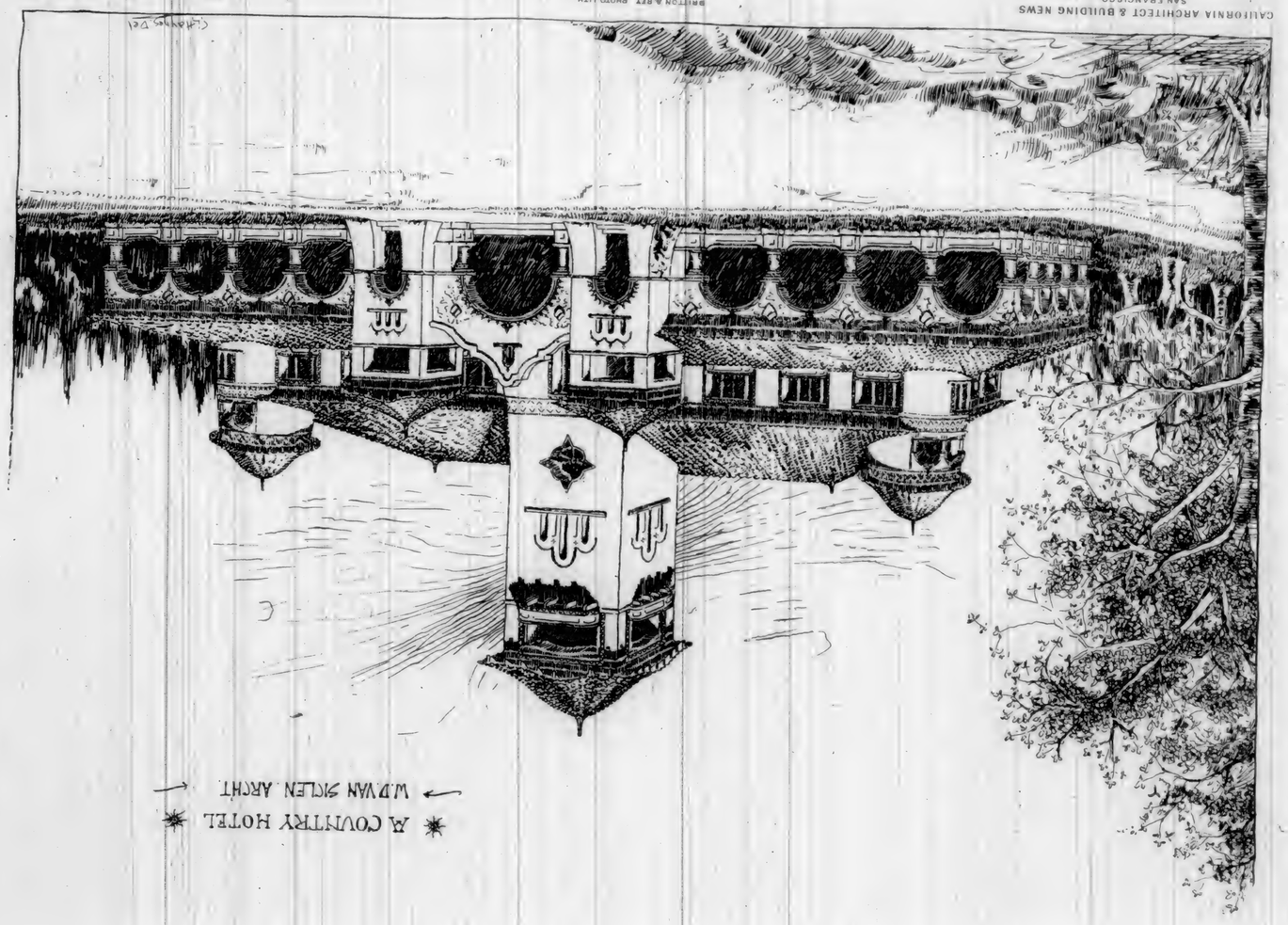
BRITTON & REY PHOTO LITH



✱ A COUNTRY HOTEL ✱

⟶ W.D.VAN SICLEN ARCHT ⟵

NOTICE OF MEETINGS.

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

SOUTHERN CALIFORNIA CHAPTER AMERICAN INSTITUTE OF ARCHITECTS, meets first Wednesday of each month at 114 Spring street, Los Angeles, Cal.
OCTAVIUS MORGAN, Pres. A. M. EDELMAN, Vice-Pres.
ARTHUR B. BENTON, Sec'y. AUGUST WACKERBARTH, Treas.

TECHNICAL SOCIETY OF THE PACIFIC COAST, meets first Friday of each month at Academy of Sciences Building.
C. E. GRUNSKY, Pres. GEO. W. DICKIE, Vice-Pres.
OTTO VON GELDERN, Sec. W. C. RALSTON, 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.

PRACTICAL SUGGESTIONS RESPECTING THE VENTILATION OF BUILDINGS.

A REPORT TO THE STATE BOARD OF HEALTH. BY JOHN H. KELLOGG, M. D.

GENTLEMEN:—In obedience to your request, I herewith present in brief form a few suggestions and fundamental principles which it is believed may be found of service in arranging the ventilating system of public and private buildings. The sole effort has been to embody, in as brief and lucid a form as possible, the information which the writer has gathered during some years of study of the subject, and such facts as he has gleaned from his own experience in planning and superintending buildings of some size for hospitals and other purposes. The only recommendation offered for the plans and principles suggested is that they have borne the test of practical experiment in a satisfactory manner, which cannot be said respecting all the schemes for the warming and ventilation of buildings which have been offered in works on sanitary subjects published within the last score of years. In justice to himself, the writer ought to say that he has not undertaken to make this paper exhaustive, or anything more than what its title indicates; neither has he undertaken to enter the field which properly belongs to the architect, but rather to present simply such suggestions and theories as he has himself found of practical value, and which are susceptible of general application, omitting altogether the minor details, which, however necessary to the adaptation of a general plan or principles to any particular case, are likely to be of little service except in the special conditions to which they are specially adapted. Seeking, then, to avoid as much as possible, redundancy of language and circumlocution in methods of presentation, let us begin at once the discussion of the things most essential in a correct scheme for the proper ventilation and heating of a building.

First of all, it may be stated that the ventilation and heating of a building must be considered together, for a successful working of each will depend upon the conditions of the other. It needs no argument to impress the fact that the amount of heat to be furnished in any given instance must depend very largely upon the amount of fresh air to be supplied per hour or minute. If the air of a room is to be changed four times per hour, certainly a proportionately larger quantity of fuel must be consumed than if the air is to be changed but once an hour.

The air supply of a room or building is generally determined by its size rather than by the number of persons by which it is to be occupied. This is certainly not a scientific method. A large room, occupied by but one or two persons, might possibly admit through cracks about windows and doors, and through its porous walls a sufficient air supply; while a small room, crowded with people, would require a very large provision for the supply of fresh air. The first thing, then, to be considered in the study of the ventilation of a room or building is the number of persons who are to occupy the space under consideration.

According to the most eminent sanitary authorities of England, each healthy adult person requires not less than three thousand cubic feet of air per hour. This statement is based upon careful experiments, which showed that if the normal quantity of carbon di-oxide contained in the atmosphere, which is two parts to every five-thousand parts of air, is increased to three parts in five thousand of air, the limit of tolerable impurity is reached; that is, if the amount of CO_2 is increased by respiration to a larger proportion than that stated, namely, three parts in five thousand, the air thus contaminated becomes productive of disease. It must not be supposed that the poisonous properties of such air are due to the chemical compound CO_2. Air may contain a much larger proportion of CO_2 provided this compound is derived from purely chemical sources, without injury being apparent. But when the CO_2 is furnished by the respiration of animals, there is association with it a subtle poison, which has been shown by the eminent physiologist, Prof. Brown-Sequard, to be one of the most powerful poisons known, exceedingly minute quantities being sufficient to produce death.

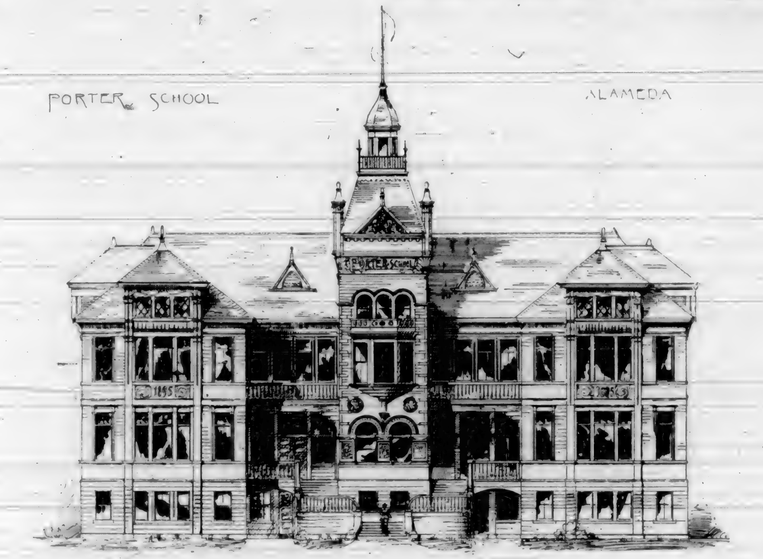
A little computation based upon the experiments referred to will show that Dr. Parke's figures are certainly not extravagant. With each breath, each human being exhales into the air one cubic inch of carbon di-oxide, and a definite amount of organic poison associated with it. As air naturally contains two cubic inches of carbon di-oxide in every five thousand cubic inches of air, and as an additional cubic inch of CO_2, or three cubic inches in five thousand cubic inches of air is the limit of safety, it is evident that each breath renders unfit for further use, five thousand cubic inches, or approximately, three cubic feet of air. The average person breathes eighteen times per minute; consequently each person spoils or renders unfit for further use, 3x18, or 54 cubic feet of air per minute; 54x60 gives us, as the amount of air which each person contaminates per hour, 3240 cubic feet, a slight excess over the amount named by Prof. Parkes. Some other authorities place the line of dangerous contamination at a somewhat higher point, and consequently they require a smaller amount of air. Avoiding either extreme, we may place the amount of air required per hour for each healthy person, at about 2400 cubic feet. It must be understood, however, that this rule applies to healthy persons only, and it is not applicable to hospitals or buildings occupied by infirm or sick persons. For such institutions, and for manufacturing establishments in which the air may be contaminated by chemical or other processes, at leased double the amount named, or 5000 cubic feet of air per hour must be supplied. In any given case then, to ascertain the amount of air required per hour, we have only to multiply 2400 or 5000 as the case may be, by the number of persons to be supplied with air. The number of persons taken should be the maximum rather than the minimum number which the room or building is calculated to accommodate, for the evident reason that the capacity of a ventilat-

ing shaft, duct or opening, may be easily diminished, but cannot be so readily increased.

Having determined the amount of air required in any given case, the following important practical points remain to be determined:—

1. The circulation of the fresh air.
2. The area of fresh-air inlets.
3. The area of foul-air outlets.
4. The location of foul air outlets.
5. The construction and location of foul-air ducts.
6. The location, sectional area, and height of ventilating shafts.
7. The question of artificially assisting the draft by means of a pressure or suction fan, or by means of heat in the ventilating shaft.

We will consider each of these several questions in the order named.



ADDITION TO PORTER SCHOOL, LAVER & MULLANY AND W. J. CUTHBERTSON, ARCHITECTS.

1. A room cannot be properly ventilated without an efficient arrangement for the circulation of air. For this there must be for each space to be ventilated at least two openings: one for the admission of fresh air, the other for the removal of impure air. Nothing could be more absurd than the frequently witnessed attempt to ventilate a room by supplying it with a ventilating shaft connected with proper ducts and foul-air openings, but without any provision for a supply of fresh air. Such an arrangement is eminently well calculated to produce dangerous drafts through the opening of windows, and the impression that any attempt at efficient ventilation is liable to result in failure. It is also essential for the proper distribution of the air admitted to a room that the air shall be heated before it enters room or building, or at the moment of entering.

2. To determine the required area of fresh-air inlets, the amount of air required and the velocity at which the air is to travel must be known. Air heated to a temperature of 40° F. above that of the external air will travel at the rate of about five feet a second when entering a room of ordinary height, from which it may escape readily. If the escape of air from the room is assisted by means of an efficient ventilating shaft, the velocity of the incoming air may be safely computed as ten feet per second. If the fresh air enters the room at a temperature so high as 120° F. to 150° F., the velocity of the air-current will be increased to 12 or 15 feet per second. Better practical results are obtained by large volumes of moderately heated air, traveling at a moderate speed, than from super-heated air traveling at a high velocity.

Calculating the velocity of the incoming air at ten feet per second, it is only necessary to divide the total amount of air required per second by ten, and the result will represent the area of free opening required. An allowance of at least forty per cent must be made when the openings are covered by register-plates. For example: Suppose the amount of air needed is 240,000 cubic feet per hour, sufficient to supply 100 persons with the minimum quantity of air. This requires 66⅔ cubic feet of air per second. Sixty-six and two-thirds divided by 10 is 6.6⅔. Adding 40 per cent for obstruction of register-plate, give us 9.3 square feet as the combined areas of the register-covered openings for admitting fresh air.

3. The number and location of the fresh-air inlets is not a matter of so great importance as is commonly supposed. If the fresh air enters the room at a temperature 20 to 40 degrees higher than that of the air of the room, it will go at once to the ceiling, no matter where or how admitted, and will thence gradually diffuse itself through the room, its course being chiefly determined by the location of the windows and of the foul-air exit openings. I think it preferable that the fresh-air inlet should be in the wall, near the floor, rather than in the floor, as it is by this means better protected against the accumulation of dust and dirt.

In the case of large buildings containing several floors and many rooms or apartments to be supplied with air, it is best not to undertake to carry a separate fresh-air duct to each room, but to equalize the air pressure within the building by leading large ducts to the common hall or corridor of each floor, supplying each room of each floor through open transoms or register plates placed near the ceiling. This arrangement secures a constant supply of pure air in the halls or corridors from which each room can draw, and establishes a constant current in the direction of individual users of the air, the foul air being directly removed from each separate room by its own duct. This plan secures the greatest possible safety from the dissemination of contagion or the dispersal of any element capable of producing dangerous contamination of the air.

4. Experience has shown that in order to prevent unpleasant draft, the velocity of the air at outlet openings should not be greater than five feet per second. The necessary area of outlet openings is readily obtained then, by simply dividing the total amount of air to be supplied per second by five. For example, suppose a room to be ventilated is calculated to accommodate thirty persons, each to be supplied with 2400 cubic feet of air per hour. The aggregate amount of air to be supplied will be 30x2400 or 72,000 cubic feet. Dividing this amount by 3600, the number of seconds in an hour, we have 20 cubic feet as the amount required for each second. Dividing this by 5, the velocity allowable, we have 4, which represents the necessary area for the foul-air outlets in square feet.

It must of course be understood that the figures thus obtained represent actual opening, and not an opening partially obstructed by a grate or register. As before stated, forty per cent must be allowed for when the opening is covered by an ordinary register.

As regards the proportion of the area of the foul-air exits to the area of fresh-air inlets, it may be said that outlets should be at least double the area of the inlets, since a velocity of ten or fifteen feet per second may be allowed without injury or inconvenience at the inlet, although such a velocity would not be tolerable at outlet openings.

TO BE CONTINUED.

EXPOSITION OF INDUSTRIES AND FINE ARTS OF MEXICO, 1896.

THE Federal Government has obligated itself to admit *free of duty* all materials and machinery for any buildings to be erected on the Exposition grounds, or the entire buildings imported for erection there, and, furthermore, it is expected that all building material used in construction of exhibition buildings and buildings entire for exhibition will be carried by the Railroad at one-half the regular tariff on same.

To this very important fact we desire to call the attention of Builders and Dealers and Manufacturers of Lumber, Machinery, Hardware, Glassware, Metal Roofing and Building Material.

It can readily be seen that there is open to our merchants a large and profitable field for their manufactures, taking in consideration the fact that at present there is in Mexico a great dearth of building material, the prices of which, under the tariff, were high. The exposition grounds will embrace an area of about 600 acres, and there will be ample space provided for the construction of all varieties of buildings of a desirable nature aside from the official buildings of the National and Foreign departments and buildings used by concessionaires, and at the close of the Exposition the material used in the construction of these buildings will find ready and quick sale to Railroads, Haciendas, Merchants, etc. It is projected that a large hotel on the American plan shall be erected on the grounds for the accomodation of such visitors as prefer the comforts of American civilization, and it is understood that this hotel will remain permanent, it being located in the suburbs, in close proximity to the city.

The Exposition will undoubtedly create a large demand for portable buildings, such as cabins, kiosks, stations, ticket offices, etc., which could be easily transported and readily sold at the close of the Exposition.

As contracts will be made for the erection of all of the main buildings of the Exposition as well as the buildings

for concessionaires and others connected with the Exposition, a great and legitimate profit could be realized by the formation of a stock company which could handle all of these contracts, and parties desiring to subscribe to the company could in lieu of cash furnish merchandise and material.

The advantage derived from the liberal privileges granted by the Mexican Government to our merchants on the occasion of this Exposition are such as should be eagerly sought for by those who have the interests of the advancement of American commerce at heart.

In the interest of the exhibitors of the United States a company has been formed at San Francisco, Cal., under the style of the American-Mexican Exposition Company, A. K. Coney, Consul General at San Francisco, President, of whom any further information regarding the Exposition can be obtained.

BOOKS AND PERIODICALS.

LIPPINCOTT'S MONLHLY MAGAZINE for March, contains one of Captain Charles King's delightful stories called "A Tame Surrender" for the complete novel. Among other interesting articles "A Glimpse of Cuba" will be found timely from the fact at the present time Cuba is undergoing one of her usual revolutions, or perhaps it would be more proper to write attempted revolutions.

INDUSTRY, a monthly magazine comes to hand for March containing a number of articles not only of general interest, but particularly so for the resident of this coast. "Constructive Engineering on the Pacific Coast," as well as "Ship Building" will be read with pride as showing the advance that is being make in the science of Engineering and Mechanical Arts on this Coast.

THE GOULD'S MANUFACTURING CO.—This company have just issued a handsome illustrated catalogue and price list of pumps and hydraulic machinery for every service. The headquarters of this establishment is at Seneca Falls, New York, with warerooms 16 Murray street, New York City. Having been founded in 1848, it is fair to suppose that their pumps and other machinery must be of great value to account for the large increase of their works, Woodin & Little, 312–314 Market street, San Francisco, is one of their principal branch agencies.

A number of tables giving capacity of round tanks and cisterns, dimensions, weight, etc., of wrought iron welded pipe horse power shafting will transmit; weights and measures, estimate of values of foreign coins, and many others will add greatly to the value of this catalogue as a book of reference.

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.

SUFFICIENCY OF STATEMENT OF MECHANIC'S LIEN.—A mechanic's lien stating that the labor was done and material furnished in improving the separate real estate of a married woman is sufficient to charge the property.

Reece v. Haymaker, Supreme Court Penn., 50 At Rep. 404.

CONTRACT WITH OWNER NECESSARY IN LIEN FOR MATERIALS.—A person claiming a right to a lien for labor or material furnished in the construction of a building must show that it was performed or furnished at the instance of the owner or his agent.

Sellwood Lumber & Mfg. Co. v. Monell, Supreme Court Oregon, 38 Pac. Rep. 66.

STATUTE FOR MECHANIC'S LIENS LIBERALLY CONSTRUED.—The statute by which a mechanic's lien is created was designed to protect material men, contractors and laborers; and, although in derogation of the common law, its provisions should be liberally construed, to the end that the intention of the legislature may be realized, and substantial justice done to all affected by its provisions.

Hill v. Alliance Bldg. Co., Supreme Court S. D. 60 N. W. 752.

LIABILITY FOR INJURIES TO ADJOINING OWNER.—One who erects a chimney on his land is liable for injuries to an adjoining owner by its fall, when it is not the result of inevitable accident, or wrongful acts of third persons.

Cork v. Blossom, Sup. Jud. Court of Mass., 38 N. E. Rep. 495.

DEFECT IN DESCRIPTION OF PROPERTY CURED BY EVIDENCE.—Where, in a building contract, on which a mechanic's lien is claimed the only description of the property was embodied in the statement that it was "to be erected on Avenue E, just north of U. S. Post Office building, in the city of San Antonio, Tex.," the defect, if any, in such description, is latent, and may be aided by extraneous evidence.

The order of the introduction of evidence is within the discretion of the court.

Myers v. Maverick, Ct. Civ. App. Tex., 27 S. W. Rep. 1083.

WHEN TAKING NOTE DOES NOT WAIVE MECHANICS' LIEN.—In the absence of an agreement or anything indicating an intention to the contrary, a mechanic or material man does not waive his right to file and enforce a lien merely by accepting for the amount of his claim the promissory note of the owner, at his request, and for the sole purpose of suspending his right to foreclose such lien for sixty days, at which time such note, according to its terms, matures.

Neither will the mere assignment of such note operate as a waiver or extinguish the lien, nor prevent the assignee from obtaining a decree of foreclosure, provided he has the note, and offers to surrender it at the trial for cancellation.

Hill v. Alliance Bldg. Co., Supreme Court S. D., Co. N. W. Rep. 752.

RIGHTS OF ASSIGNEE OF CONTRACT.—Where a vendor has made advances to the purchaser to enable him to erect a building on the land under an agreement that he should be secured by a lien, specific performance in favor of the assignee of the purchaser will be decreed, subject to the vendor's judgment for the money so advanced.

The assignee of an oral contract for the purchase of land, which has been partly performed, has the same right to specific performance as the assignor.

Dodge v. Miller, Supreme Court, 5th Dpt., 30 N. Y. S. 726.

EFFECT OF FAILURE TO AFFIX NOTARY'S SEAL TO CLAIM FOR LIEN.—The omission of a notary to affix his seal to the jurat in a notice of claim for a lien cannot be cured, at a trial of an action to foreclose the lien, by the introduction of parol evidence that the claim was in fact sworn to; and where the seal is affixed, and the name of the notary is omitted, parol evidence to the effect that the claim was in fact sworn to is equally incompetent; and the omission in each case renders both claims for a lien insufficient, when filed, to constitute constructive notice of the existence of such liens.

Such failures do not defeat the lien, but operates to postpone it to purchasers or incumbrances in good faith, without notice, whose rights accrued after the time within which the verified statement should have been filed. They are not available to one with actual notice of the existence of such lien, takes a quit-claim deed to the property, subject to all valid liens, under circumstances that fail as a matter of law to make him a purchaser in good faith.

Hill v. Alliance Bldg. Co., Supreme Court S. D., 60 N. W. 752.

BUSINESS MOSAICS.

CITY BUILDING NEWS.

Army near Valencia. To build; owner, A. Chamberlin; contractor, F. V. Acker; signed, Feb. 21; filed, Feb. 23; cost $4000.

Berry near 5th. Brick warehouse; owners, Somers & Co.; contractor, W. P. Smith; cost $8000

Bush near Buchanan. Alterations and additions; owner, Patrick and Mrs. A. Walsh; contractor, John L. McLaughlin; signed, Feb. 15; filed, Feb. 18; cost $1120.

Bush near Laguna. To build; owner, Henrietta Ann Forbes; architect, R. H. White; contractor, John G. Adams; signed, Feb. 16; filed, Feb. 18; cost $6800.

Brannan near 8th. Two-story stable; owners, McNab & Smith; architect, Emil John; contractor, Geo. H. Walker; signed, Feb. 18; filed, Feb. 19; cost $8740.

Brannan near 5th. Rough carpenter work; owner, D. Nugent; architect, J. J. Clark; contractor, Cameron & McDonald; signed, March 6; filed, March 6; cost $6970.

Brannan near 5th. Brick for church; owner, D. Nugent; architect, J. J. Clark; contractor, San Joaquin Brick Co.; signed, March 7; filed, March 7; cost $7.87½ per thousand.

Birch Ave. near Buchanan. All work on a building; owner, Mrs. T. N. Van Ness; architects, Wright & Sanders; contractors, Liebert & Hoffman; signed, Jan. 3; filed, Feb. 20; cost $2300.

Bush near Laguna. Plumbing; owner, Henrietta A. Forbes; architect, R. H. White; contractor, G. C. Sweeney; cost $980.

Broadway near Stockton. To build; owner, N. Pucinelli; architect, E. Depierre; contractor, P. A. Antonelli; signed, March 9; filed, March 9; cost $9,000.

California and Jones. Brick and stone building; owner, Nob Hill Development Co.; architects, Buzbee & Gash; contractor, D. Jordan; signed, March 4; filed, March 11; cost $200,000.

California near Baker. Alterations and additions; owner, Margaret Skaine; architect, J. P. Brady; contractor, James O'Sullivan; signed, Feb. 20; filed, Feb. 25; cost $2165.

California Ave. near 30th. To build; owner, Nils Linberg; contractor, J. Gillogley; cost $1475.

California near Polk. Additions and alterations; owner, Samuel Moffatt; architect, H. W. Lillie; contractor, Geo. R. Lang; signed, Feb. 25; filed, Feb. 27; cost $2525.

Castro near 18th. To build; owner, Mrs. Mary Kipp; architect, John T. Kidd; contractor, C. W. Dodge; signed, March 1; filed, March 2; cost $3,600.

Capp near 16th. To build; owner and builder, G. Ratto; cost $6000.

Church and Liberty. To build; owner, Mrs. Mary E. Crawford; architect, W. H. Wharff; contractor, Jacob Schuler; signed, March 2; filed, March 8; cost $4225.

Creek Lane (Erie street) near Folsom. To build; owner, Albert A. Miller; contractor, H. R. Schmuckert; signed, March 9; filed, March 9; cost $2640.

Cora near Visitation Ave. To build; owner, Mrs. C. Bergold; architect, Geo. Strolmeir; contractor, H. A. Tessmer; signed, Feb. 7; filed, Feb. 15; cost $1150.

Cole near Waller. Six two-story frame residences; owner, William Hinkel; architect, Wm. Koenig; days work; cost $24,000.

Corbett Ave. near Hattie. To build; owner and builder, A. Murry; cost $2000.

Davis and Washington. Carpenter work on brick building; owner, Estate of A. Ivancovich; architects, Plesis & Moore; contractor, J. W. Wissinger; signed, Feb. 11; filed, Feb. 23; cost $8675.

Davis near Washington. Carpenter work, etc., on brick; owner, Issac Kohn; architects, Plesis & Moore; contractor, J. W. Wissinger; signed, Feb. 11; filed, Feb. 23; cost $5500.

Douglass near 17th. Additions; owner, Cal. Brewery Co.; contractor, A. Huller; cost $5000.

Diamond and 25th. Two one-story frame cottages; owner and builder, T. A. Born; cost $6000.

Diamond near 25th. Two-story frame dwelling; owner and building, T. A. Born; cost $3700.

Eighth Ave. near California. To build; owner, Mrs. Z. Hawkes; contractor, A. W. Goss; signed, Feb. 13; filed, Feb. 14; cost $1960.

Elizabeth near Hoffman. To build; owner and builder, J. Anderson; cost $2000.

Fell and Masonic Ave. To build; owner, Charles H. Phillips; contractors, White Bros.; cost $6000.

Fell and Masonic Ave. Additions and alterations; owner, Charles H. Phillips; cost $1000.

Folsom near 7th. Alterations and additions; owner, Harris Samuel; architects, Salfield & Kohlberg; contractors, Petterson & Person; signed, Feb. 20; filed, cost $1651.

Fifth Ave. near Clement. To build; owner, Ernest Webner; architect, A. J. Barnett; contractor, Ed. Mooney; signed, Feb. 27; filed, March 1; cost $1500.

Franklin and California. Concrete and cement work; owner, Edward Coleman; architect, W. H. Lillie; contractor, Geo. Goodman; signed, Feb. 28; filed, March 2; cost $2375.

Franklin and California. Plumbing; owner, Edward Coleman; architect, W. H. Lillie; contractor, H. Williamson; signed, March 5; filed, March 6; cost $962.50.

Geary near Leavenworth. Excavations, etc.; owner, Percy Klien; architect, Emil Depierre; contractor, James A. Wilson; signed, Feb. 27; filed, Feb. 28; cost $1700.

Golden Gate Ave. near Laguna. Additions; owner, Mrs. Annie Fallon; architects, Martens & Coffey; contractors, Ackerson & Peterson; signed, Feb. 23; filed, March 4; cost $2180.

Hyde near Broadway. To build; owner, Cornelius Harrigan; architect, J. C. Colbron; contractor, F. W. Maurice; signed, Feb. 5; filed, Feb. 13; cost $5300.

Hyde nerr Clay. Plumbing work; owner, Laura Hirshfeld; architects, Plesis & Moore; contractor, R. Rice; signed, Feb. 23; filed, Feb. 23; cost $1048.

Jackson near Locus Ave. Two-story brick; owner, Belle F. Lee; architect, Newton J. Tharp; contractors, Ingerson & Gore; signed, Feb. 12; filed, Feb. 15; cost $2852.

Jackson near Steiner. To build; John Sprunance; architect, J. H. Littlefield; contractors, Blanchard & Clark; signed, Feb. 15; filed, Feb. 19; cost $5345.

Kentucky near Sierra. To build; owner, Hans Kroeger; architect, H. Geilfuss; contractor, F. Klatt; signed, Feb. 28; filed, Feb. 28; cost $1402.

Kingston Ave. and Mission Sts. To build; owner, John Wiese; architects, Martens & Coffey; contractor, F. Weincehl; signed, March 1; filed, March 4; cost $4080.

Laguna near Vallejo. Concrete foundations; owner, Caroline S. Townsend; architect, W. H. Wharff; contractor, Chas. Quast; signed, March 4; filed, March 4; cost $1620.

Laguna and Jackson. Hydraulic Ram Elevator; owner, W. F. Whittier; architect, E. R. Swain; contractors, Cahill & Hall Elevator Co.; signed, March 1; filed, March 6; cost $1225.

Lott near Grove. To build; owner, Richard English; architects, Martens & Coffey; contractor, I. J. Walsh; signed, Feb. 20; filed, March 6; cost $2988.

McAllister near Devisadero. To build; owner and builder; H. Keenan; cost $500.

Mission and 24th. Repairs and additions; owner, Thusenelda E. Ingram; architect, T. W. McKee; contractor, Ed. Bowyer; signed, Feb. 18; filed, Feb. 19; cost $3100.

Mission near Main. Four-story brick; owner, Eliza T. Grosh; architect, William Patton; contractor, W. A. Butler; signed, March 7; filed, March 8; cost $32,500.

Octavia near Greenwich. Cottage; owner, Mr. Tracy; contractor, J. W. Smith, cost $2000.

Octavia near Greenwich. To build; owner, W. C. Latham; architect, H. T. Bestor; contractor, Christian Andreson; signed, March 9; filed, March 11; cost $1400.

Pacific Ave. near Octavia. Capenter, masonry, plumbing, etc.; owner, Mrs. Elizabeth Dore; architect, Samuel Newsom; contractor, Richard Sinnott; signed, Feb. 12; filed, Feb. 16; cost $7375.

Presidio Reservation. Excavations, etc., for boiler house; owner, U. S. Government; architects, Percy & Hamilton; contractors, W. H. Flaherty; signed, Feb. 19; filed, Feb. 21; cost $7000.

Presudio Reservation. Fort Point 1st brick dynamite building; owner, U. S. Government; architects, Percy & Hamilton; contractor, D. T. Francoiger; signed, Feb. 25; filed, Feb. 25; cost $1400.

Point Lobos Ave. near 5th Ave. Macadamizing, etc.; owner, La Societe Francaise, etc.; architect, Emile D pierre; contractors, Warren & Malley; signed, Feb. 13; filed, Feb. 14; cost $2100.

Polk and Elm. Cottage; owner, R. H. Lyod; architect, B. E. Henriksen; contractors, Doyle & Son; signed, March 1; filed, March 2; cost $3280.

Polk and Sutter. To build; owner, M. De Young; architect, Clinton Day; contractor, Robert Frost; signed, March 5; filed, March 6; cost $31,500.

Pierce near Greenwich. Alterations and additions; owner, F. G. Eickhorst; architect, Emil John; contractor, Alfred Neville; signed, March 4; filed, March 8; cost $1250.

Second Ave. near California St. Cottage; owners, Lee Kahn and wife; contractors, White Bros.; signed, March 4; filed, March 4; cost $2088.

Second Ave. near Clement. To build; owner, H. Frolman; architect, H. Kraetzer; contractor, B. J. Taylor; cost $3500.

Second Ave. near Lake St. To build; owner, Thos. G. Parker; architect, H. J. Kraetzer; contractor, Byron I. Taylor; signed, Feb. 15; filed, Feb. 15; cost $2800.

Steiner near Haight. To build; owner, Mrs. E. Winters; contractor, Casper Zwerlein; signed, Feb. 12; filed, Feb. 15; cost $2210.

Spear near Howard. One-story brick; owner, Janet C. Haight; architects, Herman & Swain; contractor, Daniel D. Cameron; signed, Feb. 16; filed, Feb. 18; cost $2575.

Spear near Howard. Brick and mason work; owner, Janet C. Haight; architect, Herman & Swain; contractor, J. O'Sullivan; signed, Feb. 20; filed, Feb. 20; cost $1848.

Shotwell near 15th. To build; owner, S. LeRoy; architect, F. Vandervecken; contractor, S. F. Building Co.; cost $4500.

Sixteenth and Church. Three-story frame and brick building and two-story frame in rear; owner, Joseph Harvey; architects, Havens & Toepke; contractors, Ackerson & Paterson; signed, Feb. 28; filed, March 4; cost $8100.

Taylor near Green. To build; owner, H. H. Christiansen; contractor, A. Waller; cost $2500.

Third Ave. near Clement. Cottage; owner, Geo. Allen; contractor, H. Rowe; cost $1800.

Tenth Ave. near Pt. Lobos. Cottage; owner, G. Schmelser; contractor, G. T. Paff, cost $1800.

Tenth near California. To build; owner, C. Stoltz; contractor, D. A. McIntosh; cost $2000.

Twenty-third near Folsom. To build; owner, Jas. H. & L. A. Anderson; contractors, Hyde & Cox; signed, March 4; filed, March 6; cost $1850.

Twenty-fourth and Sanchez. Cottage; owner, P. Gumm; contractor, R. Frost; signed, March 2; filed, March 2; cost $1828.

Thirtieth near Laikley. To build; owner, Peter Braunbeck; contractor Robert Frost; signed, March 2; filed, March 7; cost $1500.

Washington near Scott. To build; owner, Agnes J. Jones; architect, H. D. Mitchell; contractor, J. Norris; signed, March 2; filed, March 7; cost $4614.

Webster near Pine. To build; owner, L. R. Ellert; architects, Shea & Shea; contractor, James Mooney; signed, Feb. 12; filed, Feb. 20; cost $5400.

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

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OUR Eastern exchanges contain full descriptions of the Orchard street disaster and the attempts to place the responsibility therefor on the shoulders of the proper persons. The facts of the case are as follows: An interior cross wall of brick was to be carried by an iron girder, resting on the side walls of the building. The bearing was not sufficiently strong to carry the weight, and gave way with fatal results. The plans for the building had been passed on and approved by the Department of Buildings of New York City, and theoretically would have been within the limits of safety. Owing to the poor quality of bricks used, no bonding, and poor mortar laid in freezing weather, the disaster occurred. The Coroner's jury blamed the deputy inspector who passed the plans as being grossly careless, but the Grand Jury absolved him from blame.

The real responsibility appears to belong to the person supervising the carrying out of the work, and the Grand Jury who reported on the matter recommended "that no building be erected hereafter, or changes made to an existing building, without the employment of a duly 'licensed' architect who shall draw the necessary plans and specifications of the same and superintend the same from first to last during its progress" and also recommended that "no person be allowed to practice the profession of architecture, make plans and specifications for a building or superintend its erection unless duly licensed for that purpose and registered."

Public indifference and private greed and shortsightedness have so far hindered or entirely thwarted the efforts of the architectural profession to exclude by law, the incompetent and incapable practitioners, and it will take more than one fatal accident to interest the public in the important subject of safe building.

The law presented to our last California Legislature, designed to meet the requirements of the more complicated construction of advancing civilization, by restricting the right to practice architecture to those proving themselves competent, fared no better than the law proposed to the Legislature that preceded it, nevertheless the profession men, who see the necessity of some such law for the safety and protection of the public, will continue their crusades in this and other States, until they succeed in their meritorious

efforts to raise the proficiency of the architectural practioner to such a standard that fatal accidents will no longer be cause by faulty construction and imperfect execution. This can only be done by prohibiting the grossly incompetent from practicing.

THE MANUFACTURING INTERESTS OF THE PACIFIC COAST.

A PAPER READ BEFORE THE MANUFACTURERS AND PRODUCERS CONVENTION, BY MR. OSCAR LEWIS.

Mr. President and Gentlemen of the Convention:—

To every man connected with the manufacturing interests of the Pacific Coast (and especially to those engaged in the Building Trades) the necessity of this Convention is but too plainly apparent; and the varied interests here represented show to us all that it is not only one industry that is threatened with disaster, if not annihilation, but that all are alike passing through the most disastrous business depression that has ever visited California. We all of course expect to take our share of these periodical upheavals in industrial and financial circles that sweep over our entire country, but we know, that aside from this, manufacturing has been on the down grade for some years past, and each year sees a greater number of firms, either going out of business altogether, or becoming importers in part at least, of the various articles in which they deal.

"It is a condition, not a theory that confronts us." We cannot disguise it. The time has arrived, when not only the employer, but employe, the mechanic, the farmer, the merchant and the real estate owner, in fact all who have a hope in what California ought to be, must stand together, and putting aside our petty differences, work in harmony for the maintaining and building up of the various industries of this Coast.

In connection with the Building Trades let me give you some examples of selfishness, or short-sightedness, of some of our real estate owners and contractors—and I may truthfully say that a good many of them brought little more when they came to this State, than they did when they came into the world. But before doing so, I will say that our local architects, builders and workmen will compare favorably with any that can, or have been, imported from any part of these United States. We fall short only in the art of combining modern conveniences with modern ugliness, and some of us are bold enough even to attempt that; but at all events there is no reason why San Francisco mechanics should not build San Francisco's buildings.

Yet the iron stair cases and ornamental iron work, costing in the neighborhood of $80,000, of one of our large buildings on Montgomery street, was made by Winslow Bros., of Chicago. It was not even bid on here, as in the opinion of the Chicago architects of that building, it could not be done here. I do not think it could have been done here as poorly. It was condemned and would have been rejected, but for the delay such rejection would have caused. This fact, and that great boon to botch workmanship—lead and putty—pulled it through.

The carpenter, or mill work, the entire wood finish was also made in Chicago, shipped out here and nailed in position by a local contractor; and at this time over one-half of the wood-working, machinery and mill hands of San Francisco were idle, and hundreds of worthy men were standing in line for hours in the rain to obtain a card that would entitle them to work in the Park for a dollar a day.

Why only recently, in the midst of our excitement over the laudable "Valley" Railroad enterprise, we found time to send a small job of iron work to Winslow Bros. of Chicago, while iron-workers walked the streets of San Francisco idle. This reminds me of Artemus Ward, who was in favor of enlisting and sacrificing all his wife's relatives, including his mother-in-law to put down the Rebellion.

And yet, Mr. President and Gentlemen of the Convention, we are all more or less to blame in this matter, for it seems to be a California fashion to shout for the opposition and travel on the old line. Even at this moment, when all Californians seem to be banding together in their effort to build up the industries of the State and City, the Eastern drummer—or human toredo—is at work, boring around the architects' offices with his samples of interior wood finish, seeking to lay his plans to procure wood work that will soon be required for our large business buildings and residences that are now in course of construction.

Owners and Contractors of the Coast, give the mechanics of California a chance: If you want the Eastern woods that are not grown here, import the lumber and have the work done here, unless the Railroad treats you as it does the wire nail industry—charge sixty cents a hundred on wire rods or the raw material, and thirty cents on the finished article.

Gentlemen, it does seem to me that those of us who have invested large amounts of money in rolling-mills, shipbuilding works, wire works, foundries and wood-working plants, have made a mistake, when the great iron and steel manufactuer of Pennsylvania, can be fully represented and equipped on this Coast, by a very affable gentlemen, occupying a 7x9 office, containing a roller top desk and a telephone; and while thousands of extensive Eastern manufacturers and wholesale houses, are represented by nice young men with alligator skin grip-sacks, who adorn themselves with diamond pins, four-in-hand ties, Willie-boy coats and custard pie shoes, while the people of San Francisco sigh for a "Half-Million Club," so do I sigh for a half million clubs.

But enough of complaint: Admit it all, and what is the remedy? Boycott Eastern made goods? No! rather build up our own State and let others build up theirs.

It has been said that the high rate of wages prevents manufacturing. While it is true that wages here are higher than in the East, we hope that the rates in the East may be raised rather than ours lowered. However, notwithstanding the fact that both labor and materials are higher here, our greatest difficulty is local prejudice, and the limited market we have to supply: For we know that the cost of manufacturing is largely governed by the quantity of a given article manufactured.

It is to be hoped that this Convention will go far towards convincing the people of this Coast, without regard to age, color, or previous condition, that their true interest lies in standing loyally together, and so far as possibly supplying their wants from the home market. Use the California produced article, even if it costs a little more, for the extra cost will come back to you tenfold in the general prosperity of the State.

A competing railroad has been advocated. There would be some merit in that, for to us manufacturers it would be no lingering death, and we could rent our plants as storehouses for the reception of its cheap freight and Eastern made goods that would flood San Francisco.

After thirty-six years residence in California, I believe in her resources; I have faith in her people, and I feel that with the commencement of the Valley Road, and the general awakening of the people, the revival of our mining, agricultural and industrial interests, a new era of prosperity will be felt over our entire State and Coast: If on the other hand, the people will not awake, will not protect their own interests from the tomahawk of the middle-man, or the grasping greed of our soulless monopolies, then at least save us from the hands of the Health Officer, and give us an elegant funeral, as will, in the language of Jimmie McGinn, make it a pleasure for us to die; dig the grave wide, dig it deep, and place it face downwards so that we may gaze on Chicago.

CODE OF ETHICS,

IN CONFORMITY WITH THE BEST STANDARDS OF PRACTICE, RECOMMENDED TO ITS MEMBERS BY THE BOSTON SOCIETY OF ARCHITECTS.

Adopted by the Society, February 1, 1895.

SECTION 1. No member should enter into partnership, in any form or degree, with any builder, contractor, or manufacturer.

SEC. 2. A member having any ownership in any building material, device, or invention, proposed to be used on work for which he is architect, should inform his employer of the fact of such ownership.

SEC. 3. No member should be a party to a building contract except as "owner."

SEC. 4. No member should guarantee an estimate or contract by personal bond.

SEC. 5. It is unprofessional to offer drawings or other services on approval and without adequate pecuniary compensation.

SEC. 6. It is unprofessional to advertise in any other way than by a notice giving name, address, profession, and office hours, and special branch (if such) of practice.

SEC. 7. It is unprofessional to make alterations of a building designed by another architect, within ten years of its completion, without ascertaining that the owner refuses to employ the original designer, or, in event of the property having changed hands, without due notice to the said designer.

SEC. 8. It is unprofessional to attempt to supplant an architect after definite steps have been taken toward his employment.

SEC. 9. It is unprofessional for a member to criticise in the public prints the professional conduct or work of another architect except over his own name or under the authority of a professional journal.

SEC. 10. It is unprofessional to furnish designs in competition for private work or for public work, unless for proper compensation, and unless a competent professional adviser is employed to draw up the "conditions" and assist in the award.

SEC. 11. No member should submit drawings except as an original contributor in any duly instituted competition, or to secure any work for which such a competition remains undecided.

SEC. 12. The A. I. A. "schedule of charges" represents minimum rates for full, faithful, and competent service. It is the duty of every architect to charge higher rates whenever the demand for his services will justify the increase, rather than to accept work to which he cannot give proper personal attention.

SEC. 13. No member shall compete in amount of commission or offer to work for less than another, in order to secure the work.

SEC. 14. It is unprofessional to enter into competition with or to consult with an architect who has been dishonorably expelled from the "Institute" or "Society."

SEC. 15. The assumption of the title of "Architect" should be held to mean that the bearer has the professional knowledge and natural ability needed for the proper invention, illustration, and supervision of all building operations which he may undertake.

SEC. 16. A member should so conduct his practice as to forward the cause of professional education and render all possible help to juniors, draughtsmen, and students.

ARMY OFFICERS AS SUPERINTENDANTS OF PUBLIC BUILDINGS.

THE old scheme, of having officers of the United States Army superintend the construction of public buildings, has been revived, according to the Washington papers; and the usual frightful examples of the slowness of progress on such buildings, under the ordinary methods, are brought up to show how much more quickly they would be finished if the military arm took hold of them. To complete the alluring picture, we are told that the Congressional Library, which is nearing completion, under military direction, and has certainly been rapidly built, is "a gem of art," as if all we had to do, to scatter gems of art speedily around the country, was to transfer the Supervising Architect's office to the Army Headquarters. It is hardly necessary to say that this agitation is decidely pernicious. That the Congressional Library is a fine building, well and quickly built, we acknowledge with pleasure, but, notwithstanding the remarkable and exceptional qualifications of General Casey and Colonel Green for architectural undertakings, it is quite capable of improvement as a work of art, and the rapidity with which it has been carried out is due as much to the energy with which the officers cut off Congressional interference, and demanded appropriations, as to any hidden capacity of the military mind for making bricks and stones jump into their places without assistance; while the Pension Building, the other great example of military architecture, though quickly built, for the same reasons, is about as far from being a "gem of art" as any structure within our knowledge. The fact is that the people who can build most rapidly, skilfully and beautifully are the people who have devoted their lives to learning how to do so, namely, the architects; and the sooner the public stops dodging around them, and trying to utilize politicians and generals and carpenters and what not, in place of them, the better off it will be.—*The American Architect and Building News.*

PRACTICAL SUGGESTIONS RESPECTING THE VENTILATION OF BUILDINGS.

Continued from March Number.

FIVE. When a room is heated wholly or chiefly by warm air, the distribution of heat in the room will be almost wholly controlled by the location of the foul-air outlets. The natural course of the air current is this: the heated air

rises to the ceiling, spreads out, and coming in contact with the outer walls which are lower in temperature than the inside walls, especially the windows, it is cooled and falls to the floor. It is evident then that as the outer walls and the proportions of the room adjacent to them are necessarily the coldest part of the room, the circulation of the air through the room and the proper distribution of the heat will be facilitated by placing the foul-air openings along the outer walls and preferably under the windows. If the foul-air outlets are placed in an inner wall or at the floor near an inside wall, one effect will be to draw toward this opening warm air which ought to have been utilized in warming the outer walls. Another effect, and one of the most disagreeable features attending this method of placing the foul-air outlets, is that the air which has been cooled by contact with the windows and outer walls and by its greater specific gravity has fallen to the floor, will be drawn the whole distance across the floor to the opening on the opposite side, thus constantly maintaining at the floor a stratum of cold air. An arrangement of this sort is a very frequent cause of cold floors, and consequently cold feet, and the resulting headaches from which the occupants of such a room are almost sure to suffer.

The foul-air outlets should be placed as near the floor as possible. The opening may be in the base board or in the floor itself The only objection to the latter method is the collection of dust which is likely to be swept into the opening.

6. The ventilating ducts communicating with the foul-air outlets should have a sectional area equal to the free area of the openings with which they communicate. This capacity should be maintained until the duct reaches the ventilating shaft, and should be increased if several turns are made in the duct as each square turn has the effect to diminish the velocity of the air current nearly one-half. Square turns should never be made, and the ducts should be enlarged at the angles where a turn is necessary. In case a duct must be carried for some distance, its capacity should be increased fifty or even one hundred per cent to compensate for the great amount of friction occasioned by distance. The ventilating ducts should of course be made tight. For this purpose it is necessary that they should be lined with metal or some other durable material. Even well-seasoned lumber will shrink and open up large cracks, by which the efficiency of the duct will be very materially diminished. It is also a wise plan to construct ventilating ducts of some non-combustible material, or at least to line with such material as a caution against fire.

Only ducts coming from the same room or floor should be connected with a common ventilating shaft. Each story must have its own foul-air shaft; otherwise the counter drafts occasioned by the opening of doors and windows, especially in moderate weather, or the adverse influence of winds, will be certain to lead to contamination of the air of one room by the air of another room with which it is in communication through the common shaft.

It is of the utmost importance to supply each floor, and if possible each room, with its own independent ventilating shaft running as directly as possible to the open air without any connection with other ducts.

7. The location, sectional area, and height of the ventilating shaft, are questions of very great interest and practical importance. As regards location, it is always better that the ventilating shaft should when possible be located within the building, as in an inside wall; this insures a temperature equal to that within the building, and so secures a constant and positive draft, whenever the building is supplied with artificial heat. If, in addition, the ventilating shaft can be located adjacent to the chimney, or if the smoke can be carried up through it by means of a boiler iron stack or a stack constructed of sewer pipe, a still higher temperature of the air in the ventilating shaft and hence a better draft will be secured.

The sectional area of the shaft will depend upon the amount of air to be removed and the height of the shaft.

By a careful study of the tables of Parke and others, I have been able to construct a simple formula which is of great practical service in determining these two questions. The following is the formula: The square root of the height of a shaft, multiplied by the square root of the difference in temperature between the air in the shaft and the outside air, divided by four, equals the velocity of the air in the shaft in feet per second. In using this formula, it is of course necessary that two of the quantities should be known. The difference in temperature is a pretty constant factor. In fixing this the minimum difference should of course be chosen rather than the maximum, as a ventilating shaft which may have an ample capacity in extreme cold weather when the great difference between the external and internal air would secure a powerful draft, would be quite insufficient to supply the necessary amount of air in moderate weather. I have chosen as a basis for obtaining the minimum difference id temperature, the temperature of 45° F. for external, and 70° F., the usual internal temperature. As a temperature much higher than 45 degrees, doors and windows are likely to be opened, and hence the working of any ventilating apparatus would be interfered with. The difference between 45° and 70° is 25, which may be fairly taken as a basis for calculation.

The height of the ventilating shaft is usually determined by the architect, who considers it with reference to the architectural effect in the building. When this is given, we have but to take the suqare root of the known height of the chimney, multiplied by the square root of 25 which is 5, divide the product by 4 and you have as a result the velocity at which the air will travel in the shaft in feet per second. It only remains to divide the total number of cubic feet to be removed per second by the velocity of the air per second, and the result is the sectional area of the shaft which is sought. Let us take a simple example by way of illustration. Given the height of the shaft 50 feet, and the amount of air to be furnished 72,000 cubic feet per hour or 20 ft. per second, the formula would work out thus:—

$\frac{\sqrt{50}\times\sqrt{25}}{4}$=Vel. in fit. per sec.=9 fit. $\frac{20}{9}$=2.22 sq. ft., the necessary sectional area of the shaft.

If the area of the ventilating shaft is given, the height being left to be determined, it is only necessary to know the amount of air to be removed, the difference between the internal and external temperatures, and to fix upon the velocity at which the air shall travel. The sectional area of the shaft must often be determined by the conveniences of construction, being governed by the plan of the building. A very safe rule is to make the sectional area of the ventilating shaft equal to the combined sectional areas of all the ducts leading into it. It is possible to secure efficient ventilation with a ventilating shaft which is somewhat smaller than this, but this is unquestionably the safest rule to follow. To determine the rate at which the air will travel, it is only necessary to divide the amount of air in cubic feet required per second, by the sectional area of the shaft expressed in feet. With these data the determining of the required height is a very simple problem, using the formula which has already been given. An example will make this entirely clear.

Let us suppose that the conditions are as follows: air is required for 48 students. At 2,400 cubic feet per hour for each, the total amount needed would be 115,200 cubic feet per hour, or 32 cubic feet per second. The combined area of ducts of sufficient size to allow the transmission of this air at the rate of 5 feet per second would be 32÷5=6.4 square feet, and the velocity will of course be 5 feet. The question we have to solve is what would be the necessary height of the ventilating shaft to secure this velocity, the difference in temperature being 25° F. The solution of this very practical problem is extremely simple. Bearing in mind the formula we will let H represent the height of the shaft, D the difference between the internal and external temperatures, and V the velocity of air per second; $\frac{\sqrt{H}\times\sqrt{D}}{4}=V$. Substituting the quantities which are known we have the following: $\frac{\sqrt{H}\times\sqrt{25}}{4}=5$. Reducing we have $5\sqrt{H}=20$; $\sqrt{H}=4$: H =16; that is, the height of the shaft required by the conditions named would be 16 feet. In most instances it is more convenient to employ a smaller shaft and one of greater height. Let us suppose such a case, in which the amount of air required per second is the same, namely, 32 cubic feet per second, and the sectional area of the shaft 4 square feet instead of 6. Dividing the amount of air required per second by the area of the shaft we have 8 as the velocity per second (32÷4=8). Our formula then would be as follows: $\frac{\sqrt{H}\times\sqrt{25}}{4}=8$, reducing we have $5\sqrt{H}=32$; $\sqrt{H}=6.4$; H =40.96. In this case the height of the shaft would be practically 41 feet. By the same method the necessary height of shaft for any given area may be readily determined.

From an economical standpoint, other things being equal, it is far better to secure increased efficiency by increasing the size of the ventilating shaft rather than its height, for the obvious reason that the capacity of a shaft for removal of air increases directly with the increase in sectional area; whereas the velocity of the air current increases in direct ratio with the square roots of the heights of the shaft, thus requiring that the height of a shaft shall be quadrupled to double its efficiency, while it is only necessary to double its sectional area to secure double efficiency. There is also a loss by increase of friction and of cooling surface, and in the disproportionate increase of expense of construction. The cost of increasing the efficiency of a shaft one hundred per cent., by increasing the velocity of the air current, will be very much greater than in securing the same result by increasing its sectional area.

Cases occur, of course, in which the stronger draft secured by increased height of shaft is essential to the efficient working of a ventilating system, or the accomplishment of a specific purpose.

8. When possible to do so it is unquestionably preferable to so plan a system of heating and ventilation that it will operate efficiently by the aid of "natural draft" only. Such a system is as nearly automatic in its action as any ventilating system can be made. A draft which depends upon a mechanical apparatus, as a pressure or suction pan, or even upon a steam coil or other form of heating apparatus in the ventilating shaft, is very likely to be found defective when efficiency is most needed. I have visited many large institutions provided with large ventilating fans, and have never yet found one in which the apparatus was in constant operation. In many cases it had been inoperative for years and was not in running order. In one case I was informed that the fan was started "whenever the odors in the ward became so strong as to be very noticeable." To my nose the odors were at that moment very strongly pronounced, and yet the fan was not in operation. The noses of managers and attendants become accustomed to odors to the presence of which they are constantly exposed, so that they cease to be a proper means of testing the condition of the air.

Some years ago the writer visited a large hospital, the air supply of which was wholly dependent upon a fan which was a pressure blower, and hence so constructed that when the fan was not in operation the opening for the entrance of air through the fan was very small. The fan was placed in the mouth of a tunnel nearly eight feet in diameter, just about the proper size for supplying the air to the hospital at a moderate velocity, but the opening from the fan had a sectional area of only about four square feet. The hospital had been in operation for some three years. The fan had never been in operation since the opening day, as it was run by a separate engine and was so far from the building as to require the attention of a special engineer when in use, and consequently the air supply of the hospital, which was filled with sick people of all classes, was limited to the small opening described, there being no other. It is certainly unwise to so plan the ventilating system of a large building as to make the inmates absolutely dependent upon the efficient working of a mechanical apparatus of this sort. Mechanical and other means of assisting "natural draft" are, nevertheless, valuable; and, in some instances, necessary accessories to a system of natural ventilation, especially for large buildings, as they furnish a means by which the disturbing influence of winds may be more or less completely overcome. The writer has had two large fans in use in buildings under his care for several years, as occasion has required. As usually constructed and employed, however, these appliances are almost useless from their inadequacy and inefficiency. This is especially the case when heat in the ventilating shaft is depended upon as a means of securing a strong draft, in consequence of the use of an amount of heating surface quite inadequate for the work required.

Ventilating shafts which are exposed on all sides, and even those which are placed in the outer walls of buildings must be heated or furnished with a fan to insure a constant draft. The amount of heating surface usually provided in such cases, is ridiculously small, and is not infrequently so placed as to be of very little value. When it is recalled that all the air supplied to a building must pass through the ventilating shaft, it will be apparent that a considerable amount of heat must be imparted to this air to produce a strong draft in case the chimney is so situated that the air loses a considerable amount of its heat before it is expelled from the chimney.

From experiments which have been made (Box) for the purpose of determining the heating capacity of steam pipes, we know that one square foot of surface of one-inch pipe (3 linear feet) will give off about 300 heat units per hour, or 5 heat units per minute under the conditions in which heating is required in a ventilating shaft. Five heat units will raise the temperature of 276 cubic feet of air 1° (1 cubic foot of air at 62° weighs .0761 lbs. The specific heat of air is .238. 5÷.0761.÷238=276). Knowing the amount of air to be transmitted by the ventilating shaft per minute or second, it is easy to determine the amount of heating surface required to raise the temperature of the air one one or more degrees. It is only necessary to divide the amount of air transmitted per minute by 276 to determine the number of square feet of heating surface required to raise the temperature of the given quantity of air 1° F.

Taking, for example, a case in which, as in our last illustration, the amount of air required to be transmitted is 32 cubic feet per second, or 1920 cubic feet of air per minute, we have 1920÷.276=6.95, practically 7 square feet of heating surface, or 21 linear feet of one-inch pipe, necessary to raise the temperature of the air 1° F. To raise the temperature of the air 5°, which would be quite sufficient to insure the successful working of the shaft, would of course require five times as much heating surface, or 105 linear feet of one-inch pipe.

The most economical method possible for heating a ventilating shaft is the combustion of fuel in the shaft itself. A number of years ago, in studying the ventilation of the House of Parliament in London, by the aid of the assistant engineer, who kindly conducted me through the subterranean region of this great structure, I was surprised to find that the current of air in the great towers, which are not merely architectural features but constitute the ventilating shafts of the building, was maintained by means of a great heap of burning coal, which was placed exactly in the center of the shaft upon a high platform, the top of which was at about the same level as the top of the great horizontal ventilating ducts which entered the shaft at its bottom.

Fuel may be consumed in a shaft by means of a stove placed in a chimney, carrying the stovepipe up through it. In exceptional cases the smoke may be discharged directly into the shaft; but this arrangement is not always a safe one and hence cannot be recommended. The position of the heater is a matter of no small importance. I have sometimes seen a steam coil placed at the extreme bottom of the ventilating shaft, the first opening being several feet above it. In so placing the heater, there is very little circulation of air, and hence its efficient heating capacity is not utilized. To secure the efficient working of a ventilating shaft, the heater should be placed above the highest opening. It is, as a rule, not wise to have openings into a ventilating shaft at different levels, but if this arrangement cannot be avoided, the heater should certainly be placed above the highest opening; or if a long heater, placed against the side of the chimney, it should extend above the highest opening. Whether the heat should be concentrated near the lower portion of the shaft, or should be extended some distance along the inside wall, is a question which may be differently answered according to circumstances. There is an advantage in the extension of the heater some distance along the inner wall in that a better opportunity is afforded for radiation, and thus for heating the inner surface of the shaft, and so preventing the tendency to downward currents. It should be remembered, however, that the higher in the shaft the heater is placed the shorter will be the heated column, and hence, from this standpoint, the less the efficiency of the heat employed.

In conclusion, the writer wishes to disavow any attempt to make, in the foregoing, an extensive presentation of the subject of ventilation. Those who wish to make an extended study of the subject will find the means of doing so in the excellent work of Mr. Thomas Box, published by E. and F. N. Spon, 12 Cortlandt street, New York City. My aim in the preparation of this paper has been to present such practical points as I have gathered from a somewhat extended experience in planning the ventilation of large buildings in which I have had an opportunity to live for a series of years, studying the result of various methods employed, and to formulate a few simple rules which are useful for the working out of correct methods of ventilation in all ordinary cases, and which are much less cumbersome for use than the ponderous formulæ of Box and others who have undertaken to present this subject in a scientific way. I ought, also, perhaps, to call attention to the fact that, while the physical principles relating to heating, ventilating, etc., are correctly given by Box and other authors who have given much scientific data upon this subject, the suggestions made with reference to the supply of fresh air are, as a rule, widely at variance with the conclusions at which Parke, Angus Smith, and other investigators have arrived in the study of the question of ventilation from a sanitary and hygienic standpoint, and so are not to be relied upon. For example, Box puts the amount of fresh air required for each person per hour at 212 cubic feet, which is simply ridiculous, being less than one-tenth the amount shown by ample experience to be really necessary.

THE HALF-MILLION CLUB.

WE would call the attention of the Half-Million Club to the importance of having our city properly lighted by gas and electricity during the full month, before inviting strangers from a distance to visit our city in order to gain a favorable impression of its advantages as a residence, or business headquarters.

The new rule of having the city left in the dark for eight nights each month will not favorably impress those from the east who are accustomed to see their streets well lighted at all proper times. If the city is too poor to pay for such accomodation, it had better go out of business at once. If it is good economy to be in the dark nearly one-third of the month, why not save the other two-thirds of the expense and have no light at all?

A GRAND BOULEVARD.

A magnificent boulevard fifty miles long, from San Jose to San Francisco is the latest improvement talked of; many of the leading citizens along the route are interesting themselves in having a macadamized driveway constructed. If this magnificent scheme is carried out, we see no reason why it should not be, it will make one of the finest drives we know of. Another encouraging feature of this promised driveway, is that it shows the city is awaking to the importance of making improvements and if the spirit of enterprise is allowed to develop itself it will lead to still more startling inovations, that may for a time make old fogies sick at heart, but in the end will put money in their pockets.

Pluck and enterprise cause benefits to fall upon the just and the unjust.

ILLUSTRATIONS.

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.

SEVENING Building, Oakland, C. Mau, Architect.

PRELIMINARY Sketch of Residence at Saucelito, Narine County, Havens & Toepke, Architects.

CITY Hall, Alameda, Competitive Design, Second Prize, Edmund Kollofrath, Architect.

RESIDENCE at Bakersfield, Cal., Henry A. Schultze, Architect.

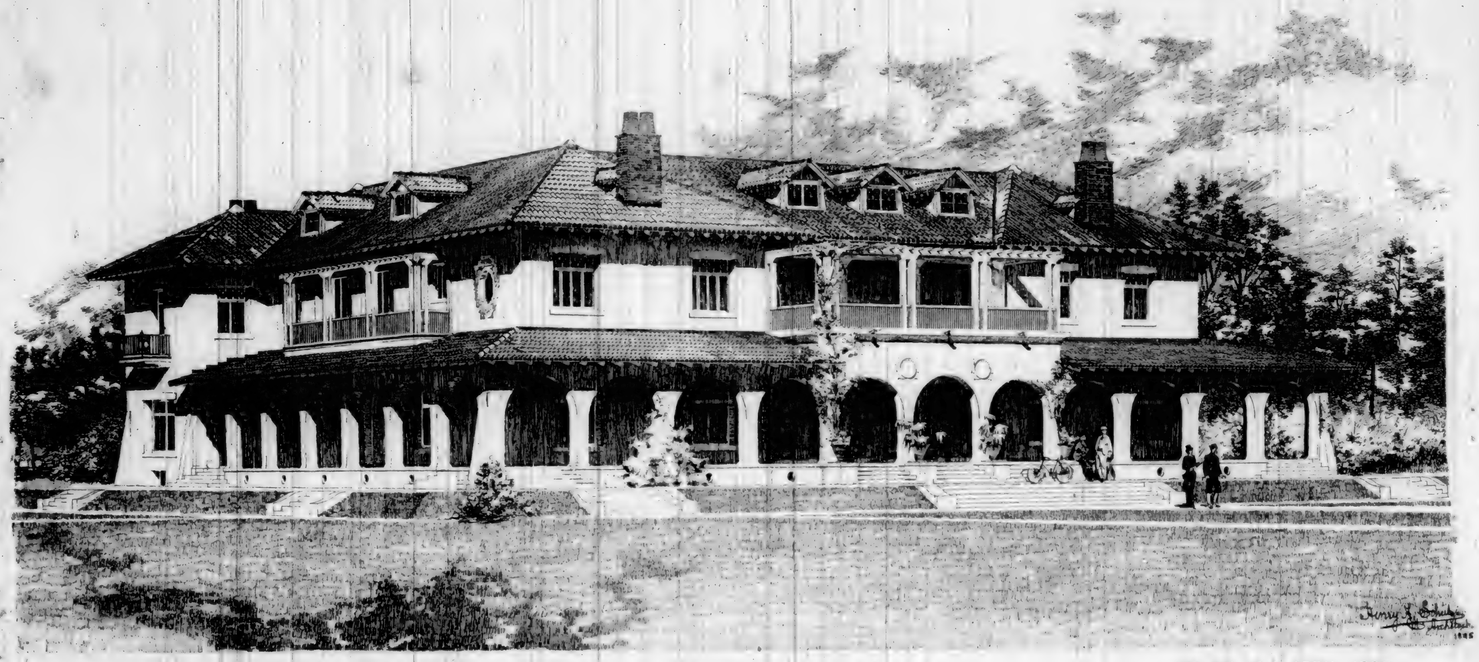
AS a matter of information we would state that the original building of the California Safe Deposit and Trust Company's Building was designed by Wm. Patton, Architect; the additions and alterations are by Henry A. Schulze, Architect.

PRELIMINARY SKETCH
FOR MR. F. H. KERRIGANS. RE
SIDENCE AT SAUCELITO MARIN CO.
HAVENS & TOEPKE ARCHTS.
33 FLOOD BUILDING S.F.

CALIFORNIA ARCHITECT & BUILDING NEWS
SAN FRANCISCO.

BRITTON & REY PHOTO LITH.

VOL. XVI Nº 4 APRIL 1895.



CALIFORNIA ARCHITECT & BUILDING NEWS
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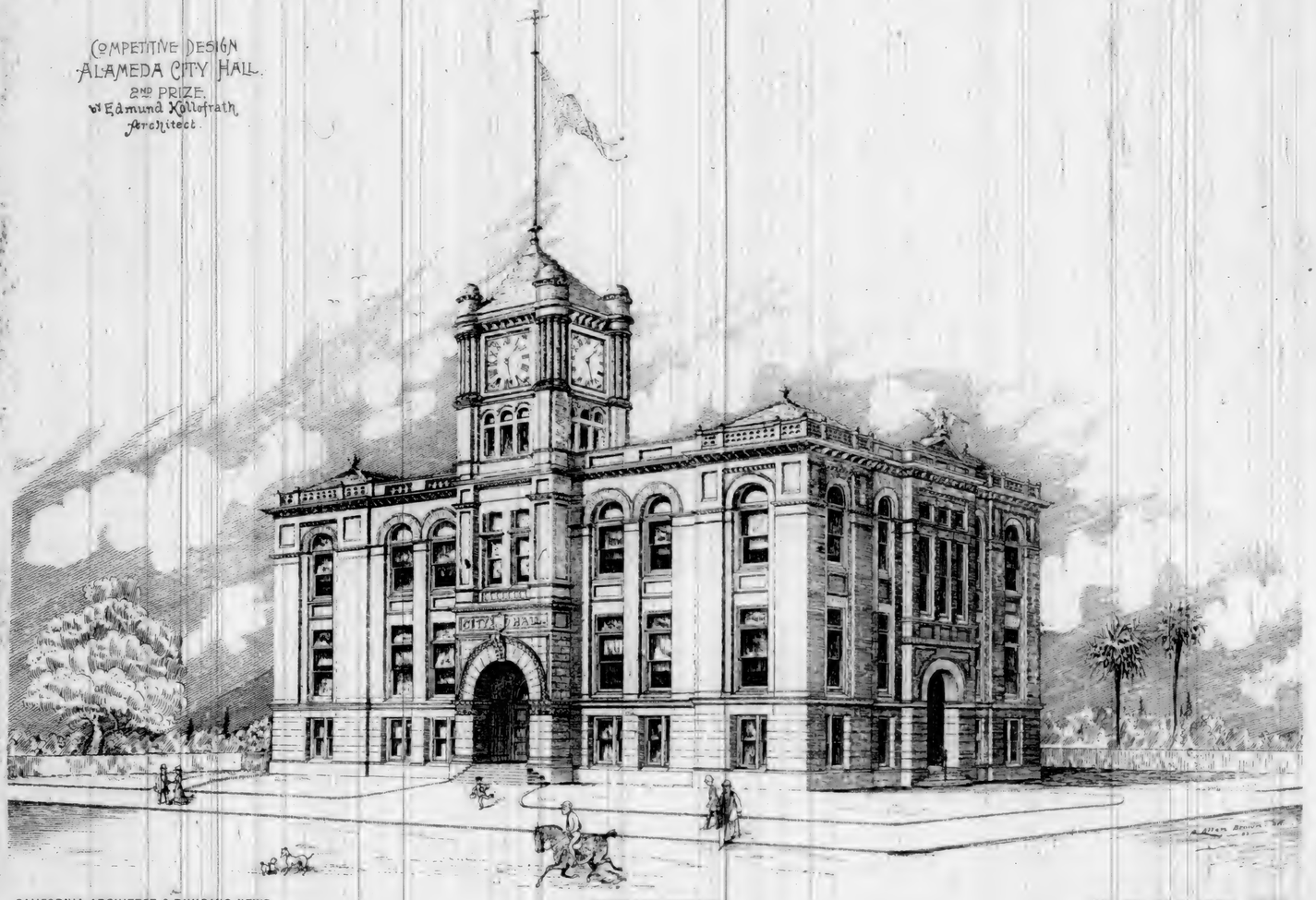
RESIDENCE FOR MR W. S. TEVIS BAKERSFIELD, CAL.

COMPETITIVE DESIGN
ALAMEDA CITY HALL.
2ND PRIZE.
W^m Edmund Kollofrath
Architect.



NOTICE OF MEETINGS.

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

SOUTHERN CALIFORNIA CHAPTER AMERICAN INSTITUTE OF ARCHITECTS, meets first Wednesday of each month at 114 Spring street, Los Angeles, Cal.
OCTAVIUS MORGAN, PRES. A. M. EDELMAN, Vice-Pres.
ARTHUR B. BENTON, Sec't. AUGUST WACKERBARTH, Treas.

TECHNICAL SOCIETY OF THE PACIFIC COAST, meets first Friday of each month at Academy of Sciences Building.
C. E. GRUNSKY, Pres. GEO. W. DICKIE, Vice-Pres.
OTTO VON GELDERN, Sec. W. C. RALSTON, 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.

EUROPEAN FORESTRY WORK.

NEARLY all the nations of Europe are engaged at the present time in no controlling the forest supply that every bit of public and private property in trees is placed under restriction against destructive cutting. The forests are all so highly protected, says the *Boston Herald*, and even where no state control exists, the freedom in cutting trees which exists in this country is unknown.

In Germany during the last twenty-five years some 300,000 acres have been reforested, and the government has granted $300,000 in this way to private owners of waste land. In Austria, since 1852, a forest law, which exercises a strict supervision over the forests, both public and private, has been in existence, and no one is allowed to devastate a forest to the detriment of adjoining holders of land, and cleared or cut forest must be replanted within five years.

In Italy the effort is constant to increase the amount of wooded lands, and the government contributes three-fifths of the cost of reforestation, upon condition that the work is done according to its plan and instructions. In Switzerland the national government contributes from 30 to 70 per cent of the establishment of new forests, and from 20 to 50 per cent for the planting of protected forests, and the law is very strict in regard to cutting.

France is also deeply interested in public forest property. The forests belong largely to communities and public institutions, as well as to the state, and they are controlled in a manner similar to the regulation of forests in Germany. Here, as well as there, no clearing is allowed except by consent of the forest administration.

In all these countries the strictest attention is paid to the subject of forestry, and schools are everywhere maintained for the purpose of instructing men in this work. Russia has been the only nation where forests have been until lately under no restriction, but since 1888 even this country has had its forest laws, and offers loans on favorable terms for the protection and increase of the forests. Hardly any European nationality is without its state control of the forests or without the training schools in which men are instructed how to take care of them.

They are trying in Europe in every way possible to save the forests, and in the United States efforts are now being made in nearly every commonwealth to regulate and control the wooded lands, but our people are not ready to accept the stringent measures which have been empioyed as a necessity for preservation.

THE BUILDING THAT IS TO BE.

DESCRIPTION OF THE STRUCTURE DESIGNED FOR THE SITE AT SEVENTH AND MISSION STREETS.

THE acting Supervising Architect of the Treasury has at last secured the approval of the plans for the proposed new p ostoffice building for San Francisco. The following is the official description of the building as furnished to the *Examiner* by Mr. Hamilton, the Civil Engineer, who has charge of the drafting room of the Supervising Architect's office.

The main dimensions of the building will be 250 by 215 feet, a height of 70 feet in the main, 90 feet at the main entrance, which will be on Seventh street. This main entrance will project 20 feet from the main building and there will be pavilions on the corners and in the center of the other facades 12½ feet each, making dimensions for Seventh street to the rear 270 feet, and from Mission to Stevenson street 240 feet. The building is to be three stories in height in the main and five stories over the center pavilion on Seventh street.

IN RENAISSANCE STYLE.

The design is what is known as Renaissance, with pavilions on each corner and in centers of facades. The main entrance will be fifty feet wide, divided into three arched doorways. The other entrances will be forty feet wide and will also have three arched doorways with carved pediments over them and in the rear, with tympanums of appropriate designs. The pavilion in the center of each facade will be flanked with columns and pilasters, and the whole building will be crowned with a balustrade. There will be a group of statuary over each center pavilion. The building will be constructed of either granite or marble, which has not yet been determined.

The first story will be set apart for the use of the San Francisco Postoffice. In the center will be a clear space 200 feet square for the use of carriers and other employees engageed in the reception and distribution of mails, and in alcoves there will be rooms for the Postmaster, Assistant Postmaster, and money order and registry offices. This story will be eighteen feet in height.

In the second story there will be three rooms set apart for United States Courts, one each for the Circuit Court, District Court and Federal Court of Appeals. These rooms will by 50x30 feet in size. On this floor there will also be rooms for judges, attorneys and other officials of the courts, jury-rooms and library. This story will be fifteen feet in height.

The third story has been designed with a view of accommodating the Railway Mail Service, Signal Service and Pension Agent. There will be rooms for railway mail clerks, Superintendent of Railway Mail Service, Postoffice Inspectors, a dormitory for mail clerks when off duty, offices of the Signal Service, United States Pension Agent and his clerks and miscellaneous offices for Federal officials. This story, as well as the fourth and fifth, will be thirteen feet in height. In the basement will be located machinery for operating the heating and ventilating apparatus. Here will also be a large space for storage.

PLENTY OF LIGHT.

It is proposed to have plenty of light and ventilation for people employed in the building. All corridors above the first floor will look out upon a court 153x120 feet. This

court will leave a clear space above the postal clerks employed on the first floor, so that there will be no lack of natural light at any time. The ventilating apparatus will also be of the latest improved kind, and there will be four ventilating flues to carry off foul air.

The offices on all floors above the basement will open upon the street. Thus each will be will supplied with light and air. There will be four elevators, two each at the Seventh-street and Mission street entrances. A peculiar feature of th postoffice buildings recently planned is that lookout stations are provided on top of the postoffice safes which are to be built on the first floor. Inspector will have entry by a circular shaft in the basement, which by means of a spiral stairway will enable them to mount to the top of those safes located in different parts of the floor and overlook all the operations of the postal clerks.

ONE MORE MOVE.

The House Committee on Appropriations wrestled for some time to-day with the San Francisco public-building imbroglio. Representives Loud and Maguire were present at the request of the committee and the question was discussed in all its phases. After quite a lengthy wrangle the committee reached a decision. There will be added to the appropriation already available for the building only $50,000, instead of $150,000, as Secretary Carlisle first recommended. This appropriation will be incorporated in the Sundry Civil bill. There will also be further delay in begining work, on account of the decision of the committee that an investigation must be made to determine whether it is safe to erect on the site selected.

The first surprise at to-day's meeting came when it was announced that Secretary Carlisle has revised his first estimate for the appropriation, and requested of the Appropriations Committee only $50,000 in addition to about $190,000 left over from the purchase of the site. When this matter was brought up before the committee, both Representatives Maguire and Loud vigorously protested against this small appropriation for beginning so large a building, but Chairman Sayers was firm, and refused to allow any more than the Treasury Department had requested. Then the San Francisco Representatives conceded that it was a wise course that this appropriation be made a contingent one, and only available after thorough examination of the site has been by United States Army Engineers.

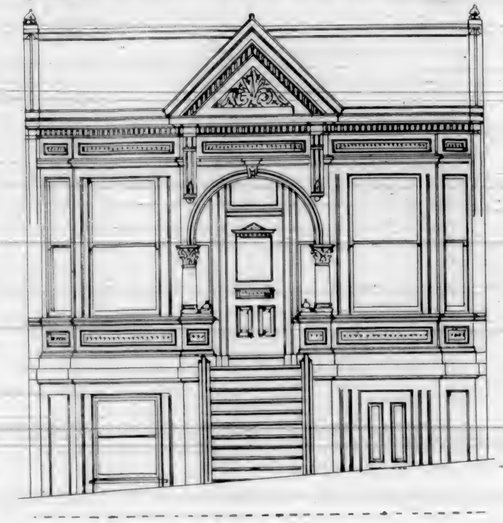
A CASTLE ON TWIN PEAKS.

E. AVERY McCarthy, secretary of the Stanford Addition Land Company, is authority for the statement that a rich English friend is negotiating for the purchase of the Twin Peaks and about thirty-five acres of the adjoining land for the purpose of erecting a handsome residence, built after the style of the old English baronial castles. The site is a perfect one for such a purpose, as it commands a view which cannot be equaled in variety and extent. From the rugged outlines of Marin County to far down among the San Mateo hills, and from the horizon out on the ocean to the mountains back of Oakland, there is nothing which does not come within view from the Twin Peaks.

Perched upon the top of the peaks a large building such as would be put there would stand like a sentinel over Market street, for that thoroughfare would lead right up to its doorstep should it ever be carried out so far. Senator Stanford at one time signified an intention of securing the property for the city, to be used as a public park, but it was sold to others and finally came into the hands of Mr. McCarthy's family.—*Call.*

BOOKS AND PERIODICALS.

MODERN OPERA HOUSES AND THEATRES. Examples selected from playhouses recently erected in Europe, with a short descriptive text and a treatise on theatre planning and construction, with supplements on stage machinery,



FRONT ELEVATION.

theatre fires and protective legislation. By Edwin O. Sachs, Architect, F. S. S., and Ernest A. E. Woodrow, Architect, A. R. I. B. A. Preparing for publication. Illustrated by a Series of 220 plates, reproduced in the best manner by Photo-lithography, from line drawings specially prepared for the Work, and some hundreds of diagrams in the text, reproduced from original working drawings, with all plans and sections drawn to a uniform scale.

The work will be in three volumes, size 23 by 16 inches (58 by 40 cm.), strongly and suitably bound in buckram.

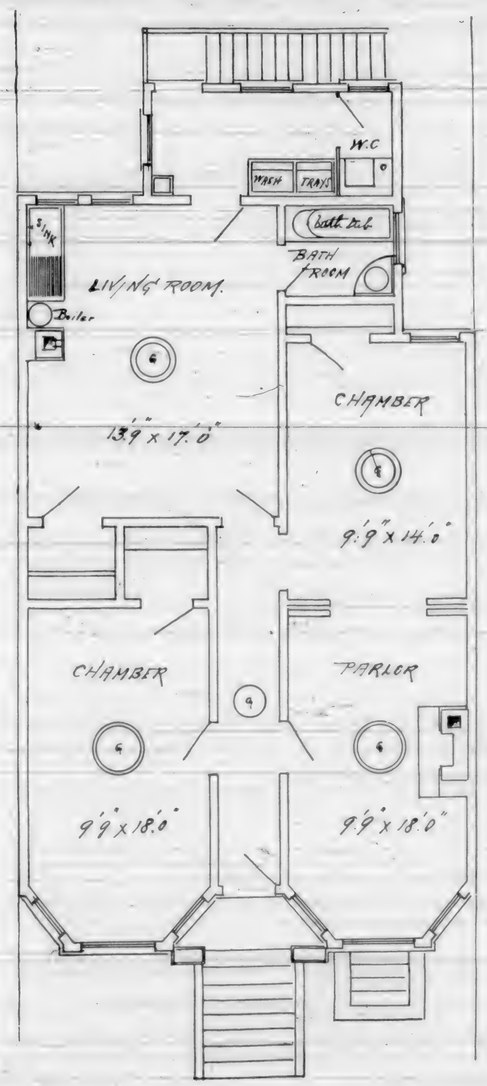
Upon publication the price of the work will be £15 15s., but for the *Subscribers, on whose support the issue entirely depends, the charge will be £9 9s. net.* Half the subscription price will be payable on the issue of the first volume, and the remainder on the completion of the work. A List of Subscribers will be printed in each volume. The first 150 Subscribers will receive numbered copies with a distinguishing title page.

LIPPINCOTT'S MAGAZINE for April, 1895. The complete novel in the April issue of Lippincott's is "Alain of Halfdene," by Anna Robeson Brown. It is a stirring tale of the sea, pirates, rescuers and Mt. Desert (then by no means so well known as now), in the days when Washington was President.

"At the Hop-Pole Inn," by Mrs. Poultney Bigelow, tells how curiously a nearsighted Englishman and his young wife were reconciled after a first quarrel. "The Defendant Speaks" to some purpose in a story by Genie H. Rosenfeld; result, a divorce is avoided.

Mary Dawson relates the innocent loves of a dancer, 'The Butterfly," and her young man. Marjorie Richardson shows how the young woman who occupied "The House with the Paint Worn off" procured its external rehabilitation.

THE ENGINEERING REVIEW edited by J. Stevens Jeans, London, England, can be truly called the "Epitome of the World's Current Literature". The American agency



of this ably conducted monthly magazine is at 12 Cortlandt street, New York, conducted by Messrs. Spon & Chamberlain. American subscription $1.75 per annum.

An illustrated description of a visit to the works of Messrs. Charles Cammell & Co., Limited, Sheffield, England, gives a very vivid account of these immense works for the manufacture of steel and iron as well as the various application of these metals in the way of heavy ordnance, forged cylinders, steel nails, armor plates, etc.

The late Mr. Charles Cammell was the founder of this company in 1837, who in partnership with Mr. Thomas Johnson commenced as steel and file manufacturers and merchants. The demand for their steel proved so great that from time to time enlargements in their works have been made, until at the present time it includes mines of coal and iron ore, and every appliance of turning out the immense production full tables of which will be found in this very interesting article.

We were pleased to notice that the editor gives many notices of recent works of engineering in this country. The article entitled "Recent Progress of Electrical Engineering" by Major T. Flood Page will be read with interest by the Electric Engineers of this country.

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.

Tenant's Remedy for Breach of Agreement by Landlord.—Where a landlord agreed to make improvements for the benefit of the tenant, his failure to make them does not relieve the tenant in possession from liability to pay rent. And, in such case the tenant is entitled to damages, the measure of which is the difference between the rental value of the premises without the improvements and their rental value with the improvements.

Long v. Gieriet, Supreme Court of Minnesota, 59 N. W. Rep. 194.

Action for Balance on Contract for Work and Labor.—Where no time is fixed for the completion of work under a contract in an action thereon for a balance due, the party for whom the work is being done is not entitled to credit for wages voluntarily paid, in the absence of the contractor to another, to do part of the work he had contracted to do.

Wagner v. Jennings, Court of Civil, Appeals of Texas, 27 S. W. Rep. 888.

Effect of Destruction of Building as to Mechanics' Lein.—Under the statutes, giving a contractor who performs labor or furnishes materials in the construction of a building "a lien thereupon, and upon the interest of the owner of such building in and to the land on which the same is situated," and extending the right to subcontractors, neither a contractor nor a subcontractor has any lien for materials or labor when the building is destroyed before completion.

Goodman v. Baerlocher, Supreme Court of Wisconsin, 60 N. W. Rep. 415.

Right to Mechanics' Lien on Theatrical Scenery.—Scenery and other articles constituting the stage and scenic outfit of an opera house are part and parcel of the edifice, as such, they being essential to the completeness of a building of that class. This being so, the furnishing of such outfit, or of the materials composing same, is furnishing materials for the improvement of real estate; and the person by whom said furnishing is done is entitled to a lien upon the opera house and premises, under the provisions of the statutes giving mechanic liens.

Waycross Opera House Co. v. Soseman, Supreme Court of Ga., 20 S. E. Rep. 252.

Liability for Dangerous Premises.—By contract with an elevator company a party agreed to put fire extinguishers in its elevator. The elevator company was to furnish the staging for the men employed to put in the apparatus. One of these men while at work was killed by a fall caused by a defective plank in the staging. The evidence showed that there was a knot in the plank, and the deceased could not possible have seen it, by reason of the darkness. It was held by the Supreme Court of Wisconsin, that the workman was not guilty of contributory negligence, and that the elevator company was liable by reason of its contract to put in the staging, although the contract was not made with him.

Bright v. Barnett & Record Co. 60 N. W. Reporter, 418.

BUSINESS MOSAICS.

What house is complete without some decoration? Samuel Kellett manufacturer of plaster decorations, plastering repaired and whitened. 28 Ellis street, San Francisco; 375 Twelfth street, Oakland.

"Were you ever up before me?" asked a Police Judge. "Shure I don't know, yer anner. What time does yer anner get up?"—*Boston Commercial Bulletin.*

W. H. Wickersham, as we have had occasion previously to remark is a Building Contractor at 1125 York street, San Francisco, whom if you once employ, is sure to give such satisfaction that he is again called for when more work in his line is wanted, this we consider the highest kind of recommendation.

"Why do you punch that hole in my ticket?" asked a little man of the railroad conductor. "So you can pass through," was the reply.—*Boston Commercial Bulletin.*

If you need water only when the wind blows; if you are satisfied to utilize but a small fraction of the water in your well; if you prefer heavy bills for repairs after each storm in winter, by all means use a windmill; but if you want water at any time, and up to the full capacity of your well, put in the Ajax Coal Oil Gas Engine, the latest thing in mechanics, an engine that uses common coal oil for fuel, and is built by the well known firm of Palmer & Rey, San Francisco, Cal.

Labor Agitator—"Every man is the architect of his own fortune." Murphy (from the rear of the hall)—"Yis, that's so, but he stands a mighty poor chance when he has nothing but a shovel or hod to draw his plans wid."—*Ex.*

Architectural and Ornamental Iron Work. Stable fixtures, hay racks, feed boxes, stable guards, harness fixtures, etc. Now that horses are so cheap is a good time to fix over your stable; of late years much attention has been paid to having the horse housed in a proper manner, and if the rage continues the stable is likely to out do the parlor, unless the madam put her foot down. 135–145 Fremont street, San Francisco, is the headquarters of the Vulcan Iron Works.

"Highstep seems very blue since Miss Coins threw him over." "Yes; he's heartbroken to think what an excellent husband she has missed."—*Chicago Inter-Ocean.*

Miss Peart—"Do you think one is liable to catch anything from kissing?" Mrs. Placid—"That's the way I caught my husband."—*Ex.*

Clawson's Patent Chimney's generally considered the most complete and safest in the market, can be found at 1340 Market street, San Francisco.

"Here's a lovely cigar I picked out for you." "Thanks, but give me one you bought for yourself."—*Humoristische Blatter.*

Wm. Bateman manufacturer of wood mantles, interior finish, inlaid floors, banks, offices, stores and steamboats fitted up. If in want of any of this kind of work you have only to call upon Mr. Bateman at 411 Mission street, who will soon convince you that your wants can be supplied at his establishment.

The antique Roman who fell on his sword made a much better historical figure than the modern militiaman who tripped with the same weapon twisted between his legs.—*Puck.*

Proper Lubricant for Cycle Chains.—It is conceded by all wheelmen that some lubricant is needed to prevent wear of chain and sprocket wheel; such a lubricant not only prevents wear but very largely increases speed and ease of driving. Oil or grease, while useful for the moment, catches and holds dust and dirt. After much experimenting it has been found that graphite makes the most perfect lubricant, when the right kind is used and properly prepared.

The word graphite, like the word charity, covers a multitude of sins. Under the name graphite lubricant are found compounds of cheap black-lead, stove polish, foundry facings, soapstone, etc. Safety in buying, and the surety of getting the best graphite lubricant made, lie in purchasing of a firm of world wide reputation and long experience. Such a firm is the Joseph Dixon Crucible Company, of Jersey City, N. J.

He—"Oh, yes, when I was in London I was enthusiastically received in Court circles." She—"What was the charge against you?"—*Pick-me-up.*

Tin Roofers on the Coast will be glad to notice by our columns in the present issue that the old house of N. & G. Taylor Co., Tinplate Manufacturers, Philadelphia, now carry a large stock of their world wide celebrated brand of Roofing Tin, The Taylor "Old Style" at San Jose, in charge of the well-known house of Messrs. John Stock Sons. This firm announce that they are now ready to supply all dealers and consumers, with either prices, samples or general information as to the merits of the goods.

The Taylor "Old Style" has been largely used in the past throughout California, and also in Oregon and Washington. It is now being used on the Grand Central Station on the Northern Pacific R. R. at Portland. It is handled for the North West as a distributing point by Messrs. Goldsmith & Loewenberg, Portland, Oregon. Thousands upon thousands of buildings all over the United States are lasting testimonials of the worth and great durability of this, the original and genuine "Old Style" brand of Roofing Tin, its many imitations have made the "Genuine" almost a household word among the roofing fraternity. To our readers it should be borne in mind that it is made in the same way as Roofing Tin was first made in 1830, over 65 years ago, in Philadelphia, and then handled by Messrs. N. & G. Taylor Co., and as the firm states, "There are roofs East covered with this brand of Tin that are just as good to-day as when first put on nearly 70 year ago." The wear is certainly the true test of value.

Architects in naming the brand in their specifications can run no risk of substitutes or "just as good". The brand can be obtained quickly from Messrs Jno. Stock & Sons, each sheet is stamped with the name of the brand, the thickness, and the name of N. & G. Taylor Co. who warrant the tin, and it is the only tin on the market that is warranted in the sense demanded by the user. We compliment the Messrs. Taylor on the step they have taken, and congratulate Roofers on the advantage they thus secure.

CITY BUILDING NEWS.

Baker near Greenwich. To build; owner, Mrs. T. M. Sheilds; contractor, Jacob Schuler; signed, April 5; filed, April 8; cost $2200.

Beaver street, No. 15. Additions; owner, Mrs. F. Loth; contractor, C. Eriksen; signed, March 23. filed, April 3; cost $2000.

Butchers Reservation, lot 3, block 22. Cold storageplant; owner, Henry Miller; architect, H. F. Spencer; contractor, Cyclops Iron Works and Gurney Refrigator Co.; signed, March 29; filed, April 3; cost $22,000.

Broadway near Stockton. Mason and terra cotta work; owner, V. Pucinelli; architect, E. Deplerre; contractor, P. A. Anotonelli; signed, March 14; filed, March 14; cost $2750.

California and Montgomery. Steam heating; owner, Cal. Safe Deposit and Trust Co.; architect, H. A. Shulze; contractor, P. Leprohon; signed, March 6; filed, March 15; cost $4235.

California and Montgomery. Electric Lighting, etc.; owner, Cal. Safe Deposit and Trust Co.; architect, H. A. Schulze; contractors, Will & Finck Co.; signed, March 6; filed, March 15; cost 3592.

California and Montgomery. Plumbing, gas fitting, etc.; owner, Cal. Safe Deposit and Trust Co.; architect. H. A. Schulze; contractor, James Duffey; signed, March 6; filed, March 15; cost $16,954.

California and Montgomery. Carpenter work and the addition of two stories; owner, Cal. Safe Deposit and Trust Co.; architect, H. A. Schulze; contractor, Thomas Day & Sons; signed, March 6; filed, March 15; cost $35,400.

California and Jones. Ornamental Iron Work; owner, Nob Hill Development Co.; architects, Bugbee & Gash; contractor, D. Jordan; signed, March 18; filed, April 4; cost $4550.

California and Jones. Anchors beams, etc.; owner, Nob Hill Development Co.; architects, Bugbee & Gash; contractor, Dennis Jordan; signed, March 18; filed, March 19; cost $20,600.

California and Jones. Plumbing, gas fitting, etc.; owner, Nob Hill Development Co.; architects, Bugbee & Gash; sub-contractor, J. Doherty; signed, March 13; filed, March 20; cost $10,990.

California and Jones. Electric Elevators; owner, Nob Hill Development Co.; architects, Bugbee & Gash; contractor, Frank A. Hall; signed, March 18; filed, April 4; cost $7,000.

California near Heyman. To build; owner, Mr. Lindberg; contractor, J. Gillogley; cost $1600.

Castro near 19th. Two flats and coal yard, except plumbing; owner, Edward Ring; contractor, Thomas McKee; signed, March 3; filed, March 13; cost $2025.

Carl near Stanyan. To build; owner, A. M. Bruiscber and wife; architect, J. T. Kidd; contractor, W. A. Muller; signed, April 2; filed, April 3; cost $1460.

Central Ave. near Clay. To build; owner, W. R. Van Alen; architects, McDougall & Son; days work; cost $5000.

Clement street and 4th Ave. Three two-story frame residences; owner, D. F. McGraw; architect, C. F. Robinson; cost $9000.

Clementina near 4th. To build; owner, Chas. Giovanetti; architect, C. R. Wilson; contractors, Cuneo & Cavaglia; signed, April 8; filed, April 8; cost $3750.

Chattanoga near 23d. Alterations and additions; owner, Samuel Hortop; contractor, D. Currie; signed; March 16; filed, March 19; cost $2400.

Clay near East. Driving 316 piles; owner, J. D. Montanya; architects, Percy & Hamilton, contractor, S. F. Bridge Co.; signed March. 14; filed, March 15 cost $4218.60.

Church near 21st. To build; owner, R. M. Barry; architects, Mahoney & Ryland; contractor, T. E. Corrigan; signed, March 13; filed, March 19; cost $2595.

Clayton near Frederick. To build; owner, Mary O'Leary; architects, Shea & Shea; contractor, James Mooney; signed, March 12; filed, March 15; cost $2898.

Collins near Pt. Lobos Ave. To build; owner, J. McMahan; contractor, J. D. Barton; cost $1600.

Dolores near 22d. Raising old building and additions; owner, Samuel Mathews, Jr.; contractor, W. P. Smith; signed, March 18; filed, March 18; cost $640.

Duncan near Guerrero. To build; owner, Kate Marron; architect, J. T. Welsh; contractor, P. R. Bassett; signed, April 3; filed, April 8; cost $2250.

Dupont near Francisco. To build; owner, J. Kucich; architects, Salfield & Kohlberg; contractor, John Pecavich; signed, March 19; filed, March 20; cost $2230.

Eddy near Buchanan. To build; owner, Simon H. Bush; contractor, C. W. Depew; cost $5000.

Elizabeth near Noe. Raising building; owner, M. J. Fitzgerald; contractor; Wm. Plant; signed, March 15; filed, March 19; cost $1065.

Elizabeth near Noe. To build; owner, R. P. Thompson; contractor, W. W. Rednell; signed, April 2; filed, April 9; cost $1600.

Fell near Gough. To build; owners, Mrs. Mary F. and George F. Kelly; contractors, Wheeler & Perry; signed, March 27; filed, March 28; cost $4800.

Francis near Mission. To build; owner, James and Delio Rice; contractor, P. H. McKenna; signed, April 1; filed April 1; cost $800.

Folsom near 20th. To build; owner, J. H. Robinson; contractor, H. J. Weiss; signed, March 23; filed, April 2; cost $3313.

Folsom near 21st. To build; owner, Jacob Rohrer; architect, Emil John; contractor, H. T. Grieb; signed, March 28; filed, April 2; cost $2900.

Fourteenth and Howard. Alterations and additions; owner, Maria L. Rerrel; architects, Pissis & Moore; contractor, F. W. Kern; signed, March 19; filed, April 3; cost $6350.

Filbert near Dupont. To build; owner, Pietro Queirolo; contractors, Cuneo & Cavaglia; signed, March 21; filed, March 26; cost $6000.

Fillmore near Washington. Alterations; owner, Mrs. R. Greenfield; contractor, G. G. Gillespie; signed, March 27; filed, March 27; cost $3000.

Fifteenth Ave. near Point Lobos. To build; owner, E. G. Flanders; contractor, W. W. Redmill; signed, March 19; filed, March 23. cost $1350.

Fulton near Baker. To build; owner, Hannah Mahoney; contractor, J. C. Kelly; signed, March 21; filed, March 23; cost $2360.

Fulton near Baker. To build; owner and builder, Thomas Volden; cost $6000.

Franklin and California. To build; owner, Edward Coleman; architect, W. H. Lillie; contractors, Farrell & Bell; signed, March 18; filed, March 19; cost $13,640.

Geary near Leavenworth. To build; owner, Dr. C. D. Cleveland; superintendent, J. W. Blundon; days work; cost $3500.

Green and Taylor. To build; owner, Thomas McCarthy; contractor, A. E. Waller; signed, March 16; filed, March 19; cost $5300.

Grant Ave. and Sutter. Two-story brick; owner, J. W. Tamm; architect, A. J. Barnett; contractor, A. G. Johnson; signed, April 5; filed, April 6; cost $4000.

Hayes and Octavia. Plumbing; owner, Mrs. Reinle; architects, Stone & Cahill; contractor, J. Doherty; cost $960.

Hattie and 17th. To build; owner, Jas. Kelly and wife; architects, McDougall & Son; contractors, Brennan Bros.; signed, March 28; filed, March 28; cost $1740.

Hermann near Steiner. To build; owner, Chas. Huber; architects, Mahoney & Ryland; contractor, Geo. Reichley; signed, March 30; filed, April 3; cost $1989.

Jasper Place near Filbert. To build; owner, A. Cahri; architects, Townsend & Wyneken; contractors, Cuneo & Cavaglia; signed, March 21; filed, March 23; cost $1450.

Jessie near 2d. Five stories and basement, brick; owner, D. Keil; superintendents, Hansbrough Bros.; days work; cost $15,000.

Jessie near 7th. Additions; owner, Michael McNamara; architects, Hatherton & Ross; contractor, J. W. Sandy; signed, March 20; filed, April 3; cost $1250.

Jersey near Noe. To build; owner, Laura H. Wells; architect, Frank Mead; contractor, W. H. Mead; signed, March 27; filed, April 10; cost $1950.

Jones near Chestnut. To build; owners, Mr. and Mrs. David Crowley; contractor, J. W. Pauls; signed, April 6; filed, April 10; cost $3600.

Jones near Post. Berkshire Hotel plumbing; owner, Emily B. Hopkins; architect, J. H. Littlefield; contractor, H. Williamson; signed, March 27; filed, March 28; cost $2750.

Jones near Post. Alterations and repairs; owner, Mrs. Emily B. Hopkins architect, J. H. Littlefield; contractor, D. Currie; signed, March 30; filed, April 1; cost $1200.

Kentucky near Sierra. To build; owner, Catherine Sullivan; architect, A. J. Barnett; contractor, Timothy Sullivan; signed, March 14; filed, March 18; cost $2900.

Laguna near Vallejo. To build; owner, Caroline S. Townsend, architect, W. H. Wharff; contractor, F. W. Maurice; signed, March 14; filed, March 15; cost $11,230.

Laguna near Vallejo. Plumbing and gas-fitting; owner, Caroline S. Townsend architect, W. H. Wharff; contractor G. C. Sweeny; signed, March 28; filed, March 30; cost $1240.

Laguna near Pine. Alterations and additions; owner, Z. Wollberg; architect, H. Geilfuss; contractors, Hood & Watson; cost $1900.

Lafayette Place near Green. To build; owner, G. Gardella and wife Giovanni; contractors, B. Pagano and G. Capelli; signed, March 25; filed, March 25; cost $3194.

Liberty near Guerrero. To build; owner, W. J. Patterson; architects, Martens & Coffey; contractor, H. Behrens; signed, March 26; filed, March 28; cost, $2441.

Liberty near Guerrero. Concrete, Grading, etc.; owner, W. J. Patterson; architects, Martens & Coffey; contractor, Cushing Welmore Co.; signed, March 25; filed, March 28; cost $895.

Lyon near Fulton. To build; owner, K. C. Richard; contractor, Wm. Harvard; signed, March 25; filed, March 25; cost $3250.

Market street, No. 1318. Alterations and repairs; owners, Dunn Bros.; architect, J. W. Rowell; contractor, W. H. Hughes; signed, March 16; filed, March 16; cost $1348.

Market and O'Farrell. Alterations to entrance, Phelan Building; owner, Phelan Estate; architect, Wm. Curlett; cost $6000.

Market near 5th. Mason work on Parrott Building; owners, Parrott Estate; architects, Pisses & Moore; contractors, Richardson & Gale; Estimated cost $76,156.

Market near 5th. Cast iron casing for steel columns; owner, Miss Emma Spreckles; architects, Reid Bros.; contractor, Bay City Iron Works; signed, Feb. 26; filed, March 28; cost $1235.

Market near 5th. Marble work; owner, Miss Emma Spreckles; architects, Reid Bros.; contractor, Vermont Marble Co.; filed, March 28; filed, March 28; cost $3600.

Market near 5th. Finishing a bar room; owner, Chas A. Zinkand; architect, Emil John; contractors, Fink & Schindler; signed, April 2; filed, April 4; cost $11,256.

Market and 4th. Elevator alterations; owner, Mrs. Flood; contractors, Cahill & Hall; cost about $25,000.

Mason near Green. Six dwellings complete; owner, A. J. Garibaldi; architect, E. Depierre; contractor, Jas. McLean; signed, April 1; filed, April 8; cost $6150.

Mason near Geary. Plumbing, etc.; owner, Hall Association N. S. G. W.; architect, A. C. Lutgens; contractors, Allen & Rooney; signed, March 30; filed, April 2; cost $2790.

McAllister near Baker. To build; owner, Thomas J. Campbell; architect, J. B. Campbell; contractor, James McConahey; signed, March 28; filed, April 12; cost $2700.

Montgomery near Vallejo. To build; owner, G. Capura; architect, E. Depierre; contractor, Jas. McLean; signed, March 9; filed, March 12; cost $2345.

Mission near 7th. To build; owner, O. Nolte; architect, C. M. Rousseau; contractor, R. J. Pavert; signed, March 19; filed, March 21; cost $4000.

Octavia and O'Farrell. To build; owner, Hannah Maurer; architect, E. J. Vogel; contractor, M. J. Savage; signed, April 1; filed, April 2; cost $9140.

Ocean House Road. Excavations and embankment for a race track; owner, Alexander F. Williams; Engineer, M. M. O'Shaughnessy; contractors, P. Broderick and J. Kelso; estimated cost $25,000.

Pacific Ave. near Jones. To build; owner, John and Annie Wrede; architect, F. B. Wood; contractor, Robert Frost; signed, March 12; filed, March 13; cost $2475.

Presido. Pneumatic Gun Power House; owner, U. S. Government; architects, Percy & Hamilton; contractors, Francoeur & Bowers; cost $4200.

Post near Pierce. To build except plumbing; owner, Wm. Kaiser; architects, Salfield & Kohlberg; contractor, T. R. Bassett; signed, March 12; filed, March 14; cost $5600.

Post near Pierce. Plumbing; owner, Wm. Kaiser; architects, Salfield & Kohlberg; contractor, W. D. Hobro; signed, March 12; filed, March 14; cost $1125.

Polk and Sutter. Plumbing, etc.; owner, M. H. DeYoung; architect, Clinton Day; contractor, E. J. Duffey; signed, March 7; filed, March 27; cost $4000.

Ridley near Valencia. To build; owners, Galland Bros. & Caro; architect, M. J. Lyon; contractor, J. N. Cobura; signed, March 13; filed, March 16; cost $875.

Sacramento near Walnut. To build; owner, Felix Latz; contractor, F. G. Kronnick; signed, March 14; filed, March 14; cost $4000.

Sanchez and 19th. Additions; owners, Mr. and Mrs. Carmile; contractors, Hood & Watson; cost $900.

Second Ave. near Clement. To build; owner, Mrs. Adline Froham; architect, Herman Kraetzer; contractor, B. I. Taylor; signed, March 21; filed, March 25; cost $2500.

Second Ave. near Lake. To build; owner, T. G. Barker; architect, H. J. Kraetzer; contractor, Byron I. Taylor; signed, April 5; filed, April 10; cost $2500.

Seventh Ave. near A. Cottage; owner, J. C. Shea; architects, Shea & Shea; contractor, Jos. Keaney; signed, March 25; filed, March 28; cost $1100.

Shotwell near 24th. To build; owner, Samuel G. Hammond; architect, E. N. Snell; contractor, C. S. Emmons; signed, March 12; filed, March 12; cost $3363.

Sharon near 18th. To build; owner, Mrs. HuldaHeine; contractor, C. V. Bunce; signed, March 16; filed, March 22; cost $1800.

Stockton near Filbert. To build; owner, V. Podesta; architects, Townsend & Wyneken; contractor, G. Massoletti; signed, March 27; filed, March 28; cost $1425.

Steiner near Hayes. Plans and specifications filed; owner, Anna Cornahrens; architect, Henry Geilfuss; contractor, J. H. Munster; signed, April 6; filed, April 8; cost $4196.

Sutter near Central Ave. To build; owner, Miss Rebecca E. Mathews; architect, C. F. Robertson; contractor, Thomas J. Crawford; signed, March 8; filed, March 16; cost $2300.

Sutter near Powell. Alterations to Elsmere House; architect, Wm. Curlett; cost $3000.

Third street No. 44. Painting, glazing, etc.; owners, Hyman Bros. Co.; architects, Percy & Hamilton; contractors, Merchant & Nickles; signed, April 5; filed, April 8; cost $1500.

Turk near Larkin. Additions; owner, Geo. Scott; contractor, G. A. Hunnewell; signed, March 20; filed, March 20; cost $1200.

Turk and Fillmore. Car House; contractor, Wm. A. Butler; cost $28,000.

Twenty-fourth near Bryant. To build; owner, C. H. Dolan; architect, M. J Welsh; contractor, W. G. Hughes; signed, March 16; filed, March 16; cost $1348

Valencia near 16th. To build; owner, W. A. Bahr; architect, Emil John; contractor, F. A. Hellmuth; signed; March 14; filed, March 15; cost $2585.

Valencia and 15th. Excavations, etc.; owner, Rose A. Pickering; architects, Havens & Toepke; contractors, Whittle & Smith; signed, March 16; filed, March 22; cost $1891.

Van Ness Ave. near Vallejo. To build; owner, John Evans; architect, J. P. Chadwick; contractors, Wm. Smith & Thomas Rindell; signed, March 15 filed, March 8; cost $3675.

Vallejo near Buchanan. To build; owner, Thomas F. Boyle; architect, J. C. Newsom; contractor, Jas. McLean; signed, March 28; filed, March 30; cost $4647.

Vermont near Nevada. To build; owner, Isaiah Leslie; contractors Holmgren & Westerlund; signed, March 30; filed, April 2; cost $1200.

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IF late a great many accusations have been made of inferior workmanship being done in the construction of the foundations destined to carry the superstructure of the new ferry depot, which the State Board of Harbor Commissioners are erecting at the foot of Market street. The daily press have taken the matter up and redoubled the noise made by the accusers, till a disinterested public would be justified in believing it dangerous to even walk across the concrete arches and piers already completed. From the Governor of the State down through the Grand Jury and investigating committees and experts of all kinds, the foundations have been bored and tapped and tested, with the result that the more they are investigated the better they prove to be, and not a single serious charge against the contractors or the engineer in charge has been made to stick. But as a scape-grace must be found, it is now charged that the architect did not make a sufficient number of personal visits of inspection, and our worthy watch-dogs of the treasury will try to avoid any further payment of the architect's commission on that ground.

There is no doubt that the architect would have been held responsible in case the foundations had been found defective; it is a poor rule that will not work both ways; if the architect is responsible for the proper execution of the work, and would be blamed if things went wrong, why in the name of Justice is he not entitled to some credit when praise of the ferry foundations is the order of the day.

WHAT THE STATE OF MASSACHUSETTS HAS DONE IN REGARD TO GOOD ROADS.

STARTING in June, 1892, a Temporary Commission was appointed to examine into the condition of the roads, and to draft a bill providing for the improvement of the highways of the Commonwealth. The law suggested by the Commission was, with some changes, passed in June, 1893, but, before any petitions for construction of State highways were submitted to the General Court, an act was introduced and passed June 20, 1894, increasing the powers of the Commission, and permitting the Selectmen of any town, or the Mayor and Aldermen of any city, as well as County Commissioners, to petition the Highway Commission for taking roads as State highways. In place of submitting to the Legislature a separate bill for the construction of each road, it was voted that the appropriation be used by the Highway Commission, without further legislation, in building State highways.

The $300,000 has been pretty evenly divided among fourteen counties. Before deciding which of the many petitions should be granted an official visit was paid to each locality, and full information as to the value of the proposed improvement collected. While this method has distributed the work in small sections of roads, thus increasing the expense per mile, the advantage to the people at large will be greater, for the reason that each portion of the State highway constructed is intended to be an object lesson to those living near by. County Commissioners and other officials will watch the work as it progresses, and follow out the same lines in building county and other roads which are not intended for State highways.

The plan is to build, section by section, such roads as will connect the great centers of trade, and join with through roads in other States, so that both local and interstate communication will be benefited. Under date of January, 1895, the Massachusetts Highway Commission has rendered a report which covers the work of the past year, and this publication should be consulted by those who are considering legislation.

The provisions of our law will permit contracts for the construction to be let to municipalities or to private corporations, but the former arrangement is preferred, as it is more effectual in teaching the people the art of road building, and protects the State against cheapening the work by the importation of foreign laborers, an element which is apt to be objectionable.

A resident engineer is appointed by the Commission, and it is his duty to be in attendance, and keep a correct account of all items to be paid for by the State.

Wherever the traffic was of sufficient proportions to warrant it the roads have been broadened. The advantage to owners derived from the construction of the way is, as a rule, so much greater than the injury to them by widening the road that, in a large majority of cases, the town officials have been able to procure releases without any cost.

Thirty-eight sections have been contracted for, and only eight of them are to have a width of eighteen feet of hardened surface, all others being fifteen feet wide. As the primary object is to get length of way, the Commissioners are considering the advisability of building single-track roads in the thinly-settled districts. These would not be over nine feet wide, with here and there portions of double width as convenient passing points for carriages. A mile and a half of such roads can be built for less than the cost of a mile of fifteen feet width, and the advantage in getting produce to market is not lessened, provided such construction is confined to localities where the average traffic is from six to eight vehicles an hour.

There is need of legislation to regulate the care of, and responsibility for, sidewalks on State highways. These being of purely local advantage should be under the supervision of the town, the wheelways alone being constructed and kept in order by the State.

Progress has been made in the laboratory work on the road building stones of the State. Experiments of this kind are carried on at Harvard University in the Lawrence Scientific School, whose dean, Prof. N. S. Shaler, is a member of the Highway Commission. The chief aim of these inquiries has been to determine the qualities which constitute fitness for road making. This will be of value to the Commission in enabling them to utilize the road material near at hand, and thus lessen the cost of construction. As this phase of the work progresses maps are made showing the location of all deposits suitable for road building.

A number of towns have already appropriated money to build their streets in the same careful manner as those constructed by the State, and others have purchased road machinery with the intention of extending the work on roads other than State highways.

Careful consideration has been given to the plan of planting shade trees along the highways. With this end in view, experts have been consulted concerning the best varieties for the purpose, and the wayside trees have been examined, so as to determine the species well adapted to the climate and soil of Massachusetts.

As the estimated expense of procuring and planting these trees is not less than one-half a million dollars, the Commission has rightly made this question secondary to road building, but in the meantime they are collecting such data as will enable them to work with profit on the adornment of the roads after the construction is well in hand. The American and English elms have the advantage of fairly rapid growth, with shade high above ground, and the leaves falling from them give but little obstruction to the gutters. They have the disadvantage of being subject to the attacks of insects, so that the cost of protecting them from these pests would be considerable. Maples grow well and are beautiful, though they often shade the road too much. It is the custom in parts of Europe to plant the road-sides with trees which yield profitable crops. In France and Germany, for example, cherry trees abound. In these countries the yield of the wayside trees belongs to the neighboring land owners, but in some cases to the community, and their product is well guarded by law. There will be more or less experimenting on the part of the Commission before they decide upon the species to be planted. The law provides for the beginning of this work in the Spring of 1895, and from that time it will be carried on slowly, so as to give us the benefit of experience.

Every State should make a beginning on road improvement. In thinly settled regions of the country, where the people do not feel able to undertake much, they can do no better than to start the reform by constructing sections of single-track roads. No community can afford to neglect the common roadways. Our prosperity is too intimately connected with the facilities for communication.

I have spent many thousands of dollars in inaugurating and advancing this reform, and continue to take an active part in it, though for a long time I have not addressed you on the subject.

The interest is now general, and the leaders numerous, consequently there is a demand for road news, more especially for the recent advancements in the line of actual experience.

ALBERT A. POPE.

GLASGOW—A MODEL MUNICIPALITY.

TO the thoughtful mind, nothing is more interesting or a more hopeful sign of the times than the growing interest which we in Great Britain are learning to take in questions of municipal government. Sixty years ago representative municipal government, in the sense that we attach to the word to-day, was a thing unknown. The towns were then in the hands of the old close corporations. The representive principle only received final sanction in 1833, in Scotland; two years later, in England. It has grown up with the Victorian era, nor is it the least of the important developments that have done the same. Perhaps a cynic might find significance in the fact that the real importance of Parliament as an administrative body has been steadily decreasing during the same period. The House of Commons has been more and more given up to the demons of speech, irrepressible and leading nowhither, until in this present year of grace men are learning to look to the remarkable renascence of municipal spirit as the most likely source of the reforms that are needed to adjust the conditions of modern life to modern people. Even London, whose inherited *inertia* has combined with her proximity to the central authority of the Empire to make her neglect her own salvation, has at last awakened to the desirability of good self-government, and the consequence is that her inhabitants have, some of them at least, ceased to ask, with disdainful scorn, whether any good thing could come out of Nazareth or Sunderland. They are not unwilling to take counsel from the experience of Berlin and Paris, even of Manchester and Glasgow. The whole change that has come over the public mind in this respect in the last twenty years is admirably expressed in a recent speech of Mr. Chamberlain, who has himself contributed to it in no small degree. "Now," he said, "people are beginning to appreciate the fact that municipal government is the most potent agent of social reform, and that it is the best instrument by which the wealth and the influence and the ability of the whole community can be concentrated and brought to bear in order to relieve the pressing wants of its least fortunate members, and in order to raise the general level and standard of the whole population." There are many towns to-day from which this definition might be illustrated. Manchester and Birmingham and Bradford are all keen at the work. But Glasgow, whom her citizens delight to call the second city of the Empire, assuredly deserves the name of first, both in regard to the chronology of modern municipal development and to the success with which she has executed all her designs. Glasgow was on the crest of the wave of reform which began to gather in the cities of the United Kingdom about the middle of the century, and she has many lessons to-day to teach even her most advanced sisters. Some of these I am now to sketch, with the apologies for the necessary limitation of my canvas.

The municipal policy of Glasgow for the last fifty years may be defined in words used by her present Lord Provost, Mr. James Bell, who is himself an epitome of the social enthusiasm, the business capacity and the enterprise that distinguish the city over which he rules. It is, in brief, to attempt to make the life of the citizens as healthy and as happy as is possible. The Corporation recognise three duties as being lain upon them: to fulfil their trust by economical administration of the city's finances; to improve public health, both physical and moral; and to give brightness and the possibility of happiness to civic life. There are few residents in Glasgow to-day who are unwilling to admit that this rather ambitious programme has been carried out to the full. Good financial management is placed first partly because the Glasglow town council is composed of business men who apply the lessons of their practical life to their municipal work; partly because (to quote the Lord Provost again) their duty "is to the whole body of the citizens rather than to individuals, and low rating is the most widespread of boons." The result is that the well-to-do Glasgow householder enjoys his manifold advantages for a rate of little more than half-a-crown, while his poorer brother is still more lightly taxed. Beyond that, the Glasgow Corporation hold it their duty to undertake the supply of those necessaries of life—light, fresh air and pure water—which private enterprise cannot generally be trusted to provide. Further, they attend to the prevention and cure of the moral and physical diseases that always threaten a large community. They prefer prevention to cure, and therefore they endeavour to give everybody a chance of owning a clean and decent home, with fresh air, sunlight, and opportunities of recreation for himself and his children. Parks and picture galleries, recreation grounds and concerts are supplied by them on a sound commercial basis. "The power of the multiplied penny" is very thoroughly understood in Glasgow, where Councillors are accustomed to boast that for an infinitesimal fraction in the rates they can give their constitutents parks and picture galleries that no millionaire could afford to own so near the heart of a town. Indeed, if the chancellor Oxenstiern had known Glasgow to-day, he would probably have instructed his son to go and see with how little expense and how little fuss the world could be governed, and so have deprived the leader writer of one of his favourite *cliches*.

As in case of most governing bodies which have come into being by evolution, not by creation, the functions of the Glasgow Corporation are distributed in a somewhat arbitrary manner. The seventy-seven gentlemen who compose the Council meet now as one body, now as another, for the discharge of various duties. This Proteus-like transformation is a relic of the past that might be spared. But there is no difference in the constitution of the various ruling bodies, and the Council is really one and indivisible for all its functions. The administration of the city's property is in the hands of the Town Council, as also that of certain minor trusts chiefly educational. Next come the trusts of greater importance which are in the hands of the Magistrates and Council of the City of Glasgow. Thus we have the City Improvement Trust, the Markets Trust, and the Water Trust. The supply of gas and electric light, the parks and picture galleries, the public baths and wash-houses, and the tramways are also managed by the Town Council. That body controls in addition the Michell

Library, a collection of upwards of 100,000 volumes, which Glasgow owes to private generosity. Persevering attempts are being made to get the Free Libraries Act adopted, but it is one of the few blots upon the fame of the city that they have not yet been successful.

The Corporation adopts the name of the Police Commission in order to discharge some of the most important of its duties. Indeed, it may be said that the Town Council might perhaps be spared, but the Police Commission never could. It has also been said that that the one corresponds to the spiritual power, the other to the secular arm; but it is not well to push the metaphor too far. The name of the Police Commission recalls the old Scottish connection with France and the once universal Roman law. It must be taken in the wider significance of the Greek *politeia*, rather than in the narrower sense which England attaches to the word. The duties of the Police Commission of Glasgow include the work of the policeman proper, of the lamplighter and the fireman—watching and lighting, in short; further, the whole of the very important sanitary department, the repair and cleansing of the streets, and the purification of sewage before it is sent into the Clyde, a work that is as yet only done in part. It has long been contended by certain critics that this distinction between the Council and the Police Commission is wasteful, since it involves the duplication of certain officials, and it is possible that the administration of the city will soon be unified in name, as it has long been in reality. But this is another story.

When an outsider proceeds to look more closely than this Pisgahsight has done into the municipal activities of Glasgow, he finds that both in chronological order and in magnitude the water supply is the first matter that calls for attention. This has long been a text for the sermons of would-be municipal reformers in other towns. The wave of municipal progress that appeared in Great Britain about the middle of the century probably arose from the scare that was caused by frequent outbreaks of cholera and typhus in the large towns. In Glasgow it showed itself in uneasiness about the water supply, which was then derived from the comparatively unpolluted Clyde. Forty years ago this supply was both impure and limited; nasty, though by no means cheap; and the Corporation decided, with some misgivings, to venture on the then unprecedented step of taking water for their city from the beautiful and romantic Loch Katrine, thirty-five miles distant. The domestic water-rate was then 1s. 2d. in the pound. In the course of the first sixteen years years after the introduction of the Loch Katrine water it was reduced to 8d., and for the last four years it has stood at 6d. The necessary raising of the Loch has destroyed the famous Silver Strand but Glasgow is not so romantic as to think that an offset to the fact that the water, "caught within cloudland, is purity itself." There is practically an unlimited supply for domestic purposes, and in consequence the Corporation are able to rejoice over the fact that Glasgow is said to use more water per head of her population than any town in the kingdom. Only Dublin gets cheaper water, and not even Manchester gets it better.

The finance of the matter, though dry, is practically interesting, since it relates to the first experiment in municipal collectivism that was made on a big scale in this country. One cannot, unfortunately, say of statistics, as Philaminte did of Greek, that with them *on ne peut gâter rien*; but on a subject like this the reader must be entreated to pardon a certain sprinkling of figures. The capital outlay on the waterworks up to 1894, then, was nearly two and a half millions sterling. In 1870 a sinking fund was established. Through its agency about three-quarters of a million have been paid off up to the present time. And this sinking fund will pay off the whole of the remaining debt by 1941, when the present waterworks will be the unencumbered property of the Corporation. In the meantime the supply of water has been immensely increased, the quality vastly improved, and the price more than halved. It has been calculated that the aggregate saving to the consumer since 1870 amounts to more than two-thirds of the debt now outstanding. It has, in short, been conclusively proved that municipal management of such a business as the supply of water is compatible with a direct saving of money to the consumer and a great improvement in the supply, while it is impossible even to guess at the economy in life and coin that has been effected by the introduction of the soft, pure, and abundant water of Loch Katrine to the crowded city.

The Water Trust is also about to supply power in the form of water at a pressure of 1,000 lbs. to the square inch, throughout the business area of the city. The hydraulic mains will be extremely useful in case of fire. Further, the selling of power ought to prove another interesting experiment in municipal "business."

Along with water one naturally thinks of gas as another necessary of life. Here, too, the Glasgow Corporation have long held the field. It was no doubt, the marked success of their dealing with the water that encouraged them to assume control of the lighting of the city. In 1869 they took over the production and sale of gas from the two private companies which then performed it. The quantity of gas sold has since more than trebled, while its price has been correspondingly decreased. The total debt on the gas works is still nearly two millions, but one is credibly assured that this formidable sum will be cleared off in twenty-five years from now by the operation of the present sinking fund.

The Corporation have also supplied electric light for the last three years. Many streets are lighted with it, in a rather pleasing fashion, and there are about five hundred private consumers.

But perhaps the most brilliant affair is the undertaking of the tramways. The history of this business is worthy of record. The tramways of Glasgow have hitherto been worked by a private company which had a lease of them for twenty-three years, that expired June 30, 1894. Some six years ago the Council requested the Tramway Company to assent to certain conditions, regulating, amongst other things, the hours of work of the Company's servants. The Company refused point-blank to do anything of the kind. Immediately thereafter it was suggested by some of the more advanced Councillors and their friends—especially by their friends—that the town should take the tramways into its own hands on the expiry of the lease. For some time this proposal was generally treated as "rank Socialism." But it was not long in commending itself to the citizens. As often happens, the citizen tail wagged the Corporation dog, and a speedy *volte-face* was made by Councillors who had been most backward in the matter. The Company, confiding in what is fondly considered to be its necessity to the town, refused to make any concessions. And so it was determined that the lease should not be renewed. One consequence of this was that the Company felt itself much injured, and threatened to do its utmost to wreck the Council's business. It was known that the Company was going to

put omnibuses on all the tramway routes, and to start a brisk competition; also that the Council had to begin the service without experience, with new men, new plant, and new horses. So this notable experiment in municipal tramway management was tried under perhaps the most unfavourable conditions that could have been selected.

It is no light matter for inexperienced men to start a tramway business on a scale that involves 300 cars, 3,000 horses, and 1700 men, even with plenty of time in which to prepare. The only possible practice that the Corporation could give their men and horses was "under difficulties, in tracks temporarily laid down at the depot." Their achievement under the circumstances was little short of miraculous. At midnight on June 30th the last of the Company's cars left the lines. At five the next morning those of the Corporation began to run. Luckily it was a find Sunday; still more luckily, the citizens were well aware that the experiment was being made in their interest, and were lenient judges of the inevitable defects of the first few days. The general criticism was, that these defects were wonderfully few in number.

It was a trial start, and with so many new men and unaccustomed horses, some confusion might not unnaturally have been expected. On the contrary, however, the service seemed to go like clock-work from the first hour . . . The horses were only given about half work to begin with, and this was gradually increase as they became somewhat seasoned. Within two months from the start they were able for full work, and the complete service of cars was running."[1]

There was no doubt whatever that the new cars were a vast improvement upon the old. They were larger, more roomy, and much easier of access. The corporation, besides improving the service, also reduced the fares. They introduced the halfpenny fare, hitherto unknown; they extended the penny stage, and made twopence the maximum fare. There were not wanting critics to declare that, in face of the keen competition of the old company's 'buses, this was madness, and to prophesy a serious deficit on the first six months. The Corporation refused to be discouraged, and gave their servants the six-day week, not to exceed sixty hours in all, while the Company has steadily declined to concede.

About two months ago the first opportunity was given for judging as to the financial success of the Corporation. To satisfy the very general and not unjustifiable curiosity, a trial balance was struck for the half-year ending December 31, 1894, The Lord Provost announced the gist of this as follows:—

"The result is that, after providing for all charges for working, maintenance of plant (including permanent way), interest, and also payment to the Common Good, as arranged at the rate of £9,000 per annum, the accounts still show a credit balance on the six months' working; or, to give it perhaps in more detail, the revenue has met all working charges, interest on capital, the half-year's payment to the Common Good, upkeep of cars, upkeep of plant and buildings, upkeep of permanent way, covers loss of horses by death and horses found unsuitable and sold under cost, and still leaves a credit balance; and further, nothing has been placed to capital beyond initial expenses incurred prior to 1st July last. It must be kept in mind that this result has been achieved with the keep charges of a full stud of horses, but as these at 1st July were soft and unfit for heavy work, the service was begun with only 108 cars, gradually increasing until now about 250 are in daily use. All fares have been reduced, on some routes to the extent of 33 per cent, while to the great benefit of the people, halfpenny fares have been introduced."

This result, in face of the opposition of the 'buses, is enough to fill every believer in the possibilities of municipal enterprise with gratification, and reflects much credit upon the business powers of the men who engineered it.

Continued in June number.

(1) Let me here say that this quotation is taken, like so many of my facts, from the admirable summary of the year's work now annually published by the Lord Provost, whose innovation may be recommended to the heads of other municipalities; let me also take this opportunity of thanking him and other members and officials of the Corporation for the courtesy with which they gave me the information I desired.—G. F.

MOSCOW'S BIG BATH-HOUSE.

THE death of the enormously wealthy Russian philanthropist, M. de Tegorow, at Moscow, will probably have the effect of opening to the public the great baths which, some nine years ago, he caused to be constructed under the shadow of the Kremlin walls. Not only was provision made for the classes, but also for the masses, while the clothes of each bather who desired it were to be washed and ironed free of cost. M. de Tegorow spent many million roubles in the erection and furnishing of this establishment, which was to have been thrown open on January 1, 1885. Dismayed, however, by the prospect of too much cleanliness, the gypsies, whose aversion to the quality which is generally considered as being next to godliness is well known, determined to devote all their efforts to frustrate the excellent intentions of the philanthropic millionaire, and consequently an old woman who had besought him to permit her to tell his fortune, warned him that he would die on the day that the baths were opened. Like all his countrymen, M. de Tegorow was extremely superstitious, and the dismal prophesy resulted in the huge structure with all its magnificent appointments remaining unopened and unused. Meanwhile, the object of the gypsies had been attained, for nobody would invest money in the construction of other baths while any possibility of those built by M. de Tegorow remained. The result is that Moscow and its citizens have lived up to their reputation of being the dirtiest city and the most uncleanly people, not only in the Empire, but in all Europe. It is likely, however, that before the summer comes, the establishment will be in full operation, and that the people of Moscow will have the oportunity of pronouncing themselves in favor of cleanliness or filth.—*Marquise de Fontenoy in the Philadelphia Press.*

RICHMOND IMPROVING.

SINCE January, 1893, up to date there have been over 2000 houses built in San Francisco, of which it is estimated 15 per cent have been erected in Richmond. Miles and miles of streets have been graded and sewered. A scientific system of sewerage, with proper outlet to the bay, has been laid down, and to-day, it is said, Richmond is the only properly sewered district in the city. It also enjoys excellent transportation facilities, and when the Sutro road is completed and the Geary street line continued it will, with those roads now running through the district, be ahead in this respect also. Saltwater mains have been laid in the district for private baths, flushing sewers, sprinkling streets and putting out fires, for which purposes it is superior to fresh water. The Spring Valley mains give an abundant supply of good fresh water. The location, scenery and shelter is unsurpassed. Its closeness to the park and bay, coupled with the advantages enumerated above, make Richmond, with its magnificent marine views, a favored locality for building homes.—*Daily Call.*

DURABILITY OF RED LEAD ON IRON.

AN old painter thus sums up his fifty years' experience with red lead as a paint on iron work exposed to severe atmospheric influence: "It was about thirty years ago that I first began to take any interest in the causes of decay in paint on iron surfaces, and then I began to think and inspect work I had done ten years previously. About thirty-five years ago I had to do some iron rods, which were string-bolts for holding a large roof together in a flax spinning factory. These rods had been painted with oxide of iron and had rusted. They were cleaned to the iron, and so thoroughly that the iron was made bright with rubbing. I had to paint them with red lead mixed with half oil and half turps, and some liquid dryer of my own make. This dryer was composed of black wad, red lead and oil boiled to a pulp and then thinned with turps. The second coat was about the same as the first. The third coat contained less turps, and the fourth and last coat hardly any turps. This work has not been done since, and is to-day as perfect a protection to the iron as then. Four years ago I visited the place and was allowed to examine these bolts, and when I scraped off the paint the iron was as bright as when I painted them. Another case is a water wheel which has been built seventy-five years. Twenty-five years ago I had a contract to paint this wheel. The owner thought he would have it cleaned and painted. I employed men to clean it thoroughly and to my surprise I found no rust. When I called the attention of the owner to the fact, he informed me that his father had painted it fifty years before, when it was built, and the red lead was made from ore got in a hill just by, and smelted in the village. However, I gave it two coats of red lead, mixed as I have stated. This wheel is still running, has not been painted since and is in good condition. Now, in regard to work rusted on a smooth surface, I have done work of this kind also, which has been exposed to the sea air. My first step is to clean thoroughly, and then, if badly rusted, to mix a thin mixture of lamp black with plenty of turps and dryers, and a little oil, and when dry apply the red lead as above. This will give a lasting job, as the lamp black arrests and prevents the rusting. In conclusion, I would say if any of your readers want a job of iron painting, let them try the above plan, and I am sure that they will be repaid for the trouble and extra cost as compared with the customary *wash* of matallic paint and oil."—*The Hub.*

TRADE PAPERS DESERVE THEIR SUCCESS.

A man who subscribes for a trade paper does so, not only because he is alive to the interests of his trade in general, but because he expects to find in it—and generally does—information and suggestions of value in the conduct of his own business. Such a man reads his paper from end to end, advertisements and all, commenting as he goes along. Many things are jotted down on his memo. pad for every day use, as well as for inquiring further into on his first visit to market. And as it is necessary for a man to be wide-awake nowadays in order to succeed in business, these are the men who subscribe to their trade journal, and are the advertisers' best patrons. The cannot afford to pass anything which promises help or suggests additional profits. Hence, the trade journal is the best medium for advertising things which concern the business man.—*Newspaperdom.*

APARTMENT HOUSES AT POMPEII.

OUR architects should not forget that the modern system of hotels and apartment houses on a vast scale is merely child's play compared with the practice of the ancients in the same direction. Recent excavations at Pompeii have unearthed some enormous buildings of such beauty and solidity in architecure, such perfect drainage, and such provisions for health and comfort as to fill all who have seen them with astonishment. These newly discovered buildings contain thirty or forty immensely spacious apartments on the first floor, and as many on the second. The rooms looked out on a rotunda nearly forty feet long; courts supported by columns surround the bedrooms which opened upon large, ornamental gardens with fountains. Provision for light and air was made upon the most extensive scale. On the second floor were found evidences that there were suites of rooms built upon the flat plan of to-day. In fact, the revelations made by the exhumers at Pompeii show that place to have been one of the most wonderful watering places for splendor, comfort, health, and enjoyment, and gave every evidence that floor-renting, like many other modern improvements, is not a new thing under the sun.—*Carpenter and Builder.*

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.

COTTAGE for Marin County shore, Herman & Swain, Architects.

SECOND United Presbyterian Church, Samuel Newsom, Architect.

PROPOSED Hotel, near Golden Gate Park, San Francisco.

Miss Antique—"How dare you kiss me?" Jack Gallant—"I don't know. Must have had a temporary fit of insanity."—*Rochelle Life.*

"Have you heard that big sleeves are going out George?" "Yes, but I don't believe it." "Why not, pray?" "I don't believe they can get through the door."—*Harper's Bazar.*

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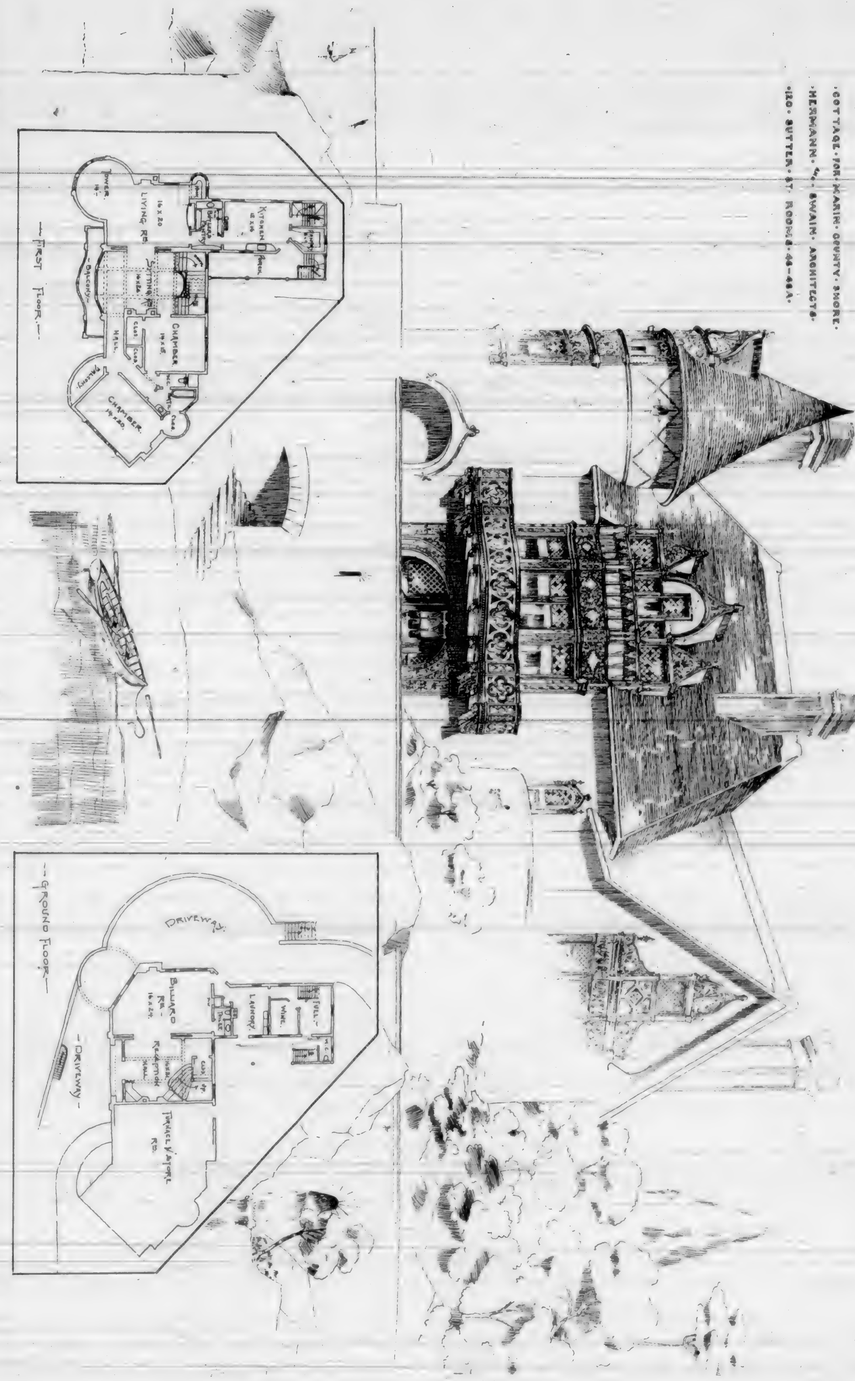

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