, and his name is a sufficient guarantee.

Bilton—"It is a great misuse of terms to say a man is the architect of his own fortune."

CHILTON—"How so?"

Bilton—"When an architect plans a \$5,000 house it costs \$10,000, but when a man plans to get a \$100,000 fortune he usually lands somewhere in the neighborhood of \$1,500."—*Tid-Bits.*

The J. L. Mott Iron Works are too well-known to require a work of commendation from us, nevertheless we cannot refrain calling attention to their constant improvements in their line, for which the public should be grateful.



Messrs. Merchant & Co. deserve credit for having placed upon the market a Graduated Tile, which is a valuable addition to their regular "Spanish Metal" tile, and is well adapted for covering all Conical Towers, Circular Roofs, Turrets, Domes, etc., being so graduated in size and form as to fit almost any radius. This tile is manufactured in copper, steel or tin, the latter being painted in imitation of the red clay tile.

Doubtless the manufacture of this tile will do much to encourage the use of a more substantial material for roofing, and in copper we find the ideal material for this purpose.

More Than Plumb. ASSISTANT BUILDING INSPECTOR—"I am afraid, Mr. Gilligan, you will have to take that front out of your residence,—it's dangerous." MR. GILLIGAN—"An phat the Devil is the mather with the front; it's the best on the shreet, and the only one with a bay windy." ASST. INSP'R.—"But it's not plumb." MR. GALLIGAN—"The Devil ye soy! It's not plumb, is it not? Well I just want to shate that it's more than plumb. This thing is getting outrageous. It was only last week the plumbing inspector was here and made me tear the whole inside out o' the house to have it plumbed according to the modern idee, and now ye want me to have the outside of it plumbed. Well, I guess not, and ye kin tell Entwisle that I'll see him in—first."

A fine model of Windsor Castle, built to scale from architectural drawings, will be exhibited at the World's Fair. It is believed to be the largest in existence and the only one architecturally correct. The model covers an area of 45x18 feet and stands sixteen feet high. It is built upon a stand, the inside of which is a work of art in saloon decoration.

We are indebted to Mr. Samuel Cabot of Boston, for a handsome Colored Lithograph of his factory, said to be the largest shingle stain work in the world. As specimens of the work done in this line, attention is called to the Forestry Building and several of the State Buildings at the World's Fair in Chicago. To those about to build, the offer is made to send one dozed colored studies upon application to their office in Boston.

With AN EYE TO THE FUTURE.—Mr. Billus was looking over the plans of a new barn he was preparing to build.

MR. BILLUS—"I don't care about having any windows on the side facing the kitchen yard," he said. ARCHITECT—"But you will need them for light." MR. BILLUS—"Light nothing!" "Those windows call for sixty-four panes of glass and I've a boy eight years old! Leave 'em out!"—*Chicago Tribune.*

The highest chimneys in the world are two in Glasgow, one being 468 feet and the other 455 feet, while one near Cologne comes next with a height of 441 feet.

The West Coast Wire Works of 13 and 15 Spear street should not be forgotten by persons in need of wire work of whatever description; Mr. Trowbridge is well and favorably known by architects and builders and any work done by him always gives satisfaction both as to workmanship and price.

A BRIGHT BOY.—OLD GENTLEMEN—"What would you like to be when you grow up?"

Boy—"I'd like to be a bricklayer."

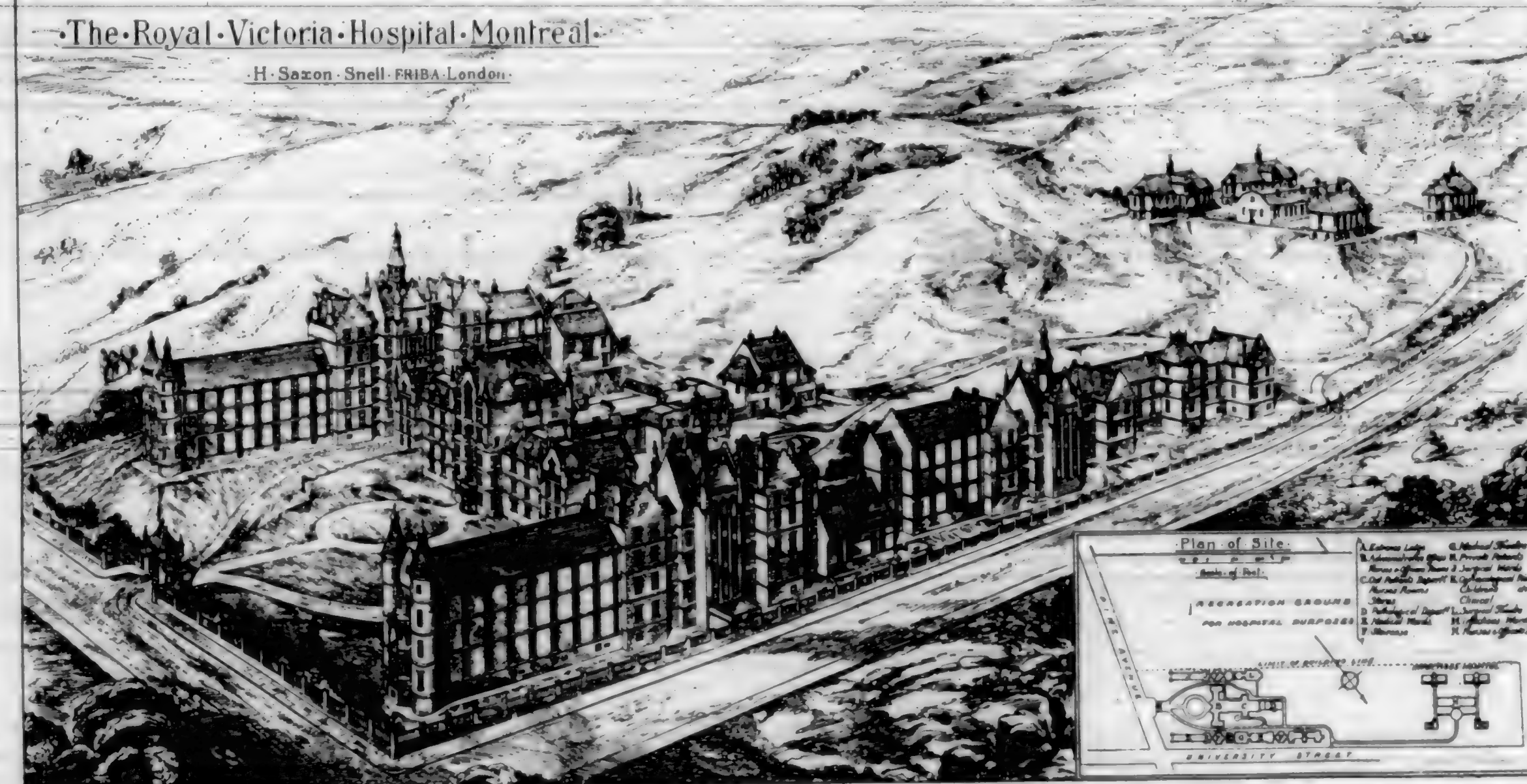
OLD GENTLEMAN—"That's a commendable ambition. Why would you like to be a bricklayer?"

Boy—"Cause there's so many days when bricklayers can't work."—*Good News.*

A transparent mucilage of great tenacity may be made by mixing rice flour with cold water and letting it simmer gently over the fire.

Ex-President Harrison, whose handwriting is as clear, precise and neat as that of a woman, said, after writing his annual message with a lead pencil, "My thoughts flow more freely from the pencil." General Grant, in writing his important papers, used a Dixon "American Graphite S M" and commended it for its unequaled qualities.

The 40,000 thousand souvenir quarter dollars, which Congress authorized to be minted for the Board of Lady Managers of the World's Fair, will be issued in June. It is thought the ladies will want two dollars each for them, quite a tidy sum.



CITY BUILDING NEWS.

Austin near Franklin. Two-story flat; owner, Mrs. B. McCarthy; architects, Townsend & Wynken; contractors, J. F. Klensch & W. Faucher; signed, May 15; filed, May 18; cost \$3,000.

Baker and Turk. One-story, basement and attic frame; owner, H. Northrup; architect, Geo. A. Bordwell; contractors, Portor Achinson & Meyer; signed, May 18; filed, May 19; cost \$1,683.

Broadway and Steiner. All work to build; owner, M. Van B. Watson; architect, J. B. Mathison; contractor, A. Jackson; signed, May 11; filed, May 11; cost \$7,532.

Broadway near Leavenworth. Two, 2-story frame buildings; owners, Jas. and Ann Walsh; architects, Shea & Shea; contractor, Jas. Maguire; signed, May 18; filed, May 22; cost \$4,080.

Broderick near Clay. All carpenter work; owners, Mathias Edwards and wife; architect, J. H. Littlefield; contractor, O. E. White; signed, May 19; filed, May 20; cost, \$3,757.

California and Jones. Copper work; owner, Geo. Whittell; architects, Coxhead & Coxhead; contractors, Forderer Cornice Works; signed, May 17; filed, May 18; cost \$1,970.

California near Drumm. Slatting, metal and copper work; owners, Luning Co.; architects, Coxhead & Coxhead; signed, May 19; filed, May 25; cost \$2,750.

California near Drumm. Plumbing and gas-fitting; owners, Luning Co.; architects, Coxhead & Coxhead; contractors, Duffey Bros.; signed, April 20; filed, May 15; cost \$3,918.

California near Broderick. Two-story frame; owners, Gottell Bros.; architect, C. M. Rousseau; contractors, L. Cuneo & Co.; signed, May 8; filed, May 8; cost \$3,150.

California near Hyde. Underpinning, brick, stone, etc., for a 4-story frame; owner, F. Katz; architect, A. C. Lutzgens; contractor, E. W. Haaf; signed, May 15; filed, May 18; cost \$1,800.

California near Prospect Place. Three flats; owner, Mrs. Caroline Scherr; contractor, W. W. Rednell; signed, May 16; filed, May 18; cost \$4,550.

Clara street. Alterations and repairs; owner, John Weir; contractor, J. A. McDonald; signed, May 19; filed, May 20; cost \$435.

Clara street No. 223. Alterations and repairs; owner, Jas. L. Fallon; contractor, J. A. McDonald; signed, May 19; filed, May 20; cost \$769.

Clarendon Heights, lot 13, block 4. Two-story frame; owner, J. H. Pauls; contractor, A. D. Muller; signed, April 28; filed, May 17; cost \$2,510.

Carl and Stanyan. Plumbing, gas-fitting, sewerage, etc.; owner, Thomas Landy; architect, T. J. Welsh; contractors, Duffey Bros.; signed, May 23; filed, June 3; cost \$1,888.

Clay near Jones. Excavating, sewerage, brick, carpenter, etc.; owner, Cattie Carroll; architect, H. D. Mitchell; contractor, Martin Bapett; signed, May 22; filed, May 22; cost \$1,350.

Day near Sanchez. One-story frame cottage; owners, Gertrude and George Samuels; architect, J. B. Wuerchling; contractors, Home Building Co.; signed, May 20; filed, May 25; cost \$1,500.

Drum, Market and California. A solid brick wall; owners, Luning Co.; architects, Coxhead & Coxhead; contractors, Richardson & Gale; signed, June 3; filed, June 5; cost \$3,950.

Ellis near Mason. Marble work; owner, Y. M. C. A.; architect, A. Page Brown; contractors, Inyo Marble Co.; signed, May 9; filed, May 11; cost \$1,623.

Ellis near Mason. Terra-cotta work; owner, Y. M. C. A.; architect, A. Page Brown; contractors, A. Steiger Sons; signed, May 6; filed, May 11; cost \$11,702.

Fell near Mason Ave. Four flats; owner, M. A. Moldenhauer; contractor, A. H. Baily, Jr.; signed, May 17; filed, May 18; cost \$5,450.

Fell near Devisadero. Two-story frame; owners, Wm. and Rachel Smith; contractor, Wm. Plank; signed, May 26; filed, June 1; cost \$3,843.

Filbert near Mason. Three-story frame, except painting and plumbing; owner, John Haub; architects, John & Balczynski; contractors, Weber & Kohler; signed, June 2; filed, June 3; cost \$3,600.

Filbert near Mason. Three-story frame; owner, Jacob Schimp; architects, John & Balczynski; contractors, Weber & Kohler; signed, June 2; filed, June 3; cost \$3,600.

Fillmore. Two-story frame; owner, Mrs. C. Frutiger; architect, C. W. Kenitzer; contractor, C. F. Ruppel; signed, May 16; filed, May 16; cost \$4,325.

Florida near Butte. Two-story frame; owner, Ellen E. Ryan; contractor, E. Wilberg; signed, May 12; filed, May 12; cost \$1,850.

Fremont Nos. 239, 341 and 243. Repairing and additions; owner, Jas. Enright; architect, Oliver Everett; contractor, J. T. Carberry; signed, May 10; filed, May 20; cost \$1,540.

Fulton near Octavia. Excavating, brick, plastering, carpenter, plumbing, painting, tinning, etc.; owner, D. Gulsto; architect, H. D. Mitchell; contractors, Cuneo & Caraglia; signed, May 23; filed, June 1; cost \$4,790.

Garden near Harrison. Carpenter, brick, grading, plumbing, painting, plastering, mill, hardware, etc.; owner, F. H. Ingwersen; architect, M. J. Welsh; contractor, Henderlong Bros.; signed, May 31; filed, June 1; cost \$4,025.

Green and Buchanan. Plumbing on six houses; owner, E. A. Sanders; contractors, Cowap & Trumbull; signed, May 2; filed, May 12; cost \$1,085.

Hayes near Steiner. To build; owner, Bridget Mogles; contractor, John N. McLeod; signed, May 11; filed, May 11; cost \$4,510.

Harrison bet. 5th and 6th. To build, except painting; owner, Henry Besthorn; contractor, Henry Munster; signed, June 1; filed, June 5; cost \$4,575.

Harrison near 20th. Two-story frame; owner, J. J. Green; architect, A. J. Barnett; contractor, A. J. Ahern; signed, May 9; filed, May 9; cost \$2,700.

Hoffman near Alvarado. To build cottage; owner, Mary A. McComb; contractors, Rule Bros.; signed, May 17; filed, June 1; cost \$2,000.

Howard near 6th. Excavating, brick, carpenter, etc.; owner, Jos. F. Swift; architects, Martens & Coffey; contractor, John J. O'Brien; signed, May 13; filed, May 15; cost \$5,500.

Howard near 11th. Alterations to a two-story frame; owner, Jos. Herrscher; architect, C. Mau; contractor, W. J. Field; signed, May 6; filed, May 11; cost \$3,050.

Jones and Chestnut. Grading; owners, John and Clara Finley; contractor, J. J. Bauer; signed, Oct. 19, 1892; filed, June 3, 1893.

Kearny near Union. Two-story frame; owner, G. Filippelli; contractor, G. Butto; signed, May 23; filed, May 24; cost \$3,580.

Leavenworth near Lombard. Two-story frame; owner, J. J. Stofen; architect, Jas. H. Humphreys; contractor, N. R. Ellis; signed, May 24; filed, May 25; cost \$2,438.

Loft near Hayes. To build except plumbing and painting; owner, Adolph Newman; architects, John & Balczynski; contractor, F. V. Steinman; signed, June 8; filed, June 8; cost \$3,050.

Market near City Hall Ave. Two-story brick; owner, S. H. Seymour; architects, Shea & Shea; contractor, W. W. Ackerson; signed, May 31; filed, May 2; cost \$3,193.

Mason near Broadway. A frame building; owner, Mrs. Justl Capelli; architect, M. J. Lyon; contractor, Thos. Kinrad; signed, May 6; filed, May 10; cost \$8,100.

Mason near Eddy. Granite and sandstone work; owner, S. Silverberg; architects, Saffeld & Kohlberg; contractor, J. Sheedy; signed, May 11; filed, May 22; cost \$1,250.

Mason near Eddy. Plumbing and gas-fitting; contractors, Samuel Ickelheimer & Bro.; signed, May 11; filed, May 22; cost \$3,450.

Minna street, No. 147. Alterations and additions; owner, Patrick Connell; contractor, M. S. Yerxa; signed, May 19; filed, May 20; cost \$1,430.

Mission near Fair Ave. To build, except mantels, gas fixtures and painting; owner, Della Greenleaf; architect, E. A. Hermann; contractor, Henry Jacks; signed, June 8; filed, June 5; cost \$4,650.

Oak near Clayton. Two-story frame; owner, Mrs. J. D. Jennings; contractor, W. W. Redmill; signed, May 11; filed, May 12; cost \$3,742.

Octavia and Ellis. Grading, etc.; owner, Wm. Wolf; contractor, Jas. J. O'Conner; signed, May 18; filed, May 20; cost \$4,700.

O'Farrell near Webster. Three-story frame; owner, David Bernstein; architect, A. J. Barnett; contractors, Milron & Gardner; signed, May 11; filed, May 18; cost \$8,504.

O'Farrell and Grant Ave. Carpenter, marble and grille work, plastering, etc. for saloon and basement; owners, Calley & Roeder; architect, Chas. I. Havens; contractor, C. H. Green; signed, May 28; filed, May 28; cost \$1,855.

Page and Schrader. Plumbing, sewerage, etc.; owner, John W. Witt; architect, F. T. Robin; contractor, H. Williamson; signed, May 18; filed, May 23; cost \$1,074.

Page near Devisadero. To build; owner, Henry Mangels; architect, H. Geiffuss; contractor, F. Klatt; signed, May 9; filed, May 9; cost \$4,800.

Page near Steiner. Two-story frame; owner, D. Sullivan; architect, P. R. Schmidt; contractor, J. J. O'Brien; signed, May 9; filed, May 10; cost \$5,800.

Pleasant near Taylor. Three-story frame; owner, Annie Schurch; architect, Wm. H. Armitage; contractors, Gardner & Boyden; signed, May 20; filed, May 24; cost \$6,500.

Polk street, No. 1710-1712. Alterations and additions; owner, Jos. Podesta; architect, Oliver Everett; contractor, John Strand; signed, June 1; filed, June 2; cost \$900.

Post near Grant Ave. To alter elevator; owners, H. Liebes & Co.; architects, John & Balczynski; contractors, Cahill & Hall; signed, May 8; filed, May 15; cost \$3,525.

Railroad Homestead Association, lot 4 block B. To build; owners, E. J. and Mary McMullin; contractor, Jos. Morris; signed, May 15; filed, May 20; cost \$850.

Sacramento and Central Ave. Excavating, concrete and artificial stone work for a frame building; owner, John Trillary; architect, Wm. Mooser; contractor, H. M. Peterson; signed, May 22; filed, May 22; cost \$1,350.

Seventeenth and Valencia. Lathing and plastering; owner, Mission Parlor Building Association; architects, Shea & Shea; contractor, J. T. Mackey; signed, May 8; filed, May 22; cost \$1,215.

Shotwell near 19th. Painting; owner, Robt. R. Hind; architect, H. T. Bestor; contractor, Daniel Foley; signed, March 4; filed, May 11; cost \$925.

Shotwell and 19th. Plumbing; owner, Robt. R. Hind; architect, H. T. Bestor; contractor, D. J. Daley; signed, May 2; filed, May 14; cost \$2,050.

Spruce and Washington. Polishing and interior wood work; owner, O. D. Baldwin; architect, Samuel Newsom; contractor, P. N. Kuss; signed, April 19; filed, May 18; cost \$1,200.

Spruce and Washington. Plastering and cement work; contractors, D. Leahy & Bro.; signed, April 14; filed, May 18; cost \$1,040.

Stevenson near 20th. To build; owner, John T. Millbrick; architect, Edw. J. Vogel; contractor, Hugh Curran; signed, May 24; filed, May 25; cost \$2,770.

Sunny Side. One-story frame; owner, John Johnson; contractors, Peterson & Olson; signed, June 3; filed, June 3; cost \$1,120.

Sutter and Mason. Carpenter, tin roofing and galvanized iron work, etc. owner, S. Wenbau; architects, Pissis & Moore; contractor, F. W. Kern; signed, April 27; filed, May 18; cost \$15,360.

Thirtieth near Noe. To build; owner, Mrs. B. Beck; contractor, O. E. White; signed, May 16; filed, May 19; cost \$1,200.

Twenty-first and Howard. A frame dwelling and stable; owner, C. A. Clinton; architect, W. J. Mathews; contractors, Garden & Boyden; signed, May 20; filed, May 24; cost \$8,575.

Twenty-third near Noe. To build; owner, Marietta I. Willats; contractor, J. A. McDonald; signed, May 13; filed, May 20; cost \$2,300.

Turk and Larkin. Galvanized iron, metal and tin work; owners, Luning Co.; contractor, Forrester Corncorn Works; signed, April 26; filed, May 15; cost \$2,285.

Turk and Larkin. Plaster work; owners, Luning Co.; architects, Coxhead & Coxhead; contractor, Chas. Dunlap; signed, May 3; filed, May 15; cost \$3,000.

Turk and Larkin. Plumbing and sewerage; owners, Luning & Co.; contractors, Duffey Bros.; signed, April 24; filed, May 15; cost \$5,723.

Turk and Buchanan. Brick and carpenter work to four three-story frames; owner, H. F. Fortman; architects, John & Balczynski; contractor, J. H. Munster; signed, May 10; filed, May 11; cost \$25,678.

Turk and Buchanan. Plastering; owner, H. F. Fortman; architects, John & Balczynski; contractor, Arthur O'Brien; signed, May 10; filed, May 11; cost \$3,070.

Turk and Buchanan. Plumbing; owner, H. F. Fortman; architects, John & Balczynski; contractor, Wm. F. Wilson; signed, May 10; filed, May 11; cost \$3,300.

Union near Baker. To build; owner, Nicolas Silva; architect, J. B. Wuersch; contractors, The Home Building Co.; signed, May 10; filed, May 22; cost \$2,300.

Vallejo near Laguna. Two-story frame; owner, C. A. Marshutz; architect, J. E. Kraft; contractor, S. H. Kent; signed, May 28; filed, June 1; cost \$5,970.

Vallejo near Laguna. Plumbing and gas-fitting; owner, C. A. Marshutz; contractors, Duffey Bros.; signed, May 28; filed, June 1; cost \$4,200.

Vallejo near Polk. Carpenter, mill, etc.; owner, Earnst Lahgendorf; architects, Martens & Coffey; contractor, W. W. Ackerson; signed, May 9; filed, May 15; cost \$3,600.

Vermont near Yolo. To build; owner, Morris Wendt; architect, R. H. White; contractor, D. T. Pierce; signed, May 9; filed, May 15; cost \$4,938.

Vincent near Union. Two-story frame; owner, G. F. Ertola; contractor, Jean Ducasse; signed, May 24; filed, May 25; cost \$1,500.

Washington near Jones. To build; owner, Matilda Wolff; architects, Pissis & Moore; contractors, F. W. Kreling & Sons; signed, May 9; filed, May 10; cost \$12,900.

Washington bet. Lyon and Baker. A cottage; owner, Jas. Goveran; architect, Jos. P. Brady; contractor, John T. Hayes; signed, May 8; filed, May 10; cost \$1,825.

ALAMEDA COUNTY.

Brush near Thirteenth, Oakland. Two-story frame; owner, Albert Rowe; architect, W. Kirk; contractor, L. H. Long; signed, May 11; filed, May 12; cost \$7,245.

Caroline near Central Ave. To build; owner, F. Dohrman; contractors, Marcuse & Rimmel; signed, May 8; filed, May 12; cost \$2,700.

Caroline near Central Ave. To build; owner, J. C. Seigfried; contractors, Marcuse & Rimmel; signed, April 20; filed, April 20; cost \$3,950.

Fifth Assn. Tract, lot 9, block B, East Oakland. To build; owner, J. Williams; contractor, A. N. Frost; signed, April 17; filed, April 19; cost \$1,280.

Folsom and Tenth, Golden Gate Tract. To build; owner, John Chicon; architect, E. Depierre; contractor, T. A. Aymard; signed, April 24; filed, May 8; cost \$1,350.

Grove near Sycamore, Oakland. To build; owner, Mrs. R. Farley; architect, E. C. McManus; contractor, H. W. Schacker; signed, May 9; filed, May 10; cost \$1,500.

Haight Ave. Frame store; owner, P. C. L. Lawlor; contractor, A. R. Denke; signed, May 5; filed, May 9; cost \$1,545.

Howard Ave. near Oakland Ave., Oakland. To build; owner, J. F. Callahan; contractor, C. S. Whalin; signed, May 9; filed, May 9; cost \$1,300.

Moswood Tract, Oakland. To build; owners, C. H. and C. M. Dan Andker; contractor, K. Nelson; signed, May 10; filed, May 11; cost \$1,500.

Ninth near Harrison, Oakland. Two-story frame; owner, C. Terney; contractor, D. S. Brehant; signed, April 15; filed, April 17; cost \$6,050.

Pacific Ave. near Anglimbaugh. One-story cottage; owner, A. H. Wolf; contractor, A. R. Denke; signed, May 11; filed, May 11; cost \$1,250.

Paru near Alameda Ave. Remodeling; owner, A. Schmidt; architect, C. S. Shaner; contractor, A. W. Cornelius; signed, May 11; filed, May 12; cost \$2,165.

N. R. R. Ave near Walnut Ave. Three cottages; owner, Wm. J. A. M. Smith; contractors, Marcuse & Rimmel; signed, May 9; May 9; cost \$5,600.

San Pablo Ave. near 22d, Oakland. Two-story building; owner, J. M. Driscoll; architect, H. Burns; contractor, P. T. Nelson; signed, April 19; filed, April 31; cost \$4,752.

Tenth Ave. near Twentieth, Oakland. Two-story building; owner, W. H. Gregory; contractor, A. Burk; signed, April 3; filed, May 10; cost \$3,572.

Twelfth Ave. near 15th, Oakland. Seventeen-room cottage; owner, M. E. Bacon; signed, April 11; filed, April 17; cost \$3,200.

Washington near 11th, Oakland. Carpenter work; owner, F. W. Schultz; architect, C. Mau; contractors, Herbert & McLeod; signed, April 28; filed, April 28; cost \$11,637.

PLACERVILLE.

Masonic Temple and Building. To build; owner, Masonic Hall Assn.; architect, W. J. Cuthbertson; contractor, Beach & Co.; cost \$17,000.

The California Architect and Building News.

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SAN FRANCISCO, CAL., U. S. A.

VOLUME XIV.

JULY 20th, 1893.

NUMBER 7.

A MONTHLY JOURNAL DEVOTED TO THE ARCHITECTURAL INTERESTS OF THE PACIFIC COAST.

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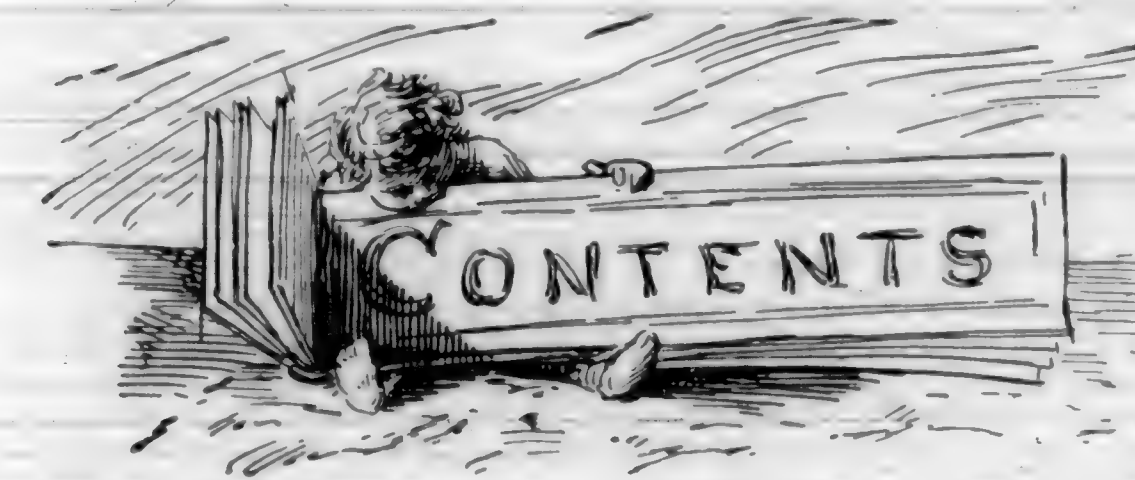
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5 Inch.....	7.50	20.00	37.50	65.00
6 Inch.....	9.00	24.00	45.00	78.00
7 Inch.....	10.50	28.00	52.50	91.00
8 Inch.....	12.00	32.00	60.00	104.00
9 Inch.....	13.50	36.00	67.50	117.00
10 Inch.....	15.00	40.00	75.00	130.00
11 Inch.....	16.50	44.00	82.50	143.00
12 Inch.....	18.00	48.00	90.00	156.00
13 Inch.....	19.50	52.00	97.50	169.00
14 Inch.....	21.00	56.00	105.00	182.00
15 Inch.....	22.50	60.00	112.50	195.00
16 Inch.....	24.00	64.00	120.00	208.00
17 Inch.....	25.50	68.00	127.50	221.00
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ESTABLISHED 1870. INCORPORATED 1889.

NOW IN THE FOURTEENTH YEAR.

W. J. CUTHBERTSON, President. OLIVER EVERETT, Secretary.

Remittances should be in the form of postal orders, payable to THE CALIFORNIA ARCHITECTURAL PUBLISHING COMPANY, and all communications addressed to the office of the Company, 408 California Street, San Francisco, Cal.



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THIS journal is prepared to take charge of rendering perspective drawings in pen and ink or color. Charges will depend on size and kind of drawing wanted.

Upon receipt of plan and elevations, with a description of what is wanted, we will submit our estimates for the performance of the work.

THE project for the California Mid-Winter Exposition has taken definite shape, and if the enthusiasm of its originators can be imparted to the community of the State, the scheme bids fair to be a success. The time is short, however, and the work to be done immense, and if all difficulties are successfully overcome, great credit will be due the promoters of the enterprise, and undoubtedly much permanent good will result to this State and city.

IN another part of our paper will be found a detailed account of the excuse of an accident at the old Ford's Theatre at Washington by which so many lives were lost.

The lesson which has been so dearly taught ought to have presented itself to the common sense of the United States without such an experience. Professional men are well aware of the necessity of employing only well educated and experienced men on any construction—but the public are not so, so it seems necessary that some such event (it is a misnomer to call it an accident) as that before us should take place to call the attention of the public to these facts.

A competent architect or engineer should always be placed to superintend all works, no matter how apparently trivial they may be, that are undertaken by the government.

This occurrence emphasizes the absolute necessity of having a body of men as architects who are thoroughly equipped in their profession—men who are compelled to pass an examination as are doctors and lawyers before they are admitted to practice. The Architectural profession involves more serious risks to life, health, happiness and general welfare, much more fold, than either of the other mentioned professions; and yet it is left to be recruited in a haphazard fashion from anyone who has the presumption to suppose he is fitted for it and is allowed to experiment on the health and life of the community.

ABUSES IN ELECTRIC WIRING.

BY GEO. P. LOW.

WHERE recently appeared in these columns an article upon the wiring of buildings for incandescent lights, in which was pointed out the utter helplessness of the layman in securing the conformity by wiring concerns in specifications for electric work and particularly was it indicated that the placing of an installation at three per cent drop in potential instead of at the two per cent loss so generally specified, will frequently net the electrical contractor hundreds of dollars saved in copper yet generally neither owner or architect will be able to detect the fraud. So completely has the universal ignorance in reference to the technical details of electric work placed the public at the mercy of a trade that is all but demoralized by irresponsible competition that property owners have in this "drop in potential" matter alone, paid thousands and thousands of dollars to wiremen for material contracted for yet which was never furnished. Nor in many instances, did the electrician intend to furnish this material when he contracted to do so. To the shame of the trade—for the just suffer with the unjust—it is a fact that of the truth of these statements there is not the slightest doubt.

Another fraud, equally flagrant with that described and which is closely akin to it, yet which, owing to the ease of detection, is not practiced so freely as it has been, consists in the substitution of a cheap and inferior grade wire for the high grade insulation that must always be used in concealed work. In localities not under the constant vigilance of an underwriters' inspector and where consequently, electrical matters all but take care of themselves, it becomes the simplest thing in the world to wire all circuits located in concealed and inaccessible places with an inferior wire and to splice on to the ends an approved insulation at all points where the wire is exposed to sight. Every experienced electrician—if he will—can cite instances in which this *felony* has been practiced. The word *felony* is used advisedly. If an electrician deceives an architect and defrauds an owner into paying for goods he did not deliver and never intended to deliver, it is a crime, but if he wilfully carries the fraud to the extent that the property is endangered, that it may be burned from the wretched work and lives may be lost thereby, then the act is of that enormity that it should be treated as a felony. No one knows better than the insurance inspector that buildings have been so wired and that should he relax his vigilance, others would be so wired again.

Property owners suffer further great loss from the fact that sufficient judgment is not exercised in determining the proper voltage for which a building should be wired. Here again as in "drop," it is impossible to lay down a general rule that can be followed even for roughly approximate results. It may be stated however that except in buildings containing isolated plants, the voltage is determined from the nature of the plant or central station that is to supply the current. Should it be desired, the building may be so wired that the wiring may be occupied by any commercial low potential system of lighting, or to go still further, any building may be so wired that its circuits can be occupied by any incandescent system, whether for series or multiple lighting, but the last named scheme would be unnecessary, ordinarily.

The usual systems for which a building may be wired are known as the 50-volt, 100-volt, 110-volt and the three-wire,

or 220-volt systems. As to the hazard presented by these systems they are about equally safe, and as far as the public is concerned they may be considered as merely different methods of distributing electric energy for commercial purposes. In the end they each accomplish the same thing, that is, by means of each, about 50 watts of electric energy is delivered to each 16 candle power lamp. But 50 watts may be 50 volts and one ampere, or 100 volts and one-half an ampere or 200 volts and one-quarter of an ampere, for the energy of a current of electricity is expressed in watts, which are derived in the product of the volts and the amperes that constitute that current. All 16 candle power lamps require about 50 watts to burn them, but these 50 watts may be variously derived as above stated, hence the voltage for which a building should be wired depends upon the voltage of the source of supply and upon the lamps to be used. Since lamp makers now furnish lamps of all voltages, the second consideration is immaterial. Clearly then the lower the voltage the higher the ampereage and as ampereage—not voltage—is the factor of electric energy that requires cross-section in the wire along which it travels, it is equally clear that the lower the voltage used, the greater must be the size of the wire run.

The point of greatest importance in determining the proper voltage is to derive the system that will meet all contingents and yet cost the least, for as will be shown, a vast difference exists in the amount of copper wire used by the various systems—and copper costs nearly 20 cents a pound.

In the accompanying table appear the ratios existing between the amount of copper used to effect any installation. In each instance, under the various voltages given, the results will be the same, each lamp will get the same amount of energy, the length of circuit is equal and the drop in potential is the same, yet it is plain from the table that for 50-volt work the amount of copper required will be 4 times that used in 100-volt work, 4.58 times that used in 110 volt work and 12.98 times that used in the three-wire system. Inversely the copper required if the installation was wired on the three-wire system, would be .077 of that used if the wiring was for 50-volts, .310 if 100-volts, and .375 if 110-volts.

RATIOS.

VOLTAGE	50 VOLTS	100 VOLTS	110 VOLTS	220 VOLTS
50	1.	4.	4.58	12.98
100	.250	1.	1.21	3.22
110	.218	.826	1.	2.66
220	.077	.310	.375	1.

It must be borne in mind that these figures are theoretical. They, however, hold strictly good in practice except in the smaller sizes of wires where the fire underwriters' requirements prohibit the use of wire smaller than number 14, B and S Gauge. The ratios which the smaller wires bear to the large ones vary very materially in each installation but it is entirely safe to say that the amount of wire uselessly placed can be measured only in tons. The writer has in mind one large western building in which nearly \$18,000 was thrown away absolutely, by reason of ignorance in selecting the proper voltage. Again as local electrical situations develop practices are becoming more uniform, and while only a year or two ago, owners were justified in wiring for 50-volts, at the present time the necessity for so doing is fast disappearing, particularly in large cities. Despite this many small and comparatively inexperienced electric wiring

concerns still maintain that the only safe course is to wire for 50-volts. Frequently it is true, but by far more frequently is it true that precisely the same results would be attained with the expenditure of from one-fourth to one-thirteenth of the weight of copper necessary to install 50-volt wiring.



To the Editor of the California Architect:

FROM the most remote period of antiquity the tower has been a distinguishing feature of architectural composition. The towers most conspicuous in history, have been located on elevated ground, either natural or artificial, presenting a wide and firm foundation. The tower may be taken as a typical illustration of the sentiments and feelings of mankind. Man has a sense of ambition and a desire to rise above his fellows, so also should the tower rise to a towering height above all surrounding objects. Burke says in his essay on the "Sublime and Beautiful" that "astonishment is that state of the soul in which all its motions are suspended with some degree of horror." This sentence describes our feelings upon seeing an illustration in a morning paper of the proposed design for the buildings and grounds intended for the Mid-Winter Fair, bearing the name of Leon Bonet. It seems to me that no architect would make such a burlesque as that shown.

Upon an examination of the proposed design it appears that the central portion of the space is to be excavated and leveled off, and the outer portions of the plot to be raised, and the buildings erected thereon. As appears by the published design, the buildings will be about fifty feet in height and the terrace will descend about one hundred feet to the level of the central portion. A tower is shown standing in this lower portion; by itself, and if erected upon elevated ground, this tower would make a creditable appearance, but when placed as shown in the design is suggestive of many things. The lowest section might be used as a crematorium, or else for the reception of a power house and electric plant, and the column above as a light beacon, but for the fact that it is too low, and the light would be confined to the inclosure. It might be intended as a monument, but the effect would be insignificant, if a person had to climb a hundred feet to get a full view of it; monuments are not generally inspiring when looked down upon; possibly some of our former enterprising citizens may take that view of the subject. If it was intended for use as a smokestack the situation is also unfortunate, as the wind sweeping over the surrounding buildings would be apt to cause a down draft. Many other possible purposes might be mentioned if space permitted.

In all seriousness is this design to be typical of the whole scheme?

Yours truly,

CRITIC.

FIFTH ANNUAL COMPETITION FOR THE ROBERT CLARKE TESTIMONIAL.

UNDER THE AUSPICES OF THE CHICAGO ARCHITECTURAL SKETCH CLUB OF CHICAGO.

CONDITIONS—The author of each design must execute all drawings without assistance, and non-adherence to these

conditions will cause the rejection of the design or designs in question.

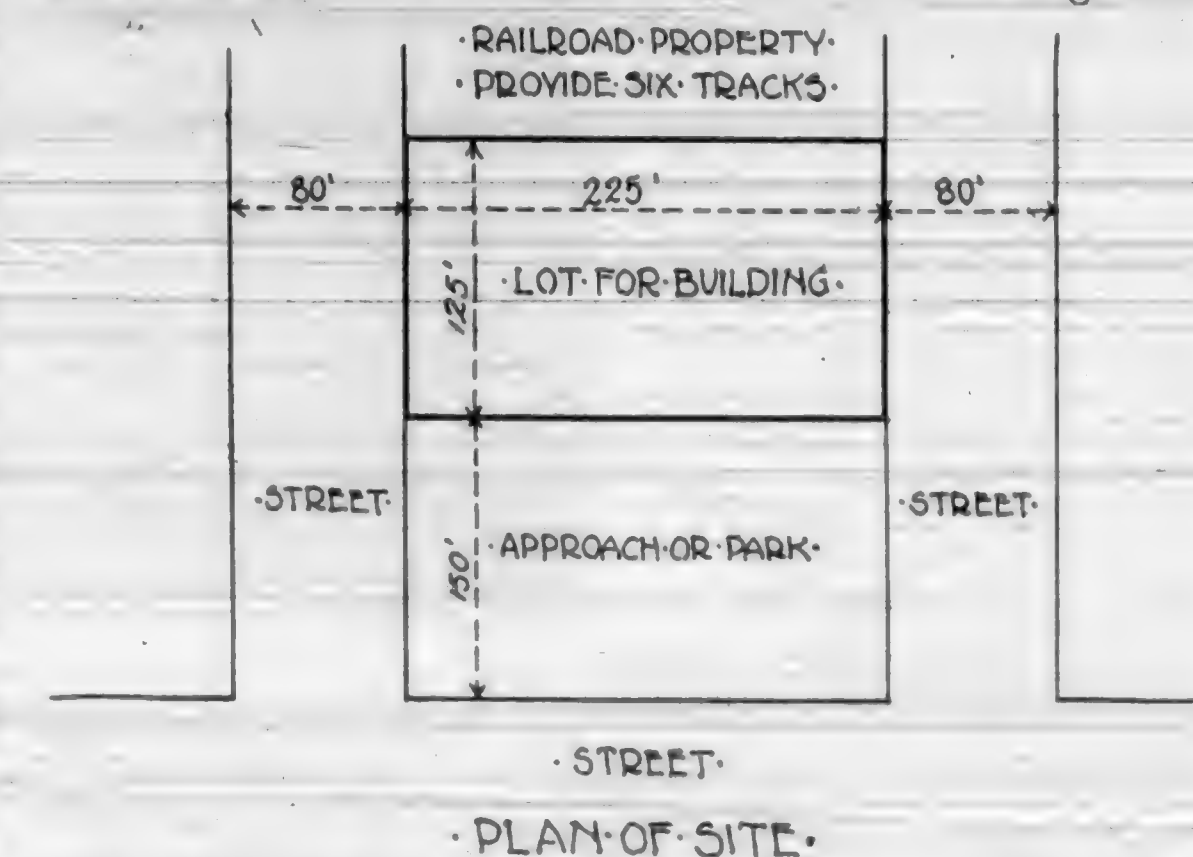
The competition is open to architectural draughtsmen under thirty years of age, residents of the United States and not practicing architects.

The awards will be made by the Adjudicating Committee on the "Robert Clarke Testimonial" competition, and are:

FIRST PRIZE	GOLD MEDAL.
SECOND PRIZE	SILVER MEDAL.
THIRD PRIZE	BRONZE MEDAL.

The prize drawings are to become the property of the Chicago Architectural Sketch Club.

PROGRAMME—A design for an elevated railroad terminal station for suburban traffic, in business centers of large cities.



The building is to have three general stories, the first or ground floor to contain a lobby, stairways, offices and all necessary conveniences.

The second floor is to be on a level with the platform and to contain one general waiting room, one waiting room for women and one for men, toilet rooms, ticket office, depot master's office and necessary stairway to reach the Railroad Co's offices on the third floor.

The building can be smaller than the lot outlined on the accompanying diagram, and the space in front is to be used as an approach or park.

The drawings are to consist of the following, their arrangement and the number of sheets being left to the discretion of the competitor:

First or ground floor plan, second floor plan, front and side elevations, transverse or longitudinal section, perspective and block plan. Size of sheets to be 22x28 inches.

Plans, elevations and section to be drawn to a scale of 1-16 of an inch to a foot, pen and India ink rendering. The perspective to be drawn from an 1-8 scale plan, rendering optional.

The drawings are to be marked with a motto or *nom de plume*, and accompanied by a sealed envelope marked in the same manner, containing the name and full address of the author, with the place and date of birth, and must be delivered flat to HUGH M. G. GARDEN, Secretary, Chicago Architectural Sketch Club, at the Club Rooms, 913 Masonic Temple Building, Chicago, on or before Monday, October 2, 1893. Charges to be prepaid. All drawings other than those receiving prizes will be returned at the expense of the contributor.

The Adjudicating Committee on the Robert Clarke Testimonial:

W. L. B. Jenny, Chairman.
Samuel A. Treat.
Chas. A. Coolidge.
D. H. Burnham.
Lorado Taft.

CALIFORNIA SLATE.

VERY few people, unless it be the architects, are aware that located in our "fair State" is one of the largest deposits of slate in the world. Its quality is second to none being a beautiful dark steel blue in color, tough and easily worked; it improves by exposure, and will not change color. In fact a true slate in every sense.

A better idea may be obtained of the magnitude of this slate deposit when one considers that the ledge is over 2000 feet wide, 1600 feet high from the bed of the American River—very likely as deep below the bed, with a length of two miles. A great mass, indeed, of fine material, good for all purposes where slate can be used.

This deposit is situated in El Dorado County, about two miles from the city of Placerville, on the American River, at the bridge on the road leading to Georgetown. This deposit has been opened and worked in a small way for the past six years. Recently a company was incorporated who purchased the deposit, and has erected an improved plant of machinery for quarrying and manufacturing the material



PLATE NO. 1.

they are split into slabs. These slabs are then placed under the saw, which is made of wire 1400 feet in length, running over numerous sheaves and passes over the slate slabs to be cut, the wire being held down by an automatic appliance on the slate. During the passage of the saw, sand and water are dropped on the part to be cut. Thus the slabs are cut to any desired size. From the saw the slate is conducted on an inclined railway to the splitting sheds, is there split and trimmed ready for shipment. Slabs for billiard tables, tiles, and other purposes are cut to size in the same way, by the wire saw and sand. The sand used in cutting, is what is known as "Quartz Sand," and is at hand in great quantities. From the fact of its not having travelled but a short distance, the cutting edges are fully preserved. It is remarkable to note how fast the wire will pass through the slabs of slate.

The parties who first opened these quarries worked them by the old process of blasting with powder, and handling it by the system carried on in Wales for the past hundred years, destroying thousands of

tons of the finest material through the action of powder. But by means of the machinery erected by the new company, almost all of the slate taken from the quarry is saved, and turned into a ready market.

The accompanying illustrations give one only a partial



PLATE NO. 2.

into roofing slate, slabs, etc. It is now in full operation, turning out several thousand squares of roofing slate each month, besides slabs and tiling in large quantities.

The accompanying plate No. 1 shows the largest of the quarries, there being two in operation. The machine

idea of these quarries. Plate No. 2 shows the quarry as it appeared when worked under the old system. Men may be seen in the act of drilling holes by hand in the slate to take the blast. Plate No. 3 shows the vast dumps of waste slate. These dumps are made up of the finest material broken into pieces, and almost worthless by blasting. But with such a



PLATE NO. 3.

mountain of slate the former owners of the quarries gave no thought to the material wasted. After a blast they selected the largest blocks or slabs, and the rest was consigned to the dump. Plate No. 4 shows the Channeling machine and one of the benches started by the new owners. This is in the largest quarry, which is an opening in the face of the hill, 250 feet in height, and over 400 feet in width. By the use of the machine, the quarry will present a series of steps or benches from bottom to top, six feet each in height.

It would be hard to estimate the value of this immense deposit. In Wales and the eastern states thousands of men are employed in the slate industry, some of the quarries in Wales employing from three to four thousand men each. Let us hope that ere long we may see as many employed in the slate quarries of El Dorado county.

Surveys and estimates have been made for an overhead rope-way to be erected by the new owners, to transport the slate to the railroad at Placerville, a distance of about two miles.

THE MINISTER—"Do you ever think of a higher life, Miss Emma?"

MISS EMMA—"No! papa is so much afraid of fire we always take the first flat."—*New York Herald.*

THE WESTINGHOUSE ELECTRIC COMPANY'S PROPOSED WORKS AT BRINTON, PA.

THE plans for the Westinghouse Electric Company's new plant at Brinton are nearly ready, says the *Electrical Review*. Of the 222 acres owned by the company, 23 will be covered by the works. The machine shop will cover a space of 750 feet by 250 feet; the warehouse 750 feet by 25 feet; the foundry 700 feet by 250 feet; and the boiler house 150 feet by 40 feet. Including other buildings, the area of the ground floors will be 7 3/4 acres, and including the second floors, 15 acres. The structure will be fire-proof stone and steel on the latest methods, and labor-saving devices will be employed to the fullest extent. Electricity as a motive power for labor-saving machinery will be utilized. It is estimated that the saving from the consolidation of the plants

will not be less than \$250,000 a year. Two hundred houses for the employees will be built at once.

MR. EDISON'S FUTURE WORK.

WHAT tireless inventor, Mr. Thomas A. Edison, has been again heard from as regards the problems he has under-

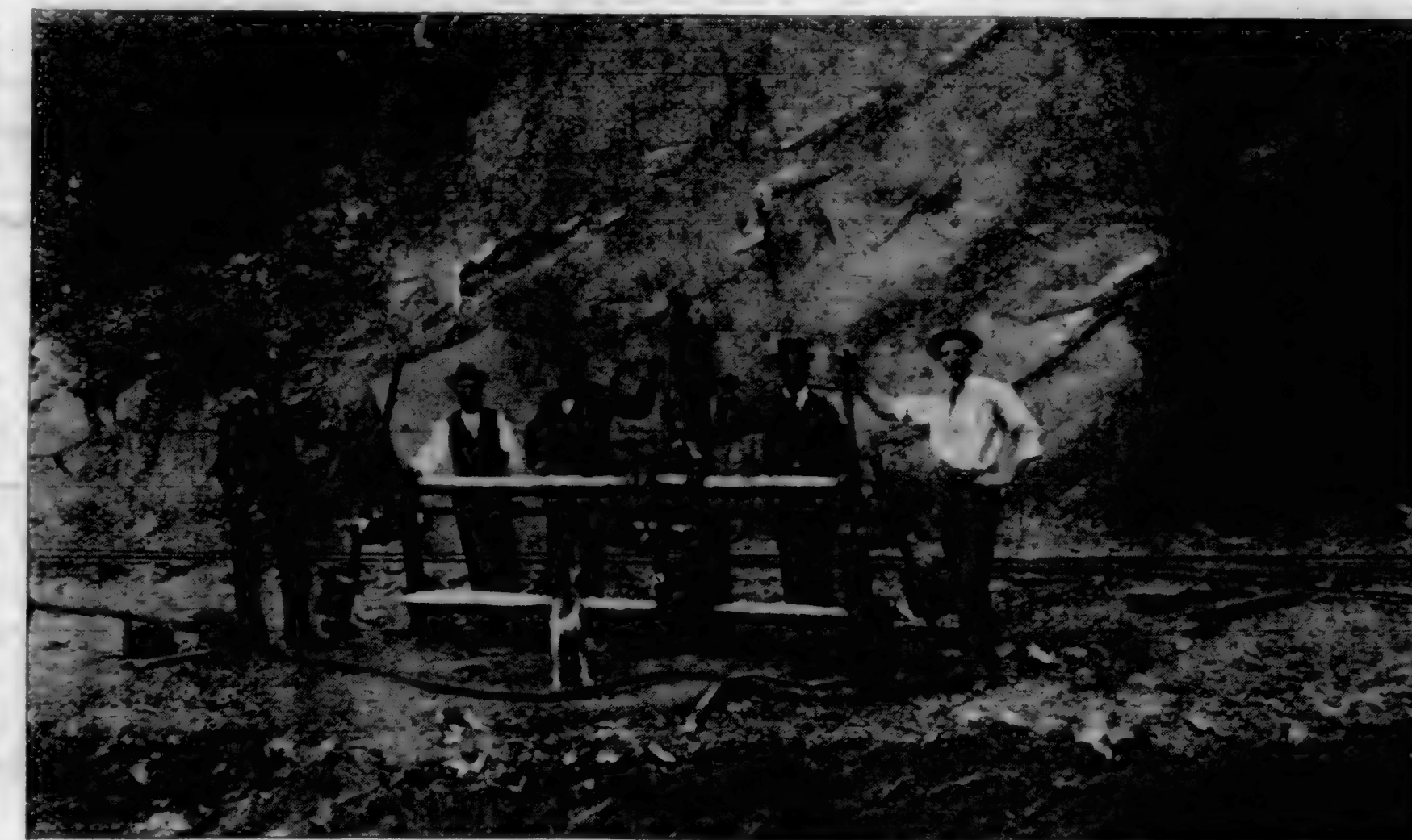


PLATE NO. 4.

taken to solve. He has not, by any means, given up his idea of devising ways and means of obtaining the energy of coal in a manner more direct than the present wasteful methods, and he promises to soon resume experiments along this line. He has had enough of the machinations of Wall street, however, and what he does hereafter, will be through his own enterprise entirely. He proposes to control all his future inventions himself, without the aid of Wall street.—*Electrical Age.*



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 Tower for the New City Hall, is by architect Frank T. Shea.

THE Kern County Land Co's Building at Bakersfield is by Henry A. Schulze, architect.

A residence for Mr. Wm. T. Garrett in Alameda, is by architect Fuller Claffin.

ACCIDENT IN THE BUILDING OF RECORD AND PENSION DIVISION, WAR DEPARTMENT, OLD FORD'S THEATRE, WASHINGTON.

LACK OF INTELLIGENT SUPERVISION OF UNDERPINNING.

FORD'S old theatre situated on Tenth street between E and F streets was erected by John T. Ford in 1857. Mr. James Gifford was the architect. After Lincoln's assassination the Government took possession of the building and arranged the interior for the Army Medical Museum. The back wall was, and is, considerably out of plumb. The interior, with probably the exception of the roof, was replaced, the floor being supported on cast-iron columns carrying iron beams with four-inch brick arches sprung between them. The back wall, which was out of plumb was strengthened by the addition of an interior wall and anchors tying the wall to the system of interior beams.

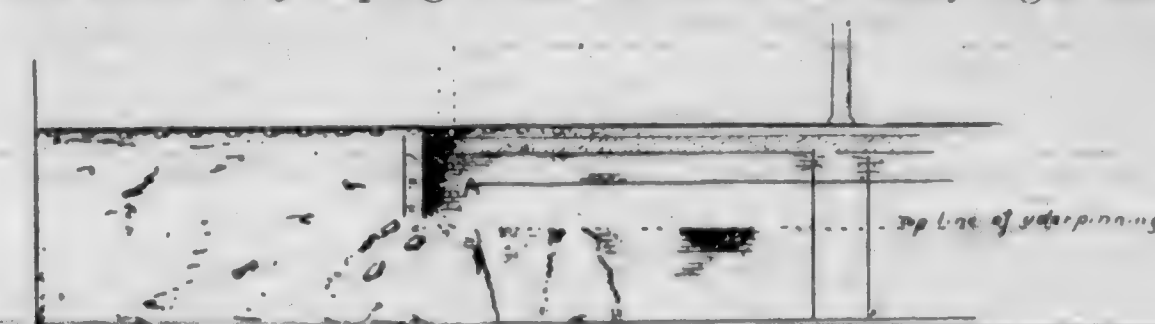
The first floor rests on a series of arches sprung from dwarf walls two feet eight inches high from footing to spring line. These arches began about twenty feet from the front wall; the floor on the intervening space rests on sleepers laid in an indifferent bed of concrete.

A small cellar was arranged in the back of the building in which the heating apparatus was located.

For several weeks workmen have been excavating a passageway from the front to the rear of the building. The central archway had been selected for this purpose. The dirt for this passage was removed, and the dwarf walls were underpinned for a height of about four feet. Curious as it may seem, they had practically completed the underpinning, having finished all the piers on which the columns rested except one, this one as an excavation was made beneath it, gave way, letting down the column marked A, pulling over the column marked B and precipitating the beams and brick arches which rested upon them on both the second and third floor to the first floor. The portion of the first floor which rested on 3' x 4' sleepers was carried into the excavation. The brick arch over the passageway did not fall. The roof, fortunately, was independent of the system of columns, reaching from wall to wall.

The clerks working on the different floors fell with the falling iron, brick, timber and desks, as there was no warn-

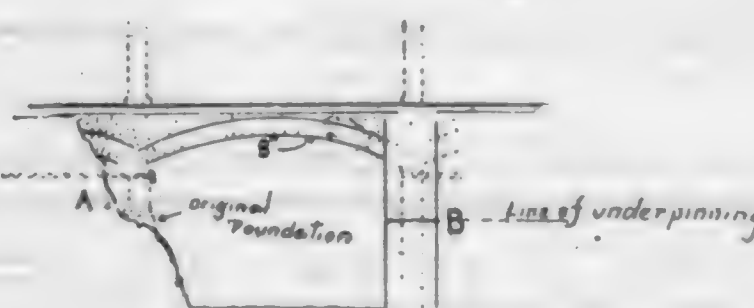
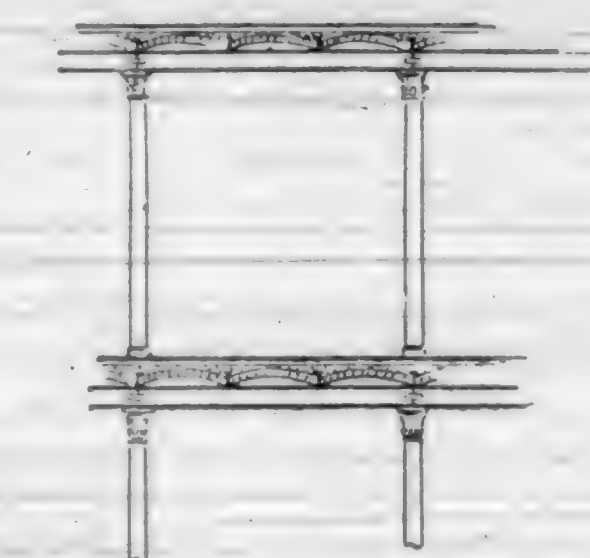
ing. Nineteen were killed by the fall, one who was safe, was killed by jumping from a window and sixty-eight were



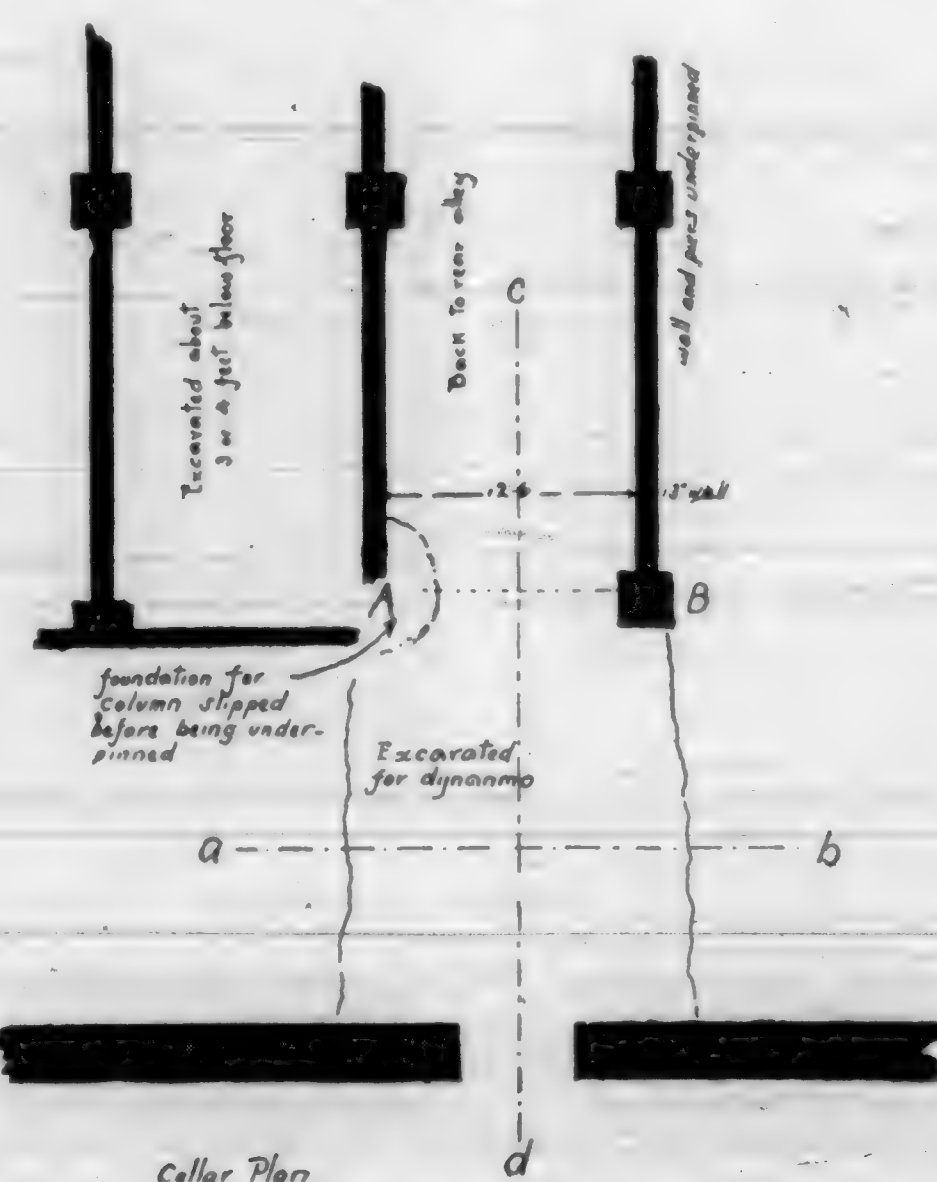
Section c-d

injured, three having died from their injuries. Twenty workmen were under the archway. The bricklayer, who was preparing to underpin the pier which gave way, feeling dirt fall on his neck, stepped back (out of harm's way) to brush it from his neck just as the crash came.

This accident has brought to light customs of the War Department, which if practised by an individual or a corporation would not only be considered criminal but would render them liable to prosecution and conviction for manslaughter. It seems that in work of this character, where the lives of many people are at stake, it does not employ proper expert supervision, and further, that it does not even get expert advice as to the proper methods of conducting such an important undertaking as underpinning a series of piers on which rested columns supporting two stories of brick and iron floors, 13x20 square feet, loaded with men, desks and papers. The methods adopted in carrying on this work show an entire lack of comprehension of the matter in

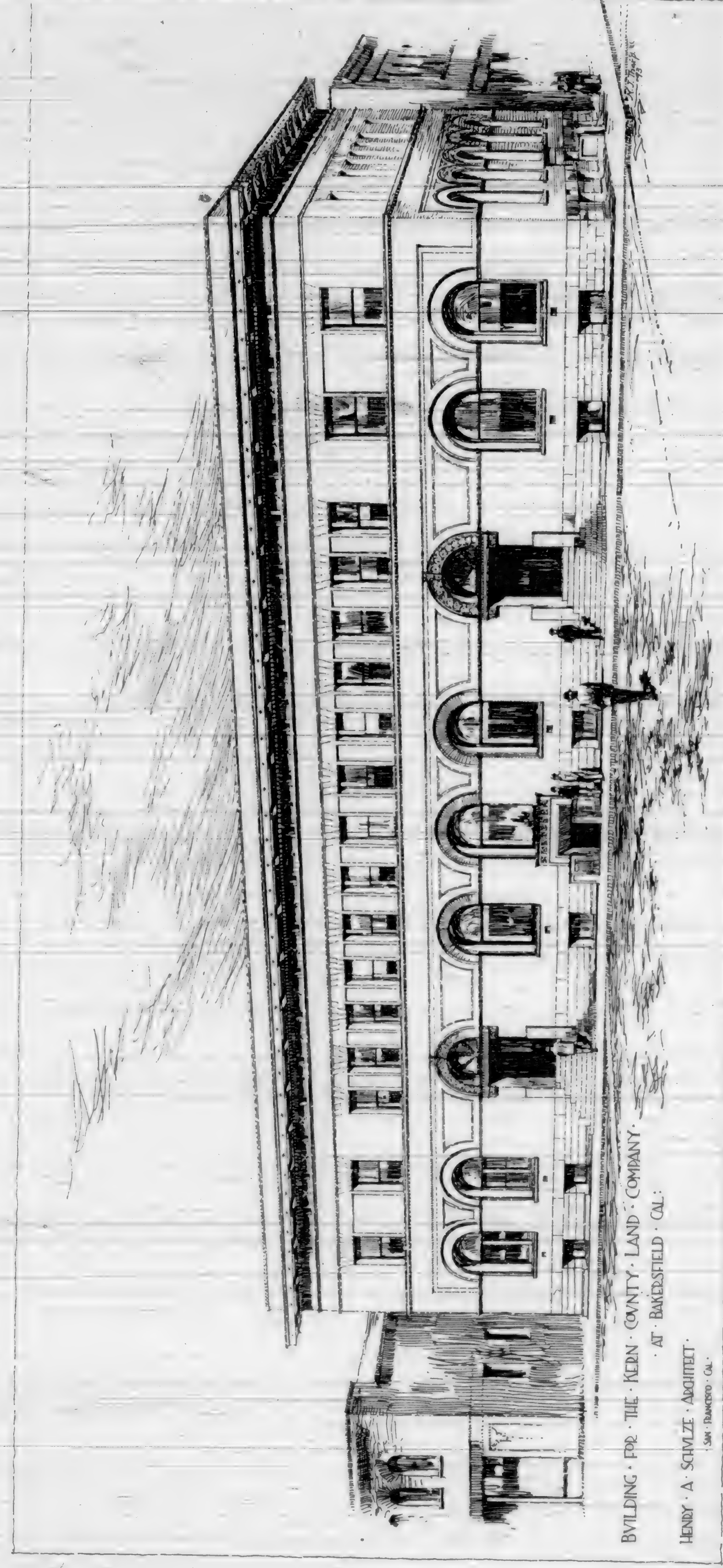


Section a-b



Cellar Plan





BUILDING FOR THE KERN COUNTY LAND COMPANY
AT BAKERSFIELD, CAL.
HENRY A. SCHULZE, ARCHITECT
SAN FRANCISCO, CAL.

CALIFORNIA ARCHITECT & BUILDING NEWS
SAN FRANCISCO.

BRITTON & REY PHOTO LITH.

VOL. XIV NO. 7 JULY 1893.

