

Knights of Pythias in San Francisco—Their Prospective New Castle Hall.

A PUBLIC meeting of the members of the order was held in B. B. Hall, Eddy Street, August 31, for the purpose of enlisting a more general interest on the part of the members in the movement now on foot to raise, by sale of capital stock of the Hall Association, the necessary funds to begin at an early day the erection of a

NEW CASTLE HALL.

Large and commodious, and in every way suited to the wants and necessities of the order, not only as providing lodge rooms for the valiant knights in San Francisco, but a grand headquarters—a home where the membership universal on this coast, personally and collectively, may repair and enjoy all the benefits and advantages to be derived from fraternal intercourse and fellowship.

The lot is an eligible one, fronting 77 feet along the northerly side of McAllister Street, opposite the Hall of Records, by a depth of 137 feet 6 inches. It has increased in value a hundred per cent. during the past few years, and the property in time will rank among the most valuable in the city, off from the great main streets, which will forever command and hold pre-eminence.

An incorporate Hall Association has been organized, composed of intelligent, capable, and honorable members of the order, who are working hard to set in practical operation, measures calculated to consummate the desired end. The capital stock of the Association is fixed at \$100,000, divided into ten thousand shares of the par value of \$10 each. The lodges in San Francisco have already taken well on to \$20,000 worth of the stock, which sum will be materially increased from the same sources as necessity requires. The enterprise is one that should not and will not be allowed to fail of success, as it presents many inducements to both lodges, as such, and individual members personally, to become shareholders.

AS AN ORDER MOVEMENT.

With a view to securing and owning meeting-rooms for its lodges and associating therewith in the shape of a grand assembly hall, library, chess room, drill room, and all the modern conveniences and comforts known in connection with buildings of this character, it commends itself to most favorable consideration; and.

AS A BUSINESS PROPOSITION.

It is an investment that should meet a hearty response from every member of the order, as its incomes and profits are assured from its inception, by rental from lodges under Pythian jurisdiction, in addition to large prospective receipts from its grand assembly hall, from organizations other than Knights of Pythias, and other incomes that have crowned the successes of other orders less numerous in membership, who have secured to themselves buildings of their own.



ELEVATION COUNTRY COTTAGE.—PLATE 3.

An interesting review of prospective cost and income was given by P. C., T. F. Bachelor, who was followed by G. C., Geo. B. Katzenstein, P. G. C., John H. Harney and W. H. Bodfish, and by P. C., A. K. Stevens, James Patterson, F. H. Farrar, Dr. N. J. Bird, and others. The assemblage was not numerically as great as was hoped for, but this was made up by the hearty enthusiasm and interest manifested by those present, and the individual subscriptions to the capital stock.

The importance of the matter being more than local, it is expected that every lodge of the order within the jurisdiction, and every member who can afford it, will aid the enterprise by becoming shareholders.

Building Report—Woodland, Yolo County.

DURING the past three months, mechanics generally have been well employed, and material dealers fairly busy, the only drawback experience being a scarcity of coin, as three-fourths of the building business is conducted here on a cash basis. The prosperities have been such that no one should feel discouraged should there be less work done during the remaining months of the year. Still there are a number of first-class buildings and improvements on the prospective state, for early commencement, and good reasons to anticipate a good ending and showing for 1885.

The list of building improvements of all classes for the third quarter of the year is as follows:—

CITY OF WOODLAND.	
35 Frame buildings, value.....	\$102,000
3 Alterations and repairs, value.....	3,000
38 buildings.....	\$105,000
YOLO COUNTY.	
16 Frame buildings, value.....	\$30,875

4 Brick buildings, value.....	25,000
20 buildings.....	\$55,875
A total for the third quarter of 1885, of.....	\$160,875
Corresponding periods in 1884, 29 buildings and improvements of the value of.....	97,400

Gain for 1885 over 1884 of.....\$63,475

In the preparation and prosecution of the figuring, the services of architects are fully up to, if not greater than any previous time, thus demonstrating the fact that our people intend to build wisely and well, observing true and correct taste and principles. Many of the cities and towns in this State are noted for the good judgment, refinement, and æsthetic taste displayed by owners, architecturally and otherwise, in the improvement of their property—a most commendable ambition, which should be practiced in all cases. Good judgment should never be influenced by bad examples, nor inconsistencies and incongruities accepted and duplicated, because other have so far erred as to practice abominations in the name of architectural science. Architecture is susceptible of almost endless treatment and variation, and any community of people may beautify their surroundings, by the exercise of good judgment, and the adoption of styles in buildings calculated to incite and inspire sentiments of admiration. In this view of the case, all artisans and mechanics should be careful in the style and character of the work presented by them for public criticism, so that it may reflect credit and prove worthy of imitation by others. GILBERT & SON.

Woodland, Sept. 5, 1885.

Plaster, How to Make It.....	\$1.00
Shavings and Saw-dust.....	1.50
Lumberman's Hand-Book.....	2.00
Practical Geometry.....	1.00
Architects' Companion.....	2.50

Crowded Out—Exchanges—Future Enlargement.

THE quantity of original matter appearing in present issue, has crowded out a number of valuable articles from the columns of several of our highly-esteemed, and ably edited and conducted exchanges. To meet this condition of things, and provide for the utilization of the vast volume of interesting matter received monthly, through the piles of Eastern and foreign contemporaries, arrangements are being perfected by which this journal,

IN JANUARY, 1886, WILL BE GREATLY ENLARGED AND IMPROVED.

Giving much greater space for both reading matter and advertisements. A number of able and intelligent, scientific and mechanical writers and correspondents will be added to its staff editorial, and nothing that personal devotion and means can accomplish, will be left undone, to place it still higher in public esteem and confidence, and render it a journal of still greater reputation and merit. To this end, we ask the hearty co-operation of every present patron and subscriber, in assisting to

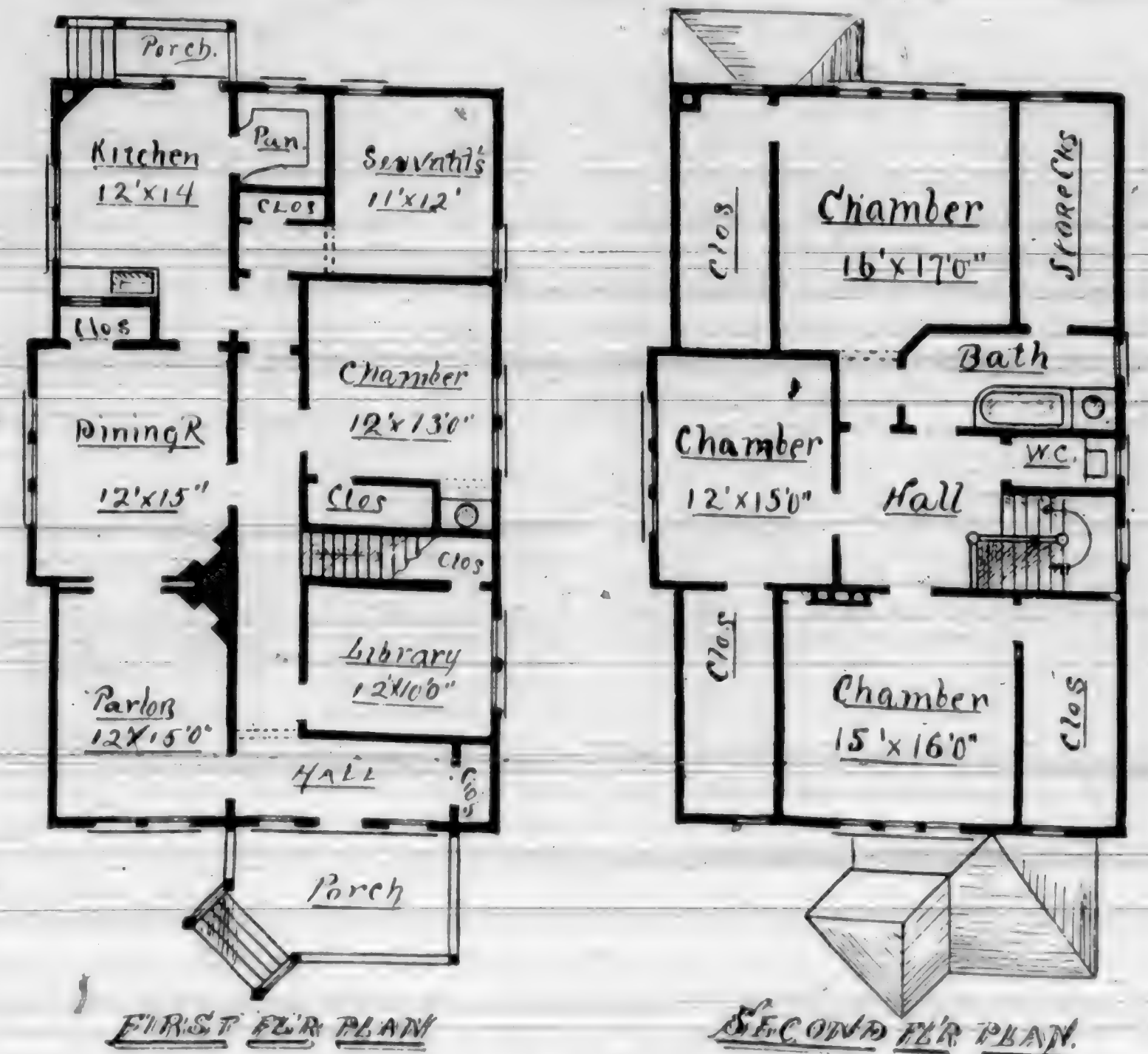
INCREASE ITS SUBSCRIPTION LIST.

Every new, and renewed subscription gives encouragement; encouragement stimulates ambition; ambition, effort; and well-directed, intelligent effort never fails of accomplishing the end and purpose aimed at.

THE BLACK DIAMOND.—The first number of the first volume of a new monthly journal, bearing the above title, is before us, edited by T. I. Jervis and H. A. Bischoff, with C. W. Collins as manager. It is published in Chicago. Very neat, clear, and readable in typographical execution, and its columns well filled with matter interesting to the general reader, as well as to those specially interested in the coal interests, to which it is particularly devoted. We bid it good speed and prosperity, and welcome it to our already plethora exchange list, and hope the number of its subscribers on the Pacific Coast may be large. Our hand, brothers, hoping that while the base of the interest you represent is black, smutty, and not to be handled with white kid gloves, your success may ever be bright and cheerful, and never smoky, even though you may have to replenish the fires of your ambition with earnest effort.

A verdict has recently been given by an English jury, which is of considerable interest. The tenant of a house in Croydon brought an action against his landlord for damages resulting from the death of his wife, from diseases caused, he claimed, by defects in the drainage and plumbing. The lady had possessed an income of \$5,000 a year, which "died with her," and for this substantial loss the husband asked compensation.

He showed that he had rented the house on representations of the landlord that it was in perfect sanitary condition, and that its plumbing and drainage had been done under the



FIRST AND SECOND FLOOR PLAN OF COUNTRY COTTAGE.—PLATE 4.

supervision of the Croydon Local Authority. But the state of the house was bad, sewer-gas escaped from the joints of the soil-pipe and from a broken trap, and a drain in the rear of the house was stopped. Before the death of the wife, the cook, the gardener, and the stepson of the plaintiff were ill. The landlord showed that he had reason to believe at the time that his representations about the condition of the house were true, as the local authority of Croydon had inspected the house, which was a new one, and had not found fault with any arrangements. But the jury, nevertheless, found for the plaintiff, awarding him \$10,000 for the damages sustained in the loss of his wife, and \$1,140 additional for expenses which he had incurred by reason of the insanitary arrangements.

In a circular issued by the Board of Health of Bridgeport, Conn., the following directions about diet and cleanliness in cholera seasons are given:—"As regards special precautions against cholera, great care should be used in the matter of food and drink. Wholesome meats and vegetables, and ripe fruits, may be used freely; in fact the free use of acids in fruit or otherwise is supposed to act as a preventive. But under no circumstances should any decayed or stale vegetables, unripe fruit, or tainted meat be allowed to be sold or used. The liability of water in the wells to become polluted by the contents of sewers and vaults, even if placed at a distance from them, should forbid the use of well-water for drinking purposes in all thickly settled places. Indeed,

during a time of threatened cholera no water should be drunk until it has first been boiled to destroy germs. It may afterwards be cooled by placing in contact with ice, but not by the addition of ice. Milk should be boiled before using for the same reason. The use of cathartic medicines should be entirely avoided except under the advice of a physician."—Sanitary Engineer.

In no part of economy are we divorced from wire. It is our slave, and an ever-present master. Sleeping, we repose on wire mattresses. Eating, we see food which has passed through sieves, and which is sheltered from insect appetite by wire covers. Calling, we pull wires to ring curled wire gongs. Traveling, we are conveyed by cable or electric railways, hoisted by elevators hung on wires and hurried over wire bridges. We announce our coming by telegraph or telephone wires, and we tread our way by night through streets lighted by means of electric cables. Across our fields are strung thousands of miles of barbed wire. Our clocks are set by wires, our watches run by wires, our books are stitched by wires, our pictures hung by wires, and our politics managed by wires. Forty years ago there was not a telegraph office in existence. To-day they number over 60,000. Ten years ago the telephone was not in existence. To-day there are 330,000 in use in the United States alone.—Electrical Review.

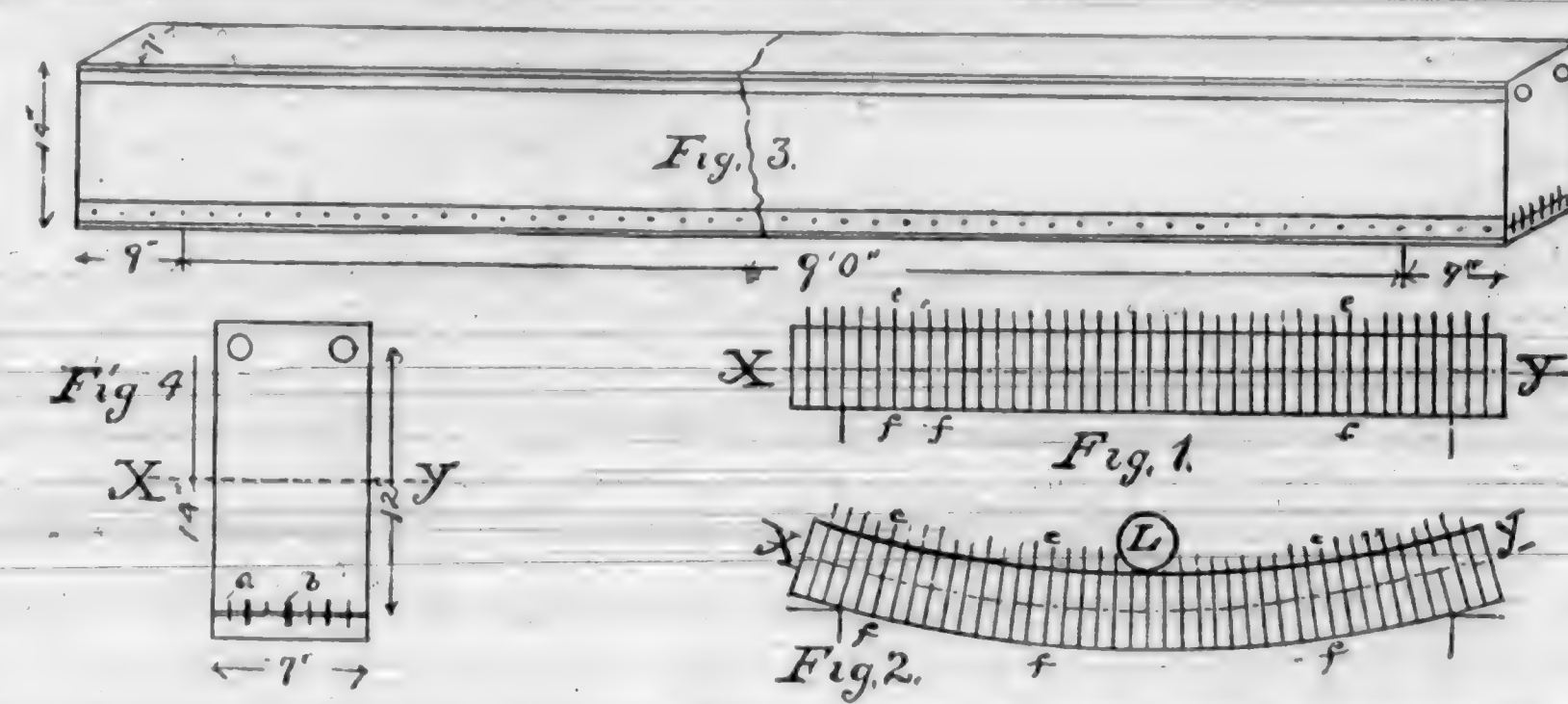
Model Homes.....	1.00
Hand Railing and Stair Casing.....	1.50
Drawing for Carpenters.....	1.75

Concrete.

AN interesting experiment was made on the 31st of August in the presence of several architects and scientific gentlemen at the Industrial Iron Works, No. 233 Beale Street, by Mr. P.H. Jackson, to demonstrate the strength of a Portland cement-concrete beam combined with iron of a kind invented by Mr. Thaddeus Hyatt and largely experimented on in London, in 1876. One of the objects of the invention is that they may be used in part as beams or girders to support sidewalks, floors of buildings, as well as walls, etc. The advantage claimed by the construction is that the sidewalk, floor, or wall aids in its own support, in furnishing all the compressive resistance requisite in the part usual above the neutral axis of a beam. The concrete-combined-with-iron part of the beam is cemented to the bottom part of the wall or sidewalk to be sustained, and is required to furnish only the tensile strength, or that part of a beam below the neutral axis.

These concrete beams or girders are straight and are made of Portland cement and gravel, and with a small quantity of iron or steel bars built on the bottom of the concrete body, sufficient to resist the tensile strain due to the load, the sidewalk or wall to be supported to which it is cemented, furnishing the remaining part of the beam or girder above the neutral axis in resisting compressive force. These bars may be of any shape with their surfaces roughened, corrugated, serrated, or other than a regular surface to hold on to the surrounding cement and prevent its slipping or sliding when under strain. Trials have proved that smooth bars with their ends fastened pulled through. These bars may be either singly or in combination; the latter are threaded to each other by $\frac{1}{4}$ -inch round rods, the width of the beam, passing through their centers, which stiffens the structure in its width. Also the concrete beam may be separately employed in resisting compression as well as tension, performing the entire function common to all beams. One of this kind was the subject of the trial. In this case the iron or steel ties furnish the tensile strength to that part of the Portland cement-concrete which is comparatively very weak in resisting tension below the neutral axis, to balance the strong compressive-resisting property of this material above the neutral axis. In General Gilmore's work on the strength of artificial stone he found by experiment that a mixture of 1 volume of Portland cement to 2 volumes of sand the ratio of the crushing to the tensile strength will generally be found between the limits of 14 to 1 and 19 to 1. With cement 1 and sand 4 it reaches as high as 25 to 1 and 29 to 1. With cement 1 and sand 5, as high as 35 to 1.

An explanation of the forces exerted on a single beam is as follows: When a straight beam or girder is subjected to a bending stress, it becomes more or less curved, by virtue of which the lower part is lengthened and the



upper part shortened in proportion to the depth of the beam and the difference in length between the radii of the curves. Were the beam made of horizontal layers the effect of the stress would be to cause these to slide one upon the other, but the beam being solid, the particles are held together by their own cohesion, the shearing strains being thus opposed by the cohesive force. The primary strains in the beam on the lines of compression and extension being upon curved lines, the disturbed particles must of necessity tend to arrange themselves in harmony with the radial lines of circles, all below the neutral axis seeking extension and all above compression. An illustration referring to figure 1 represents the side view of a straight beam or structure to be subjected to transverse strain when loaded and resting on end supports, the line $x y$ representing the neutral axis when loaded, being the dividing line between where the compression force ceases and the tensile strain begins, the greatest force and strain being at the extremes from the neutral axis. The imaginary vertical lines are at right angles with the bottom of the beam. The distance from any two of the lines at the top from e to e is the same as from f to f at the bottom. The length of the beam at top and bottom is equal.

Figure 2 represents figure 1 subjected to severe bending stress curved by the load L , which has caused great deflection. The vertical imaginary lines e, f in figure 1 have become radial lines in figure 2, radiating from a center to the curve of the bottom of the beam. The distance from f to f at the bottom of the beam in figure 2 is greater than in figure 1, the thrust force causing the disturbed particles to extend the greatest at the bottom, and gradually diminishing up to the neutral axis where it ceases, and from there the compressive force begins and gradually increases till the top surface is reached, which is the greatest, and the distance from e to e has shortened, the neutral axis line $x y$, being the original length of the beam, providing the two opposite forces have been equal in resistance. It is evident that when the beam is loaded and the imaginary lines e, f are held in their vertical position and not become radial lines, there can be no deflection of the beam, and its integrity remains intact. Mr. Hyatt, knowing

the great compressive-resisting strength of Portland cement, and the great disparity in its comparative feeble tensile resistance, united iron or steel in such a way as to bind them to the weak part of the concrete body, in resisting separation along the bottom of the beam or structure, so as to furnish all the tensile strength needed below the neutral axis to balance the great compressive resistance above the neutral axis. The beam in question tested at the Industrial Iron Works, had iron longitudinal bars connected together by small cross rods and in the manner that the places of juncture would be at equal distances as represented by the vertical lines at f, f , as in figure 1, which in this instance was 3 inches centers as shown by the dots at the bottom of figure 3. These cross rods were $\frac{1}{4}$ -inch diameter as shown in figure 4, representing them passing through the 7 vertical bars, thereby holding the concrete to the beam every 3 inches in the manner of the vertical line at f, f , figure 1.

Referring to figure 3 is a longitudinal view of the beam tested. Figure 4 is a cross section, 7 inches wide, 14 inches deep, 10 feet 6 inches long. Distance between supports, 9 feet, $x y$ representing the neutral axes. At $\frac{1}{4}$ inch up from the bottom was built in 3 of $\frac{1}{4} \times 1$ inch and 4 $\frac{1}{4} \times 1$ inch wrought bars, extending the length of the beam, and at every 3 inches $\frac{1}{4}$ inch round iron rods extended through these 7 bars, some as shown in cross section figure 4 and longitudinally as in figure 3. The total weight of the wrought iron was but 46 $\frac{1}{2}$ pounds; this resisted the tensile strains until the beam was broken. The area of cross sections of these wrought iron ties to resist the tensile strain of the beam, after deducting the holes for the $\frac{1}{4}$ inch rods, is less than a bar of wrought iron 1 inch square, or the bottom flange of a wrought iron beam 8 inches wide by $\frac{1}{4}$ inch thick.

Without due consideration, Mr. Jackson informs me, larger pieces of cast iron, as shown in figure 3 near its top, were used than the necessity of the case required to make up in compressive resistance what the beam above the neutral axis might be deficient in, hence are larger than required. These were 2 of $\frac{1}{4}$ -inch diameter cast iron rope mouldings built in near the top, weighed 36 pounds; the compressive resistance of cast iron is 93,000

pounds per square inch. The beam was five months old.

The load was of pig iron, piled uniformly over the length of the beam, ending in a line over the inside of the supports.

When laid on	deflection 1-16 in.
15 $\frac{1}{2}$ tons 30,989 lbs.	3-32 "
18 " 33,589 "	1/8 "
19 " 35,703 "	1/4 "
20 " 36,045 "	3/8 "
21 " 38,113 "	9-32 "
22 " 40,956 "	1/2 "
23 " 42,062 "	5/8 "
24 " 44,077 "	9-16 "
25 " 45,678 "	21-32 "
26 " 46,115 "	23-32 "
27 " 47,018 "	3/4 "
28 " 47,996 "	13-16 "
29 " 49,001 "	3/2 "
30 " 50,054 "	15-16 "
31 " 52,062 "	1 1/8 "
32 " 52,692 "	1 1/4 "
33 " 53,654 "	1 3/8 "

The pig iron was closely piled, and was 7 feet 6 inches above the beam.

The broken beam is now in front of 231 First Street. The gentlemen present exhibited great interest in the great strength of the construction, and when it is considered that this construction is called upon to act a part of half a beam, when supporting brick or cement work, the part to be supported acting in one-half of its own support, the invention may prove of great value.

The great strength of this beam, being but 7 inches wide, and considering the compressive resistance of the cast iron acting relatively to the wrought bars below, makes the distance in height but 12 inches. (See figure 3.) Therefore, computing the strength of this compared to a wrought-iron beam, of an area of bottom flange equally the area of all the ties in the concrete beam, we have as the breaking distributed load:—

$$1 \text{ in. area of bottom } 12 \times 180 = 17 \frac{1}{10} \text{ gross tons.}$$

Or 19 $\frac{9}{10}$ net tons. Excess of this concrete combined with iron beam over a wrought iron beam computed by the formula is 7 tons, or above one-third. This may be attributed to the solidity of the Hyatt beam compared to the web of a wrought iron beam, which is subject to lateral deflection, also from the punched rivet holes weakening the iron, and from what other causes is a subject for consideration.

Symmetry of line came in place of the extravagant contours which had prevailed, resulting in an inspiring transformation, the influence of which has been felt in all succeeding times. Even now, with the many combinations of styles in this most fruitful period of art, the Louis XVI. style receives in furniture, architectural woodwork and mural decoration very full recognition. There is an abundance of detail in present styles of ornamentation, more probably than at any former period, but there are abundant evidences that so far as simplicity of general aspect can be combined with rich and graceful elegance, designers, guided in part by advanced public tastes, will not be found wanting.—*Exchange.*

The Architect.

Of all professional men the architect should have the broadest and deepest knowledge—that is if we are to judge by the standards of the past.

Pythius, in his commentaries, the oldest work on architecture that we have any record of, says "that an architect should have that perfect knowledge of each art and science which is not even acquired by the professors of any one in particular."

Vitruvius tells us that an architect "should be a good writer, a skillful draughtsman, versed in geometry and optics, expert at figures, acquainted with history, informed on the principles of natural and moral philosophy, somewhat of a musician, not ignorant of the sciences both of law and physic," etc.

The great Hindu authority, "The Maushyalaya Chandica," gives it as a law that "an architect should be conversant in all sciences; ever attentive to his avocation; of an unblemished character."

One thing is true, that all those who intend to follow architecture as a profession should pass through some solid and rational system of instruction—drawing, geometry, motives, materials, and the machinal skill necessary to use them; "a philosophical study of the history of architecture in its relation to various phases of civilization," the causes of its development or decline, etc. The moral side should also be taught—more particularly the personal responsibility of the architect. Unless something of this kind is done we cannot hope to have able and skillful architects.—*Art and Decoration.*

In Chicago, the cry of the people for open spaces and parks has not become so intensified as it is in London, or even in New York. Yet there is pending an action in the city council which threatens to hasten the time when this cry will be bitter enough. The lake-front park is a magnificent open space, directly facing the lake in what will soon be the busiest section of the city. An effort is being made to secure the opening of streets in this park, and an ordinance is ordered drawn up for the purpose. This is but the entering wedge which it is expected will secure this valuable land for commercial purposes. It is a great mistake. The commercial interests of Chicago should be made to pay something for the hygienic influence which the preservation of this park will exert in the future.—*The Sanitary News.*

The ancient city Smyrna, now called Ismir, the only city on the western coast of Asia Minor, which has prospered, commercially, from the time of its foundation by Alexander the Great to the present, has always been defective in sewerage. Through an oversight of its architect, no provision was made for sewers, and the effects were so pronounced fifteen hundred years ago that Strabo speaks of them in his writings. The city has always been the seat of pestilence and plague.

Present Taste in Decoration.

The general abandonment of wainscoting is all in favor of a more effective display of furniture. The beautifully patterned styles of wall paper now supplied ordinarily in subdued tones and neutral tints, with no one color unduly predominating, make, when judiciously chosen, a more effective background than one partly of wood and partly of paper. This and the fact that wainscoting is a sort of walling up, has driven it out.

The selection of the tone and pattern of paper may be properly made with reference to the intended hue and tone of the furniture and of the carpet. No arbitrary rules can be laid down in this matter. A general harmony, however, is quite consistent with strong contrasts, only these contrasts demand greater art to manage than closely analogous colors. In carpets, for instance, we now see admirable patterns in which a light field is traversed by bright and dark bands; so also in upholstery textile coverings of chairs, sofas, lounges, and fauteuils. The truth is that improved taste has set in against tameness; more inspiring effects than mere neutral colors themselves will yield are looked for. Hence the abundance of gilded and colored metal ornaments in all sorts of quaint forms, which it is now the fashion to introduce, brilliant coloring extends even to lamp-shades, in some of which mosaic colored glass is introduced; in others, opalescent hues.—*Art and Decoration.*

The competition for the new Chamber of Commerce in Cincinnati, which has just been decided, presents several points of interest. Its general character, the high reputation of the architects invited to compete, the universal excellence of the designs submitted, and the final decision of the committee, all mark it as a great advance on methods formerly in vogue in competitions for public work. In issuing their invitations, the real estate committee of the Chamber of Commerce, composed of gentlemen of unimpeachable integrity and standing, selected six representative architects, whom they offered to pay about what sketches necessary for a fair presentation of designs for the building would cost. The original circular from the committee reserved for them the rights, first to retain as their property all plans presented, and second, to pay the successful architect \$2,000, and employ another man to make working drawings and complete the building. These two clauses the committee, in response to strong representations from Mr. Richardson, and Burnham & Root, finally modified, specially agreeing to return all plans except the one premiated, to use no features peculiar to any one of these designs, and virtually conceding that the architect presenting the accepted design should be chosen to finish the drawings and superintend the building.—*The Inland Architect and Builder.*

Practical Perspective.....\$ 6.00
Modern Architectural Designs..... 10.00

Abominations of the Back Yard.

MANY back yards are abominations to the eye and nose. One finds in them all sorts of litter and refuse from oyster cans to old boots. Here the slops of the kitchen are poured to increase the odors which ought to warn every thoughtful person of the malarial influence breeding there, to break out eventually in fevers or diphtheria. If any member of the family dies from one of these diseases, his death is probably lamented as a "mysterious dispensation of Providence;" but the minister would say if he were to visit the back yard, that death was caused solely by a violation of hygienic laws. A very strong argument against a dirty back yard, is the spirit of deception which it is apt to foster in the young members of the family, for it is a constant decoit to present a clean and attractive front yard to the gaze of the passers, while the back yard is not fit to be seen. Children should be taught to be clean for the sake of cleanliness, and not because outsiders are likely to criticise them. The best plan is to have a hoghead or large box fitted up in one corner of the yard, and make it a rule to throw into this old cans, boots, broken dishes, and all such rubbish, and when there is a great accumulation, to bury or burn it. Do not allow anything to be thrown about. Have drains made to convey all slops entirely from the house. Make good walks, and let the ground have a fine covering of grass, not weeds. Put up strong supports for the clothes line. Keep the fence in repair, and plant currant bushes near it. Set vines about the refuse barrel, and train them over it until it is hidden. If you have a receptacle for ashes, let it be something which can be shut up, not a row of old barrels to offend the eye, and give out a cloud of ashes every time the wind blows. Make it a rule to have the back yard at all times as clean as the front one.—*Eben E. Rexford, in American Agriculturist.*

Solar Heat.

THE light's intensity at the sun's surface is 190,000 times that of a candle flame, 5,300 times that of metal in a Bessemer converter, 146 times that of a calcium light, or three-fourths times that of an electric arc. The temperature, according to Rosette, is about 18,000 degrees Fahrenheit. The mechanical equivalent of the solar radiation, continuously acting, is nearly 10,000 horse power per square foot of solar surface.

The tallest chimney in the world is that of the Townley Works at Port Dundas, near Glasgow, Scotland, which is built of brick and stone, and is 454 feet in height. It is circular in form. The highest stone chimney is octagonal in form, and stands 381 feet in the air, and is located in Halifax, England. In Rouen, France, there is an iron chimney 279 feet high, which was riveted together and afterwards lifted into place with a crane.

Large quantities of timber are now creosoted, in a special manner, for railroad purposes, the effect being to increase the tenacity of the wood for holding spikes, &c., as well as its density, and its ability to resist mechanical wear. This is done by means of an apparatus consisting of a boiler-plate cylinder, of a size adapted to the timber; this cylinder is of a strength sufficient to resist 300 pounds pressure per square inch, and has a track extending for its whole length along the bottom, the cylinder's ends being closed by strong iron doors, air and water tight. When the timber has been run into the cylinder and the doors closed, steam at about 100 pounds pressure is injected into the cylinder, the supply continuing as required by the nature and dryness of the wood; the steam is then shut off, and vacuum pumps are worked as long as any liquids or vapors are obtained, the hot preserving liquid being now run to the cylinder from the reservoir until full. The force pumps are again operated until the interior pressure is some 100 pounds per inch, and kept thus until sufficient preservative fluid is forced into the pores of the wood; the force pumps are now shut off and the creosote oil or other liquid contained in the cylinder is discharged into a suitable cistern, after which the doors at the ends of the cylinder are opened, and the car carrying the timber or ties run out.—*Wood-Worker.*

"Talking about funny things," said a big, bronzed, bearded man in the reading-room of an up-town hotel the other night, "the funniest thing I ever heard of happened in my saw-mill out in Michigan. We used a heavy upright saw for sawing heavy timber. One day not long ago the men had all gone to dinner, leaving the saw, which ran by water power, going at full speed. While we were away a big black bear came into the mill and went nosing around. The saw caught his fur and twitched him a little. Bruin didn't like this for a cent, so he turned around and fetched the saw a lick with his paw. Result: a badly cut paw. A blow with the other paw followed, and it was also cut. The bear was by this time aroused to a perfect fury, and, rushing at the saw, caught it in his grasp and gave it a tremendous hug. It was his last hug, and we lived on bear steaks for a week. When we came up from dinner there was half a bear on each side of the saw, which was going ahead as nicely as though it had never seen a bear. This is a fact, so help me, Bob," and the big lumberman bit off a fresh chew of tobacco.—*N. Y. Tribune.*

It is reported that Boston will soon have an opportunity to see the practical workings of the electric railway system on one of her streets. A line is being laid on Huntington Avenue in connection with the Metropolitan street-car line. If it works satisfactorily there, after a thorough test, it will probably be adopted on some one or more of the roads in Boston.

Disintegration of Building Stone.

THE sandstone commercially known as freestone, which is extensively used for building purposes in American cities, is subject to disintegration from the action of the sulphurous acid produced by the consumption of coal and from frost. There is much difference in the ability of various quarries to withstand these destructive influences. The outer surfaces of some buildings in New York and Philadelphia have been, by the advice of an eminent chemist, treated with a mixture of paraffine and carbolic acid with apparently good results. The flat surfaces are warmed by means of a stove like a plumber's stove, but with a flat side, and the paraffine when applied in a melted condition penetrates the stone readily, it is said in some instances to the depth of 1½ inches. Mouldings and carved work are heated by means of a blast flame from India-rubber bags of illuminating gas. Another process has been suggested, but the preliminary results do not appear to be of a satisfactory nature on account of its tendency to crack. In this process the mixture used is an artificial stone, and consists of three parts glass sand, three parts broken marble, two parts anhydrous clay, and two parts freshly slaked lime still warm. After a coat of the above has been applied wash it with water the following day. The central portion and wings of the Capitol Building at Washington were originally built of freestone, which disintegrated so rapidly as to threaten the permanence of the structure, and the whole was protected by several coats of white paint. The wings afterwards added to the above, and now used for the House of Representatives and Senate Chamber, are built of white marble, which conforms in color to the central portion of the building, so that the whole building appears to be made of marble.—*Mechanical News.*

The "Sanitary News" has often urged the sanitary examination of school buildings during vacation. To give force to its own opinion it now desires to quote the words of Mr. William Paul Gerhard, an eminent sanitary engineer. In a recent article on school and college sanitation, he says: "The annual vacation term would seem to be a particularly fit time to undertake a sanitary inspection of the school-buildings, of their interior construction, sanitary arrangements, and of their immediate surroundings." He calls attention to the absolute necessity of such a periodical inspection, by qualified persons, and the correction of such structural and sanitary defects as may be discovered. While the water supply, drainage, and ventilation should be examined into, it is necessary to demonstrate the entire absence of dampness, and to examine the methods of lighting the class rooms, of heating the building, the means of egress in case of fire, the arrangement of seats and desks, and finally into the plumbing appliances.

Treads and Risers..... \$.50

Architects Get Their Fees by Suing.

ANOTHER architect in England has had to sue his client to get his poor pay with the usual result. In this case, which is known as *Taylor & Locke vs. Greene & Son*, the plaintiffs, composing a firm of architects, brought suit to recover \$2,250, the balance due them for services in preparing plans and drawings, with other professional work, for the rebuilding of a certain business structure. The defendants in resisting this claim, brought forward the usual tale of woe, to the effect that among other things, the architects had not sufficiently considered or warned them about the claims of neighboring owners in regard to light and air, and that through this neglect disputes had arisen between the defendants and their neighbors, involving the former in expenses amounting to \$18,000, which, as they claimed, the architects ought to pay. The reply of the architects to this was simply that they had been engaged to do the work of architects, under the instructions of the defendants, and that they had done this, and nothing more. Although the trial lasted seven days, and a great deal of evidence was brought forward, the jury seems to have retained through the whole the view of the matter that juries generally take, and promptly returned a verdict for the plaintiffs for \$1,900 and costs. So far as we can judge from the brief but clear account which we find in the *Builder*, this seems to have been one of those cases where a man, having engaged a young or over-ambitious architect to do a certain piece of professional work, imagines that he has a claim upon his time and services to any extent, and for any purpose, and keeps him trotting about, investigating, negotiating, and inquiring in regard to matters which do not come at all within an architect's province, however convenient it may be for the architect's employer to have him busy himself about them without charge; and after getting all the work out of him that he can, avails himself of all the disappointments that he may have experienced in the results of the errands which he has persuaded the architect to do for him to cut down the pay due him for his legitimate services. There are plenty of such men in the world, and plenty of architects who suffer from them, but the number of the latter would be smaller, if the younger members of the profession fully understood how little respect a court accords to any pretext whatever for depriving a man of any part of the money which he has earned by reasonably skillful and faithful services in his own vocation.—*American Architect and Building News.*

Durability of White Lead.

WHY is it that white lead does not wear as well as it used to? is a question that is frequently asked by painters and consumers. They also add: We used to be able to obtain an article that would wear for years, while

now its durability is much less. The important reason for this is found in the difference between the methods of manufacture employed now and a few years ago. Formerly, white lead was corroded by immersing it in vinegar acidulated with acetic acid, which is only concentrated vinegar. The process required about eight weeks before the carbonate was ready for use. This process, however, was found too costly, and the production was too limited to supply the demands. Then, too, a process requiring so long a time would compel corrodors to invest a large capital from which they could realize no returns for a long period. They could not afford to produce lead in this manner at a cost sufficiently low to meet the demand for a low-priced article. Accordingly their ingenuity was taxed to invent some method whereby the carbonate could be produced much quicker and at a much less price. Thus they adopted the present process whereby the lead is now corroded by means of a stronger acid in a month, or even in a few days. The result is that the pure article is much less durable when applied to buildings. Speed in the manufacture of some articles, it is true, does not sacrifice quality, while in others the greater celerity in manufacture the less durable the products. Not only is this seen in the production of lead, but another branch of manufacture where it is especially noticeable is that of leather. Formerly it required fifteen months to thoroughly tan a hide. Now the process has been shortened and a month and a half at the longest witnesses the completion of the work. As in the case of white lead, the result is lack of durability, and people constantly complain that leather soon cracks out and lacks its original durability.—*P., in the Painter.*

Painting Ironwork.

THE point of prime importance, says the *Painters' Magazine*, is the actual condition of the surface when ready to receive the first coat. Upon this point rests the success or non-success of subsequent applications, for if not in proper condition no paint will prove permanently preservative. Now the best state is that where there has been formed upon the surface of the iron a film of black oxide which has been, while hot, thoroughly permeated by and incorporated with a resinous or tarry covering. This covering insures perfect success, and its thickness may be increased from time to time by additional coats of paint. If, however, a layer of hydrated oxide (ordinary rust) be once allowed to form, the successive coats of paint will fall off, their separation from the iron being merely a question of time. During the time, also, the rust has been spreading under the paint. An instance of this may be seen after outdoor riveted work has been in place for some time. Usually all the riveting is done before the final painting is begun, each rivet-head, in the meantime, being exposed to a damp atmosphere; the paint begins to peel off the rivet-heads long before it leaves

the adjacent plates, and, when this occurs, nothing but thorough scraping will give the paint a chance to adhere again. So slight are the differences of manipulation which determine whether a given piece of work shall or shall not rust away, that they may all be found in the different methods of manufacture pursued now and formerly.

Taking the case of a piece of ornamental ironwork, which in so many instances has come down to us in unimpaired beauty and condition, it would now, probably, be forged in detail in one part of a factory, drilled, filed and fitted in another, and when completely finished, be painted in three coats of best oil paint. Formerly the smith who forged the work punched the necessary holes at the same time, fitted his various pieces together as he went on, completing each piece as he proceeded, doing all the work with his hammer, and, to quote an old book of directions to good smiths, brushing his work over with linseed oil and suspending it for some time over a strongly smoking wood fire. This will give at once a sort of elastic enamel coat, perfectly adherent and calculated to preserve the iron to the utmost. Of course ironwork to-day is not made to undergo any such preparatory process, and the consequence is that we find it very difficult to produce good results in painting on iron surfaces. But it is pretty well established that the very best finish coat for iron is found in red lead, upon which any desired shade of lead paint may be placed with the best possible results.

EXCAVATIONS AT OLYMPIA.—The excavations at Olympia are to be recommenced immediately under the auspices of the Archaeological Society of Athens. On these excavations the German Government has expended so far a million marks, (£20,000) more than is generally supposed, the sums voted by the Reichstag and granted by the Emperor having been supplemented at a later date by a large bequest from an unknown quarter in Berlin. It is declared by those best qualified to judge, that two-thirds of the site of Olympia still remain to be excavated. The Germans themselves, however, seem to be glad to have done with the work, as they have cleared out the principal parts where the richest harvest of *trouvailles* was expected, while nationally they have derived very little profit from the undertaking. They think they made a great mistake in stipulating only for duplicates of what they found, as of course no important objects existed in duplicate. They fancy that nothing of any great artistic value can now be found in the vast area of the Stadium or in the other outlying structures; but the Greek society has determined to clear away the vast mass of superincumbent earth, and to bring back the whole site to the original level, so that the lines of ancient Olympia may be clearly discerned. The local museum, the gift of a patriotic Greek gentleman, is a large building now roofed over, and is being plastered. In a few months it will be ready for the reception of the statues and bronzes already found.—*Athenaeum.*

A Grand Monument.

No ONE laughs now at the Washington monument. The day of its being a subject for ridicule is over forever. It is the wonder of Washington, and its beauty the admiration of both Americans and foreigners. It rises from the banks of the Potomac, a great, white marble shaft, piercing the clouds and backed against the blue of the sky. It is the grandest obelisk the world has ever seen, and in the eyes of the future, should the nations of to-day pass away, leaving no more records of their progress than the mighty ones of the Egyptian past, it will surpass the pyramids in the wonder of its construction. It is higher than the third pyramid. It is taller than St. Paul's Cathedral. To-day the cathedral of Cologne—512 feet high—is the tallest work in the world; next comes the great pyramid, 483 feet high; then the Strasburg Cathedral, 473 feet; then the second pyramid, 453; then St. Peter's, 430; St. Steven's at Vienna, 443; and St. Paul's at London, 384. The monument is 555 feet high, forty-three feet higher than the Cathedral at Cologne. It will be far different, however, from the needle-like shafts of the great European cathedral, each of its sides at the top being thirty-five feet in width, and the whole massive tower seems a solid growth of natural rock, rising from the earth and reaching to the sky. The width at the base of each of its four sides is fifty-five feet, the monument gradually tapering for over five hundred feet, until it becomes a pyramid, each side of which is thirty-five feet.

Our indefatigable American cousins are constantly finding out something new and useful, or making improvements on past inventions, thought to be already at their best. The latest thing is an improvement in acoustics, by means of wood. We learn that a telephone has just been brought to this country from America which is based upon entirely new principles, being absolutely independent of electricity, so that batteries, coils, and cells are quite dispensed with. This obviously greatly simplifies the working of the instrument, and in the "mechanical telephone," which was subjected to a severe test on Saturday last, simplicity and distinctness are claimed as its chief characteristics. The instrument consists of a diaphragm, or sounding-board, made of strips of willow-wood, which has been found by experiment to possess a remarkable sensitiveness to sound vibrations. These strips of wood are closely woven together and varnished. In the center of the diaphragm a small disk of metal is placed, from which the wire proceeds to any point desired up to two miles. In Saturday's trials the instrument freely answered to all demands upon it, the ticking of a watch, musical sounds, whispering, etc., being heard with great distinctness.—*Timber Trades Journal, London.*

Cumming's Details..... \$6.00
Cutting Tools..... 1.50

THE Brooklyn *Real Estate Review*, in discussing the question of low bids and poor work, makes the excellent suggestion that the contractor should be awarded the work whose cost estimate comes the nearest to the average of all the bidders. The center of difference between competitors would seem to be the proper point on which to weigh the probability of poor work on the one hand against unreasonable charge on the other, and would be the most removed from the danger of either. An average price would certainly induce a belief that a living profit could be made on an average quality of work, which is all that can be expected in a competition for trade. The complaint has always been that the work is generally below the average in quality, while the price asked really pays for nothing better. The simplest principles of reasoning would seem to teach that results not in accord with the causes that produce them should not be expected, and if bad work follows as a regular sequence of poor pay, there is nothing so very astonishing in the fact.

The remedy suggested above lies with the contractors themselves, and is the only alternative that presents itself. If they would agree with each other, and give the public to understand, that no competition would be entered into unless on this basis of award, the now much abused system of letting by inviting competition would be productive of some good, at least, to all concerned. Every contractor would be compelled to hold up his end by doing a grade of work for which he was justly paid, or go out of business, and the old excuse to his conscience and customer that the work was "good enough for the money," would have no validity or foundation in truth.

It is difficult to convince some business men that it pays to advertise. They have tried it, they say, and it did not pay them. These men expect too much; they place an advertisement in a journal for two or three insertions and if they do not get orders enough from its insertion to pay them a profit on its cost, they arrive at the conclusion that it has not paid them. They do not take into account the indirect benefits that they may derive without being able to trace them to their source. The principle of advertising is to keep your name before the trade, and to call attention from time to time to the new goods that you have for sale. The liberal advertiser is always a live business man; customers know this, and naturally go where they think the most exertion is being made to sell goods.—*Furniture Worker.*

The natural gas vein which was struck some time ago at Gardenville, near Buffalo, N. Y., while boring for salt, continues to attract attention. The gas is said to be of good quality and shoots up to a height of about fifteen feet. There is talk of forming a company to utilize the well by laying pipes to Buffalo, a distance of about twelve miles.

The Pine Lumber Supply.

HOW LONG will this wonderful work among the pines continue? The stock of pine yet standing in Michigan can produce 40,000,000-000 feet of lumber if cut for the purpose. In eight years, therefore, at the last average production of the State, the pine will have been used up. But such predictions have been made for years past. In 1867, the standing pine of Michigan was estimated to be 52,416,000,000 feet, and it was predicted that it would all be gone in seventeen years. But since then the Saginaw Valley alone has produced about 12,000,000,000 feet, and will continue to cut in the neighborhood of 1,000,000,000 feet a year for eight or ten years to come. As pine grows scarcer, it will make more lumber than when it was plenty.

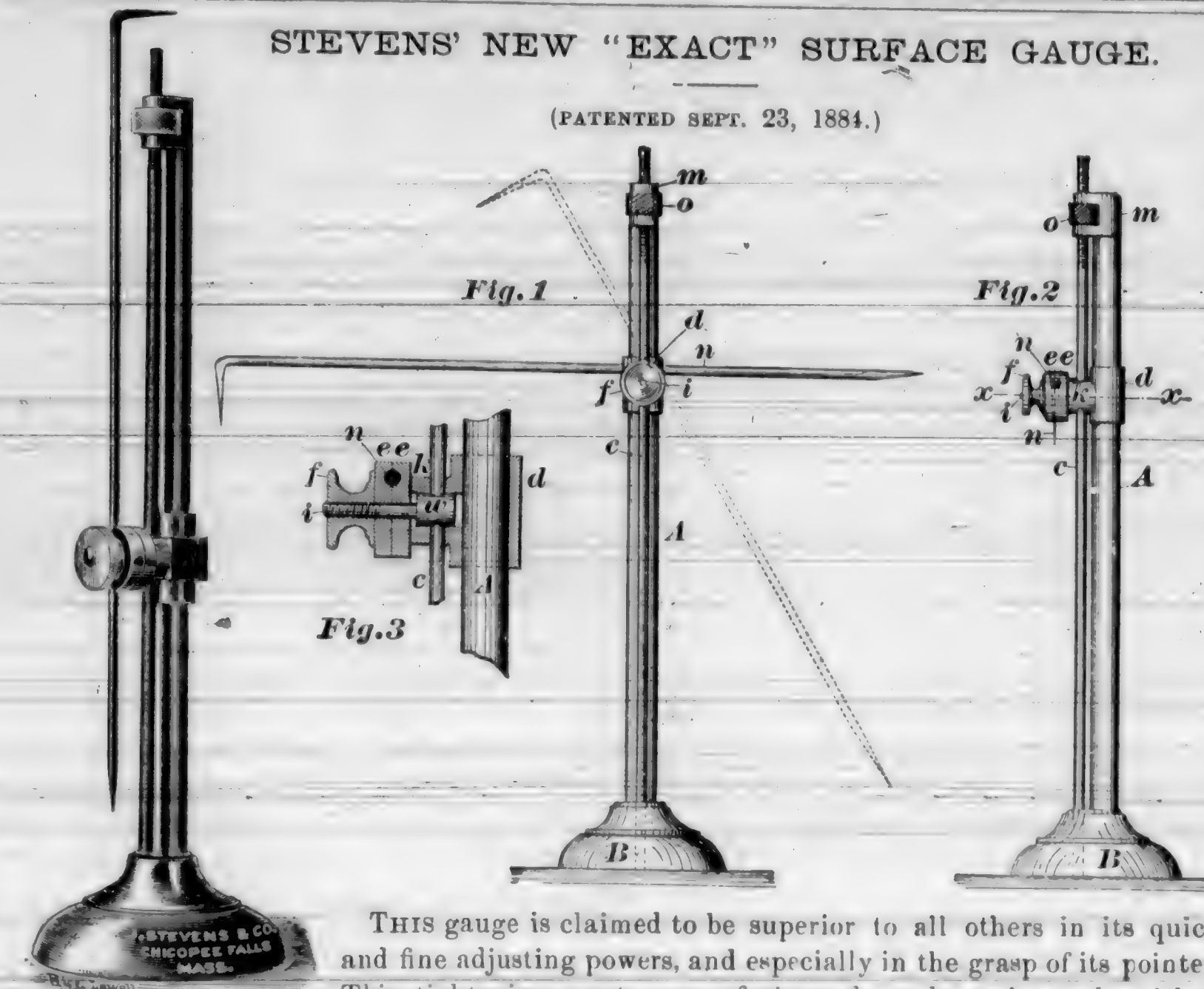
But, in predicting the end of pine lumber, a person must take into account the lumber which is yet standing in Wisconsin, Minnesota, Canada, and the South. And it will be many years before it even grows scarce, when we estimate the whole. Yet an end must come to the forests that the white race found in this country. Doubtless pine forests of the second growth will be raised for future use, but the present magnificent forests will disappear. It has been estimated that the demand for lumber in this country from 1880 to 1890 would require 210,000,000,000 feet, and one can readily see that at that rate the stock must soon be gone.—*Chicago Current.*

The large Royal Theater at Munich, Germany, is now lighted by electricity, the lights used being more than 1,400 Edison incandescent lamps, each of sixteen candle power. The auditorium is lighted by a central chandelier containing 140 lamps, which took the place of a luster with 240 gas-jets. The different galleries are, moreover, illuminated by 84 lamps, equally distributed in front of the boxes. The stage is fitted up with 610 incandescent lights, while 566 more lamps are placed in the dressing-rooms, offices, storage-rooms, etc. The current is furnished by six large Edison dynamos, located in an engine-house, placed about 400 feet away from the theater, and underground wires are used for the transmission of the current. In order to avoid the annoyance to the eyes of the glaring light, all audience lights, as well as those in the halls and reception rooms, are encased in glass bulbs, the glass of which is rendered opaque by applying to it a caustic solution. The latter arrangement is much to be commended, and forms an important step forward in the successful practice of lighting buildings by electricity.

The City Council of Litchfield, Ill., Aug. 21, granted L. C. Van Vleck the exclusive right of supplying the city with natural gas for twenty-five years. Natural gas has been found just outside the city limits in large quantities at a depth of about 507 feet, and it is proposed to utilize this in lighting the city. The work of laying the mains is to be commenced at once.

STEVENS' NEW "EXACT" SURFACE GAUGE.

(PATENTED SEPT. 23, 1884.)



THIS gauge is claimed to be superior to all others in its quick and fine adjusting powers, and especially in the grasp of its pointer. This, tightening on to one of the rods, and moving only with it instead of sliding upon it as others do, is held perfectly firm in all of its adjustments.

In this tool the post A is rigidly fastened to the base B in the usual manner. At the top of the post is the nut guide m, for nut O. The adjusting rod c is guided at the top in a hole through m, and at the bottom in a hole in the base B. By means of the nut O the rod and attached parts can be adjusted vertically.

The support d is made with a branch k, through which the rod c passes. This branch is recessed to receive the cylindrical head w, of clamp screw i. The rod c passes through head w and branch k.

The pointer n is held between two clamps, e, e, as clearly represented. This permits of turning the pointer and clamps on the screw i, and of binding the whole by means of nut f.

It will be understood that the mechanism carrying the pointer can, when the nut f is loosened, be readily moved up or down the post, that when the nut f is tightened, it clamps this mechanism to the rod c, but that by turning nut O, the pointer can be adjusted a short distance up or down to bring it to the exact position required, after it is otherwise securely clamped.

The advantages of providing for this adjustment will be apparent to those accustomed to use such tools.

By having a hole drilled in the base, it is also adapted to a depth gauge and various other purposes.

SMALL SIZE.

The basis is of cast iron, round, and turned true with the upright spindle. The total height is eight inches, and will scratch eight inches sideways and thirteen inches high. The cast steel needle is pointed at each end, one of which ends is bent to a right angle. All parts are polished and accurately fitted.

LARGE SIZE.

Same, only weight is two pounds, and arm will scratch ten and a half inches sideways, and eighteen inches high.

These points, together with its simplicity, as shown by the cut, make it a most desirable tool for practical mechanics.

These surface gauges are made by J. Stevens & Co., the well-known manufacturers of fine machinists' tools, Chicopee Falls, Mass. They are for sale by

DUNHAM, CARRIGAN & CO.,

Nos. 17 and 19 Beale Street, and Nos. 18, 20, 22, 24 Main Street, who carry not only a full line of these gauges, but also a complete stock of fine machinists' tools, and light, dark, and antique bronze hardware. Orders also taken for gold, silver, nickel, and enameled work in all colors.

"PRACTICAL ESTIMATOR."—A neat little book of 96 pages, published by David Williams, New York, is full of instructions, tables, and suggestions for the use of contractors and all parties figuring on buildings and constructive works. While its contents may not be in every particular adapted to this section of country, owing to the differences in methods and materials as between this and the Eastern States, they, and the blanks referred to in this connection, will be found most excellent safeguards against the omission and oversight of items of cost. A very large proportion of the ruinously low bids submitted in competitions that end in pro ratio settlements, are the result of careless figuring, the neglect to include costs and expenses which are sure to occur. The book and blanks under notice are excellent reminders of every detail in figuring, and should be in the hands of every contractor.

"The 'Handy Estimate Blanks' have been prepared with an idea of furnishing to contractors and builders a convenient form upon which to make estimates and record the cost of the work which they execute. Two general divisions of work are recognized, namely, 'Masonry' and 'Carpentry.' Under each of these heads subdivisions are indicated, which include all the parts of the work required to complete any ordinary structure. In the column rulings there is a space for 'Estimated Quantities,' one for 'Prices,' and then a space for extensions, entitled 'Estimated Cost.' Outside of these rulings there is another set of columns, entitled 'Actual Quantities,' 'Actual Price,' and 'Actual Cost.' This arrangement affords a convenient system of comparison between estimated cost and actual cost, not only upon an entire job, but also upon any particular portion of a contract. The arrangement is such that each individual part of a building may be figured independently of all the others as to cost and allowances and profits, or all may be taken together and a single entry made for the allowances and profits. Materials are figured independently of the labor required to put them in place, the latter being separately listed in each division. In addition to the items listed as composing a building, a number of blank spaces are provided, both under the head of 'Masonry' and 'Carpentry,' for listing such items as the special character of a given contract might make necessary, or which the practice of a given neighborhood might require."

"Practical Estimator," and the "Handy Estimate Blanks," together with a line of practical publications on architectural, constructive, and mechanical subjects, for sale at the office of this journal, at publishers' prices. All orders from parts distant from San Francisco will be forwarded upon receipt of postal order, cheque, greenback or coin.

Treads and Risers.....\$.50
Stair Building Made Easy..... 1.00
Art and Science of Stair Building..... 1.00
Architectural Perspective..... 3.50

Washington, nr. Larkin
One-story and basement
frame. O. C. Bender.
A. W. Mosser.
C. W. H. Wharf.
\$8,000.

Washington, northeast
cor. Gough. Alterations.
O. John Parrott.
C. Edward R. Swain.
C. Mahoney Bros.
\$2,500.

Waller, bet. Scott and De
visadero. One-story frame.
O. J. Morris.
A. Percy & Hamilton.
C. C. Kishman.
\$2,500.

Willard, bet. Golden Gate
ave. and McAllister. One-
story frame.
O. G. H. Drever.
A. Geo. A. Bordwell.
\$1,300.

Stockton—Improvements and alterations. O. State of
California; A. Percy & Hamilton; \$15,000.

Oakland—Fifteenth, cor. Adeline. Two-story frame. O.
S. L. Sutter; A. Geo. A. Bordwell; C. F. W. Kern; \$3,500.

Filbert, nr. Fourteenth Street. One-story frame. O. G.
Babcock; A. S. & J. C. Newson; day's work; \$5,000.

Merge—Two-story brick. O. Mr. Galliano; A. A. Man-
non; C. Meany & Peck; \$3,400.

Frank S. A. Mannon; C. Meany & Peck; brick work, Fallar
& DeWitt; carpenters; \$2,400.

One-story brick. O. John
Baker; C. Meany & Peck; brick work, Fallar & DeWitt;
carpenters; \$3,000.

Pleasanton, Alameda Co. Two-story frame. O. Geo.
J. Smith; A. J. J. Clark; C. W. Willby; \$4,000.

San Jose—Northwest cor. Santa Clara and Santa Teresa.
Two-story frame. O. M. Bennet; A. Theodore Lenzen;
C. A. J. McVain; \$4,700.

Market Street, bet. Santa
Clara and San John's. Three-story brick. O. A. Vagnose;
A. Theodore Lenzen; C. A. J. McVain; \$19,000.

N. 11th
and Santa Teresa and San Augustin Streets. Two-
story frame. O. A. Vagnose; A. Theodore Lenzen;
C. R. Summers; \$6,900.

Northwest cor. Santa Teresa and
San Augustin Streets. Additions to a two-story frame tank
and tank-house. O. A. Vagnose; A. Theodore Lenzen;
C. Fuller & Lashbrook; \$1,600.

Third Street. Two-story
frame. O. San Jose Turn Verein; A. Theodore Lenzen;
C. A. J. McVain; \$14,000.

Southwest cor. Santa Clara
and First Streets. Additions and alterations. O. Safe De-
posit; A. Theodore Lenzen; C. E. McLaughlin, contractor
of vaults, safes and locks; J. Enright, cast-iron work; Field
& Lee & Co., marble; \$33,000.

Julian Street. One-story
frame. O. M. J. Ashmore; A. J. Lenzen & Son; C. A. B.
Hamilton; \$2,204.

Vine Street, near Park ave. One-story
frame. O. L. C. W. Otto; A. J. Lenzen & Son; C. H. C.
Stow; \$1,800.

Park Ave., near Pine Street. One-story
frame. O. J. Ward; A. J. Lenzen & Son; C. Robt. Sum-
mers; \$5,000.

Berrisa—Wine cellar. O. John Anzerias; A. Theodore
Lenzen; C. G. E. McDougall; \$2,000.

Soda Springs, Napa—Additions. O. J. P. Jackson;
A. S. & J. C. Newson; day's work; \$10,000.

Woodland—Two-story frame. O. W. W. McCollough;
C. W. H. Winne; \$4,000.

One-story frame. O. John G.
Winters; C. Jack Lealand; \$1,000.

Two-story frame dwell-
ing. O. Emma H. Briggs; day's work; \$2,000.

One-story
frame building and improvements. O. Woodland Water-
works; C. Glenn & White; \$1,000.

Two-story frame house
and machinery. O. Jackson Brothers; C. Gilbert & Son;
\$6,500.

Lincoln Ave. Two-story frame. O. F. M. Brown;
C. J. Caldwell; \$3,000.

Walnut Street. One-story frame.
O. H. M. Hord; C. Glenn & White; A. W. H. Carson; \$3,000.

Fourth Street. One-story frame. O. James Harlan; C.
B. Myers; \$1,500.

Sixth Street. One-story frame. O. &
B. J. R. Hudson; \$1,200.

North street. One-story frame.
O. & B. Charles Anderson; \$1,000.

East Ave. One-story
frame carriage house. O. W. W. Campbell; day's work;
\$1,000.

Oak Ave. One-story frame. B. John West; C.
S. Odum; \$1,000.

Two-story frame. O. J. A. Clifford;
day's work; \$4,000.

Main Street. Two-story frame. O.
Beard Brothers; A. Gilbert & Son; C. Amesbury & Davis;
\$4,000.

North Street. Two-story frame planing mill and
machinery. O. Hester, Turner & Baker; C. Joseph Cald-
well; \$4,500.

Two-story frame. O. Eli Hayes; day's work;
\$1,000.

Main Street. Two-story frame cottages. O.
& B. J. S. Donnelly; \$1,000.

One-story frame carriage
house. O. E. H. Briggs; day's work; \$1,500.

Third Street.
One-story frame extension. O. Charles Gummo; C. Glenn
& White; \$1,000.

Yolo Winery—Addition and machinery. \$5,000.

Orleans Hill—Four-story brick addition on building and
machinery. O. Arrad, Haraszthy & Co.; A. C. S. C.
Buzell; \$5,000.

Madison—Frame winery and machinery. O. Cal Lenoir;
day's work; \$2,500.

Two-story frame. O. A. Dole; C. R.
B. Nisson; \$2,500.

Knight's Landing—One-story frame. O. John W.
Simmons; C. Z. Summers; \$1,000.

One-story frame. O.
D. N. Hershey; C. Gruning Brothers; \$3,000.

Two-story
frame. O. J. W. Snowball; C. Summers & Ives; \$3,000.

One-story frame. O. J. W. Snowball; C. A. Ives; \$1,100.

One-story frame. O. F. Peart; C. Z. Summers; \$1,000.

Capay—Two-story brick. O. John Nixon; C. C. C. Scott;
\$5,000.

One-story frame school-house. C. R. B. Nisson;
\$1,175.

Winters—Two-story frame. O. Dwight Hemenway; C.
A. N. Babcock; \$2,500.

EASTLAKE, INDESTRUCTIBLE GLOSS PAINT,

Especially adapted to the climate of California.

Durable, Easy Working, Economical.

MIXED READY FOR USE AS PUT UP.

No turpentine, benzine, gum or rubber. Works as easy as if
mixed with turpentine! Workmen speak well of it.
In use in San Jose for three years.

Sun and Fog do not Destroy its Gloss, or Cause it to Chalk.

COLOR CARDS MAILED FREE ON APPLICATION.

To the EASTLAKE PAINT CO.,
199 SOUTH FIRST STREET, SAN JOSE, CAL.Country Mechanics furnished
with THE BEST OF TOOLS
AT LOWEST PRICES.

Address, CAL. ARCHITECT.

BLUM, EPPSTEIN & MARSH.

MANUFACTURERS OF

Inlaid Wood Flooring

WOODEN MANTELS,

Hard Wood Interiors.

Office and Parlors 126 Kearny St., 2nd Floor.

FACTORY 209-227 FELL ST.,

SAN FRANCISCO, - - CAL.

C. CASHMORE,
Painter, Grainer,
PAPER HANGER & WHITENER.
530 VALENCIA STREET,
SAN FRANCISCO.

BUILDERS' HARDWARE.

Complete Assortment

House Trimmings,

INCLUDING

MALLORY, WHEELER & CO.'S

CELEBRATED

IMPERIAL BRONZE

Locks & Latches,

Light and Dark Shades,

Plain Antique, Tuscan,

Damascene or Berlin

BRONZE FINISH.

Unrivalled for Beauty of Design and
Superior Workmanship.

D. N. and C. A. HAWLEY, 501 to 507 Market St.



ALSO A FULL LINE OF

COPPER

WEATHER VANES,

Locksmith & Bell

Hangers' Supplies.

Union Spring Hinges

CABINET HARDWARE,

With a Full Line of

CARPENTERS'

—AND—

MACHINISTS'

TOOLS.

The California Architect and Building News.

VOLUME VI,
NUMBER 10.

SAN FRANCISCO, OCTOBER, 1885.

\$2.00 per Annum, in Advance.
Single Copies, 20 Cents.

THE CALIFORNIA ARCHITECT AND BUILDING NEWS.

PUBLISHED on the 15th of EACH MONTH

BY THE
San Francisco Architectural Publishing Co.,
240 MONTGOMERY ST. ROOMS 11, 12, 13.

TERMS.

PER ANNUM, in advance, \$2.00
Specimen Copies sent upon receipt of Price, 20c.

RATES OF ADVERTISING.

Each Insertion.

Front and Back, Outside Covers, \$2.50 and
\$2.00 per Square, Respectively.Pages next Preceding or Following Reading
Matter, \$1.75 and \$1.50 per Square, Respectively.

Inside Pages, \$1.00 per Square.

ONE INCH, Width of Column, Constitutes
a Square.SPECIAL RATES for Advertisements Con-
tinued 3, 6, 9, or 12 Months.CHARACTER OF ADVERTISEMENTS.
Those only relating to materials and devices used in
building construction, in house decoration and fur-
nishing, plumbers' materials, and the Arts and
Trades in harmony with the general charac-
ter of THIS JOURNAL.

CONTENTS.

	PAGE
Summary of Building Intelligence.....	163
Its Seventh Volume, 1886.....	163
The Building Boom.....	164
Chapter Meeting.....	164
President Wm. Curlett's Speech.....	164
Cost of Buildings East of San Francisco.....	166
The Mechanics' Fair, 1885.....	166
Staining Wood, by A. Curtis Bond.....	168
Architects as Sanitarians.....	169
Early Plastering and Plasterers.....	170
The Chinese Inflection.....	172
Science of Architecture.....	174
The Master Painters.....	176

MISCELLANEOUS.

Figures in Wood by Compression; The London
Tower; Sewerage—Berlin; Taxes and Manufactur-
ers; Old Files that Look New; Shoe Lumber; To
Remove Dry Rot; A Destructive Fire; An Ancient
Sanitary Ordinance; California's Tribute to the
Honored Dead; A Door that Cost \$28,000; Black
Walnut Worth One Dozen Farms; The Annual
Architectural Gatherings; Special Book Notices;
The Russian Admiralty; The Fire Waste in this
Country; Architects and Builders of Churches.

Building Report and Summary.

OUR building intelligence report for the
month, ending the 10th inst., shows a most en-
couraging and satisfactory condition of things
in building circles. The number of contracts
let during the thirty days since last report, is
large—particularly considering the lateness of
the season; for there are some who entertain
the notion that it will not do to commence at
the verge of the rainy period, although in fact
it makes but little difference at what time in
the year work is commenced in California.
There may be some temporary disadvantage in
the material "getting wet," but this is fully
made up by the benefits to the lumber from
the wetting. All building and finishing lum-
ber used in California is improved by wetting.
And if every foot of it before using was sub-
jected to a water seasoning, it would benefit it
greatly. But while some intend to "wait un-
til after the rains," a sufficient number have
commenced operations at once, to make the
following showing:—

4 brick engagements, value \$100,200	
112 frames	411,339
40 alterations, additions, etc.	71,375
156	\$582,914

This shows a falling off as compared with the
preceding month, as follows:—
Sept.—Total engagements, 169, value, \$746,100
Oct.—" " 156, " 582,914

13	\$163,186
----	-----------

NOTICE.—The name of this Journal hav-
ing been used by parties not in any manner
connected with this office, to obtain building
intelligence and information intended for
its columns, architects, contractors, and
others will hereafter please assure themselves
before furnishing same, that the party can-
vassing is properly authorized to represent
us. Authorized canvassers will be supplied
with sufficient evidence upon this point.

We Will Donate in Cash \$150

TO ANY person, club, society, or association,
that secures two hundred cash subscribers for
this Journal.

House painting in Paris is a very extensive
business, as a periodical renovation of the
houses is rendered imperative by law, no one
being allowed to disfigure a neighborhood by
presenting stained and disfigured walls. The
houses being of soft cream-colored sandstone,
many of the finer structures, instead of being
painted, are redressed by the stone-cutter and
come out from the process looking bright and
new.

ITS SEVENTH VOLUME,

Commencing with January, 1886.

Arrangements Looking to the General and Material
Enlargement and Improvement

California Architect and Building News.

Are in active progress and preparation, and it
is hoped, commencing with the January num-
ber next ensuing, that its numerous patrons
will have good and sufficient cause to approve
the result of our earnest and determined efforts

Returning thanks for past favors and en-
couragements but inadequately expresses the
deeper sentiment of gratitude within, and no
future effort will be wanting to express the
sincerity of our appreciation of kindness and
support received, and to render this Journal
worthy of

CONTINUED AND GREATLY INCREASED
PATRONAGE.

To enable the carrying to a successful issue of
the purposes now being matured and perfected.

3,000 ADDITIONAL SUBSCRIBERS

Are wanted in San Francisco, and a corre-
sponding increase throughout the

PACIFIC STATES AND ADJACENT TERRITORIES.

British Columbia, Australia, the Hawaiian
Islands, and the States east of the Sierras, have
liberally extended a helping hand, but we
want a large increase in all directions, not
simply from pecuniary considerations, but to
enable the publication of a journal in San
Francisco representing all Pacific Coast archi-
tectural, building, and mechanical interests,
which shall possess intrinsic merit equal to
any class journal published upon this conti-
nent.

Notice to Correspondents, Subscribers, and

Patrons of this Journal.

Geo. H. Wolfe having no interest in, or connection with,
this Journal,

All Parties in Business Relations, Corre-
spondent, Financial, and Otherwise,
will please hereafter address

JAMES E. WOLFE,

Editor California Architect and Building News,
240 Montgomery St., S. F.
For convenience sake, use only—CALIFORNIA ARCHI-
TECT, 240 MONTGOMERY STREET, S. F., as that alone will
ensure prompt delivery.

American Newspaper Annual.—A very compre-
hensive book, covering the whole ground of its specialties,
996 pages; practical, useful, well arranged, and neat in its
typographical appearance. Published by N. W. Ayer & Son,
Philadelphia. May be ordered through this office or direct
from the publishers, at \$3.00 per copy.

A Destructive Fire.

THE conflagration occurring the early part of last week, which entirely destroyed the fine four-story edifice occupied by H. S. Crocker & Co., and owned by Chas. Crocker, the railroad magnate, was one of the most destructive in this city within a decade. The building, which was one of the handsomest business buildings in San Francisco, was completely gutted. All the floors above the cellar, and all girders, posts, and supports were consumed, or fell to the cellar, leaving nothing but the walls standing. The excellent construction of the edifice is sustained by the fact that, although the heat was fearful, and all the floors giving way and tumbling, the front wall, perforated by numerous door and window apertures, remained standing, and apparently but slightly affected by the raging flames. There was nothing saved. All within—a magnificent stock of stationery, and the largest on the Pacific Coast—together with an immense lithographic department, and all its machinery and appliances, and the manufacturing department of the largest jewelry house on the coast, were all consumed. And to all this is to be added the horrid fact that two daring firemen were caught by the debris falling from above, and were roasted to death in sight of their comrades, who could render no assistance.

The Building Boom Unbroken.

THE continuance of building activities has been to many, and continues to be a matter of surprise. Months ago the feeling gained ground, and was very generally entertained, that there must be a let-up—a cessation in building operations. But the decline has not as yet manifested itself, and there are no present appearances of a falling off in the near future. Architects' offices generally are "full of work," and as far as the future can be judged from the stand-point of the present, there will be a large building trade during the remaining months of 1885, with considerable work in course of preparation for commencing "after the rains."

This flood of building prosperity has not settled in any particular locality or section, but has spread itself over the entire city; for "go where you will," piles of building materials meet the sight, and the sound of busy mechanic's tools greet the ear. And yet withal, rental rates are well maintained, and the number of empty houses seems not to increase, although each month the average of new places of abode—single tenements, flats, etc.—amount to not less than one hundred and fifty, and perhaps nearer two hundred.

This Journal Sent Free of Cost.

TO ANY one forwarding to this office the names of four others, beside their own, and the amount of four annual subscriptions,—\$8.00.

Water Closets \$1 00
Building Superintendence 3 00

San Francisco Chapter of Architects.

THE regular monthly and annual meeting of the Chapter was held October 2, with a good attendance of members. Mr. Macy acted as president *pro tem*.

The minutes of the previous meeting were read and approved. The Committee on Apprentices' Indentures reported; the report was accepted and the committee discharged. The Committee on Incorporation reported progress.

Seth Babson, treasurer elect for the ensuing year, tendered his resignation as such, owing to residency "across the bay," and inability to attend the meetings regularly. Received and filed.

The annual reports of the retiring president, A. Laver; secretary, B. E. Henrickson, and treasurer, J. M. Curtis, were received, and ordered spread upon the minutes.

The newly-elected president, William Curlett, read an interesting paper, which was ordered spread upon the minutes, and to be published in the CALIFORNIA ARCHITECT AND BUILDING NEWS. It will be found in full in this issue.

A discussion arose in reference to the plumbing law, which resulted in the appointment of a committee, consisting of Messrs. Macy, Henrickson and Curtis to consider the subject and report at next meeting.

Messrs. Macy, Pissis & Curtis were nominated to fill the office of treasurer, made vacant by the resignation of the treasurer elect, Babson.

A resolution was adopted that the president, at each meeting of the Chapter, appoint a member to lead in the discussion of some subject of interest to the profession. In harmony with the resolution, the president appointed James E. Wolfe to open the series of discussions, at the November meeting, which will be held the first Friday in November next.

No further business requiring attention, the Chapter adjourned.

An Ancient Sanitary Ordinance.

THE burgh records of Glasgow, Scotland, for the year 1574, show a complete and excellent set of regulations "for awaye haldyng and preservation of this gud town" from the pest or plague. In these regulations occurred the following item concerning the reporting of cases of sickness to the proper officers, termed "searchers":—

"It is statute and ordanit, that gif any persone or persones indwellaris in this town, happens fra this tyme furth to fall sick, that the maister of the hous incontinent cum to the visitours and sercharis of the gait, or any of thame, and shew the samyn, that thair may be sichtit; and gif any persones happinis to deceis in ony house within this town, that the maister of the hous sall cum to the visitours adpoyntit for sightyng thair of or thair be wyndit under the pane of banishment."

Another provision in the regulations read to this effect:—

"Ordnais the schule-hous wynd and all the wennallis to be simpliciter condampnit and stekit up."

Address of Mr. Wm. Curlett, before S. F. Chapter of Architects, Oct. 2, 1885.

GENTLEMEN: Permit me to thank you for the honor you have conferred upon me by electing me President of this association, and if, as I hope, I shall succeed in filling its responsible duties to your satisfaction and the advancement of our professional interests, but more particularly the advancement of the younger members of the Institute, I shall attribute it to your cordial support, which I feel assured will at all times be afforded me, so that, by your co-operation, every meeting may serve to bind us more closely together, for we know that without union in all matters it is useless to hope for success.

I cannot conceal from myself, however, that there are many Fellows whose claims to this honor are far in excess of my own, when I reflect that many of our members are eminent architects, and have practiced in this city for more than a quarter of a century, and that many of those older practitioners have been active members and colleagues together in the pioneer association, which, unfortunately, existed but for a limited period—however, it must be gratifying to those members, even at this late date, to view the result of their laudable efforts to form and maintain an Architectural Association on this coast, for the present association is but an offspring of the former, which, I feel sure, is now beyond the possibility of failure.

In reviewing the progress that has been made by the present association since its affiliation with the American Institute, I congratulate the Chapter on the substantial advancement made during that time, in the acquisition of members as well as the general improvement and development of the possibilities of our art.

I also congratulate you individually on the earnest and studious manner with which you have at all times sought to cultivate professional relationship and further the promotion of mutual intercourse and the advancement of professional knowledge, which is essentially necessary to the advancement and development of the principles of architecture; for we must remember that knowledge is accumulative, and that we all know more now than we did even one year ago; that each one of us has some new idea to impart—moving, as we are, onward in the pursuit of our calling—for every year education makes strides, and we can only maintain our position in the world by showing that we are worthy to do so. To neglect all efforts at culture and the scientific side of our work is simply suicidal.

It should therefore be the desire of every member to make this institute attain its object and realize its noble ideal. To this end he should at all times endeavor to lend the full force of his ability and influence, so far as his time will permit.

I will venture to say that I am but expressing the sentiments of the individual members of not only this, but any Chapter or association

of architects throughout the length and breadth of this country, that their monthly meetings should be something more than merely assembling for the purpose of reading the minutes of the previous meeting and transacting the usual, or routine business, such as hearing reports and appointing committees.

Now, then, I will suggest that our meetings be turned to some account, and that our time be spent so that it may redound with not only credit to ourselves, but of interest to the public. To properly accomplish this end, I should recommend that we improvise some system whereby at each meeting we elect one of our number to prepare a paper on some subject of his own choice, to be read at the following meeting. Would it be too much to ask of each of our Fellows, or associates, as they join our ranks, the contribution of an essay, or paper, on some subject connected with architecture or its practice, of which he has made a particular study?

The arguments and debates naturally arising from the reading of such papers cannot fail to be of lasting benefit to us, as I can assure you that for whatever time we devote to the study of the most simple, as well as the most complex subject, we will each in return obtain some new and interesting information that otherwise would have been passed unnoticed. Suppose we begin at the bottom, and take up the subject of foundations. What a field for discussion this first and most important part of our building construction affords us, and particularly in a city like this, where so many of our heavy and expensive structures have been erected on the most dangerous and deceptive mud banks, which, I regret to say, in some cases have already shown conspicuous signs of miscalculations? This, I claim, is something that requires our most careful attention; otherwise, but a short time will elapse before the engineer will add this portion of our vocation to his already large practice, for, indeed, he has already encroached on a class of building, such as railroad depots and manufacturing warehouses, all of which formerly came under the province of the architect, and which, undoubtedly, was a most lucrative part of his profession. Such men are generally called civil engineers, but whether this is a civil act towards us I will leave you, gentlemen, to be the judges.

Then, for instance, the topic which is agitating the minds of the public at present, the importance of which has been so ably set forth by the *Chronicle*, that of drainage and house sanitation, what an endless subject for study! One of the first inquiries of almost every one now who takes a house, or contemplates building, is about the plumbing and drainage. Considering that the health of a family depends largely on the perfection of this branch of our work, the importance of this subject cannot be disputed; and unless an architect can advise and carry out sanitary work in the most scientific manner, his reputation must assuredly suffer. Should an architect neglect this branch of his profession, we may look for an

increasing number of specialists; for have not the interior decorator and manufacturer appropriated another slice of our commissions? What we must convince the public of is that we are, as a body, necessary to their health and comfort, and that they lose in the long run by going to outsiders, whose only recommendation is that they do the work cheaper. This I consider entirely wrong, for the architect should not only design the house, its interior fittings and furniture, but he should also supervise and direct all interior decorations. If he is not the person most competent for this work, he should, before he is entitled to be recognized as an architect, or to be intrusted with such matters, be thoroughly conversant with all styles, so that he may give to his client sound and valuable advice.

It is true that a greater change and general improvement in interior decorations have taken place in this city during the past five years than have occurred since the discovery of gold.

We cannot disguise the fact that the architect of to-day must make his work apparent. He should, therefore, not be satisfied merely to act as a draughtsman, simply designing the skeleton of our dwellings for the decorator and manufacturers to step in and complete, but he must also prove to his client that he has both the intellect and culture to carry out any work that may be intrusted to his care, whether it requires a good knowledge of construction or a well-trained artistic taste.

It would seem, however, that the mission of the modern architect reminds a person of what is happening in the bee world just now, where, by the aid of an ingenious patent, ready-made cells are stamped out in wax of the correct shape and size, and when placed in the patent hive, the bee forthwith completes the cells and fills them in with honey. And I regret to say that it is seldom that the American people have to thank the architect for the poetry of their homes. However, it must be admitted that the profession is a learned one, for we all have read with deep interest of the attainments and achievements of the eminent architects both of the Old and New World; for what we know of Wren, Inigo Jones, and the Chambers, the architect was conversant with every branch of the work included in the structure.

It has often occurred to me that one of the most pleasant provinces of an architect should be to turn the necessary articles of daily use into works of art. And it must be conceded that year after year there is a growing tendency to make simplicity in design the guide towards beauty, as well as towards convenience and stability, instead of an adherence to some conventional type of design and decoration, or a straining effort after originality.

Speaking of originality in design, suggests to me that we have in this city a great amount of the so-called work, which I do not think reflects very highly on its authors. I think the more perfect the young architect's educational training has been, the more conservative he will

be in his work, and is thus less liable to foist on the public this hodge-podge of incongruities, which their authors and their innocent clients are pleased to consider as architecturally correct. However, we have a right to be hopeful for the future, as I think we have passed a period in this city of what was termed "California style," which produced so many mere houses, for we are fast growing away from the thralldom of the aggressive and persistent stereotyped front, covered with meretricious ornamentation. Does it not seem a useless waste of skill and labor to put so much detail and elaboration on a piece of carved work which is often placed so far from the naked eye as to baffle all attempts to fathom its character or design. I believe all architectural features in which carving is introduced, ought to be looked at and drawn in the exact place for which they are intended. A great advantage will be gained by the young architect who will devote some of his time to learning to model, for I believe all carving, whether for the interior or exterior of our public or private buildings, should first be modeled, if not by the architect himself, under his immediate direction. By this system we may hope to obtain some harmony throughout the work, which is essential to good effect.

To the younger members of the Institute, who naturally will, sooner or later, take the place of their older brethren, and who I cannot doubt will be no unworthy successors, I recommend that a close intercourse be cultivated throughout the Chapter; for you will find that an addition of minds well trained in the profession, broadens its influence on the public taste, and enlarges its sphere of knowledge. You will also find that the building community is imbued with clearer conceptions of the science on what our art depends for its stability, than in the early mining days. The more time you devote to study, the more you will find that it is a profession that to attain success in, taxes the best efforts that you can put forward. It is true that industry alone will not make a great artist, architect, or sculptor. But we all know that if there is one thing more certain than another in art, it is that all great men have been industrious. You will find that the pursuit of references must needs open up studies which will be of lasting benefit to you, little dreamed of at the time, and which will prevent your being drawn into the downward current which sets strongly in the direction of business as against art, for we must admit that the commercial spirit of the country has too little sympathy with the artist.

One thing more I would have you remember, and that is, to ascend the ladder of fame you must be persistent in work, so that when the golden opportunity presents itself you may be well prepared to move onward and upward. Remember that in all professions thousands are blockading the bottom, or first round of the ladder, while but few make the ascent to that position where competition is seldom known. Although our members are steadily

on the increase, there are yet a few highly qualified men in this city whom we would gladly welcome into our midst as members of this Chapter.

Before closing this short address, I should remind you that the parent Chapter holds its annual meeting on the twenty-first and twenty-second of this month in Nashville, Tenn., and in conformance with the established rules, a report of our past year's transactions is to be transmitted to that body. And I would now offer a suggestion, that we should be represented each year by one at least of our number, with a view of persuading the Chapter to hold its annual Convention in this city at some early date.

I think it is in order here to say that we are largely indebted to the reporters for their attention at our meetings, and their readiness to impart to the public our deliberations. We are also particularly indebted to the editor and proprietor of the CALIFORNIA ARCHITECT AND BUILDING NEWS for the large space he has set aside for the record of our meetings. And now, in conclusion, with heartfelt desire for the advancement and further development of the Pacific Coast Chapter of Architects, I again thank you.

WILLIAM CURLETT.

California's Tribute to the Honored Dead.

It is a well-assured fact that the people of California will erect a monument to the memory of the immortal Grant, and that it will be one worthy of the Golden State. The movements thus far developed place the matter beyond reasonable doubt as to its finality. The recent meeting, presided over by the Hon. Senator Stanford, will create wide-spread confidence and give tone and character to the movement, and there is every good reason to believe that the gentlemen whose names are prominently connected with the several committees will so shape future operations, and guard the various avenues surrounding and leading to the grand consummation, that nothing will occur in judgment or action that will not be above all suspicion of personal interest, prejudice, favoritism, or ulterior motives not of the purest and most worthy character, and universally acceptable and satisfactory.

THE DESIGN.

The most difficult part of the whole work will be the obtainment and selection of a suitable design, one that will meet the highest expectation of the greater number, and be worthy of the approximately perfect type of manhood, whose memory it is designed to perpetuate. There are greater possibilities of error in this connection than in any other, and it will require of those with whom the responsibility may rest, the exercise of

GOOD JUDGMENT, PRACTICAL KNOWLEDGE, AND FIRM AND HONEST PURPOSES AND DETERMINATIONS

To avoid serious mistakes as to the design. Every one who conceives and produces a design will naturally hold that his own is the better, and universal experience proves that

men more skilled in manipulating, working, things, than in the art and science of designing, have succeeded over true merit.

We shall again refer to this matter. At present, appearances are all favorable to earnest and vigorous action.

Cost of Buildings East of San Francisco.

VERY many of the exchanges received at this office monthly, contain plan and designs for buildings—more generally those of medium and the lesser grade classes, suitable for persons of moderate means and wage-earners—in connection with which the cost of construction is also stated.

It may be possible in some parts of the grand universe of God, bounded by the domains of the United States, to do as much for the money as is sometimes stated, but we know not where—all labor and materials being paid for.

One thing is most certain and sure, no plan yet published in plan book or periodical can be built in California for the sum affixed as the cost value of construction, not by 25 to 100 per cent added. As a rule, gross deception prevails in this connection, and we risk the assertion that there never has been anywhere, a strict conformity to the plans published, within the limits of cost stated by the author. This is a pretty broad assertion to make, but it is based upon the experiences of nearly fifty years in almost constant contact with building matters, and upon the ground that all the materials used cost a right and reasonable commercial market value, special and extraordinary advantages excepted.

The effect of this is bad, in that it leads owners to expect more than can be realized, and when told by an honest and intelligent architect that their visions of cheapness cannot be attained, disappointment follows, and hardships created for architects, as they must necessarily explain and show causes and facts, why the thing cannot be done, which, however reasonable and true in themselves, are not always convincing and clear to the party whose mind may have been influenced and pre-disposed to an impossible conclusion.

It is very well known and understood that the price of both material and labor varies in different sections of the country, and the same exact results would scarcely be possible in any two localities; consequently figures of cost representing and fitting one, would apply to no other section, beyond the same conditions and surroundings. Yet plans are sent in all directions, with the same figures of cost for all—without discrimination or modification. But the broader proposition stated is that the prices as a rule are placed too low—less than can be reached anywhere, and very much below the cost of construction on the Pacific Coast.

Dwellings for Village and Country Homes \$3 00
Ferguson's History of Architecture. Two volumes 15 00

The Mechanics' Fair—1885—Ended.

THE twentieth exposition under the auspices of the Mechanics' Institute, ended a most successful career of thirty odd days, on the 26th of September. It was a pleasant place of resort, and tens of thousands of visitors of all ages availed themselves of the opportunity of enjoying sights and scenes which can be found clustered only at exhibitions of this character.

Some of the preceding annual displays may have been more crowded with exhibits, particularly in heavy and noisy machinery; but it is questionable whether any have been more enjoyable or instructive to the multitudes who have, through its opportunities, sought information and pleasure from real life in the varied forms presented. Persons uninterested in any particular thing, whose faculties of appreciation are normal and obtuse, might spend a day or evening "at the fair" or anywhere else without profit or improvement. But the eye and mind awake and alive to see and learn from the evolutions and developments of the age, as demonstrated in the innumerable shapes and forms to be seen during the fair, could not be otherwise than benefited and instructed.

The moral aspect of the fair was excellent. While the streams of life and smiling faces flowed full and cheerful and happy greetings abounded, there were no events of rudeness or indecorous conduct transcending the bounds of the strictest proprieties, and many were the regrets expressed upon the closing evening that the managers had not extended the time at least two weeks longer.

The fruit, vine, wine, wool, silk, mineral, and other great resources of the State were well represented, as were also the industrial, mechanical, commercial, and other arts and sciences. It would be impossible for us to mention in detail each particular object or thing of interest. Some of the exhibits, as a matter of course, attracted more general attention, and at all times crowds were gathered around them. Of this class, the exhibit of

NATIVE CALIFORNIA AND OTHER HARD AND FANCY WOODS.

By Thomas Hatch, covering a very large space, and including a great variety of tree growth, and some extremely singularly marked specimens, representing in native laurel, black walnut, and redwood, perfect representations of the faces and forms of men, bears, fish, birds, and other animal life. There were also splendid specimens of California maple, sycamore, oak, etc., as well as representative woods from Mexico and the islands of the Pacific. This display secured a gold medal.

THE DISPLAY OF STAINED, GROUND, AND BENT GLASS.

By John Mallon, was complimented by the presentation of a gold medal, and also for cut and embossed glass, a silver medal. As usual with displays by Mr. Mallon, it was good.

THE S. F. EMBOSSED GLASS WORKS.

W. H. Warren, proprietor, 997 Market Street, made a liberal and handsome display of col-

ored, ornamental, and enriched sheet glass, varying in suitability and beauty from the gorgeous cathedral and church window, down through the various lesser designs, to the street-car lights. The display attracted much attention, and was awarded a bronze medal.

CALIFORNIA ONYX.

Mantel and pedestals, etc., exhibited by J. and F. Kessler, silver medal. This display was very attractive, the material being unequalled by any other variety of the marble species for beauty of color and tint.

WEED & KINGWELL

Made a fine display of brass goods and devices of their own manufacture, and were awarded a gold medal for best assortment of brass works, and silver medals for best assortment of bells, and best display of plumbers' goods.

WILL FINCK

Received grand silver medal for best display of cutlery. This firm manufactures not only handsome, but excellently good articles.

HARVEY'S HOT WATER RADIATORS

Were among the notable exhibits, and enlisted the interest of thousands during the fair. This being the age of evolutions, the Doctor has improved the time within the past twelve months, and evolved several new devices as attachments to his original system of heating, and now claims to have the most perfect and practical hot water heater in use, for heating both public and private buildings. A silver medal was awarded. Place of business, 23 Stevenson Street.

PATENT CHIMNEYS.

Mr. Browell made a good, practical display of this desirable and almost indispensable adjunct in house building, by means of which fires can be enjoyed in every room in a building, with perfect immunity from the dangers of conflagration. Mr. Browell has spent many years of his life upon this device, and in renewed approval the Committee on Awards presented Mr. B. a silver medal.

BURR FOLDING BED CO.,

603 Market Street, under the Grand Hotel, exhibited a variety of styles of sideboards, bureaus, library cases, desks, etc., which, by a motion or two, and in less time than is required to write one line of this notice, can be transformed into full-fledged spring beds, and as speedily folded back again into desks, sideboards, etc., leaving no trace of the sleeper's couch. They are ingenious, and supply a handy bed and bedstead convenience in the parlor or dining-room, if you please, disguised under the perfect appearance of any desired piece of furniture. Bronze medal.

PACIFIC ROLLING MILLS

Received a gold medal for best display of steel castings, forgings, etc. There are great possibilities in the future for this pioneer establishment in its line, and it is to be hoped that its management will not only succeed in capturing gold and silver medals at every competitive exposition, but that they will also suc-

ceed in meeting every want on this coast, in things within the range of their manufacture, so as to render it possible for wrought iron workers in San Francisco always to compete successfully with Eastern firms.

HAWLEY BROS. HARDWARE CO.

Were active competitors, and carried off several silver and bronze medals, for best general display of agricultural implements, cultivators, corn shellers, tree diggers, etc., etc.

OSBORN & ALEXANDER,

Bronze medal for best display of bicycles and tricycles. This firm of hardware dealers are energetic, and permit no opportunity to pass unimproved, in variety and kinds of goods and merchandise best calculated to suit the wants of the general public.

THE BOLLER FURNITURE CO.,

Which but recently sustained a very heavy loss by the destructive conflagration on Fourth Street, received a silver medal for best bed-room furniture. Included in their line of manufacture are wood mantels, of which they have many very fine designs, and the class of workmanship is good.

HUETER BROS. & CO.,

Silver medal for best display of varnishes, gums, etc. It is always pleasing to notice California manufactures and productions succeeding in fair contests over imported competitors.

E. G. DENNISTON,

Silver medal, best display of plated wares and works. As the result of close and diligent attention to business, not only in making trade, but in producing good work, Mr. D. has accomplished a decided business success, and with life prolonged there is a large future before him.

J. T. TITUS

Received silver medal for the best flushing and sewer trap. This device has passed through many trying tests, and has proven itself a success in all cases.

THE GRANOLITHIC PAVING CO.

Had on exhibition samples of the stone manufactured by them, in the form of heavy steps, urns, etc., beside which were specimen pieces of the window sills, ashlers, and other facings and parts intended for use in the Donohoe building. For many purposes this manufactured stone has taken the place of the natural, and in time is likely to be appointed to every service requiring strength and durability. Demonstrations are at present being made, in which concrete, the components of "patent stone," is taking the place of wrought iron beams. A silver medal was awarded to this company.

COTTON HOSE,

"Rubber-lined—always reliable, and the strongest and most durable made," was exhibited by W. T. Y. Schenck, 36 California Street, and the gentlemen appointed to determine relative merits, so far gave precedent to the exhibits of Mr. Schenck, as to award a diploma.

THOS. DAY & CO.

Displayed a fine line of gas fixtures, etc.

CALIFORNIA WIRE WORKS.

As usual, an extensive exhibit of wire works, in almost every form, and for endless purposes; gold medal.

P. & B. PAINT,

Exhibits extensive and varied. The management is indefatigable in pressing the merits of the paint material upon the attention of those requiring paint of its kind, and so far favorably impressed the Award Committee as to receive a silver medal.

MR. DAVID KERR

Received deserved recognition for his exhibit of a splendidly built, practical truck, which seems ponderous and powerful enough to transport the whole exhibits of the fair in half a dozen loads, yet so neat and perfect, that with a good team of horses, and some cushioned seats, the entire Board of Managers of the fair, with David thrown in, might take a pleasant ride through Golden Gate Park and on to the "cliff" with comfort. This splendid piece of mechanism received a gold medal. To same manufacturer was awarded a silver medal for best four-spring two-seated wagon, and also truck axle, California make.

THE ONLY SPECIALTY IN THE ELEVATOR LINE Was the *personals* representing the elevator interests. Mr. John Hammond, agent for the Otis Bro. elevator, representing the New York firm. Mr. Wm. Milliken, the genius of the Ram elevator; Mr. Hinckle, of the Hinckle device; Mr. Wm. C. Burch, Mr. Jardine, Mr. B. E. Henriksen, and other elevator builders and clutchmen, being nightly found among the lively throng of visitors.

BAKER & HAMILTON

Also received gold medals for display of agricultural implements.

John Bergstrom & Co., gold medal, best pipe organ, California make.

S. & G. Gump, gold medal, picture frames, pedestals, mantels, etc.

We have been able to notice but few of the successful exhibitors, as to do so in full would occupy nearly one half the pages of this issue. The management certainly deserves great credit for the completeness of arrangements, and the general good taste and judgment displayed throughout.

Should there be any error in the foregoing report, we will gladly correct the same in the succeeding issue.

The days of machinery, remarks a contemporary, have been for the poor man days of home-making and home-making comforts, as no other days ever were. If machinery has given the rich man luxuries, it has given the poor man the necessities and comforts of habitation, and clothing, and travel, such as he never had before. The printing press, especially, is the poor man's servant and benefactor, scattering abroad our intellectual wealth, raising all to an intellectual level, and binding all into one whole.

Staining of Woods for Decorative Purposes.

A. CURTIS BOND.

THE art of laying various ground shades of color on wood, with or without veins and figures, or vein patterns, and known as staining, adds very materially to the resources of decoration, as enabling white and other soft woods easily worked to present the appearance of rich and costly woods, or the exquisite tints of woods not growing in a sufficient quantity or of a size to be utilized in cabinet or architectural wood-work, especially in the way of veneering.

Staining also admits of altering at any time the wood-work of an apartment so as to bring it into accord, or cause it better to contrast with wall-paper and various mural adornments, or with furniture. One description of staining is applied to merely heightening the color of choice woods. The stains are ordinarily put on with a hog's bristle brush, followed by a badger hair softener, but flannels and sponges are often used in their place. For veining or ingraining, badger sash tools and sable pencils come into play.

Where woods of different hue of the same kind are brought together, as in restoring antique furniture, graining is resorted to in order to match the newly inserted pieces with the ancient. Thus to match light with dark-hued mahogany, the former is washed with soap lees or with quicklime dissolved in water. Aqueous decoctions of logwood, dyed oil, aquafortis, sulphate of iron, nitrate of silver, bichromate of potash, and other preparations of an acidulous and alkaline nature are classified in this connection as "darkeners."

Pleasing, yellow hues are supplied by aqueous decoctions of barberry root; rich, mild reds, by only decoctions of alkanet root, and alcoholic solutions of dragon's blood; a reddening tincture, by rectified naphtha, in which cam-wood dust has been steeped. The color of birch is heightened by sponging it with oil, slightly tinted with rose madder or Venetian red. Discolored ebony is revived by a strong decoction of gall nuts. Inferior rosewood will apparently be advanced in grade by applying the liquid obtained from boiling a pound of oak bark and the same quantity of walnut shells and peels. Honduras mahogany loses its pallid and dull hue by being first coated with spirits of hartshorn, and then with red oil. Raw oil and turpentine have the effect of increasing the attractiveness by adding to the beauty of many woods. American ash is made to resemble oak by drawing veins on it with a white stain, coating these with thin varnish, and darkening the remaining ground; or the veins are scratched fancifully after the varnish is laid on with a rag saturated in the ordinary preparation of French polish. A decoction of Brazil woods supplies the rich hue of rosewood, and the veins may be made by a camel's hair brush dipped in a liquid prepared by boiling logwood chips, sulphate of iron, and steel filings in equally proportioned quantities of vinegar and water. Three distinct coats of this preparation will give white wood the appearance of ebony. Showy elmwood may be delicately darkened so as to pass for Italian walnut. In short, the modifications are as various as the tints obtainable from simple and compound colors, the result being influenced by chemical and mechanical skill brought to bear on woods of different quality.

For a fine crimson, boil one pound of good Brazil dust in three quarts of water for an hour; strain and add half an ounce of cochineal, boil gently for half an hour. If more of a scarlet tint is desired, boil half an ounce of saffron in a quart of water for half an hour, and pass over the work previous to the red stain.

For purple, boil a pound of good chip logwood in three quarts of water for an hour; then add four ounces of pearlash and two ounces of indigo pounded.

For fine blue, add four ounces of indigo to a pound of sulphuric acid.

For a fine green, put four ounces of the best verdigris pounded fine, half an ounce of sap green, and half an ounce of indigo in three pints of the strongest distilled vinegar.

Note that for a bright yellow, the wood need not be stained, as a small piece of aloes put into the varnish will have all the desired effect.

For red, archil will produce a good stain, when used cold, but it is improved in color, if after one or two coats have been applied and suffered to get almost dry, it is brushed over with a hot solution of pearlash in water.

To improve the color of any stain, apply a mixture composed of one ounce of nitric acid, half a tea-spoonful of muriatic acid, a quarter of an ounce of grain tin, and two ounces of rain-water, kept in a well-corked bottle two days before using.

A black stain may thus be made: Boil one-half pound of chip logwood in two quarts of water; add one ounce of pearlash, and apply hot with a brush. Then boil one-half pound of logwood in two quarts of water as before, and add one-half ounce of verdigris and one-half ounce of copperas; strain off and put in one-half pound of rusty filings; with this go over your work again.

The Queen of Roumania is said to be an architect as well as a painter, musician, and poet. A new palace has been erected in the mountains, for which the designs were prepared by the king and queen. Her Majesty's music room is suggestive of a church. The windows are filled with glass, on which scenes from the works of the Roumanian poet Alexandri are painted; the seats are like stalls in a choir, and to aid in the illusion, strict silence has to be observed by all who have the privilege of being present at the performances.

All New Subscribers

PAYING or forwarding \$2.00, will be entitled to the present and all succeeding numbers for 1885, and the whole of 1886.

A small item, page 156 in the September number of this Journal, has called forth the following letter, which is self-speaking:—

BALTIMORE, Sept. 24, 1885.

Dear Sir:—Allow me to call your attention to a slight mistake in your September number of the CALIFORNIA ARCHITECT, in which you mention a new "electric railway on Huntington Avenue, Boston." It is Baltimore, not Boston, that deserves the credit. The Union Street railway here has been experimenting with the Daft electric motors for their suburban road, out Huntington Avenue to several towns in the suburbs, for the past year, and have had the inventor here for weeks at a time trying different ways, and about two months ago finally succeeded in getting everything complete. They now have five motors running trains back and forth over the road, which is about six miles long. The trains go at the average speed of thirty miles per hour, including stops, and the ascents of the grades, several of which are six hundred feet to the mile. Both the cars and the avenue are lit by electric lights.

Owing to the great danger of the center electric rail, it has been boarded up, leaving a narrow groove in which the wheel runs. Before this was done there were a great many accidents to persons and horses stepping on the rail at the crossings and receiving a charge of electricity. Although it works very satisfactorily where it is, there is no telling how it would answer in the crowded city streets, and there is small probability of its being used inside of the city limits for some time to come.

I hope you will make the inclosed correction for the honor of old Baltimore.

Respectfully, W. CLAUDE FREDERIC,
Architect.

Shoe Lumber.

A CORRESPONDENT of the Chicago Times says that one may see, in passing the shops of Tokio, cords of sandal-wood cut into small blocks. This, one learns, is nothing short of shoe timber. These cords of wood will speedily be converted into shoes of various sizes, at prices ranging all the way from four to twenty cents. One feels quite exalted in a pair of twenty cent shoes. The wood is called Kiri, and is very light. The clogs are still further lightened by hollowing out the center. So, in point of fact, there is little truth in calling the shoes heavy, although they appear so to the inexperienced observer. It must be admitted, though, that they are unreasonably clumsy. Sometimes the shoes worn by the ladies are laquered, and are fastened by a velvet band passing from either side over the lower part of the instep, and between the first and second toes. With this same kind of wood are made bureaus, provided with strong iron handles, and the whole box is adjustable in horizontal sections, one piled above another. Owing to lightness of the wood these boxes may be filled with clothing and carried off on the shoulders of the coolie in case of fires, which so often vex the people of Tokio.—The Furniture Worker.

"Hades and sheol" may all be well enough for ordinary occasions, but when a man is putting up stove pipes nothing takes the place of the good old unrevised version.

Architects as Sanitarians.

OUR enterprising contemporary, the *Inland Architect*, has started a crusade, of a very heroic character, against sanitary architecture, plumbing, engineering, and, withal, sanitary literature. It professes to regard the application of sanitary science to practical house-building as a species of modern craze. It denies every important advantage which has, supposably, been derived from the practice of hygienic principles in construction. It urges a return to the insanitary simplicity of an earlier day with its open sewers, untrapped drains, and unventilated soil-pipes.

It is matter for congratulation that this old-fashioned journal is powerless to turn back the hands very far upon the dial of progress, but it is to be regretted that it should seek to use any measure of its influence in so mischievous a cause. In support of its position it adduces, however, several noticeable arguments.

The intricacy and cost of sanitary apparatus; the impossibility of its being obtained by the average householder; the inability of the ordinarily educated architect or plumber to comprehend sanitary details; and the failure of the whole system to lessen the prevalence of zymotic disease—these are the principle pleas which it sets forth. We say that these are noticeable points, not because they are, by any means, answerable, but because they are suggestive of certain obstacles which sanitary scientists have to meet. Simplicity of apparatus is a desideratum, but it is one which it is not impossible, at the present time, to obtain. There is an undue tendency toward excessive elaboration, in some directions, but it is anything but an essential feature of sanitary work. It requires nothing but competent selection to secure simple and manageable apparatus at a moderate cost. Perfect appliances must necessarily cost more than imperfect ones, but the advantages they involve are an actual compensation for the additional outlay.

As to the architects and plumbers, it is a libel to pronounce them incompetent sanitarians as a class. Undoubtedly there are many in both guilds whose education, obtained from the pre-sanitary school, is defective, but progress in any direction would be impossible were the age to wait for the declining generation to be educated up to its advance steps. Men there are, of every time, who are sufficiently progressive to keep abreast of current improvements, but there must always be laggards in the race. It is the business of the architect and the plumber of the present day to be sanitarians, and they are rapidly becoming such. The sanitary engineer may have a future before him in his own separate line, but, at present, he simply fills in the gap between the new school of architects and the old.

Respecting the failure of sanitary science, as applied to the dwelling, to reduce the frequency of zymotic diseases, we can only say



PLATE I.—FRONT ELEVATION OF ONE-STORY AND BASEMENT COTTAGE.

that our esteemed contemporary is evidently unfamiliar with the statistics of the very recent insanitary yesterday and the more enlightened sanitary to-day. Year by year, these diseases are yielding to improved household conditions. More and more distinctly are they traceable to the lack of sanitary conveniences. The annual death rate, from these causes, is steadily decreasing. And because certain robust individuals withstand the influence of unhygienic surroundings, and still live on, are we to credit sewer-gas and its accompaniments with a protective power? The sanitary movement may be, at times, ill-directed, but it has attained an impetus which will carry it successfully forward, and we would kindly caution our journalistic neighbor that "it is hard to kick against the pricks."—*Northwestern Architect and Improvement Record*.

TO REMOVE DRY ROT.—A Russian professor has been experimenting, says the *Architect*, on the best way to remove dry rot. He says that a thorough draught will destroy the parasite within twenty-four hours. If the action of draught be assisted by that of sunlight, a few hours will often suffice to put a stop to further damage. A concentrated solution of common salt is very efficacious, and the stronger it is used the more rapid its action. The action of a concentrated solution of cupric sulphate (blue stone, blue vitriol) is still more energetic and complete than that of common salt. Crude carbolic acid is rapid in its action and cheap, but inconvenient to use. But he considers that the best, cheapest, and most convenient material to employ is the tar obtained when birchwood is distilled for acetic acid; the under surfaces of the flooring are painted with the tar.

Early Plastering and Plasterers.

THE use of plaster, or "plaster," as it was formerly called, is of early date, even in the British Islands, in connection with domestic architecture. Long before lime plaster came into general use, a tenacious clay or sticky and unctuous earth was employed when procurable, and, in its absence, whatever clay, or mixture of mud and earth, produced the most binding material. The rudest and coarsest forms of daubing or plastering in the British Isles were those structures erected of wattles and daubed over with clay to keep out the cold. These kind of domestic buildings were common in Ireland in the time of Henry II. From necessity or in conformity to the fashion of that country, the English monarch erected, according to Roger Hovenden, a royal palace with "uncommon elegance" of smoothed wattles in 1172, and in such buildings his majesty, with the kings and princes of Ireland, solemnized the festival of Christmas. The Devonshire "cob," a class of building not yet extinct, is a fair illustration of the ancient fashion of daubing or plastering practiced in this country for long centuries. In the thirteenth and fourteenth centuries in this country the plasterers proper and the daubers formed two distinct classes of building workmen, and their wages, like the wages of other operatives, were subject to certain regulations summer and winter. The daubers were simply the layers-on of a mixture of straw and mud to a framework of timber. The plasterers in London in the 24 Edward III. (1350), were bound to take no more for their working-day between the feast of Easter and St. Michael than 6d., without victuals or drink, and for the remainder of the year 5d. Upon feast days, when they did not work, they took nothing. The masons and carpenters received similar pay. As a curious contrast with rights claimed by building workmen in the present day, those of the fourteenth century were allowed nothing for making or mending their tools. We know what fierce disputes took place within the last quarter of a century on the question of "grinding money," and how it was at last acceded to by the employers that a workman about being paid off was allowed a certain time for grinding or sharpening his tools, with a view of being prepared for his next job. The dauber or inferior plasterer of the fourteenth century received only 5d. per day from Easter to St. Michael's Day, and 4d. for the rest of the year. The daubers had laborers to attend them as well as the tilers, and these laborers received only 3½d. for one part of the year and 3d. for the other.

At an earlier period in the preceding reign, in the 10 Edward II. (1317), we have an interesting agreement concerning the plastering of the hall of John de Bretagne, Earl of Richmond. From an earlier document the residence mentioned would appear to have been situated in the locality of Ivy Lane or Warwick Lane, near St. Paul's. Thus runs the agreement of the master-plasterer of the

fourteenth century:—Know all men that I, Adam le Plasterer, citizen of London, am held bound to Sir John de Bretagne, Earl of Richmond, to find plaster of Paris, at my own proper charges, good and sufficient, without default, proper for the hall of the said earl, and also that I will competently, at my own proper charges, plaster and complete the said hall, and will repair the walls of the same with the said plaster, well and befittingly within and without, as also the telves [the louvers or flues] to the summit, in such manner as befits the repair of the hall aforesaid; and this I will do for 24 pounds sterling, which my lord the said earl has paid to me beforehand. Faithfully to perform the which work within eight weeks from the day of the Holy Trinity next ensuing, I do bind myself and all my goods, movable and immovable, namely, my lands, houses, and tenements within the City of London being, to distress in part of any bailiff of our lord the king," etc. Plaster of Paris appears to have been used in England long before this period, but whether its use preceded the Norman migration, and how long, we cannot say. Native gypsum could supply a fair material in the absence of the imported article, and there are several beds of it in different parts of the kingdom. We have further mention of the plasterer or dauber and his wages in an account of moneys expended by a trustee on the repairs of a house in the parish of St. Michael Cornhill, in the 33 Edward III. (1359), viz.:—"For 12 cartloads of lom [loam], 4s.; for 9 sacks of lime, 18d.; for 3 cartloads of sand, 12d.; for one workman's wages for daubing, 9 days at 7d. per day, 5s. 3d.; for his man the same day at 5d. per day, 3s. 9d." Again, in an account of expenses incurred by the representatives of the city attending the Parliament in the 13 Richard II. (1389), the plasterers, or daubers, put in an appearance. "For timber and carpentry, tilers and daubers, in preparing the house for their lodgings, as well as the chambers as the hall, buttery, kitchen, and stables for horses; and for making stoles and fourmes [stools and formes] throughout, and for carting out the rubbish, such house being quite ruinous; as also for payment made to the good man of the house for said lodging, £6 9s."

The antiquity of fresco-painting, even its older forms, shows that the services of the plasterer were in requisition at a very early date in Rome, Athens, Egypt, and other places. In the mediæval period fresco-painting, in connection with our ecclesiastical and other edifices, was pretty general over the three kingdoms. In the fifteenth century the windows of cloisters in England, as well as France, were not only filled with scriptural stories, in series, in stained glass, but the walls were sometimes painted in fresco. The walls of our mediæval castles, as far as the state chambers were concerned, were covered with wainscot, painted in fresco upon the panels, where not otherwise hung with tapestry. The churchwarden renovators of our ecclesiastical buildings in the seventeenth and eighteenth

centuries destroyed, by their white-washing processes, many fine specimens of wall-painting and fresco-work. In some instances, careful manipulation on the part of artists and architects has succeeded, says the *Brick and Tile Gazette*, in saving the fresco-painting, but in many cases the thin coat of plaster forming the ground of the painting unfortunately came off with the coat of outside white-wash. An older system of plastering, known as pargeting, or pergeting, was once very general. The term, as it is known in the present day, only applies to coarse plastering inside chimney flues, and between joists of floors. Formerly pargeting was understood in several senses: sometimes it was plain plastering, but generally it was used in connection with ornamental work, including mouldings, figures, foliage, and various other enrichments, sunk and raised. The Elizabethan half-timber houses exhibited on their exteriors ornamental pargeting betimes. In different towns throughout the kingdom houses formerly of the date to which we are referring displayed small figures, and canopies surmounting them, executed in plaster work. The plasterer may put in a claim for much good work in the past as well as an alliance with distinguished artists. The plasterer in the case of fresco-painting had always to be in readiness to render the wall with a coat of coarse stucco formed of lime and sand, which was finished over with a finer material to produce the requisite surface for the artist. Though the ancients were ignorant of the use of oils and varnishes, the fresco-painter, from the very nature of his work, had to evidence marvelous dexterity and skill, rapidity of execution, and a truly educated eye, all these being essential in the efficient performance of his labor. His subordinate, the plasterer, no doubt felt an inward pleasure, at least, that he prepared a good ground or basis for the successful work that resulted.

Of the class of plaster work known as stucco proper, there are several excellent examples in England and Ireland, generally attributed to Italian artists, several of whom were encouraged to settle in these kingdoms by members of our native nobility and some others interested in architecture.

In London and Dublin, in the old town mansions, and in numerous country seats, there is often splendid stucco ornamentation to be met with in ceilings, mouldings, chimney-pieces, etc. From the latter end of the seventeenth century, a very large amount of stucco ornamental work was executed throughout the three kingdoms, and though a portion of it must be put down to the hands of Continental artists, still we have evidence enough to show that our native workmen or artists in stucco often rivaled the foreigner in this class of plaster work. To one Margaritone, who died early in the fourteenth century, is credited the invention of stucco work. At intervals down to the end of last century he was succeeded by a number of clever stucco artists. The names of a few stucco artists or workers of

more than ordinary repute, who practiced their art with fame and profit in London and Dublin, may be found in looking into some local histories. There is an inferior kind of stucco work well known to our modern builders and plasterers, made up of common mortar and plaster, which is applied to the outside of houses. This kind of stucco or "compo," if well made and manipulated, will last for several years, but the ordinary mixture called "stucco" has no tenacity, and a few nights of frost signs its death warrant. Such constituents as a composition of pulverized white marble, mixed with good plaster of lime, well sifted and wrought up to a proper consistency with water, show at once to the practical mind that the essentials for executing lasting work are present.

The half-timbered domestic buildings, or cage-work structures, so plentiful in London up to the date of the great fire, afforded not a little work for plasterers, though the general run of the work of the more common and numerous class of these buildings consisted of filling in the interstices of the frame-work with plaster. The cornices, instead of being run in plaster, were often of wood, and put up by the carpenter and joiner; but when brick-built houses became general in our cities and towns, the house-plasterers by degrees secured a fair share of the work.

Old building practices, like national pastimes and customs, take a long time to die. The builder of the mud cabin still flourishes in portions of her Majesty's dominions, and the thatcher still turns our good ornamental work, as well as the tiler. After long centuries the "cob" wall constructor, the dauber, the rustic carpenter, the hedger, and the dry-wall field mason still vegetate, and find paying patrons. History is repeating itself, for have we not men coming forward again to prove that reeds are better than laths for plaster work, forgetting that our great-great-grandfathers used the vegetable growth, and never thought it worth while seeking a patent to protect its use?—*Building News (London)*.

Excavations conducted at Sunium by the German Archaeological Institute have been handsomely recompensed. All of the ground plan of the Temple of Athens has been disclosed, and it is now put beyond all doubt that the longer side of the building had thirteen columns, and not twelve. The remaining portion of the frieze has been unearthed, but, unfortunately, time has told disastrously with its sculptures. To the age of Pericles must be ascribed the marble temple, of the same general plan as the older and smaller structure, of calcareous tufa, over which it was built.

The Queen of England was the first to send a telegram to America. The message was one of congratulation to the President of the United States, who at once replied. Her Majesty's message and the President's answer cost £500 each, being £1,000 for the use of the cable for rather less than an hour and a half.

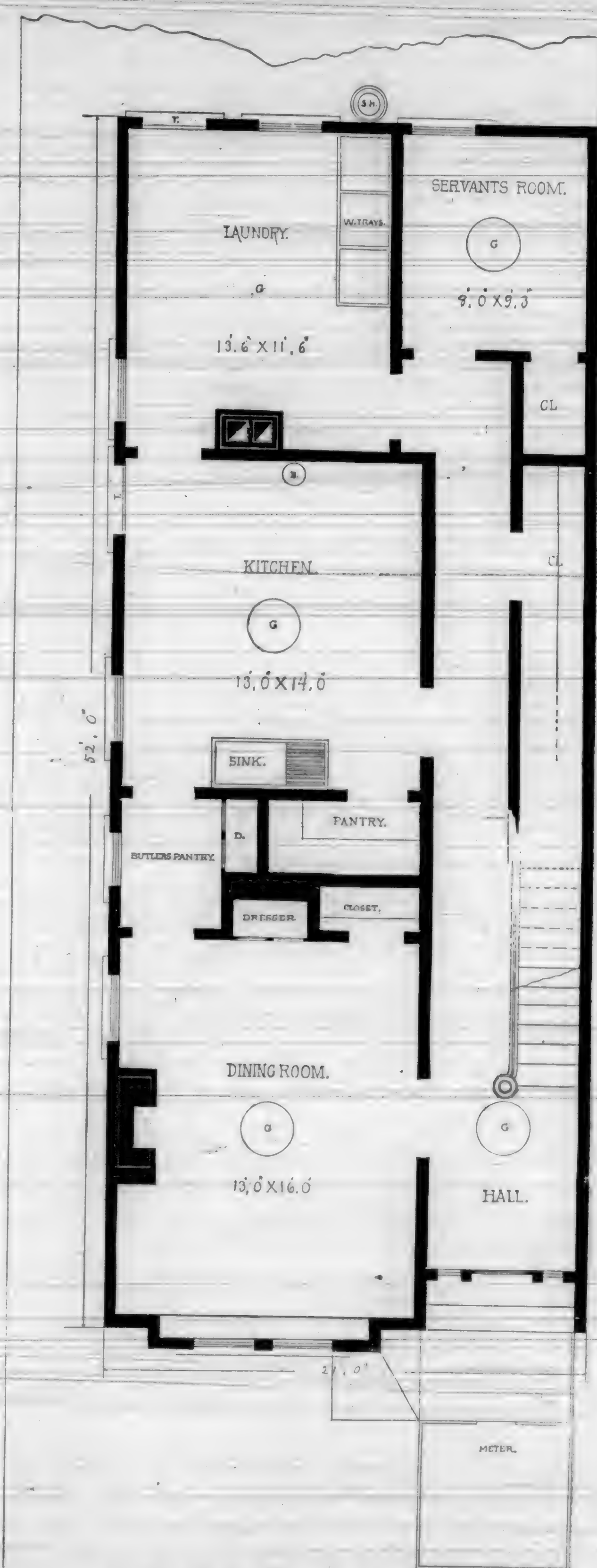


PLATE 2. — BASEMENT PLAN OF COTTAGE.

Early Plastering and Plasterers.

THE use of plaster, or "plaster," as it was formerly called, is of early date, even in the British Islands, in connection with domestic architecture. Long before lime plaster came into general use, a tenacious clay or sticky and unctuous earth was employed when procurable, and, in its absence, whatever clay, or mixture of mud and earth, produced the most binding material. The rudest and coarsest forms of daubing or plastering in the British Isles were those structures erected of wattles and daubed over with clay to keep out the cold. These kind of domestic buildings were common in Ireland in the time of Henry II. From necessity or in conformity to the fashion of that country, the English monarch erected, according to Roger Hovenden, a royal palace with "uncommon elegance" of smoothed wattles in 1172, and in such buildings his majesty, with the kings and princes of Ireland, solemnized the festival of Christmas. The Devonshire "cob," a class of building not yet extinct, is a fair illustration of the ancient fashion of daubing or plastering practiced in this country for long centuries. In the thirteenth and fourteenth centuries in this country the plasterers proper and the daubers formed two distinct classes of building workmen, and their wages, like the wages of other operatives, were subject to certain regulations summer and winter. The daubers were simply the layers-on of a mixture of straw and mud to a framework of timber. The plasterers in London in the 24 Edward III. (1350), were bound to take no more for their working-day between the feast of Easter and St. Michael than 6d., without victuals or drink, and for the remainder of the year 5d. Upon feast days, when they did not work, they took nothing. The masons and carpenters received similar pay. As a curious contrast with rights claimed by building workmen in the present day, those of the fourteenth century were allowed nothing for making or mending their tools. We know what fierce disputes took place within the last quarter of a century on the question of "grinding money," and how it was at last acceded to by the employers that a workman about being paid off was allowed a certain time for grinding or sharpening his tools, with a view of being prepared for his next job. The dauber or inferior plasterer of the fourteenth century received only 5d. per day from Easter to St. Michael's Day, and 4d. for the rest of the year. The daubers had laborers to attend them as well as the tilers, and these laborers received only 3½d. for one part of the year and 3d. for the other.

At an earlier period in the preceding reign, in the 10 Edward II. (1317), we have an interesting agreement concerning the plastering of the hall of John de Bretagne, Earl of Richmond. From an earlier document the residence mentioned would appear to have been situated in the locality of Ivy Lane or Warwick Lane, near St. Paul's. Thus runs the agreement of the master-plasterer of the

fourteenth century:—Know all men that I, Adam le Plasterer, citizen of London, am held bound to Sir John de Bretagne, Earl of Richmond, to find plaster of Paris, at my own proper charges, good and sufficient, without default, proper for the hall of the said earl, and also that I will competently, at my own proper charges, plaster and complete the said hall, and will repair the walls of the same with the said plaster, well and befittingly within and without, as also the tewels [the louvers or flues] to the summit, in such manner as befits the repair of the hall aforesaid; and this I will do for 24 pounds sterling, which my lord the said earl has paid to me beforehand. Faithfully to perform the which work within eight weeks from the day of the Holy Trinity next ensuing, I do bind myself and all my goods, movable and immovable, namely, my lands, houses, and tenements within the City of London being, to distress in part of any bailiff of our lord the king," etc. Plaster of Paris appears to have been used in England long before this period, but whether its use preceded the Norman migration, and how long, we cannot say. Native gypsum could supply a fair material in the absence of the imported article, and there are several beds of it in different parts of the kingdom. We have further mention of the plasterer or dauber and his wages in an account of moneys expended by a trustee on the repairs of a house in the parish of St. Michael Cornhill, in the 33 Edward III. (1359), viz.:—"For 12 cartloads of lom [loam], 4s.; for 9 sacks of lime, 18d.; for 3 cart oads of sand, 12d.; for one workman's wages for daubing, 9 days at 7d. per day, 5s. 3d.; for his man the same day at 5d. per day, 3s. 9d." Again, in an account of expenses incurred by the representatives of the city attending the Parliament in the 13 Richard II. (1389), the plasterers, or daubers, put in an appearance. "For timber and carpentry, tilers and daubers, in preparing the house for their lodgings, as well as the chambers as the hall, buttery, kitchen, and stables for horses; and for making stoles and fourmes [stools and forms] throughout, and for carting out the rubbish, such house being quite ruinous; as also for payment made to the good man of the house for said lodging, £6 9s."

The antiquity of fresco-painting, even its older forms, shows that the services of the plasterer were in requisition at a very early date in Rome, Athens, Egypt, and other places. In the mediæval period fresco-painting, in connection with our ecclesiastical and other edifices, was pretty general over the three kingdoms. In the fifteenth century the windows of cloisters in England, as well as France, were not only filled with scriptural stories, in series, in stained glass, but the walls were sometimes painted in fresco. The walls of our mediæval castles, as far as the state chambers were concerned, were covered with wainscot, painted in fresco upon the panels, where not otherwise hung with tapestry. The churchwarden renovators of our ecclesiastical buildings in the seventeenth and eighteenth

centuries destroyed, by their white-washing processes, many fine specimens of wall-painting and fresco-work. In some instances, careful manipulation on the part of artists and architects has succeeded, says the *Brick and Tile Gazette*, in saving the fresco-painting, but in many cases the thin coat of plaster forming the ground of the painting unfortunately came off with the coat of outside white-wash. An older system of plastering, known as pargeting, or pergeting, was once very general. The term, as it is known in the present day, only applies to coarse plastering inside chimney flues, and between joists of floors. Formerly pargeting was understood in several senses: sometimes it was plain plastering, but generally it was used in connection with ornamental work, including mouldings, figures, foliage, and various other enrichments, sunk and raised. The Elizabethan half-timber houses exhibited on their exteriors ornamental pargeting betimes. In different towns throughout the kingdom houses formerly of the date to which we are referring displayed small figures, and canopies surmounting them, executed in plaster work. The plasterer may put in a claim for much good work in the past as well as an alliance with distinguished artists. The plasterer in the case of fresco-painting had always to be in readiness to render the wall with a coat of coarse stucco formed of lime and sand, which was finished over with a finer material to produce the requisite surface for the artist. Though the ancients were ignorant of the use of oils and varnishes, the fresco-painter, from the very nature of his work, had to evidence marvelous dexterity and skill, rapidity of execution, and a truly educated eye, all these being essential in the efficient performance of his labor. His subordinate, the plasterer, no doubt felt an inward pleasure, at least, that he prepared a good ground or basis for the successful work that resulted.

Of the class of plaster work known as stucco proper, there are several excellent examples in England and Ireland, generally attributed to Italian artists, several of whom were encouraged to settle in these kingdoms by members of our native nobility and some others interested in architecture.

In London and Dublin, in the old town mansions, and in numerous country seats, there is often splendid stucco ornamentation to be met with in ceilings, mouldings, chimney-pieces, etc. From the latter end of the seventeenth century, a very large amount of stucco ornamental work was executed throughout the three kingdoms, and though a portion of it must be put down to the hands of Continental artists, still we have evidence enough to show that our native workmen or artists in stucco often rivaled the foreigner in this class of plaster work. To one Margaritone, who died early in the fourteenth century, is credited the invention of stucco work. At intervals down to the end of last century he was succeeded by a number of clever stucco artists. The names of a few stucco artists or workers of

more than ordinary repute, who practiced their art with fame and profit in London and Dublin, may be found in looking into some local histories. There is an inferior kind of stucco work well known to our modern builders and plasterers, made up of common mortar and plaster, which is applied to the outside of houses. This kind of stucco or "compo," if well made and manipulated, will last for several years, but the ordinary mixture called "stucco" has no tenacity, and a few nights of frost signs its death warrant. Such constituents as a composition of pulverized white marble, mixed with good plaster of lime, well sifted and wrought up to a proper consistency with water, show at once to the practical mind that the essentials for executing lasting work are present.

The half-timbered domestic buildings, or cage-work structures, so plentiful in London up to the date of the great fire, afforded not a little work for plasterers, though the general run of the work of the more common and numerous class of these buildings consisted of filling in the interstices of the frame-work with plaster. The cornices, instead of being run in plaster, were often of wood, and put up by the carpenter and joiner; but when brick-built houses became general in our cities and towns, the house-plasterers by degrees secured a fair share of the work.

Old building practices, like national pastimes and customs, take a long time to die. The builder of the mud cabin still flourishes in portions of her Majesty's dominions, and the thatcher still turns our good ornamental work, as well as the tiler. After long centuries the "cob" wall constructor, the dauber, the rustic carpenter, the hedger, and the dry-wall field mason still vegetate, and find paying patrons. History is repeating itself, for have we not men coming forward again to prove that reeds are better than laths for plaster work, forgetting that our great-great-grandfathers used the vegetable growth, and never thought it worth while seeking a patent to protect its use?—*Building News* (London).

Excavations conducted at Sunium by the German Archeological Institute have been handsomely recompensed. All of the ground plan of the Temple of Athens has been disclosed, and it is now put beyond all doubt that the longer side of the building had thirteen columns, and not twelve. The remaining portion of the frieze has been unearthed, but, unfortunately, time has told disastrously with its sculptures. To the age of Pericles must be ascribed the marble temple, of the same general plan as the older and smaller structure, of calcareous tufa, over which it was built.

The Queen of England was the first to send a telegram to America. The message was one of congratulation to the President of the United States, who at once replied. Her Majesty's message and the President's answer cost £500 each, being £1,000 for the use of the cable for rather less than an hour and a half.

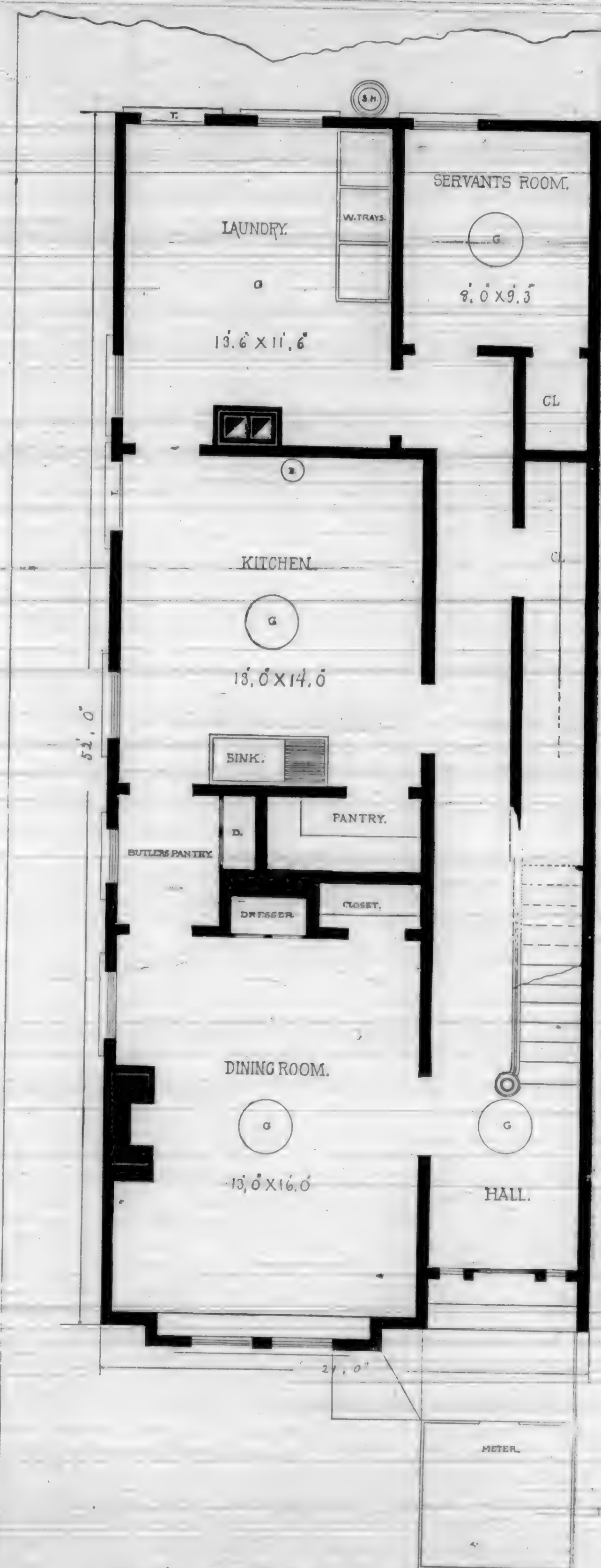


PLATE 2.—BASEMENT PLAN OF COTTAGE.

The Chinese Infliction.

It is not very difficult to understand why the people of the Eastern States are slow to accept the situation,—the living facts of everyday life on the Pacific Coast. There has been testimony sufficient adduced, and facts innumerable clearly proven, to convince any one who is not *unwilling to be convinced*, that the presence of the Chinese race in considerable number in any civilized community or county, is bad in every sense of the word—practically ruinous in ten thousand ways; and if not effectually and permanently restricted, will lead to results of the most damaging character, as far as the political, moral, and general interests of the country are concerned. If, step by step, and year after year, they increase in numbers, and the people of the United States tolerate their presence, and permit them to work into all the trades and avenues of manufacture and labor, and yield to them the rights and privileges of the people of the "most favored nations," the next that will follow will be enfranchisement and political rights. It may require time to bring this about, perhaps a half century, but we have seen evolutions and results even as great, which within fifty years have brought about changes of the most gigantic character. Let the thoughtful mind run back over the ten past decades, and gather up, and put together all the facts and results of that period of time, and then dare to face the possibilities of the next half century, by an assertion that any stupendous change and overturning is impossible.

The Chinese are by no means "fools." They are the opposite of that,—cunning, artful, selfish, perfidious, untruthful whenever a lie will serve a purpose,—without a single moral sentiment that will not yield to the slightest temptation, and consequently a corrupt and dangerous element in both a political and moral sense to tamper with; and if permitted to gain a sustained and sustaining foothold—a position that will render them secure against the influences which are now so loudly demanding restriction, and contending against their encroachments upon and into the rights of the laboring, manufacturing, trading, commercial, and other interests of the country, the babes and infants of the present day will be compelled to encounter a condition of things which, if thrown suddenly upon the present men and women of the United States, would cause a rebellion of stupendous character, and cause a slaughter greater than has ever been in the world's history. The men of to-day could not be restrained or controlled, if the attempt was made to force them at once to accept a state of things such as the Chinese incubus is bound to bring upon their children, perhaps within a generation, if with impunity, as in the past, they are permitted to continue their aggressive methods, growing stronger and more potent and powerful with the years as they pass, encroaching upon, endangering, and undermining the life prospects,

hopes, and comforts of millions of our own people, who seek to live as free men should live, in the enjoyment of this free and good land of liberty, where the laborer is worthy of his hire; and none should be forced to bow the knee to oppressive conditions, nor wear the yoke of perpetual servitude, as the result of competition with beings who know not, nor care for, any of the higher, more ennobling, and purer sentiments which actuate men and women of pure minds and holy purposes.

During the past thirty-five years, the rank seed of Chineseism has been planted, first upon the soil of California, where it has taken deep root and gained sturdy growth, with wide-spreading branches, and root tendrils shooting in all directions. They laugh at the clever case with which they beat the laws of the land, and defy the legislative and judicial powers of the Government, swearing away and nugating the enactments designed to fit their cases, and which, for all practical purposes, is perfectly clear and conclusive, except for the false swearing of the creatures themselves, and a word technicality which should be set aside as immaterial to the intents and purposes contemplated by the law-making power of a free and enlightened Government.

Says a correspondent of the *Philadelphia Record*, writing from England: "The English are the best builders, I should say, in the world; they seem to like building; where we have a fence they have a wall; where we have a wooden jetty they have a stone pier; where we have a wooden sidewalk they have a granite pavement; we are in a hurry about everything, content with makeshifts; the English are never in a hurry, and they hate makeshifts. I reckon we lick the English in inventing things, saving labor, and in steamboats; and, except that I admire the little gardens to the humblest homes in England, I think Philadelphia can match the old country for homes; but, as I said before, solid is the word I should write down to describe England."

A Door That Cost \$28,000.

ONE of the finest works of art in Washington is the bronze door of the capitol, which fills the doorway leading from the portico into the rotunda. It was modeled in Rome in 1858 by Randolph Rogers, and cast in bronze at Munich in 1860 by F. Von Miller, at a total cost of \$28,000. The valves of the door stand in a superbly enriched casing, also of bronze, and fold back into suitably fitted jams. In height it is nineteen feet, and nine feet wide, weighing 20,000 pounds. In 1862 this door stood in the south doorway of the old hall of representatives. In 1871 it was removed to its present situation, which is more appropriate, as it is now the front door of the capitol, and can be easily examined by strangers. Each wing of the door has four large panels, and eight smaller ones. The events portrayed in the larger panels constitute *alto relievo* the principal events in the life

of Columbus and the discovery of America, while in the sixteen smaller ones are beautiful statuettes of his patrons and eminent contemporaries. On the key of the arch is an excellent head of Columbus. In the casing are four typical statuettes, representing Asia, Africa, Europe, and America, while between the panels is a series of heads representing the historians of the life and voyages of Columbus and his followers, among them Washington Irving and W. H. Prescott.—*The Builder*.

Black Walnut Worth One Dozen Farms.

"If the original forests of the States of Indiana and Ohio were standing to-day," says a lumber buyer, "their valuation would be many times greater than are the farms which they were sacrificed to improve. In making their farms the settlers in those States destroyed millions and millions of dollars' worth of black walnut. Miles and miles of fence are laid with black walnut rails. One old farmer says that only thirty years ago he began making his farm, and that he had worked eight years in clearing it of the walnut timber, eight acres of which he burnt up. After thirty years of cultivation the farm is worth \$8,000. If it had its walnut timber back it would be worth more than \$100,000." *The Gazette* has several times referred to the tremendous destruction of timber which has been wrought by the hands of the farmers of the country, but regrets will not bring back the valuable stuff which has been reduced to ashes upon myriads of logging heaps. It is a case of cannot eat your cake and keep it. We cannot have improved farms and valuable timber tracts upon the same land.—*Lumberman's Gazette*.

September opened with a brisk trade in all the leading branches of manufactured goods, and the outlook is promising for the best fall business we have had for several years. Compared with the opening of September last year, there is a marked change. Then there was a halting, weak tone, and stocks of most wares were largely in excess of the demand; factories and workshops were stopping in all directions, and large numbers of people were out of employment in all the manufacturing towns. Now buyers are operating with confidence, prices of goods are advancing, and stocks have disappeared. In many instances the factories are behind their orders and some idle machinery has been started up. Fewer people in the manufacturing towns are idle for want of employment, and in some towns everybody that wants work can get it. The despondent tone has given way to a cheerful, hopeful spirit, and all are now confident that good times are coming. A glance at our reports will show that there is a solid foundation of facts for these statements.—*Brick, Tile, and Metal Review*.

Treads and Risers.....	\$.50
Stair Building Made Easy	1.00
Art and Science of Stair Building	1.00
Architectural Perspective.....	3.50

The Annual Architectural Gatherings.

THE American Institute of Architects will meet in annual session, October 21, 1885, at Nashville, Tenn. It is to be regretted that California and the Pacific States and Territories—particularly San Francisco—fail to furnish a single representative in that body, although the place of meeting has been made to some extent central, and so as to accommodate distances and equalize conveniences.

True, there are but a few of the many scores of architects practicing on this coast, entitled to a seat and active voting participation in the proceedings of the parent body; but it is very certain that any intelligent representative member of the profession being present, would be well received and entertained. The brethren East would gladly extend courtesies, and make the visit of parties representing this side of the continent exceedingly pleasant.

San Francisco Chapter should take this matter in hand, and at an early day arrange for a representation at the session of 1886. This extreme western branch of the profession has remained sufficiently long encased in its isolation. For many years the bar to comingling with the eastern sections of the country, was to a certain extent enforced by difficulty of transit and communication; but this has long since been removed, and the present facilities, conveniences, and speed of travel, render a trip East a matter of small moment. And if the Chapter should delegate representatives, it would be entitled to all the benefits arising therefrom, and at the same time strengthen the position of the party or parties representing

THE WESTERN ASSOCIATION OF ARCHITECTS.

This body also holds its session, October 18, at St. Louis. Great interest is manifest, and it is to be expected that a spirited and interested time will be enjoyed. Invitations have been extended to architects in California, and an earnest desire expressed to see a representation from this coast. The two conventions assembling about the same time—one on the 18th and the other on the 21st of the same month—will afford the opportunity to the delegates from each to mingle in the pleasures and profits of both, an opportunity that might have been made profitable to the profession in California had this city been present by representation.

Special Book Notices.

Cooper on the Use of Belting for the Transmission of Power, contains a large amount of practical and valuable information, with numerous illustrations. Its subject matter is treated intelligently, and with a clearness of comprehension that renders it a truly valuable book. Its matter covers 300 pages, 6x9, with ten pages of index additional. Thos. W. Hartley & Co., Phil., publishers' agents.

Grimshaw on Saws, with Supplement, by Robert Grimshaw. A book of 279 pages, neat and clear in typographical execution, and full of facts and figures in relation to saws. The number and variety of its illustrations add greatly to its interest. It contains a large amount of valuable information. Thos. W. Hartley & Son, publishers' agents.

A Manual of Industrial Drawings for Carpenters and Other Wood-workers, by W. F. Decker, instructor in drawings in the University of Minnesota. Published by W. F. Comstock, N. Y. Price, \$2.00. Sent by mail free of postage to any part of the world. To be had at the office of this Journal at publishers' price. An excellent, practical book.

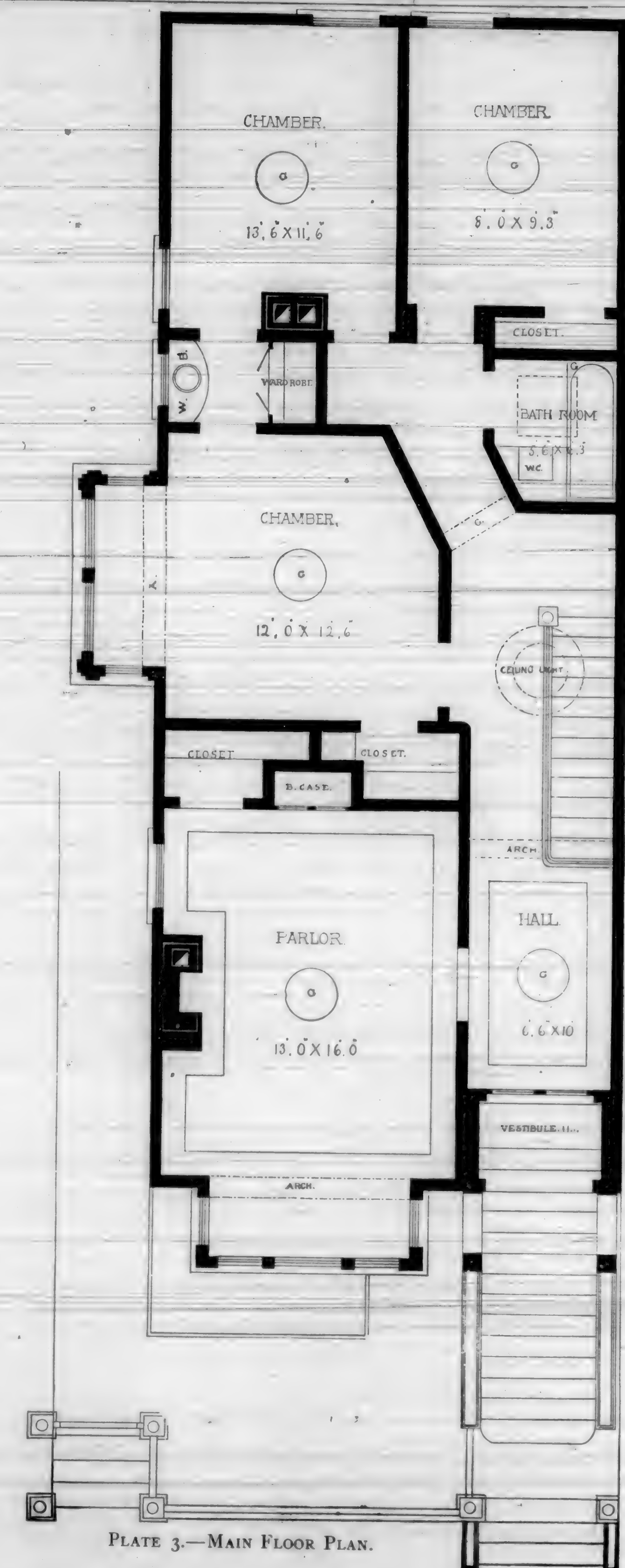


PLATE 3.—MAIN FLOOR PLAN.

Science of Architecture.

[Special for this Journal. By F. Hillert, Architect and Mechanical Engineer.]

(Continued.)

Two BODIES, M and N, each of a different temperature, are in contact with each other, the one M, the warmer, will transmit or pass heat to N, the colder, through the surface of contact, to be absorbed by N. If N is cut up in equal small slices parallel to F, the surface of contact, and in each of the slices exist a uniform temperature, but differing from each succeeding one, then the slices will the more apart, with a better conductivity of heat of the material. A motion of heat from M, the hotter body, through F towards N, will occur.

If the surface of a hot body emits or radiates heat to the surrounding colder medium, such emission is depending on the condition of the surface of the body.

By the emission or giving over of heat to a body, such may be done, by radiation or by conductivity (contact with the surrounding medium). Is named with:—

r, the heat given over by radiation per hour, and $\square$ meter (10.76 59. feet).

V, the heat given by conductivity per hour, and $\square$ meter.

T is the temperature of the surrounding medium.

t is the overplus of temperature of the emitting surface over the temperature of the medium.

k = a coefficient, depending on the condition of the surface of the body.

k₁ = a coefficient, depending on the shape and extension of the surface.

a = a constant = 1.0077.

b = constant = 1.233.

Then is:—

v = heat transmitted by radiation =

$$124.72k \times a^t(a^t - 1).$$

v₁ = heat transmitted by conductivity =

0.552 k₁ t², and the whole heat transmitted.

V = v + v₁ = 124.72ka^t(a^t - 1 + 0.552k₁ t²).

Values of k for the coefficient of radiation:—

Polished silver.....0.13	Glass.....2.91
Silvered paper.....0.42	Pulverized chalk.....3.32
Polished brass.....0.258	Saw-dust.....3.53
Gilded paper.....0.23	Powdered coal.....3.42
Copper.....0.16	Fine sand.....3.62
Zinc.....0.24	Coat of oil paint.....3.71
Tin.....0.215	Paper.....3.77
Polished black sheet-iron.....0.45	Lamp-black.....4.01
Leadsheet-iron.....0.65	Buildingstone.....3.60
Common sheet-iron.....2.77	Gypsum.....3.60
Roasted sheet-iron.....3.36	Wood.....3.60
New raw iron.....3.17	Woolen stuff.....3.68
Roasted ".....3.36	Calico.....3.65
	Silk stuff.....3.71
	Water.....5.31
	Oil.....7.24

k₁ is depending on the form and extension, and is:—

For a sphere of the radius r, k₁ = 1.778 + $\frac{0.13}{r}$

For a sphere, k₁ = 1.778 + $\frac{0.13}{r}$ of radius r = r.

For a horizontal round cylinder of radius r, k₁ = 2.058 + $\frac{0.0392}{r}$

For a vertical cylinder of radius r and the height h,

$$k_1 = \left\{ 0.726 + \frac{0.0845}{\sqrt{r}} \right\} \times \left\{ 2.43 + \frac{0.8768}{\sqrt{h}} \right\}$$

From the following table the values of v and v₁ for the different overpluses of temperature (t) can be computed, where by T is taken = 15°.

Ts T = 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 deg. then the following figures in the table must be multiplied with

0.89 | 0.96 | 1.04 | 1.12 | 1.21 | 1.31 | 1.41 | 1.52 | 1.65 | 1.78 | 1.92

Overplus of temperature (t), degrees.	Transmission by Radiation.	Conductivity.	Overplus of temperature (t), degrees.	Transmission by Radiation.	Conductivity.
10	11.2k	9.4k ₁	40	269.5k	244.3k ₁
20	23.2k	22.2k ₁	50	302.1k	266.1k ₁
30	36.1k	36.6k ₁	160	339.0k	288.1k ₁
40	50.1k	52.2k ₁	170	277.4k	210.5k ₁
50	65.3k	68.6k ₁	180	418.5k	333.2k ₁
60	81.7k	86.0k ₁	190	463.2k	356.1k ₁
70	99.3k	104.0k ₁	200	411.2k	379.4k ₁
80	118.5k	122.6k ₁	210	563.1k	402.9k ₁
90	138.7k	141.7k ₁	220	619.0k	426.7k ₁
100	161.3k	161.5k ₁	230	679.5k	450.7k ₁
110	185.3k	181.5k ₁			
120	211.3k	202.1k ₁	240	744.8k	475.0k ₁
130	239.3k	223.1k ₁	250	848.7k	498.6k ₁

For the transmission of heat, those cases are most important where two parallel equal distanced surfaces are surrounded and in contact by mediums of a different temperature, where the overplus of heat of the one medium transmits heat to the other through the separating body. The transmitted quantity of heat M must be equal to the heat transmitted to the medium facing the colder surface.

If we name

e, the thickness of the transmitting body, the distance between the absorbing and emitting surface.

t, the temperature of the heat-emitting medium = to the heat-absorbing surface.

t', the temperature of the heat-emitting surface.

t'', the temperature of the heat-receiving medium.

C, a coefficient, depending on the capacity of the body to conduct heat,

Then is:

$$M = \frac{C(t-t'')}{e} \text{ wherein}$$

$$C = e(k + k_1) \frac{(t' - t'')}{t - t'}$$

Table for the values of C of the different bodies pro 1 boner 1 sq. meter = 10.76 ft. 59 e = 1 meter, 3.28 ft. (t - t') = 1°

Gold.....77.	Cork.....0.143
Platinum.....75.	Caoutchouc.....0.170
Silver.....74.	Guttapercha.....0.173
Copper.....69.	Starch paste.....0.425
Iron.....28.	Glass.....0.75-0.88
Zinc.....28.	Quartz sand.....0.27
Tin.....22.	Broken brick coarse.....0.139
Lead.....14.	Broken brick fine.....0.165
Graphite fr'm gas retorts.....4.96	Dry washed chalk.....0.086
Fine-grain marble.....3.48	Dry washed chalk, pressed.....0.103
White coarse marble.....2.78	Flour from potatoes.....0.098
Fine-grain limestone.....1.70-2.08	Wood ashes.....0.060

Common mixed gypsum.....0.331	Saw-dust.....0.065
Gypsum mixed with alum.....0.63	Charcoal powder.....0.079
Burnt clay 0.51-0.63	Coke.....0.160
Pine cross-grain 0.093	Iron filing.....0.158
parallel fiber.....0.170	Cotton.....0.040
Walnut cross-gr. parallel fiber.....0.174	Carded wool.....0.044
Oak cross-grain 0.211	Elderdown.....0.039
	Linen.....0.043-0.052
	White writing paper.....0.043
	Gray printing paper.....0.034

A body, composed of many layers of thicknesses, e, e', e'', and the conducting capacity C, C', C'', will have

$$M = \frac{t-t''}{\frac{e}{C} + \frac{e'}{C'} + \frac{e''}{C''}}$$

A scrutiny of the radiating and conducting capacity of the different bodies, as solid or in a pulverized state, shows a large difference, the movements of the heat being retarded by the air between the small particles.

A conservatory of 1 sq. meter surface of glass, the outside temperature being 20°, the required inside temperature being 40, the whole heat emitted by radiation and conductivity is

Q = v + v₁; v = 23.2 × 2.91 × 1.04 = 70.21.
v₁ = 22.2 × 0.88 × 1.04 × 20° = 40.62.
Q = v + v₁ = 110.83 caloric per hour and square meter, or 10.76 square feet.

HEATING AND VENTILATION.

The quantity of heat acquired pro unit of time (one hour) to warm a room is depending on the capacity of transmitting heat, viz., on the kind and thickness of the surrounding wall inclosing the room (walls, windows, doors, floor, and ceiling), and the difference between the temperature wanted in the room and the temperature existing outside of the inclosing wall.

For the most important instances for practical application, the needed amount of transmitting heat can be calculated by the following rules. The terms therein given are:—

M = to the number of units for heat (caloric) which for every hour every square meter = 10.76 sq. feet through a body with parallel sides (wall, plate) are transmitted.

C, the coefficient of the conducting capacity of the material.

k, a coefficient depending on the condition of the surface.

k', a coefficient depending on the form and extension of the body; the sum of k + k' = Q.

T, the temperature in centidegrees desired in the room to be warmed.

t, the temperature the transmitting body is exposed to on the outside.

e, e', e'', the thickness of the parallel stratas the transmitting body is made off, measured from the heat-receiving strata to the heat-distributing surface of each strata.

1. Transmission of heat through the walls or doors of a room, when all the walls are not exposed to the outside air.

$$M = \frac{C, Q(T-t)}{2C + Qe}$$

2. Transmission of heat through single windows, not all of them being exposed to the outside air.

$$M = \frac{Q(T-t)}{2}$$

3. Transmission of heat through plain glass walls, all of them being exposed to the outside air.

$$M = \frac{Q k_1 (T-t)}{Q + k_1}$$

4. Transmission of heat through double sash windows of a room, not all the walls containing them are exposed to the outside air.

$$M = \frac{Q(T-t)}{2+1}$$

5. Transmission of heat through the ceiling of a room—

$$M = \frac{Q(T-t)}{2 + 2\left(\frac{1}{Q} + \frac{e}{C} + \frac{e'}{C'} + \frac{e''}{C''}\right)}$$

By inserting the values before given for the radiating or conducting coefficients, and for a difference of temperature (T - t) = 1, we obtain by these formulas the following figures:—

For 1; a, for a brick wall.

Thickness of Wall, m. or feet.	Transmission Value, M.
0.125 (5")	1.80 cal.
0.25 (10")	1.20 cal.
0.38 (15")	1.04 cal.
0.51 (20")	0.86 cal.
0.64 (25")	0.73 cal.
0.77 (30")	0.63 cal.
0.91 (35")	0.55 cal.
1.04 (41")	0.49 cal.

B, for wood in doors.

Material.	Height of Door.	Thickness of Door.	Transmission Value, M.
Pine	3m (9'10")	0.040m (1 1/2")	0.050 (2")
Oak	3m (9'10")	2.55 cal.	2.50 cal.
		2.72 cal.	2.49 cal.

Ad 2, for single windows.

Height of Windows.	Transmission.
2m (6'6")	2.56 cal.
3m (9'10")	2.52 cal.
4m (13'1")	2.50 cal.
5m (16'4")	2.49 cal.

Ad 3, for glass walls.

Height Glass Walls.	Transmission.
2m (6'6")	1.54 cal.
3m (9'10")	1.49 cal.
4m (13'1")	1.47 cal.
5m (16'4")	1.45 cal.

Ad 4, for double sash windows.

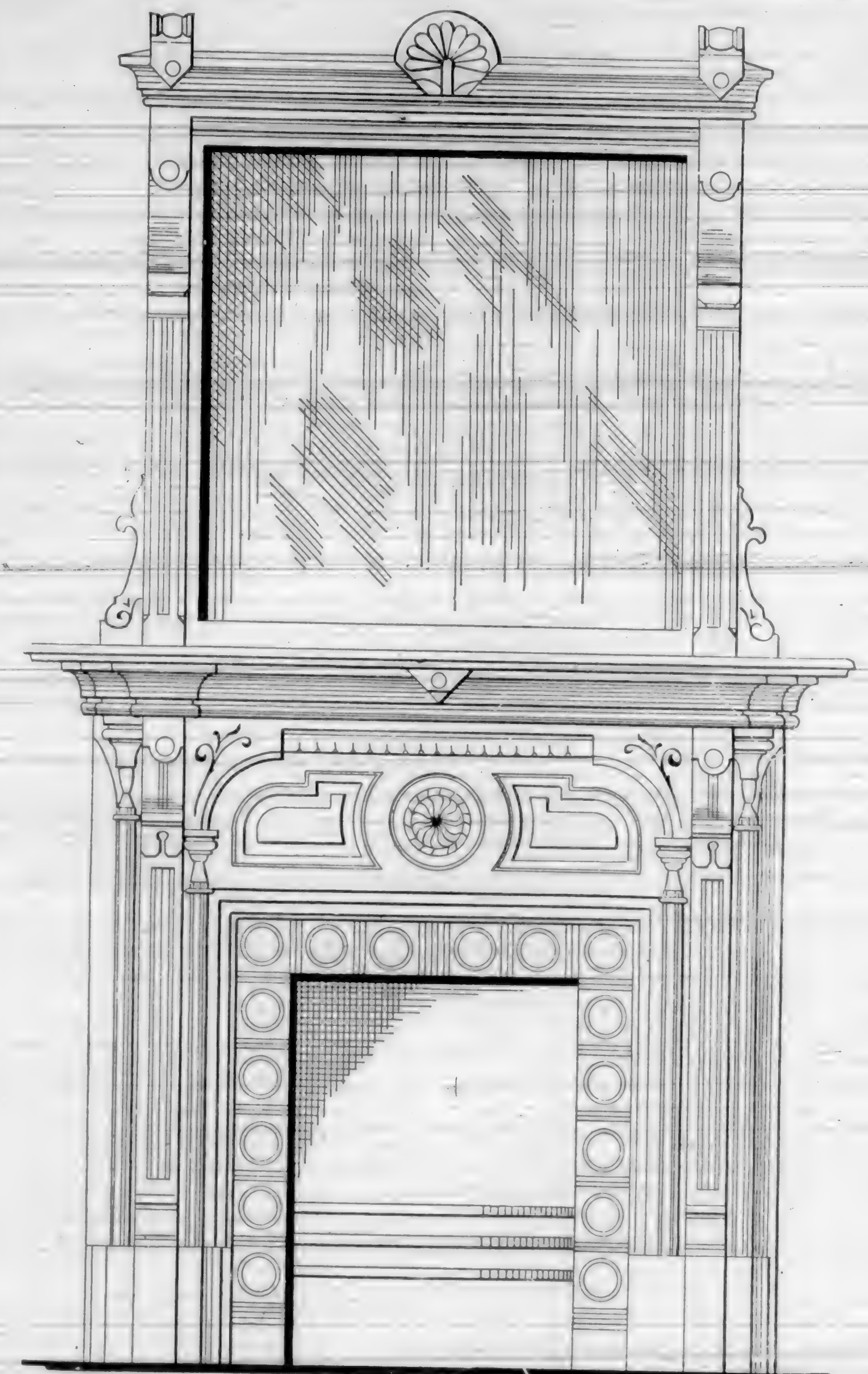
Height of Windows.	Transmission.
2m (6'6")	1.70 cal.
3m (9'10")	1.68 cal.
4m (13'1")	1.66 cal.
5m (16'4")	1.65 cal.

Ad 5, for ceiling.

For a ceiling of 0.3m (11.81") thickness we find the value of transmission 0.5 cal.

The above formulas and the values calculated, with their assistance, must practically be applied with some allowance and consideration, since the conditions under which those formulas were made can't exist in reality.

For example, the transmission is considerably influenced by the position of the transmitting body towards the quarter of heavens, through rain, wind, state of moisture of the atmosphere, the air, sunshine, by the special quantities of the material and the quality of work executed, etc. The given formulas are only guilty for a state of continuation and uninterrupted use, which in reality is seldom the case. For a room seldom heated and only used for a short period, the calculation for a heating apparatus for the heat needed hourly, the question in the first



DESIGN FOR LOW CAST MANTEL.

place is, not as much the transmission of heat as the absorption of the same by the walls (churches, halls, etc.), to be considered.

To have, under the common conditions, a support for the approximate calculation of the losses of heat, it will be well to increase the values obtained by the formulas; for room facing north and east, by 10 per cent, and multiply all values of M with respectively:

1.1 when the heating is carried on uninterrupted.

1.2 when the heating is carried on during daytime, and the building having no sheltered position.

1.3-1.4 when the heating is carried on during daytime, and the building having a much exposed position.

1.8-2.00 when the room is only periodically heated.

From the above calculated amount of heat can, when the room is occupied by a certain number of persons stopping in it constantly, or for a longer time, that quantity of heat be deducted created by them, and for which we can allow 130 cal. of heat for a grown person per hour, and 70 cal. for a child.

Suitable temperatures T for room to be heated, are:—

For heating rooms, halls, theaters, etc.	16°-18° cal.
Living rooms	18°-20° "
Bedrooms	15°-16° "
Stair corridors	12°-15° "
Hot-houses } warm	20°-24° "
} cold	10°-14° "
Hospitals	20°-22° "
Prisons	16°-18° "
Workshops	10°-12° "

For t, the temperature of the outside atmospheric air, we have to consider the climatic condition of the country, since the heating arrangement must fulfill its functions with safety under all conditions.

FUEL.

Of the three kinds of fuel, the solid, fluid, and the gaseous, the solid is by far the most in use, inasmuch as late attempts to introduce the gaseous were, so far, not successful.

As stated before, and in connection with the application to be repeated, hydrogen and carbon are the heat-producing elements of the fuel, which, by perfect combination or oxidation, taking the required oxygen from the air, are reduced to water and carbonic acid, but by imperfect combustion, under considerable loss of heat, are reduced to oxide of carbon, olefiant, and water; both instances leaving ashes as residue from the incombustible inorganic substances of the fuel.

The Master Painters.

THE regular monthly meeting of the master painters was held on the 6th inst., Mr. E. M. Gallager occupying the chair. The aims and objects of this organization are to protect mutual interests, and remedy existing evils in the painting art; and, as far as possible, purge it of the influences which have rendered it next to impossible for thoroughly competent and trustworthy men to secure work at prices sufficient to enable them to pay for the stock used and the labor employed.

There is no question but that there are some terrible frauds in the painting business, who manage to manipulate compounds bearing but the semblance of genuine lead and oil paint, and who "play it on owners" to a disgraceful extent. The report of proceedings states: "It has been one of the crying evils, for many years, that property owners have sought in vain for protection against the use of vile materials. Hundreds of private dwellings in this city are to-day blistered and cracked from the use of inferior stock—notably one on Nob Hill, which is in a wretched condition, and is being overhauled."

This outcry against the "slop shop workers" is all very well and right, as against the *bas tard* painters, but owners are also to blame—inasmuch as they, as a rule, are willing that every fellow who calls himself a painter, although in very fact the merest dauber, should compete with competent men; and they—possessing neither the integrity nor the ability to do good work, figuring below all reasonable and right values in eight out of ten cases—so far underbid the good men (often to the extent of fifty to one hundred per cent),

that the amount seemingly saved to the owner dazes his better judgment, and he submits to the chances, both as to materials and workmanship.

This mistaken course on the part of owners is damaging alike to themselves and qualified mechanics; to themselves in that they pay money for a worse than worthless something—a something that has neither merit nor value, and which, when used, becomes a continuous annoyance and vexation. For when a man realizes that he is the martyr of a bad job of painting, it is impossible for him to reconcile himself to the fact, excuse it, and be satisfied with it. It haunts him ever, and he cannot forget one of two things: either, "What a fool I was to give the job to that man;" or, "That rascally painter swindled me badly," neither of which propositions are pleasant reflections.

If owners would exercise better judgment, and a little more liberality, they would secure better work. But unfortunately, as a rule, when the contrast is presented of \$675 or \$902, as against \$1,075 or \$1,680 respectively, the difference has a powerful effect and influences in determining issues, and qualifying preconceived purposes and resolutions not to contract with nor employ any but first-class painters.

The objects of the organization are, however, to be commended, in that it is seeking to correct a great wrong and evil existing in the painting business, and to stimulate integrity and correct dealings in the use of materials and otherwise, and inspire ambitions among its members to learn and know what is best to do, and how to do it, and to exercise that knowledge rightly, honestly, and faithfully in every transaction.

It is to be hoped that the better men will consolidate determinations and efforts, and work unitedly as against the manipulations of slush and fraudulent compounds, by the use of which they gain an advantage in figuring over men who have "learned the trade," and who are unwilling to disgrace themselves and the pursuit of their choosing by resorting to any of the numerous dishonest and un-mechanical devices by and through which the "cheap" operators obtain a large proportion of the contract work let in San Francisco.

Figures in Wood by Compression.

A NEW process has been invented by which designs in wood, having all the appearance of genuine carving, and being if anything of a finer finish, are produced by compression, and can be sold at a nominal price. The process consists in paring hard-wood shavings as thin as wafers, which are then placed in a chemical solution. When in a properly pliable condition, the mass is introduced into moulds made from steel plates, and pressure is applied, which forces the wood pulp in every line of the mould. When it becomes dry, it is removed from the mould, and has exactly the appearance of a wood carving, with the grain of the wood as perfect as though it had never

been reduced to a pliant condition. The process is a German invention, and large numbers of different designs are now being manufactured in Berlin. These are in form of heads, figures of men, women, birds and animals, flowers, picture and mirror frames, clock frames, cabinets and cabinet decorations, album covers, etc. Beautiful designs are framed in brass, bronze, and plush, and make exquisite plaques and parlor ornaments. The designs can be used in every form of decoration for which wood carving is suitable.—*Furniture Worker*.

When the architects and builders of churches learn that ventilation does not consist in a draught of cold air, and that something more is necessary in a crowded building than an open door or window, one very great danger to health will be removed. This subject of ventilation has received much practical attention of late, in which the churches seem to have been largely left out of the account. An open door, or window, in such a building usually means a current of cold air, which must inevitably blow directly on the necks and shoulders of many people, at least one-half of whom will either take cold or suffer twinges of rheumatism or neuralgia in consequence. Very few people, even in robust health, can sit in a draught without uncomfortable consequences, and delicate people more frequently "tempt Providence," as the saying goes, by sitting in a church where some zealous lover of fresh air throws open a door or lowers the upper sash of a window without a thought of the consequences, than they would by staying at home. The writer attended a church last Sunday, where study and expense had not been spared in the interior decoration. The olives and blues, brightened with a touch of gold on wall and vaulted ceiling, were soft and restful to the eye. The seats were comfortable, the organ and choir satisfactory. But when the air grew heavy, and people moved about uneasily to keep themselves from drowsiness, one looked in vain for some adequate means for supplying freshness and life to the tainted air. At last, somebody opened a door at the back of the church, and there was no lack of fresh air, only it struck the heads and shoulders of every one in its path and effectually distracted attention from the sermon. People moved more uneasily than before, and no one had a monopoly of stinging neuralgic pains in back and shoulders for the rest of the day. If this were an exceptional case it would be of comparatively little importance, but it is so common a thing that it demands attention and remedy. If it is wrong to place one's self voluntarily in a position where health and, often, life are in danger, it is manifestly far more reprehensible to construct a church building, where people will go and ought to go, without proper thought or knowledge of this important matter. Clergymen will find their work very greatly advanced, and some of the stumbling blocks of coldness and indifference speedily removed, when pure air is properly and constantly furnished to their hearers without danger to health and comfort.—*Sanitary News*.

The London Tower.

IN the future, it would seem, the Tower is to be, even more than in the past, one of "the sights of London." It is to be divested entirely of its utilitarian chapter. The rifles in the Armory are to remain, but the whole of the large store of arms is to be removed to the central depot at Weedon. This, we are told, is in fulfillment of a desire that the Prince Consort had very much at heart—a desire that the Tower should be preserved wholly and simply as a building remarkable for its architecture and for its historical associations. In accordance with this view, the barrack and hospital stores were removed in 1869, and the accoutrements a few years after. The workmen, of course, went also, and now the building will be deserted, so far as permanent tenants are concerned, by all save the small garrison which has always been maintained there. The arrangement will probably meet with general approval. It is, perhaps, as well to separate in this case the practical and the sentimental elements. The maintenance of the useful functions of the Tower means, of necessity, wear and tear, to which it is, no doubt, desirable that the building should no longer be subjected. There is very much to be said for keeping such famous old places as the Tower in as perfect a state of preservation as possible. We can find plenty of localities for the storage of arms, but we cannot adequately repair any damage which may be done to our ancient historical landmarks. We can "restore" them in one sense, but not in another.—*London Globe*.

The Russian Admiralty has ordered that twelve gunboats shall be immediately provided with furnaces for burning mineral oil instead of coal. The substitution of petroleum for coal for steamships is progressing rapidly. Already there are upward of three hundred steamers burning this liquid fuel, and their number is being added to almost daily. This is a matter that must even now affect the coal trade in an appreciable degree. It is reported that the owners of an important line of steamers from England to Australia are likely to adopt oil furnaces shortly. The space occupied by the oil for a given effect is scarcely more than half that required for coal, an advantage of great importance in long voyages. The oil can be taken in, too, in much less time than coal. Hitherto no accident has occurred with this fuel.

A sudden rise in the Snohomish River, W. T., lately, broke the Pilchuck boom and let loose 1,500,000 feet of logs. The whole lot went out to sea. About 1,000,000 feet were saved and turned into Ebey Slough, 100,000 feet going out on ebb tide and drifting into Port Susan Bay. Through the breaking of other booms it was thought that not less than 2,000,000 feet of logs went out to sea, about three-fourths of which were saved.

Cumming's Details.....\$6.00
Cutting Tools.....1.50

Sewerage—Berlin.

SOME idea of the effect which the inauguration of a system of sewerage has upon the sickness-rate of typhoid fever may be gained by studying the results already attained in Berlin. Durand-Claye has recently published a description of the new system, in which he touches upon its effects upon the health statistics. It may be stated that the system has been put in so far, in the most crowded sections of the city, leaving the more open suburban portions of the town still unimproved in this regard. It may also be stated that Berlin is eminently a city of apartments and tenements. The average number of people living in one house in Berlin is fifty-eight. In the suburbs, of course, the number is much less than that. The number of cases of typhoid fever in a stated time, in that part of the city where the sewerage is not yet put in, was one to each nine and three-tenths houses, while in the sewered portion in the same time, there was but one case to each forty-nine and three-tenths houses. The deaths from the disease bear out the conclusions derived from the sickness reports. In the unsewered portions of the city the deaths were one to each forty-three houses, while in the sewered portion the deaths were one to each one hundred and thirty-seven and five-tenths houses.—*Sanitary News*.

The fire waste in this country for the past few years is something fearful to contemplate. Probably few persons stop to consider what this amounts to in the aggregate, and few, comparatively, are aware that over \$100,000,000 worth of property is sacrificed to the fire fiend every year in this country. This is equivalent to the annihilation of so much in actual values, which are taken, directly or indirectly, from the pockets of the people, either in premiums to the insurance companies, or in taxes to support fire departments. And the worst feature of it all is that the greater portion of this loss is wholly preventable. The poor character of buildings, carelessness on the part of owners or occupants, or want of adequate protection, are among the causes which lead to many of the disastrous conflagrations. In Philadelphia the underwriters have determined upon the selection of approved experts who are to visit properties and require improvements, and make re-examinations every six months.—*The Indicator*.

It is stated that the work on the new State House at Austin, Texas, will progress rapidly after Jan. 1. The foundations and basement are now completed, and a new railroad fourteen miles long has just been built to connect the site of the capital with the quarries from which the granite to be used hereafter in the construction of the building is to be procured. Contracts for iron and other building material have not yet been closed.

Builders' Guide.....\$2.00
Album of Mantels.....8.00

Taxes and Manufacturers.

THE prodigal waste of money raised by taxation in large towns and cities frequently has a depressing effect on manufactures. In many cities there appears to be a regular increase in tax rates, which is likely to stop no one knows where. Such a state of affairs prevents the location of manufacturers, for the sufficient reason that they cannot compete, under the load of taxes imposed, with those more favorably situated in this respect. This is something never considered so fully as it should be; it is a strong plea for honesty and business principles in the expenditure of money raised by taxation. Nothing places a town or city in better condition to meet necessary taxation than the presence of large manufactories, distributing money to a large number of workmen.

In some of our Northern and Eastern cities the tax rate is three per cent, and increasing year by year. It cannot be expected that manufacturers will be anxious to establish themselves where they will be burdened, or overwhelmed, with such a load; on the contrary, those already there will be likely to consider the propriety of moving elsewhere in self-defense. Other towns and cities, alive to the advantages, offer to abate taxes altogether for a term of years; with honest and business-like methods of officials, we do not believe there would be any need of resorting to this last-named expedient, the justice of which is, to say the least, questionable. Manufacturers do not object to bearing their share of public burdens, but they do object to taxation about equal to profits they would be satisfied with. In such times as we have been passing through, this burdensome taxation is, in many instances, where business has been done at little or no profit, unbearable. We commend this view of the case to the law-makers. In too many instances they seem to lose sight of the fact that, when they succeed in driving away manufacturing, they will not find it easy to raise even the money required for the honest administration of affairs.—*American Machinist*.

Old Files That Look New.

ACCORDING to the *Sun*, the Kearney & Foote Company, one of the largest manufacturers of files in the country, have lately received complaints of worthless goods bearing their trademarks. Recently one of their agents learned that a Jersey City dealer had had an offer of a large lot of files at remarkably low figures. The would-be seller represented that he had secured a supply of files at a sale of unclaimed express packages. An arrangement was effected which secured the presence of a detective, when two men called at the dealers and effected a sale.

Receipted bills showed that the sellers had purchased large quantities of scrap files from the Singer Manufacturing Company. An acid process gave the worn-out files a new appearance. A trial showed they would hardly cut lead, the acid having ruined their temper.

MASONS' AND BUILDERS' EXCHANGE OF SAN FRANCISCO

Room 11, 314 Montgomery St.

BELOW will be found a list of the members composing this Exchange. Boxes are provided for each member, so that architects, owners, or others desiring the services of any particular member, or those having boxes who are not members, and yet whose business is directly connected with that of the Exchange, can readily secure the attendance of the party sought, by leaving a note in the respective boxes.

BRADY, O. E., President, 822 Valencia St., Box 22
BUTLER, THOMAS, 593 Ash Ave., Treasurer, " 28
BOWERS, T. N., Oakland, 804 Castro St., " 49
BENDER, JACOB, 1009 Clay St., " 73
BECK, J., 10 Eleventh St., " 12
CAIN, R. K., 213 Page St., " 61
CALVERT, JOHN, 812 Hyde St., " 16
COX, JOHN, 608 Jones St., " 2
CLAWSON, L. E., 129 Oak St., " 14
DUNBAR, WM., 27 Eleventh St., " 18
DOWNS, JOHN, 269 Minna St., " 34
DUNPHY, ED., 1006 Bryant St., " 20
FERRIS, CRAWFORD, 9 Bourbon St., " 57
GLYNN, JAS., 432 Clementina St., " 15
HANAVAN, JOHN H., 1711 Jessie St., " 60
HOOK, T., 422 Golden Gate Ave., " 6
HAF, J., 516 Kearny St., " 13
HIGGINS, ROBERT, 1724 Jessie St., " 21
HUGHES, JOHN, 310 Seventeenth St., " 59
JORDAN, D., 911 Webster St., " 51
KNEEDLER, G. W., 1013 Vallejo St., " 45
KINCAID, J. E., 2219 Pacific Ave., " 32
LEIBERT, J. G., 330 Oak St., " 38
LOANE, F. M., 1512 Golden Gate Ave., " 26
MITCHELL, ROBERT, 807 Turk St., " 7
MC CARTHY, JOHN, 2509 Folsom St., " 17
MCGOWAN, MATT, 614 Linden Ave., " 33
MCDERMOTT, JOHN, 124 10th St., " 74
MCGUIRE, JOHN, 212 Grove St., " 33
MULCAHY, JAS., 612 Larkin St., " 24
NAGLE, GEO. D., 427 Montgomery St., " 19
O'CONNOR, J. J., 648 Minna St., " 31
O'BRIEN, D. J., 323 Dupont St., " 35
O'SULLIVAN, P., 432 9th St., " 39
RICHARDSON, GEO., 513 Ellis St., " 1
RICHARDSON, M. B., 624 Shotwell St., " 38
RILEY, J. F., 165 Perry St., Secretary, " 55
ROBERTS, S. N., 54 3d St., " 46
STEVENS, W. E., cor. Larkin and Market Sts., " 62
SCHOENMAKER, C., 323 Chestnut St., " 3
WAGNER, J., Potrero Ave. bet. 22d & 23d Sts., " 5
WORRELL, C. R., 888 17th St., " 64
WATERSON, G. T., 638 Market St., " 49
YOUNG, LEWIS, " 49

BOX RENTERS—IRON MEN.

RASTON, H. & J., Iron-men & House-smiths, Box 78
LEWELLYN, R., Columbia Foundry, " 77
PENDERGAST, THOS., Howard Iron Works, " 72
WESTERN IRON WORKS, " 69

STONE.

SCHALICKE, F. W., Patent Stone, Box 75
SOMERVILL, W. S., Granolithic Paving Co., " 55
PETERSON, H. M., Sand and Gravel, " 63
RICHARDSON, M. B., Concrete, " 1

BRICK.

ROBERTS & DAVIS, Sacramento Brick, Box 36
REMILLARD BRICK CO., " 23
PATENT BRICK CO., " 20
PETERSON, T. W. & Co., San Jose, Brick Co., " 68

PATENT CHIMNEYS.

STEVENS, W. E., Patent Chimney, Box 46
BROWELL, J., Patent Chimneys, " 71
CLAWSON, L. E., Patent Chimneys, " 2

MISCELLANEOUS.

DAVIS & COWELL, Lime and Cement, Box 43
WHITTIER, JAS. E., Asphaltum, " 41
MCCLURE, P. L., Grader and Waterman, " 30
SIBLEY, L. B., Teamster, " 40
WARREN, CHAS., Grader, " 42
BECKMAN, A. E., Grader, " 46
KELSO, JOHN, Grader, " 70
ENGLISH W. D. & Co., Graders, " 48
BUTTERWORTH, T. C., Glazier, " 54
HARNEY & SON, Street Contractors, " 54

THIS PAPER may be found on file at GEO. P. ROWELL & CO'S NEWSPAPER ADVERTISING BUREAU (19 Spruce Street), where ad- vertising contracts may be made for it

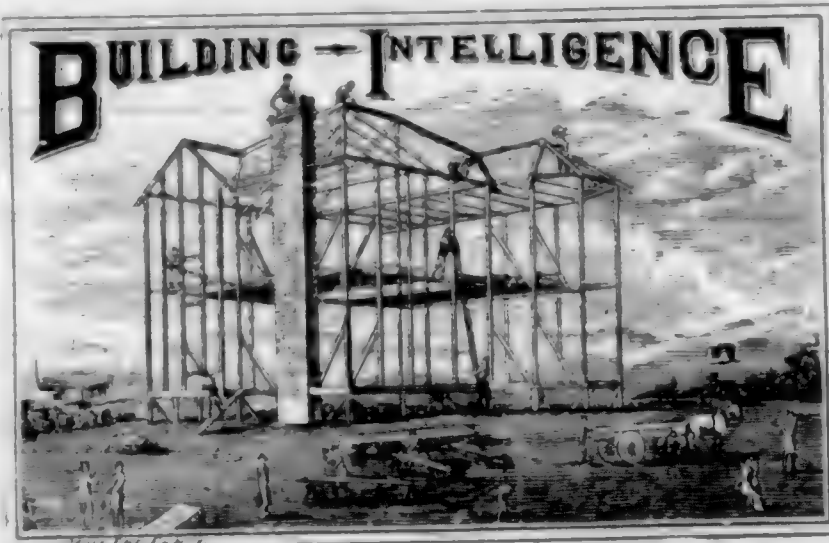
Partial List of Books on Sale.

We have a list largely to our line of architectural, mechanical, scientific and other works, and shall carry a very complete stock, among which will be found:

The Wonders of the Slide Rule..... \$3 00
Carpenter and Joiner Modernized..... 7 50
Lessons on Hand-railing for Learners..... 5 00
Mechanical Geometry..... 5 00
The Artisan..... 5 00
Handbook of Legendary and Mythological Art, by Mrs. Clement. Contains much interesting reading..... 3 00
How to Build, Furnish, and Decorate..... 5 00
Practical Carpentry..... 1 00
More Universal Assistant. A good book..... 2 50
Treads and Risers. Every carpenter and stair-builder should have one..... 50
Stair Building Made Easy..... 1 00
Wright's Practical Perspectives..... 3 00
Leffell's House Plans..... 2 50
Modern House Painting..... 5 00
Art and Science of Saw Filing..... 75
Art and Science of Carpentry Made Easy..... 5 00
Practical Lessons in Architectural Drawings..... 2 50
Builders' Guide and Estimate Book..... 2 00
Brickell's Street, Store, and Bank Fronts..... 4 00
Plaster and Plastering..... 1 00

And a much greater number which space will not permit mention in detail.

The books above noticed, or any others published in the English or any other language, can be had at publishers' prices at the office of this Journal.



NOTE.—To Architects, Owners, Contractors, and Builders: The information comes to us from many sources, that parties at present in no way connected with this Journal or office, sometimes, if not frequently, use its name in soliciting and obtaining building intelligence, and, in some cases, matter intended for its columns has been diverted. As a protection against this unfairness, authorized canvassers will be provided with printed forms in book shape, bearing the name of the CALIFORNIA ARCHITECT AND BUILDING NEWS, without which there is no authorization from this office to any one, no matter what his name, or what may have been his former relationship with this Journal.

Where owners' names are left blank, it is so done in most instances by special request

A
Ashbury, bet. Waller and Frederick. Two-story frame. O. C. A. Hooper. \$10,000.
B
Brannan, No. 270, nr. Second. Alterations. O. Thos. Campbell. C. W. Plums. \$1,500.

Bush, south side, bet. Devadadero and Broderick. Addition. O. H. McLaughlin. C. F. Roettger. \$1,100.
Buchanan, bet. California and Pine. Two two-story frames. O. C. Devin. C. B. Dryer. \$6,700.
Bush, nr. Mason, south side. Two two-story frames. O. J. Heller. A. J. Flanders. C. J. Blake. \$8,500.
Bryant, nr. Fourth, north side. Repairs. O. S. Armstrong. C. C. Crisman. \$1,200.
Buchanan, west side, bet. Turk and Tyler. Two-story frame. O. J. Baumeister. A. Salfeld & John. C. Conrad & Miller. \$6,000.
Bryant, near Fourth. Two-story frame. O. J. Riley. A. J. J. Clark. C. T. Lynch. \$6,000.
C
Chesley, nr. Bryant. Alterations. O. Thos. O'Day. Day's work. \$1,000.
Chattanooga, bet. Twenty-second and Twenty-third. Two-story frame. O. J. Barry. A. M. J. Welch. C. Moore Bros. \$2,000.
Central Ave., east side, nr. Bush. Two-story frame. O. C. McKenzie. Day's work. \$1,500.
Central Ave., east side, nr. California. Two-story frame. O. Mrs. A. H. Plunkett. C. F. Guttero. \$3,250.
California, nr. Van Ness Avenue. Additions. O. Dr. W. F. McNutt. Day's work. \$1,500.
Clay, bet. Mason and Taylor. Additions and alterations. O. G. W. Haight. A. R. Swain. C. R. Gillespie. \$5,000.
Collinswood, bet. Ninth and Twentieth. One-story frame. O. W. Such. C. G. M. Salsbury. \$1,000.
Clay, bet. Van Ness and Franklin. Three one-story frames. O. P. Gorrevan. A. T. J. Welch. C. Bateman Bros. \$8,500.
D
Dupont, east side, nr. Filbert. Additions. O. L. Cavignaro. C. W. Hannagan. \$4,000.
Douglass, cor. Eighteenth. Two-story frame. O. A. Lyons. C. G. Wakefield. \$2,000.
Douglass, east side, bet. Eighth and Seventeenth. One-story frame. O. and B. J. McCann. Day's work. \$1,600.
E
Ellis, No. 123, bet. Powell and Mason. Addition. O. C. Turner. A. H. D. Mitchell. C. R. McCann. \$1,300.

Elgin Park Ave., bet. Ridley and Hermann. Two-story frame. O. J. Witt. A. H. Gelfuss. C. Haskell & Webb. \$7,000.
Eddy, south side, bet. Mason and Taylor. Additions. O. G. Braham. A. C. Devin. C. T. Morris. \$3,200.
Eighteenth, bet. Collinswood and Diamond. One-story frame. O. J. Flanders. C. O. D'Ania. \$500.
Eighteenth, north side, nr. Merritt. One-story frame. O. A. F. Newton. Day's work. \$600.
Eddy, cor. Scott. Two two-story frames. O. H. Dorscher. A. R. Warren. C. H. J. Weiss. \$8,200.
Eddy, south side, bet. Laguna and Buchanan. Two-story frame. O. G. Baraty. A. Huerne & Everett. C. P. Crowley. \$6,300.
Eight, bet. Howard and Folsom. Addition. O. P. T. Flynn. Day's work. \$800.
Eighteenth, cor. Church. One-story frame. O. and B. J. P. Courter. \$3,000.
F
Folsom, bet. Twelfth and Thirteenth. Two-story frame. O. John Jones. C. J. Sanderson. \$2,200.
Folsom, bet. Eighteenth and Nineteenth. Additions to tannery. O. J. F. Taylor. C. E. M. Hunter. \$1,600.
Ford, north side, nr. Sanchez. One-story frame. O. Mrs. E. Mitchell. C. E. M. Hunter. \$1,300.
Fell, nr. Devisadero. One-story frame. O. M. Carrick. A. R. Warren. Day's work. \$1,800.
Folsom, nr. Second. Two-story frame. O. Fulton Iron Works. Day's work. \$1,000.
Fillmore, between Post and Geary. Two-story frame. O. H. Levy. A. McDougall & Son. C. J. A. Leonard. \$5,500.
Fair Oak, between Twenty-third and Twenty-fourth. One-story frame. O. H. Childs. A. C. Geddes. C. R. B. Hicks. \$3,000.
G
Gregory, near Second. Three-story frame. O. P. Riley. Day's work. \$3,400.
Graven, bet. Nineteenth and Twentieth. Two-story frame. O. Thos. Neary. A. M. J. Welch. Day's work. \$3,500.
Golden Gate Ave., north-east cor. Scott. Additions. O. J. Thierbach. C. H. Meyn. \$3,500.
Golden Gate Ave., bet. Scott and Devisadero. Additions. O. W. Erwin. C. F. Roettger. \$1,000.

Gough, No. 1315, between Geary and Post. Alterations. O. F. Doble. C. J. Resmore. \$550.
Geary, bet. Franklin and Gough. Two-story frame. O. Mr. Franklin. A. W. Mosser. C. H. Jackson. \$11,000.
Geary, nr. Gough. Alterations. O. B. L. Levy. Day's work. \$1,000.
Green, north side, bet. Buchanan and Webster. Two-story frame. O. Mrs. M. Nelson. A. J. Gash. C. J. Owens. \$2,400.
Greenwich, north side, bet. Scott and Pierce. One-story frame. O. C. Bowers. Day's work. \$1,800.
H
Howard, near Eleventh. Two-story frame. O. W. Deane. Day's work. \$1,500.
Hampshire, bet. Twenty-first and Twenty-second. One-story frame. O. P. Lamb. A. M. J. Welch. C. W. Schaffeld. \$1,300.
Haigh, cor. Buchanan. Additions. O. J. Nightingale. C. R. McCann. \$4,000.
Haigh, bet. Webster and Fillmore. One-story and basement. O. H. Wiersbitzky. A. M. P. S. Hetzel. C. W. J. Peters. \$2,000.
Hill, nr. Valencia. Two-story frame. O. J. F. Taylor. A. G. H. Miller. C. J. W. Hansbrough. \$3,300.
Hattie, east side, bet. Seventeenth and Eighteenth. One-story frame. O. and B. A. Disher. Day's work. \$800.
Howard, between Fifth and Sixth. Repairs. O. M. J. Crowley. A. T. J. Welch. C. E. & F. J. Owens. \$700.
Hardie, nr. Sixteenth. Two-story frame. O. W. Pullen. C. C. Gunyan. \$8,500.
Harrison, near Twelfth. Two-story frame. O. Mrs. Kerchival. A. G. A. Brodwell. C. Gray & Stover. \$5,000.
J
Jones, No. 1217, bet. Clay and Sacramento. Additions. O. C. Crow. C. C. Gunyan. \$1,500.
Jackson, near Fillmore. Two-story frame. O. G. Bowers. A. Percy & Hamilton. C. Gray & Stover. \$3,000.
Jackson, north side, bet. Gough and Octavia. Two-story frame. O. J. Leo Lillenthal. A. Kenitzer & Raun. C. Mahoney Bros. \$18,000.
L
Locust Ave., south side, bet. McAllister and Taylor. Three two-story frames. O. F. Hook. A. Kenitzer & Raun. C. W. Plums. \$4,000.

Larkin, nr. Turk. Three-story frame and brick basement. O. P. Connolly. A. A. Laver. C. Farrell & Ringrose, brickwork. J. H. McKay, carpenter. \$16,000.
Lombard, cor. Van Ness Ave. One-story frame. O. J. McGowan. C. P. J. McQuary. \$1,000.
Larkin, west side, bet. Lombard and Chestnut. One-story frame. O. W. E. Toby. C. J. Anderson. \$750.
Lombard, south side, bet. Jones and Leavenworth. One-story frame. O. Otto Thues. C. H. Inwood. \$1,500.
Lombard, south side, bet. Stockton and Powell. Additions. O. R. Mayers. A. W. Mosser. C. J. C. Brown. \$1,200.
Lyon, bet. Tyler and Turk. One-story frame. O. P. O'Keefe. C. G. M. Salsbury. \$1,000.
Larkin, cor. Turk. Three-story frame. O. G. G. Burnett. A. J. E. Wolfe. C. H. A. Sheldon. \$1,345.
Larkin, nr. Turk. Three-story frame. O. Dr. P. H. Flood. A. J. E. Wolfe. C. J. J. Punn. \$7,294.
M
McAllister, bet. Fillmore and Steiner. Two-story frame. O. J. R. Williams. A. J. Marquis. C. J. R. Bateholder. \$3,000.
McAllister, No. 1214, bet. Fillmore and Steiner. Alterations. O. C. S. Capp. A. C. Geddes. C. A. C. Hussey. \$2,400.
McAllister, north side, bet. Laguna and Buchanan. Two two-story frames. O. T. Hook. A. Kenitzer & Raun. C. W. Plums. \$8,000.
Mission, cor. Eleventh. Three-story frame. C. R. Doonan. A. T. J. Welch. C. C. Gunyan. \$4,000.
Mason, east side, between Greenwich and Lombard. Four-story frame. O. L. Iacari. A. Hoffman & Knapp. Day's work. \$12,000.
Merritt, nr. Rose. One-story frame. O. A. F. Newton. C. J. Erickson. \$600.
Mission Ave., bet. Seventeenth and Eighteenth, and Valencia and Guerrero. Two-story frame. O. J. Calderwell. A. W. Mosser. C. Owens Bros. \$3,000.
Mission, nr. Ninth. Two-story frame. O. Mrs. S. Stevens. C. Gray & Stover. \$6,500.
Mission, near Eighteenth. Two two-story frames. O. O. G. Moore. C. J. Geary. \$7,500.
N
Noe, north side, nr. Eighteenth. One-story frame. O. and B. W. Hunter. Day's work. \$2,000.

Nineteenth, nr. Church. One-story frame. O. J. Stapleton. Day's work. \$1,500.
O
Octavia, northwest cor. Fell. Two two-story frames. O. R. Warren. C. R. Doyle & Son. \$7,500.
Oak, bet. Franklin and Gough. Alterations. A. Salfeld & John. C. J. Kline. \$1,900.
Oak, cor. Webster. Alterations. O. Jas. Adams. A. T. J. Welch. Day's work. \$3,000.
Ocean View. Addition to church. O. J. A. Cooper. A. T. J. Welch. C. J. Younker. \$600.
P
Powell Ave., nr. Valencia. Alterations. O. Mrs. A. Collins. C. O. Nordberd. \$925.
Post, bet. Devisadero and Broderick. Two-story frame. O. B. F. Norris. Day's work. \$2,500.
Post, bet. Lyon and Central Avenue. One-story frame. O. J. E. Wolfe. C. J. J. Punn. \$1,500.
Polk, cor. McAllister. Additions. O. J. Henley. Day's work. \$800.
Pacific Place, bet. Stockton and Dupont. Additions and alterations. O. Ah Jim. C. J. V. Lawrence. \$2,500.
Pierce, nr. Union. Two-story frame. O. and B. W. Mosser. C. G. McKay. \$7,100.
R
Rose, near Corbett Road. Alterations. O. J. Wyatt. Day's work. \$750.
Rush, between Folsom and Howard. Two-story frame. O. P. Denner. A. Salfeld & John. C. B. Dryer. \$7,500.
S
Seventh, between Brannan and Bryant. Alterations. O. Thos. Dormely. Day's work. \$2,500.
Shotwell, bet. Twenty-fifth and Twenty-sixth. Two two-story frames. O. J. Scheerer. Day's work. \$7,000.
Seventeenth, north side, near Church. Two-story frame. O. Mrs. M. Marcheni. A. W. Mosser. C. Owens Bros. \$3,500.
Sixteenth, nr. Castro. Two-story frame. O. W. A. Leighton. A. Townsend & Wyneken. C. E. A. Doolittle. \$2,500.
Seventeenth, nr. Market. One-story frame. O. and B. J. Conlan. Day's work. \$1,000.
Seventeenth, north side, near Sanchez. One-story frame. O. and B. C. Schere. Day's work. \$900.
Scott, east side, nr. Haigh. One-story brick. O. F. Hertel. C. Geo. Turner. \$1,200.
Scott, west side, bet. Eddy and Turk. Two-story frame. O. J. Dowling. Day's work. \$4,000.
Seventeenth, cor. Dolores. Two one-story frames. O. M. O. Colson. C. G. M. Salsbury. \$2,900.
Stockton Place, between Dupont and Stockton, Post and Sutter. Additions. O. Dr. A. M. Loryea. C. J. E. Williams. \$800.
Silver, northeast corner Fourth. Repairs. O. Mrs. M. Donley. C. J. Wilson. \$500.
Silver, south side, between Third and Fourth. Repairs. O. J. McDonnell. O. J. Wilson. \$1,500.
Sixteenth, near Church. One-story frame. A. Salfeld & John. C. J. Kline. \$2,200.
Second, near Folsom. Alterations. O. Chas. Montgomery. A. J. J. Clark. C. G. J. Adams. \$5,000.
Seventeenth, bet. Valencia and Mission. Two-story frame. O. C. I. Crummer. O. W. E. Ede. A. R. H. Daley. C. Terrill & Slaven. \$7,000.
Shotwell, bet. Twenty-first and Twenty-second. Alterations. O. M. Baumgarten. A. C. Geddes. C. R. B. Hicks. \$3,000.
Sutter, near Polk. Two-story and mansard roof. O. Dr. J. Simpson. A. J. M. Curtis. C. F. Crowley. O. E. Brady, brick work. \$12,500.
Sacramento, bet. Hyde and Larkin. Two-story frame. O. Gen. W. H. Dimond. A. W. F. Smith. C. Gray & Stover. \$850.
T
Treat Ave., bet. Thirtieth and Fourteenth. Two-story frame. O. and B. E. Anderson. \$4,500.
Treat Ave., bet. Twenty-first and Twenty-second. Three one-story frames. O. and B. H. Geilfuss. Day's work. \$6,000.
Treat Ave., north side, between Twenty-fourth and Twenty-fifth. Alterations. O. Mrs. M. Beck. C. Thos. Mitchell. \$1,300.
Treat Ave., north side, between Twenty-fifth and Twenty-sixth. Two-story brick. O. and B. J. McCarthy. A. H. Geilfuss. Day's work. \$5,000.
Twenty-fifth, cor. Noe. Alterations. O. W. Axtwood. C. M. Jennett. \$1,200.
Thirtieth, north side, bet. Sanchez and Church. One-story frame. O. W. Murdoch. C. J. Nelson. \$1,200.
Thirtieth, south side, near Sanchez. One-story frame. O. Muldowney. Day's work. \$1,200.
Thirtieth, south side, cor. Warren. Additions. O. C. DePue. Day's work. \$1,200.

Sacramento—Eighteenth Street, bet. Land J. Two-story frame. O. E. C. Atkinson; A. A. A. Cook; C. Ruggles & Wendt; \$2,500. Third Street, bet. I and J. Two-story frame. O. D. Mason; A. A. A. Cook; C. Dean & Bolin; \$5,000.

Red Bluff—Cor. Main and Walnut Streets. Two-story brick. O. Cone & Kimball; A. A. A. Cook; C. Swain & Hudson; \$32,000.

Piedmont—O. Mrs. C. A. Kohler; A. S. & J. C. Newson; C. W. P. Wettenose; \$2,000.

Daggett—Residence. O. A. H. Koebig; A. Geo. E. Voelkel; day's work; \$1,000. Residence. O. Judge Perkins; A. Geo. E. Voelkel; \$4,000.

Santa Cruz—Brick church. O. Catholic Church parish; A. T. J. Welch; \$25,000.

San Rafael—School-house. O. San Rafael County; A. Curlett & Githenston; C. D. Perry, carpenter; C. Ferris, stone work; \$2,000.

Alameda—Santa Clara Ave., corner Verdy Street. Three two-story frames. O. J. Hesse; A. Geo. E. Voelkel; day's work; \$6,000. Newton, cor. Santa Clara Ave. Three two-story frames. O. F. L. Perkins; C. E. W. Lewis; \$10,000.

West Berkeley—One-story frame. O. F. Schrader; A. W. Schrod; C. C. Lutz; \$1,500.

East Oakland—Two one-story frames. O. J. Slattery; A. J. & E. D. Newson; C. W. Herin; \$3,800. Eleventh Street. Two one-story frames. O. W. R. Richardson; A. J. J. & T. D. Newson; C. C. Wilkins; \$3,000. Twelfth, cor. Ninth Ave. One-story frame. O. E. Tichener; A. J. J. & T. D. Newson; C. C. Wilkins; \$3,000.

Oakland—Washington, near Seventh. O. S. Hancock; A. J. Macquis; day's work; \$30,000.

Nevada City—One and one-half story frame. O. Mrs. Cross; A. S. & J. C. Newson; \$8,500.

A. F. KNORP, MAIN STREET MILL.

ELEVATORS,

RAILROAD CARS, MILL WORK,

GENERAL JOBBING WORK,

OF EVERY DESCRIPTION.

MOULDINGS, BRACKETS,

Door and Window Frames,

PLANING,

Sawing, Turning, Shaping

WOOD CARVING.

120-122 Main St.,

SAN FRANCISCO.

C. CASHMORE,

Painter, Grainer,

PAPER HANGER & WHITENER.

530 VALENCIA STREET,

SAN FRANCISCO.

EASTLAKE, INDESTRUCTIBLE GLOSS PAINT,

Especially adapted to the climate of California.

Durable, Easy Working, Economical.

MIXED READY FOR USE AS PUT UP.

No turpentine, benzine, gum or rubber. Works as easy as if mixed with turpentine! Workmen speak well of it. In use in San Jose for three years.

Sun and Fog do not Destroy its Gloss, or Cause it to Chalk.

COLOR CARDS MAILED FREE ON APPLICATION.

To the EASTLAKE PAINT CO.,
199 SOUTH FIRST STREET, SAN JOSE, CAL.

Country Mechanics furnished
with THE BEST OF TOOLS

AT LOWEST PRICES.

Address, CAL. ARCHITECT.

BLUM, EPPSTEIN & MARSH.

MANUFACTURERS OF

Inlaid Wood Flooring

WOODEN MANTELS,

Hard Wood Interiors.

Office and Parlors 126 Kearny St., 2nd Floor.
FACTORY 209-227 FELL ST.,
SAN FRANCISCO, - - CAL.

BUILDERS' HARDWARE.

Complete Assortment

House Trimmings,

INCLUDING

MALLORY, WHEELER & CO.'S

CELEBRATED

IMPERIAL BRONZE

Locks & Latches,

Light and Dark Shades,

Plain Antique, Tuscan,

Damascene or Berlin

BRONZE FINISH.

Unrivalled for Beauty of Design and
Superior Workmanship.

D. N. and C. A. HAWLEY, 501 to 507 Market St.



ALSO A FULL LINE OF

COPPER

WEATHER VANES,

Locksmith & Bell

Hangers' Supplies.

Union Spring Hinges

CABINET HARDWARE,

With a Full Line of

CARPENTERS'

—AND—

MACHINISTS'

TOOLS.

The California Architect and Building News.

VOLUME VI,
NUMBER 11.

SAN FRANCISCO, NOVEMBER, 1885.

\$2.00 per Annum, in Advance.
Single Copies, 20 Cents.

THE CALIFORNIA ARCHITECT AND BUILDING NEWS.

PUBLISHED on the 15th of EACH MONTH

BY THE
San Francisco Architectural Publishing Co.,
240 MONTGOMERY ST. ROOMS 11, 12, 13.

TERMS.

PER ANNUM, in advance, \$2.00
Specimen Copies sent upon receipt of Price, 20c.

RATES OF ADVERTISING.

Each Insertion.

Front and Back, Outside Covers, \$2.50 and
\$2.00 per Square, Respectively.

Pages next Preceding or Following Reading
Matter, \$1.75 and \$1.50 per Square, Respectively.

Inside Pages, \$1.00 per Square.

ONE INCH, Width of Column, Constitutes
a Square.

SPECIAL RATES for Advertisements Con-
tinued 3, 6, 9, or 12 Months.

CHARACTER OF ADVERTISEMENTS.
Those only relating to materials and devices used in
building construction, —in house decoration and fur-
nishing,—plumbers' materials, and the Arts and
Trades in harmony with the general charac-
ter of THIS JOURNAL.

CONTENTS.

	PAGE.
Building Report.....	181
Oakland Report.....	181
Postal Grievances.....	182
Snows East—Strawberries in California.....	182
Anti-Chinese Demonstration.....	182
A Style in Decadence.....	182
Mineral Products of the United States.....	183
Science of Architecture.....	184
Mechanical Aids to Decoration.....	186
Fresh Discoveries.....	186
Side-walk Ordinances.....	188
Book Notices.....	191
Amateur Carpenters.....	191
Disposing of Dead Bodies.....	192
Street Architecture, New York.....	193

MISCELLANEOUS.

Compressed Timber; Don't Fail to Write; San-
itary Cause of Action; Magnificent Timber Region;
More Lost Arts than Fresh Discoveries; Licorice
Cultivation; Arrest of Architects; Revival of
Trade; How to Decorate; The Better Bridges; An
English Plan of Ventilation; A Rapidly Growing
Health Evil; Rosewood; Unfair Treatment of Con-
tractors; A New Phase in the Chinese Question;
Healthful Height of Stories; Staining Wood.

Building Report.

THE current month, ending the 10th inst., shows a marked decline in the number of new building engagements, and a diminished sum of costs. This is not to be wondered at, for the two prominent reasons: First, the "wet season" is upon us, and, as has been the case in all preceding years, serves as a damper in checking building activities. Secondly, the "boom in building" has been such that a continuance at the high pressure reached during the season could not be kept up under any natural, reasonable state of things. It would require increase in population of large proportion to sustain the activities of preceding months. Still the showing is good for the season.

NOTE.—The reports appearing in this Journal are as near the SOLID and RELIABLE facts as care in collecting, and truthfulness in stating, can make them. If we were to pick up every side-walk or other small job of \$150 or \$350, and report them from three to five times the amount of actual cost, and republish items of building news reported three or four months previous, it would alike swell the apparent number of improvements and outlays in buildings. But our object is to confine ourselves to the strict order and condition of facts as they exist, deeming it a wrong to bolster up, or make appear, that which does not appear in fact. The future of the great city of San Francisco is sufficiently well assured to need no fictitious additions to the actualities that exist.

The number of buildings for the current month, ending November 10:—

85 new frames, total cost.....	\$286,550
19 additions and alterations.....	41,150
3 brick structures.....	38,000

107 engagements. Total cost....\$365,700
Although this is a greatly diminished showing as compared with preceding months of current year, it is not so reviewed with the same month's report in 1884, which gave the total number of buildings at 101, and the total cost at \$418,226.

(See Building Intelligence for itemized report.)

Compressed Timber.

A NEW process for toughening timber is announced, by which it is claimed that white-wood can be made so tough as to require a cold-chisel to split it. This result is reached by steaming the timber and submitting it to end pressure, technically "upsetting" it, thus compressing the cells and fibers into one compact mass. It is the opinion of those who have experimented with the process that wood can be compressed 75 per cent, and that some timber which is now considered unfit for use in such work as carriage building could be made valuable by this means; and more especially since the rapid consumption of our best ash and hickory will sooner or later render some substitute necessary.

Oakland Report.

FROM this on, a carefully prepared report of building intelligence in Oakland, Alameda, and Berkeley will appear in each issue. To do this with accuracy, it will be necessary for the architects, owners, contractors, and others interested, to render us the little assistance required in furnishing figures and facts. It is to be regretted that architects of surly, vinegary disposition sometimes act as meanly as men can possibly act, just to gratify some morbid disposition of mind or stomach, refusing to give decent if any reply to questions which, if answered, would hurt no one, and be of interest to many. If an owner has a house built he cannot hide the fact, and should not wish to if the transaction is legitimate; and an architect can have no intelligent and proper excuse for withholding the facts in his charge, in so far as they apply to outward appearances—the improvement of real estate. The secrets of his profession and the private interests of his client should be respected; but outside of these—the erection of buildings in their very nature and surroundings, become matters of public interest.

Our gleanings for the present issue show:—
Oakland, 22 frame buildings, \$61,200
" 2 alterations..... 4,700—\$65,900
E. Oakland, 18 frame build'gs, \$43,700
" 2 alterations..... 10,500— 54,200
Alameda, 7 frame buildings, \$18,500
Berkeley, 4 " " " 7,400
N. Berkeley, Berryman tract
2 frame buildings..... 5,400— 31,300

Total reported from the Oakland side
of the bay.....\$151,400
(See Building Intelligence for itemized report.)

The work of sinking artesian wells in this valley is going on at a lively rate. There are now about forty in the valley, some of which are classed among the best on the continent. Two good augers are kept busy, each employing a force of hands. It is estimated that the average depth of these wells is about 150 feet. Their water is pure, deliciously cool and invigorating.—San Jacinto Register.

Don't Fail to Write.

SHOULD this paper be received by any subscriber who does not want it, or beyond the time he intends to pay for it, let him not fail to write us direct to stop it. A postal card (costing him one cent only) will suffice. We will not knowingly send the paper to any one who does not wish it, but if it is continued, through the failure of the subscriber to notify us to discontinue it, or some irresponsible party requested to stop it, we shall positively demand payment for the time it is sent.

Postal Grievances.

THE discriminations in the postal law of the United States, operating against monthly, bi and tri weeklies, and quarterly journals and publications, and in favor of weekly issues, has long been a source of just and merited complaint. The arguments used in support of this inequality of privileges are not sound nor good, and partake largely of special legislation; as well as an arbitrary ruling by the law-making body as to the status of the publications of the day; for if it were a fact that weeklies contain the bulk of all valuable information published, then they, more than any others, should be patronized.

But even were this true, still the discrimination would be unjust, in that it helps and protects one class or denomination of producers, as against others producing exactly the same thing in texture, bulk, and general character, the time of production alone being the difference. If the benefits of this special protection accrued to the consumer, —the hundreds of thousands who read the various publications,—there would be greater plausibility in the sophistical argument used; but such is not the case, particularly at the present time, as no publisher would allow the circulation of his publication to suffer on the score of postal charges for delivery, whether requiring one cent per pound, with three to ten copies to each pound, as in the case of weeklies, or one or two cents postage each, as imposed upon all journals other than weeklies. The feeble protests of this journal against so transparent a wrong, began with its earliest issues, and we are glad that other journals, especially the *Art Age*, N. Y., are now moving in the matter, and demanding a fair and equal distribution of rights and privileges in the use of the mail facilities of the United States.

Snows East—Strawberries in California.

COLD weather, frosts, and snows have been reported from various sections of the continent east of the Sierras, in the month of October, making overcoats and warm clothing a necessity to personal comforts. But as these are of common occurrence, even that early in the season, there is nothing special in that state of things,—they being regularly repeated with each returning autumn season, and, therefore, a something to be looked for and expected. But they are strongly in contrast compared with conditions existing upon the Pacific Slope. Although November is upon us, there has not been so much as a nipping frost to harm, much less to destroy, anything that grows. Garden-grown strawberries are in fair supply in our markets; grapes of every variety and species are abundant; pears, apples, some peaches still, and almost every kind of summer vegetables and garden products crowd the stalls, shops, and places where such things are sold. The "rainy-season" period has arrived, and it is likely and hoped that the genial and copious showers will fall upon the earth, until it shall have drank up

or absorbed enough to supply moisture during and through the "dry season," to everything that grows; there may also be some few "cold snaps" of short duration, between now and April next, but none of that bitter kind—none that will sink the mercury within less than 30° above zero, and when so low as that, it will be severe for California.

Soon, with the falling of the early rains, verdure will everywhere begin to grow, and long before Christmas times come around, the hills and valleys of the Pacific Coast, over thousands of square miles, will be covered with beautiful grass; while in many parts east of the great divide, the frozen earth, with its mantles of snow, and the piercing cold winds, will hold back all growth, until stern winter shall have spent its fury, and the zephyrs of spring bid all nature arise and prepare for the harvest time.

Anti-Chinese Demonstration.

A MASS-MEETING of the people, mainly the working classes, but also considerably of the representative men of San Francisco, was held in Union Hall, on Saturday evening, October 31, 1885. The number present and astir on the occasion was not less than ten thousand, with fully two hundred and fifty thousand others in the city in full sympathy with the movement. While the proceedings were of the most orderly and quiet character there was an intensity of earnestness and interest manifested upon every countenance, but little if any less than that which animated the patriots and soldiers who rushed to the fierce battle fields in defense of the flag of our common country. For this too was a demonstration against an enemy of the worst kind; an insidious and relentless foe, in certain regards much more to be dreaded than the bold and daring men of the South, most of whom, believing their cause to be just, braved the risks and dangers of the battle field and the perils and results of bloody war. But the enemies against whom battle is now waged have entered our cities and garrisoned themselves in our very midst, and so surrounded themselves with the strong bulwarks of manufacturing, mechanical, trade, commercial, financial, and other defenses, that unless outgeneraled or circumvented; or by wise, strong, decisive and effectual legislation thwarted, they will complete and make general their monopoly of all the smaller and at present less important branches of industry, precursory to the grand swoop that in due time will be made upon every vital interest of the country. Demonstrations such as that referred to in this article, are both justifiable, and an urgent necessity, not only in San Francisco, but in every part of the United States where white men are required to toil for bread: for it is but a matter of time when, if not effectually checked, Chinese will force themselves into every State, city, town, and hamlet over which the stars and stripes float, with the danger possible that the flag of our Union will be insulted, and that of the hideous dragon raised above it.

A Style in Decadence.

ONE of the strongest claims made in behalf of Queen Anne domestic architecture, which has come to mean anything that throws aside all the rules of symmetry, is that it gives more variety and character to city houses than was possessed by houses of the old style, that stood along the streets like regiments of drilled soldiers. Speaking upon this point a Pittsburgh exchange asserts that it may be questioned whether a hundred houses of the same type, but with a few variations of an extra gable or an overhanging porch, show more individuality than the uniformity of the mansards of a few years ago, or of the Gothic cottages of the last generation. In fact, the most thoroughly characteristic houses that exist in this country today are those of the early part of the century. There may not have been much æsthetic character in the solid, prim, Grecian mansions, of which we still have one or two noted types in our suburbs, but it was a solid and enduring character. Between the rank of some of these old mansions and some of the last vagaries of the architectural craze there is just about the same difference as between the strong individuality of Adams, Webster, and the men of that generation and those of the present day who spend their days in dilettante studies of art, or the worshiping of blue china. There are some specimens of the Neo-Renaissance architecture produced in the present era of construction that will always preserve their quaint beauty, but it will not be many years before the spawn of cheap monstrosities that now goes under the name of Queen Anne, will be seen to be as inartistic a conventionalism as any of its predecessors.—*Carpentry and Building*.

The general tone of Eastern journals is against the continuance of Queen Anne as a style of domestic architecture. The Eastern profligacies in peculiar deformities in house building, as compared with the idea of the science of architecture developing strength, symmetry, proportions, durability, etc., has been great. But if the minds that guide the pens that write words of disfavor toward that which they see and know at home, would but journey westward, and tarry a day or two in San Francisco, they would see enough frightful, tortuous, barbarous, hideous transgressions of true architectural skill to set them mad with rage, or make them laugh until aching sides would demand restoratives, or the services of a medical man.

QUEEN ANNE AND EASTLAKE.

The old lady has been tortured some, but poor Eastlake, how he is to be pitied, having been made the scape-goat for ten thousand sins, monstrosities and abuses of taste and architectural deficiencies, committed by a class of aspirants who would never have been known as practical architects, except by producing all manner of funny things—things outside of all architectural rules and teachings, and calling them "Eastlake." There are hundreds of tons of lumber material cut in fantastic shape and

stuck up on the fronts and parts of buildings which, if the avenging angel of architecture should be permitted to pass over San Francisco, would be torn from present lodgments and consigned to the fiery furnace. The cruel sin has been and is, in men incompetent to distinguish between neat and tasty improvements in, and wild, glaring departures from all right rules in architecture, and the impudence with which they concoct impracticable mutilations, and then seek to shield themselves behind the poor man Eastlake, who never wrote a line on architecture with a view of even suggesting a new order or style in house building. And the wrong is still further augmented by the fact that the more pronounced the deformity, and the more unskillful and inexcusable the feature or construction, the more and louder it is called Eastlake, simply throwing enough of Queen's skirts in to relieve the innocent Eastlake a little sometimes.

SOME CLEVER EXAMPLES.

While all this is true, there are some very clever and pretty examples of the "new style,"—a mixture of consistent ideas, carefully handled by some of the better informed and educated architects,—which display good taste and judgment, and give variety and change, and do their authors credit.

Sanitary Cause of Action.

A NOVEL and important case affecting house property owners has just been determined in the Court of Queen's Bench. According to the evidence adduced, a married lady died last year from the effects of blood-poisoning, induced by the sewer gas which escaped into her house at Croydon from a broken pipe. The lady had an income of £1,000 a year, which "died with her," and her husband brought an action against the owner of the house to recover compensation for the loss he had sustained. It was shown that the owner had made "false and fraudulent" representations as to the healthy condition of the house, and the jury awarded the plaintiff £2,228. The judge also ordered the agreement for letting the house to be rescinded. It is said that the fact of the owner being an architect prejudiced the jury somewhat. The sanitary inspector of the district had passed upon the work. This, with an ordinary owner, must have been sufficient defense, but the jury were evidently of opinion that an architect's duty comprised a rigid inspection of every joint in the soil and waste pipes.

Dallas, Texas, claims to be the most striking example of growth in the Southern States. In 1872-73 it was only a clump of unpretentious warehouses and shanties on the Trinity; now it is solidly built over an area extending back two miles from the river, and has a population of over 35,000.

According to a new law in Berlin, which went into effect the 1st of January last, no house can be built higher than the width of the street on which it faces. If such a law existed in Boston some streets would present nothing but a double row of meek and lowly basements.

Magnificent Timber Region.

FEW people have any good idea of the vast timber resources of Tuolumne County, California. Lying on the southern boundary, along the Mariposa line, on the upper waters of the south and middle forks of the Tuolumne River, is one of the finest bodies of timber in the world. Here, for sixty miles, is an unbroken forest of sugar pine, yellow pine, red and white fir and spruce. The trees are enormous in size, and rise to magnificent heights, while the growth is so dense as to plunge the depths of the forests into a perpetual gloom. The trees average from five feet to ten feet in diameter, and their freedom from limbs and knots greatly enhances their value for lumbering purposes. Nothing extraordinary to find pine and fir trees ten and twelve feet in diameter, straight as an arrow, rising to a height of 150 or 200 feet. This body of timber is easy of access, and only requires to be tapped by a railroad to be turned into a vast source of wealth. As yet most of it is the property of the Government. Much of it, however, has been surveyed, and is now in the market. About two years since some parties projected a railroad through this region and prepared to take 50,000 acres of the timber, but apparently the scheme has fallen through. There was not a legitimate enterprise, as their object was only to get the project under way, and then make a big deal with Eastern capitalists. Now the giant trees stand nodding an invitation to the railroad and the saw-mill. Whenever these two agencies make their advent into this immense forest, old Tuolumne will spring into renewed life and prosperity. The field lies fallow waiting for the coming of enterprise and capital.—*Exchange*.

Those who have recently visited the Albert Palace will have noticed the preparations in the Nave for a further novelty. This, we understand, is to be a *gaum*, or village, to practically illustrate the arts and sports, and varied amusements of *gaum* life in India. For this purpose about fifty skilled artisans and entertainers are now on their way to this country. They will practically show us, in workshops as much like their own as skill and experience can make them, the modes in which they carry on their interesting and important industries. There will be wood carvers, metal workers, mat makers, shawl weavers, carpet weavers, rug makers, and workers in many other handicrafts for which India has long been famous, and for many of which she has attained an undisputed pre-eminence; "Nautch Girls" will dance to the weird strains of the native music; "Snake Charmers" will exhibit their marvelous powers over the beautiful but dangerous reptiles of their native jungles; and conjurers, whose skill in "deceiving the eye and bewildering the sense" has long been the wonder of visitors to the far East, will produce, at the Albert Palace, those marvelous feats which have made them famous throughout the world. No doubt many thousands will be anxious to "see how it's done." These interesting

visitors will arrive towards the end of the present month.—*Sanitary World, London*.

Mineral Products of the United States.

THE second report on "The Mineral Resources of the United States," by Albert Williams, Jr., Chief of the Division of Mining Statistics and Technology, United States Geological Survey, is now in press, and will be issued shortly. This report is for the calendar years 1883 and 1884, and contains detailed statistics for these periods, and also for preceding years, together with much descriptive and technical matter. The following items relating to building materials are taken from this valuable report:—

Building Stone.—It is estimated that the value of the building stone quarried in 1884 was \$19,000,000, as against \$20,000,000 in 1883; the decline being due partly to dullness of trade, and partly to the increased use of other structural materials.

Brick and Tile.—The output was about the same as in 1883, but as manufacturers cut down expenses still further, meeting a lower market, the total value is estimated at \$30,000,000 against \$34,000,000 in 1883.

Lime.—There were 37,000,000 barrels (of 200 pounds) made in 1884, the average value per barrel at the kilns being not over 50 cents, or \$18,500,000. The production was about 5,000,000 barrels greater than in 1883, but owing to the fall in price the total value was about \$700,000 less.

Cement.—About 100,000 barrels (of 400 pounds) of artificial Portland cement were made, or 10,000 barrels more than in 1883; the total value, at \$2.10 per barrel, being \$210,000. The production of cement from natural cement rock, was 3,900,000 barrels (of 300 pounds), or 200,000 barrels less than in 1883, worth, at 90 cents per barrel, \$3,510,000. The total production of all kinds of cement was about 4,000,000 barrels, valued at \$3,720,000.

Marls.—In New Jersey about 875,000 tons, worth \$483,500 at the pits, were dug in 1884. In addition small quantities were produced for local use in some of the Southern States. The production is declining, owing to competition with fertilizers made from phosphate rock, etc.

Gypsum.—In the Atlantic States from Maine to Virginia, 65,000 long tons of land plaster and 60,000 tons of stucco, total, 125,000 tons, were made in 1884, of which nearly all was from Nova Scotia gypsum. The statistics from Michigan have not been reported, but the production did not vary greatly from that in 1883, in which year it was 60,082 short tons of land plaster, and 159,100 barrels (of 300 pounds) of stucco. In Ohio 4,217 short tons of land plaster and 20,307 barrels of stucco were produced. There was also a small production in other parts of the country; but the total amount of domestic gypsum used is not known.—*Exchange*.

Science of Architecture.

[Special for this Journal. By F. Hillert, Architect and Mechanical Engineer.] (Continued)

ACCORDING to the department of the fuel, we have to mention its "combustibility," the temperature required for the beginning of a self-acting oxidation, or the kindling temperature, which is very variable, and is never below 500° C.; its "inflammability" being in proportion to the amount of hydrogen contained in it, its effect or the aggregated quantity of heat, either "absolute," measured according to the weight, or "specific," measured according to the volume, using for a scale the "unit of heat" or caloric, and its "pyrometric" effect of heat, or the temperature of the fire by the perfect combustion, and which is the quotient of the absolute heat expressed in units, and the product of the weights, and the specific heat of the fire gases created, and, lastly, the quantity of air required.

THE FIRE HEARTH IN GENERAL.

Each fire must be so constituted that, by the burning of the fuel, the highest absolute and specific heat possible is obtained; therefore it becomes necessary for the burning to be perfect—all combustible parts are in reality burned; it not only depends on the admission of a sufficient amount of air, but this admission must be so regulated that on intense mixing of the same with the combustible, distilled gases occur; a want of air produces a lower grade of oxidation of the burning parts (hydrogen escapes unconsumed, and the carbonic acid already formed, and in contact with the glowing fuel, is reduced to oxide of carbon); a surplus of air not used is hurtful, by being heated—reducing the temperature in the fire-place. The second condition of a fire hearth is a complete use of the heat produced for heating purposes; and third, the arrangement must be so constructed that, with the admission of air, the discharge of the same, bereft of its oxygen and mixed with the fire gases, is done and conveyed off out of harm's way of men; and in conformity with this consideration, the construction of the fire-place with grating surface, the heating room, ash pit, and the smoke stack must be arranged.

THE FIRE HEARTH, GRATING, AND ASH PIT.

The size of these depends on the amount of fuel to be consumed, the method of heating, and the kind and condition of the fuel. The arrangement must be convenient for working and giving up of the fuel.

The grating surface, which divides the fire-place in the heating room and ash pit, serves to admit and regulate the flow of the atmospheric air; the total grating surface is divided into the free—containing the openings between the grate bars for the passage of the air—and the covered. The proportion between the two—free and covered—varies with the kind of fuel; the size of the total must be ample to take the quantity of fuel to be consumed pro unit of time, which must have a certain height on the grating, and the open-

ings sufficiently large to admit the needed quantity of air.

TABLE FOR AN APPROXIMATE PROPORTION OF THE GRATING:

Kind of Fuel.	100 k g. of fuel pro hour.		Ratio of the fire to the total grating.	
	Total Grating qm. and sq. ft.	Fire Space. c. bin. & cu. feet.		
Coal.	1.4 1.6 sq. m. 15.06 17.21 sq. ft.	0.25 cbin. 29 cbin. 8.82 c. ft. 9.64 c. ft.	1.4 to 1.3	
Hardwood & bitum. coal.	1.2 1.4 12.91 15.06	0.43 0.50 14.34 17.60	1.5 to 1.3	
Soft wood & peat.	1 1.3 10.76 13.98	0.65 0.75 22.89 26.40	1.6 to 1.5	
Charcoal and coke.	1.6 1.8 17.21 19.36	0.53 0.62 18.66 21.82	1.4 to 1.3	

For a high temperature to be obtained in the fire-place, the sides must be lined with a non-conducting material.

The ash pit under the grating, to receive the ashes; the air channel for the passage of air to the fuel must not be low to admit sufficient air, and by a high accumulation of ashes in the pit will heat and burn the grate bars.

THE HEATING ROOM.

In which the action of the created heat is to be made useful, must have a sufficient section, that the fire gases do not obtain too large a velocity, and therefore deliver the produced heat imperfectly. The best and most advantageous cross-section is equal to the free grating surface.

THE SMOKE STACK.

The draft to be produced by the smoke stack is intended, not only to take and convey away the obnoxious and hurtful fire gases after doing the work of heating, but also to furnish the sufficient amount of atmospheric air for a perfect combustion and reduction of the fuel, and must be strong enough to overcome in the same time all the resistances on the hearth—passing of air through the pieces of fuel—and in the flues.

The column of fire gas standing in the smoke stack has, by reason of its high temperature, a smaller density than the atmospheric air, which, resting on top—the mouth—of the chimney, and the pressure at the foot or at the hearth, is larger by a column of air of the same height as the rarified gas column in the smoke stack; the rarified fire gases will raise, and the colder air under the hearth will fill the vacuum formed by the ascending gas, that the excess of pressure between the air and gas column—both of the same height—will furnish dates for formulating an equation to calculate the velocity of the draft in the smoke stack, namely:—

"A family uses for a fire-place one sack of coal, or 100 pounds, weekly, of 8 hours, daily burning, and for each hour 1.3 lbs, creating thereby 40.14 for m=2 fire gas of 1.022 density 20.93 for m=1 1.040 density requiring 33.40 lbs of atmospheric air. But since 1 cu. ft. of air weighs 0.08 lbs, then one cubic foot of fire gas will weigh 0.081, furnishing 495 cubic feet of fire gas hourly of 1.022 density."

Assuming that the fire gases in the smoke stack have at least a temperature of 300 degrees, the rarified gas changes its density to 0.65, and its volume to $\frac{777}{403}$ cubic feet per hour,

or $\frac{12.95}{6.72}$ cubic feet per second, to be discharged through the mouth of the chimney.

To calculate the velocity of the ascending fire-gas current, the common formula for the discharge of water under pressure can be applied by substituting for the water column of 1 atmospheric pressure, or 33.82 feet air column of the same weight. Air being 770 lighter than water the air column will have a height of 26,041 feet.

$$\text{Velocity} = 8.02 \sqrt{(26041 + 40) \cdot (-6040 + 0.65 \cdot 40)}$$

$$8.02 \sqrt{14} = 30.07 \text{ ft. per second (wherein the gas column is 40 feet high),}$$

requiring an area for $\frac{m=2}{m=1}$ at the top of the chimney of $\frac{0.42}{0.22}$ sq. feet.

The air required for $\frac{m=2}{m=1}$ per second is $\frac{7.92}{4.00}$ cubic feet, which must pass through the free grating.

The velocity of the draft in the chimney only increases with the square root of the chimney. Any fuel, of which the chemical compounds are known, can be utilized as such, and the fire hearth, etc., arranged for a perfect combustion.

Some time since, citizens in the neighborhood of the California Street Railroad Depot litigated with the company, to abate the nuisance created by soot and coal dust thrown on them from the chimney, caused by imperfect combustion. By an order of Court the chimney was extended about fifty feet, and the mouth reduced to more than one-half of its area, which perfected the draft and combustion, and consequently abated the nuisance. The money expended for litigation would have amply paid for a good design. It is this, one of the instances where money and ignorance, assisted by legal chicanery, produced discontent and unhappiness among the very customers on which a rich corporation depended for their existence. Can they not live peaceably together?

Heating of rooms are either periodically—as for halls, churches, etc.—or are continuously, where the heating arrangement must be capable to furnish heat for a longer period of time.

In a room to be heated, the atmospheric air required for combustion is drawn to the fire from the room, to be restored through the untightness of doors, windows, etc. In opposition to this voluntary ventilation ventilating ovens are constructed, which not only supply the room with sufficient air of the same temperature as in the room, but also draw off, regulate, and discharge the unhealthy air produced into the smoke stack.

CENTRAL HEATING.

Central heating, generally speaking, is every

heating arrangement, by which many rooms, from a common source of heat, are warmed; but specially, we understand such arrangements, by which the conveying of heat (attached to a suitable medium), from the common source, is distributed to the rooms to be warmed.

The calculation of every heating arrangement is divided in two parts: the first consists in the finding of the quantity of heat required per unit of time, for all the rooms to be warmed; the second, the calculation of the corresponding sizes of the parts of the arrangement for the heating, such as the heat accumulating, distributing, conducting, and delivering, composing the whole arrangement. The first has already been stated; the second part is depending on the system selected, either heating by hot air, warm water, or by steam.

HEATING BY HOT AIR.

By heating with hot air, the same is heated outside of the rooms to be warmed, and then conveyed to them. The main parts, therefore, are: an apparatus for the making of the heat, and for heating the air, and the flues conducting the same.

The apparatus for the creation of the heat and for warming of the air, consists of a heating oven (calorifere), and the heating chamber, a room wherein the calorifere is set up.

An oven built for this purpose must fulfill the following conditions, (1) must prevent an overheating of the heating surfaces; (2) must be a so-called "countercurrent" apparatus, wherein the fire gases must have an opposite directed current than the air current; (3) the same must conveniently be cleaned of dust on the outside and of soot on the inside; the cleaning from soot must not require an entry to the heating chamber; (4) the heating surfaces and connecting joints of the different parts must be made smoke tight, and the number of connections must be reduced as much as possible; (5) the expansion and contraction must go on without creating any tension in them; (6) and the utilizing of the radiating heat must be most complete.

The overheating of the surfaces is prevented by a correct proportion of the heat distributing to the heat receiving surfaces, which must be, the larger, the hotter; and smaller, the less warm the heating gases are.

The heat-distributing surface of the heating oven in square meter or square feet, as well as the hourly introduced quantity of air used as the medium for warming the rooms, is calculated by

$$Q = \frac{0.3 \cdot L \cdot (t - t_n)}{W}$$

$$L = \frac{M}{0.3 \cdot (t - t_n)}$$

Wherein Q is the heat-distributing surface of the heating oven in square meter; L, the quantity of air in cubic meter used hourly as medium for heat introducing, respectively, heat leading off; M, the quantity of heat per hour

used up, and to be replaced by heating; W is the mean heat delivery per hour per square meter surface of the heating oven on the surrounding atmospheric air; t, the temperature of the air to be introduced into the rooms to be heated; t_n, the temperature of the air to be discharged from the rooms; t_u, the lowest temperature of the outside air, by which a good warming of the rooms is to be effected.

The mean heat delivery of the heating oven must not be taken below 1,800 C. and not over 2,500. The temperature, t, up to which the air is to be heated by the heating oven, respectively, the heat for the entry into the room to be heated is, on the highest, 50°.

From the above formula can be seen the important fact, not sufficiently appreciated in *praxis*, that to supply the needed transmission heat for a constant temperature, t, the quantity of air, L, cannot be selected arbitrarily; t is for all the rooms to be heated from the same air-heating oven, constantly.

The shape of the heating oven is very variable. The material lately used, in addition with brick and fire brick, is exclusively cast iron, seldom wrought iron.

Flues for conducting the air are, (a) flues for conducting the cold, fresh air from the outside to the heating oven; (b) flues for conducting the heated air to the rooms to be heated; (c) flues for discharging the cooled, spoiled air to the outside (ventilating flues); (d) flues for conducting the used air to the oven for the purpose of reheating (circulating flues).

The use of the flues at 1 is only conditionally recommended, expressly for the starting of the heating operation.

The section of the flues (F) is calculated in consideration of the quantity of air to be conveyed, and the assumed velocity of the same. The velocity, theoretically calculated, is never obtained in reality, the same being reduced by various resistances. If we have not to contend with extraordinary proportions (long, horizontal, and slightly inclined flues, etc.), when for them a correct calculation, under consideration of all the separate, single resistances, must be made, the following formulas for practical use can be applied:—

$$F = \frac{L}{3,600} \left\{ \frac{v}{v_1} \right\}; v = 0.5 \sqrt{\frac{2gH(T-t)}{273+t}}$$

$$v_1 = 0.5 \sqrt{\frac{2gH(T-t)}{273+T}}$$

Wherein T represents the section of the flue in square meter; L, the quantity of air for each hour in cubic meter passing through the flue; v, the velocity of discharging of air into the colder air; v₁, the velocity of air discharging into the warmer air; 2g=19.62; H, the height of the flues in meter. Difference of temperature between the lower and upper end; T, the temperature of the warm air; t, the same for cold air.

The execution of the flues must be very carefully done; the brick work must be made as smooth as possible with smooth joints. Where it is possible, on account of the small size of the walls, glazed clay pipes can be used.

Flues for the conducting of hot air, and those for carrying off the spoiled air, must not (except circulating pipes) lay in the outside walls; they must run up perpendicular; all changes of direction and of section must be avoided.

There, where from the heating chambers, perpendicular or inclined flues, and flues running to different distances, are to be branched off, it must be recommended, besides the regulating arrangements to be put in the walls of the rooms to be heated, to put in a regulating slide valve at the foot of the flue, and the same, later, during the heating, to be closed; that all flues in a uniform manner fulfill their functions as desired, the sections of the flues should be nearly square or circular.

The outlet in the hot-air conductor for the common rooms should be 2-2.25 meter (6.56-7.38 feet); for high halls 3-4 meter (9.84-13.12 feet) above the floor. In very large rooms, where a uniform distribution of the hot air is desired and a powerful ventilation arrangement exists, the discharge opening of a larger number are put in the floor.

The discharge of the air from the room is done by the circulating heating flues and by heating with ventilating arrangement in winter time close to the floor, and by summer ventilation, or when the air is warm or spoiled by gaslight, close to the ceiling. For the selection of the position of the hot air and the ventilating flues, we observe that the hot air on entering the room ascends towards the ceiling, spreads over the same and towards the windows and the cool walls, where the same cools off, becomes denser, sinks, and in spreading over the floor moves towards the discharge opening in the wall above the floor.

The admission flues for fresh air, and the entry for the same, are placed in a sheltered position. Best to use two openings placed in opposite directions in the building, of which the one is to be used laying opposite to the direction of the wind. The sections of the openings must be such that the air will enter with not a higher velocity than 1.5 meter (4.92 feet) per second. It is of advantage to arrange a large air chamber close to and behind the entry for the settlement of the dust, etc., contained in the air, but which may be accomplished by application of a wire-screen filterer.

The size of the openings for entry and discharge in the room to be heated are regulated by the velocity of the air, and is from 0.5 to 1 meter (1.64-3.28 feet). The openings of all the flues must have good-fitting regulating arrangements. It is of importance that the flues are easy of access to be cleaned.

The building statistics of Washington, D. C., show that an unusually large number of buildings were erected during the past year. According to the figures, 1,330 dwellings and 303 buildings for other purposes were added to the city and the property valuation increased by \$3,564,611.

Builders' Guide..... \$ 2.00

Mechanical Aids to Decoration.

BY A. CURTIS BOND.

MECHANISM in decoration, by which color designs and forms may be indefinitely repeated or multiplied, is always in course of progress; yet it here would seem, with all the varieties of adaptations which we witness, certain defined limits, and in numberless directions of decorative art handiwork well asserts its superiority. Yet mechanical production itself bears the stamp of intelligent purpose and constructive ingenuity, it being, so to speak, a transfer of handwork, an intermediary between the designing brain and hand, shown in the pattern and the execution. The die of the mould for molten metal and plastic material has either itself to be worked out by hand, or, if obtained by impress of relief work, the relief model has to be carved. The production and duplication of much decorative work by mechanical means is recommended by economy, in some instances by greater uniformity, but in the higher spheres of decoration, the absolute uniformity thus obtained falls far short in value of the direct work of the hand. This is evident in ornamenting in color, walls and ceilings, if the execution be skillful, as compared with stenciling. The slight variations in the ornament—for the work of the hand never absolutely repeats itself—is itself a charm, as showing greater freedom of execution, and in some instances greater delicacy of touch. Nevertheless decoration is greatly behooven to the mechanical arts for its diffusion, whether in furniture, structural surfaces, or the ornaments by which interiors are adorned.

One of the greatest novelties promised in mechanical devices, as concerns painting, is a machine consisting of a hand piece, a compressed air chamber, and an air pump, with communicating cup filled with liquid pigment, the latter filled with liquid pigment, which enables the artist to throw out a spray which, in the first instance, forms a fine line, and in the second, widens the line to the desired breadth. The skill required in the operation, the proportions to be given to the line, renders the line, which may even be thus shaded at will, something more than mechanical work.

Many devices for facilitating decorative work may be characterized as assistive. They are brought in co-operatively, and are little more than the brush to the painter. The improvement in tools merits notice here. Take, for instance, the wedge-shaped brush so useful for many purposes, previously to the manufacture of which decorative artisans had to wait the wearing down on one side of their flat brushes. Fortunes have been made by smaller devices than these, suggested primarily by individual requirements and really foreshadowed by the efforts of artificers in their practices or methods, to devise means for escaping inconveniences attached to their tools. The tools used for wood carving, and

adapted to special purposes and to different scales, have been greatly increased in number of late years. There are mechanical devices which may be regarded as completing the operations of the hand, as when, previously to applying veneer, the ornament adjusted to the pattern and already rubbed down with the veneering hammer, and affixed by glue to paper, is placed between hot boards and pressed with hand screws, which, when the glue is dry, allows the work to come out quite clear from the boards and appear as one piece of veneer, which is then ready for application.

The cowl with its screw clamps comes to the aid of the veneerer to secure a graduated pressure, commencing from the center of the piece, being an exact counterpart of curved work, and when flat employed, like the veneering hammer, for plain surfaces. The heat of the cowl quickly penetrates the thin veneer, making the glue exceedingly fluid, and the pressure applied by the clamps soon expels the greater portion of it, and causes the veneer to bed very closely to the work.

Wood carvers, in copying models, are now supplied with a marking or cutting gauge of ingenious construction by which, when once set to the required dimensions, they cannot only give all their markings the relative width, but secure depth of the ground line of the carving, and height of relief portion, or rather the excess on their own panel, so as to enable them to cut away freely, instead of timorously dealing their strokes.

The services of the lathe are particularly prominent in decorative woodwork, particularly in hand-turning. In hand-turning the tool is held by the hand, the changes of form made in the wood being dependent on the relative position or angle of the cutting edge. It is the work of an instant only to vary the relative height and angle of a hand tool to the work, converting it from a roughing to a finishing tool, or even to a scraper, which operations are often impracticable with a tool held in a side rest. With the latter the guidance is solely by the eye; with the lathe the delicate sense of feeling is appealed to, so that any variations may be made with absolute accuracy.

In the development of electricity as a motor under the system of storage, much of the preparatory work of the moulder, whether in wood or metals, will doubtless be greatly aided in the future.

Scaffold brackets is among ingenious contributions to the satisfactory execution of exterior house decorative work on walls. This work is necessarily done much better when the artisan has not to balance himself, but obtains a steady platform without unpleasant swaying. The ladder is made with large hooks at top to hang from window sills, and the platform which is transferable to any of the runs, is fastened by curved hooks attached to an environment bar both to that rung and the rung above.

Album of Mantels \$ 8.00

More Lost Arts than Fresh Discoveries.

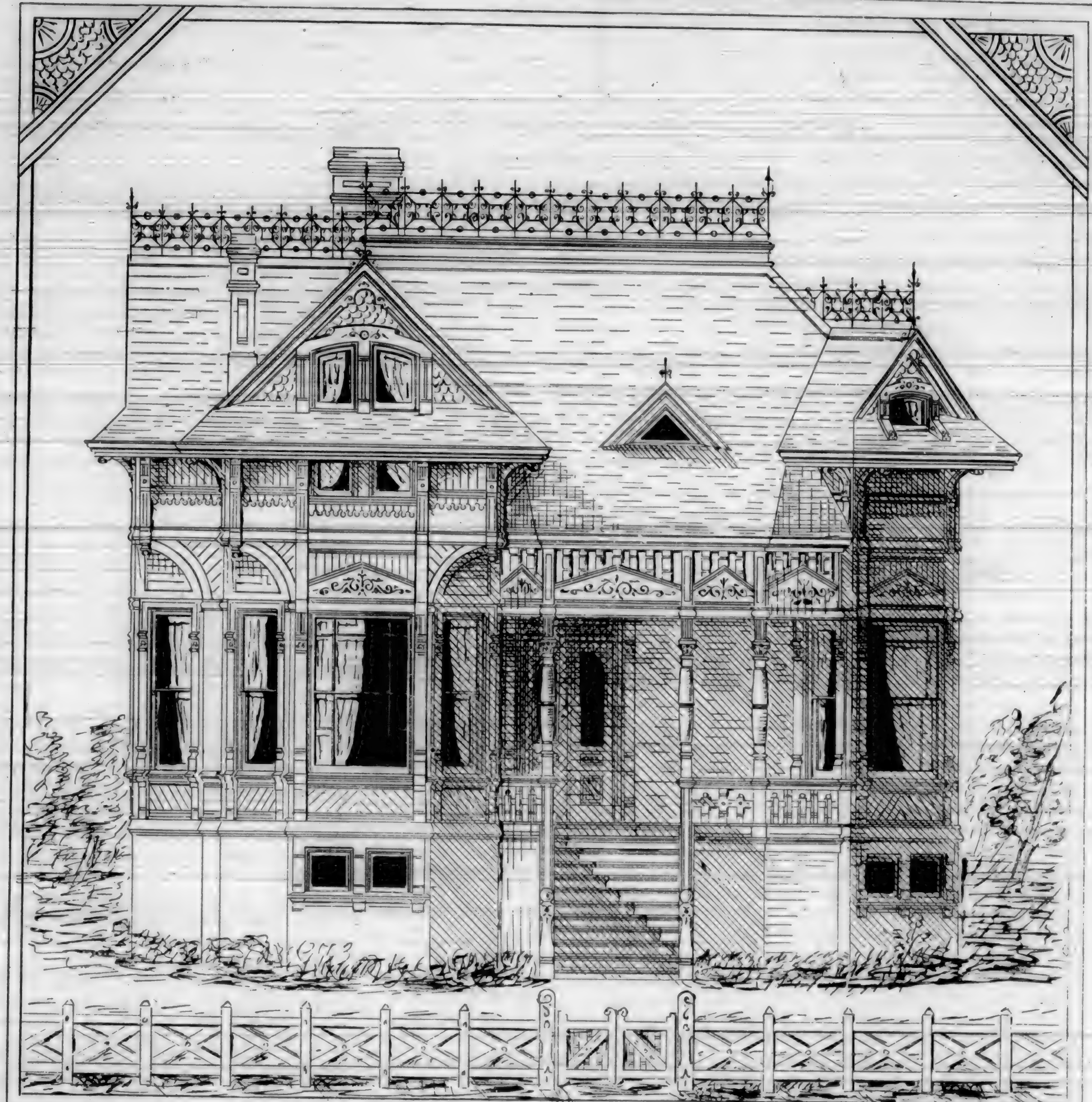
THOSE evolutionists, says the New York *Journal of Commerce*, who believe that our ancestors were fools or pigmies, will find little comfort in the fact that between the ancients and ourselves there are more lost arts than fresh discoveries. Modern chemistry has exhausted itself in the vain effort to produce a compound as useful and durable as the cement of olden times. Vitruvius, who wrote upon architecture before Christ, but whose works have only been printed within the last 450 years, speaks of *opus albarium* and *opus coronarium*, as well-known compounds, too familiar to need description. Among modern experiments are the oil cement of Adams, made of fine whiting and calcined oyster shells ground up in a mill with oil; Pashu's, called Roman cement, is made of argillaceous limestone. Bailey's cement is composed mostly of lime and sharp sand. Mastic cement (sometimes called Hamelin's) is composed of peroxide of lead and oil. The technical "stucco" is made largely of plaster of Paris and lime, and is used for interiors. The Italian stucco is chiefly lime putty, mixed with white sand or powdered marble. We presume the ancient stucco so durable was made of a peculiar sand, or of powdered marble, since the great fault of modern outside work is in the impurity of this foundation. If sand is used, it should be repeatedly washed until it will no longer discolor the purest water. The least particle of earthy matter will be brought into action in warm weather and spoil the adhesion. The wall should be oiled before the stucco is applied, and the latter should be thoroughly oiled every two or three years afterward. But our ancestors, according to the evolutionists nearer the apes than ourselves, could prepare the cement and color it after the fashion that mocks all the modern attempts at either.

Licorice Cultivation.

WHAT is there in the entire vegetable kingdom that California cannot produce? There is scarcely anything that is grown in the earth that does not find favorable soil and climate somewhere within her borders.

The cultivation of the licorice root, is one of the most recent industries of our State, and promises to be not only a successful but a very remunerative one. The experiment has been successfully tried in Sacramento County, where it is estimated that the net receipts from one acre, at thirteen cents per pound, would amount to \$2,400 from the first three years' growth. No doubt other parts of the State would be equally favorable to its growth.—*The Interior*.

It is estimated that the value of the building stone quarried in 1884 was \$19,000,000 as against \$20,000,000 in 1883; the decline being partly due to dullness of trade and partly to the increased use of other structural materials.—*Age of Steel*.



The American Institute of Architects held its annual Convention at Nashville, in October. The number present was not large—not such a representation as should have been, considering the number of practicing architects in the United States. But this fact is not to be considered as evidence of non-interest on the part of the membership, but as proof that architects generally, all over the country, are so engaged in the conduct of their business that it is inconvenient, if not practically impossible for them to leave their offices and business even for a week. As far as the "Fellows" of the Institute residing in San Fran-

cisco are concerned, every one of them would gladly have been present, but time and circumstances forbade that pleasure. But the session is reported to have been one of the most delightful character, and those who did attend were richly repaid for the loss of time and expenditures attending. The most liberal and kind courtesies were extended to the attending members in all directions; so that, aside from the fraternal pleasures and benefits of the occasion, there was a season of enjoyment which will long be remembered by those who made the sacrifice and were present at the Convention of 1885.

Ten years ago a standard car load on all first-class railroads was 20,000 pounds, the weight of the cars being about 20,500 pounds. In 1881 the load on most roads had increased to 40,000 pounds, but the weight of the car had increased to only 22,000 pounds. The master car builders of the Pennsylvania road have now adopted cars to carry 60,000 pounds; while the weight of the cars will be very little increased. Instead of hauling more than one pound of car to one pound of freight, nearly three pounds of freight can now be hauled for one pound of car. The substitution of steel for iron rails has made the change possible.

Arrest of Architects.

MESSRS. WRIGHT & SANDERS, architects of the Union Club Building, northwest corner of Post and Stockton Streets, were arrested, a short time since, for violation of the Conglomerated Code of City Ordinances, denominated "Order defining the fire limits, and regulating the construction of buildings in the city and county of San Francisco," in which is contained all matters specially and properly belonging to the supervision of the fire wardens, chief engineer of the fire department, and his assistants, and also all matters which should be under the separate control and direction of a competent "building board," "board of public work," or a qualified board called by any other name. Without discussing the merits of the Code as now in force, the facts of the case in question are these: The wrought iron, or box girders to be used in the erection of said building, were specified in harmony with the requirements of the law regulating how the girders should be made. The competition was submitted to the wrought iron workers in San Francisco, and the award of contract made to the lowest bidder, who happened to be the agents of an Eastern manufacturer. This created an interest on the part of the San Francisco manufacturers in the character of work that would be produced under the contract.

The girders finally arrived, and, while the material and workmanship employed in their construction was beyond criticism, they were not constructed as the law provides, which reads: "Wrought iron girders, if made of plate iron and of box pattern, shall have proper diaphragms placed in them at distances not exceeding five feet apart, and the riveting shall be done hot, and hammered to a proper conical head." No question was raised as to the sufficiency or strength of the girders, nor the quality of material or workmanship; but the diaphragms were spaced a greater distance apart than five feet, and the rivets were round, button, or cupped heads, instead of "proper conical heads." The matter was freely talked over among interested parties, and it was understood that arrest would follow the attempt to place the girders in position in the building; consequently, when they were lifted and seated on the walls, an arrest complaint was served on the architects, and a prohibitory injunction issued, stopping the work.

Although two weeks or more have passed since the arrest, at the time of this writing, no decision has been rendered, and the case still hangs before the Police Judge, under the charge of violating a city ordinance.

The violation is clearly technical, as it is not likely that the framer of the ordinance ever contemplated or intended any more than that all such girders should be properly made, and sufficiently strong for the purposes intended. But the law is arbitrary in its language, and should be either held as the absolute rule of practice, or be wiped from the or-

dinance book. There is no discretionary power anywhere to regulate matters of this kind; to allow, as in this case, the use of something else every whit as good as that required by the law, to be used. But if local manufacturers are held strictly to the law, even in the matter of conical head rivets "done hot," and diaphragms spaced five feet, then outsiders should be held to the same rule.

THE FIRST RAILROAD IN AMERICA.—In the course of a paper read before the Franklin Institute, bearing the title "Transportation Facilities of the Past and Present," Mr. Barne Le Van corrects the commonly received statement that the Granite Railroad, built at Quincy, Mass., in 1827, by Gridley Bryant, for transporting stone for the Bunker Hill Monument from the granite quarries of Quincy, was the first railroad built in the United States. On this point he presents interesting testimony to prove that, far from being the first, the Granite Railroad was really only the fourth in order of precedence in the United States. We quote from that portion of the paper relating to the subject, with the simple comment that the statements made by the author are of considerable importance from the standpoint of historic accuracy: "Railroads were also first introduced in Pennsylvania. In September, 1809, the first experimental track in the United States was laid out by John Thompson (the father of John Edgar Thompson, who was afterwards the president of the Pennsylvania Railroad Company), civil engineer, of Delaware County, Pa., and constructed under his direction, by Somerville, a Scotch millwright for Thomas Leiper, of Philadelphia. It was sixty yards (one hundred and eighty feet) in length, and graded one and one-half inches to the yard. The gauge was four feet and the sleepers eight feet apart. The experiment with a loaded car was so successful that Leiper in the same year caused the first practical railroad in the United States to be constructed for the transportation of stone from his quarries on Crum Creek to his landing on Ridley Creek, in Delaware County, Pa., a distance of about one mile. It continued in use for nineteen years. Some of the original foundations, consisting of rock in which holes were drilled, and afterward plugged with wood to receive the spikes for holding the sleepers in place, may be seen to this day."—Exchange.

There are twenty window glass factories in Pittsburgh, with 276 pots, making 838,400 boxes, at \$3.00 per box. The glass trade is fairly active in all branches. Flint glass works are everywhere running to their full capacity.

Most of the private structures in Russia are built of wood, and it is estimated that the bulk of them burn down every seven or eight years. There is said to be always twenty fires, at least, in different parts of the empire.

Cumming's Details..... \$6.00

Side-Walk Ordinances.

MR. FARWELL of the present Board of Supervisors has for several months seemed to have had "side-walks on the brain." Consequently he has proposed and introduced several orders, more than one of which has been passed by a majority vote of the Board and gone to the mayor for an expression of his opinion, with the result—veto every time; and as often the veto has been sustained; except that the last passed by the Board in October, and vetoed by the mayor, was finally passed by a vote of ten to two over the veto.

The issues and merits of the case may be thus stated: That the first side-walks laid in San Francisco were of wood, that being the only available material in the early days of the city's existence for the purpose. For several years there were no other than wooden side-walks in use, except occasional isolated cases of brick construction. But the brick obtainable failed to serve a good purpose, owing to unequal hardness and durability—the softer wearing away more rapidly, leaving as many pot holes in a side-walk of five hundred square feet as there are small-pox pits in the face of a man who has passed through a bad case of that disease. The late Mr. Lick of Lick Observatory renowned, went further, and obtained pressed brick, such as those used in the facings of buildings, but they proved to be no more durable than the common article, and brick side-walks were passed as impractical. Time and service proved that side-walks of wood construction were also but temporary expedients, as the friction and wear and tear on the surface wore away the fibers of the wood rapidly, causing unevenness, and where knotty pieces were used, the softer parts would wear away around the knots, leaving disagreeable lumps for people to stumble over and sometimes sprain an ankle. Beside this, the sleepers and underside of the planking would soon rot, thereby destroying the hold of the spikes used in securing the planking, and, as a consequence, the spikes would work their way upward, and protrude above the planking, thus forming a rake-like surface for pedestrians to practice toe stumping, and ladies to hook the lower parts of their garments and tear them; and thousands of devout female worshipers have gone to the house of prayer full of indignation at the annoyance of having torn their skirts by catching them on a nail in the side-walk, or, perhaps, the sudden jerk carrying away the pin and string fastenings at the waist and letting more of the under-clothing drop in the street than was agreeable to a lady. During the past ten or fifteen years, however, greater care has been exercised in laying plank side-walks; the surface of the planking more generally being surfaced, larger timbers being used for the sleepers, and the spikes being set in with nail sets. The next to appear for public approval was the

ASPHALTUM SIDE-WALKS. And tens of thousands of feet were laid, both in the business localities and residence quar-

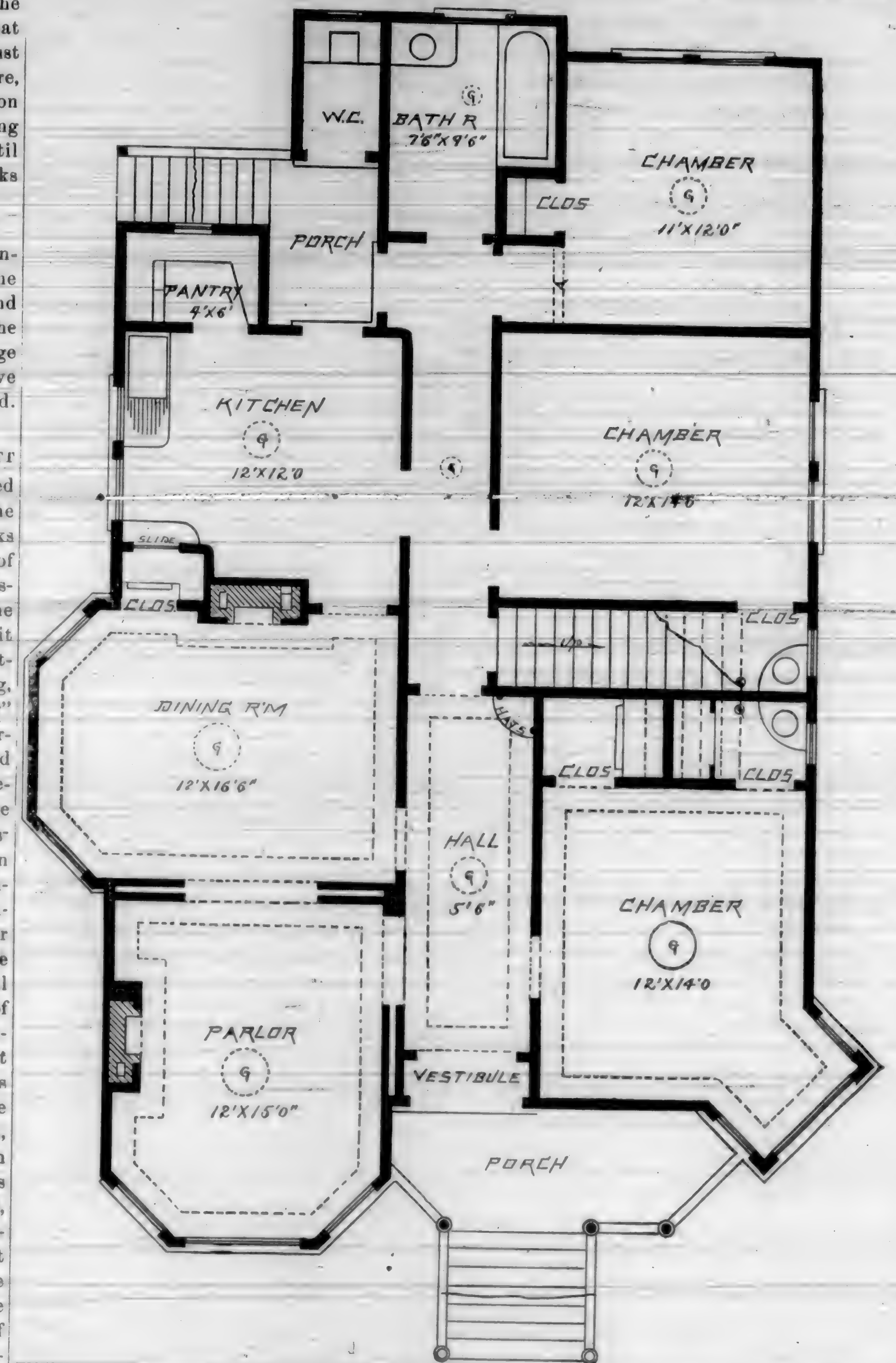
ters. These gave great satisfaction over the wooden constructions; but time proved that even the asphaltum material failed to be just the thing, as exposure to the atmosphere, evaporation, and ordinary wear and tear soon developed defects, such as softening during warm days, cracking, disintegration, etc., until at the present time but few asphalt side-walks are laid. The next in order was the

PATENT STONE OR CONCRETE SIDE-WALK. Which, during the past ten years, has maintained great popularity, and stands to-day the most appreciated of side-walk materials; and is generally adopted by all who can afford the difference in cost over wood. A very large number of the wooden constructions have been torn up, and the patent stone substituted. The conflict between

SUPERVISOR FARWELL AND MAYOR BARTLETT is, the supervisor has aimed and introduced municipal legislation, to hereafter inhibit the construction of any more wooden side-walks within certain limits, and to compel the use of "natural stone, artificial stone, flagging, asphaltum, concrete, or bituminous rock." The mayor on the other hand, seems to think it possible with such a law in force, for importers and dealers in cement, asphaltum, flagging, etc., to "put up a job," and "make a corner" in the materials contemplated by Mr. Farwell's order, and so force property owners and the city to pay exorbitant prices for side-walk work. He further argues in favor of the lumber trade, claiming that there is no present prospect for another lumber combination such as has heretofore at times ruled the lumber market and shoved the price of rough lumber, which is now selling at fifteen dollars per thousand feet, up to twenty-five dollars. The public should be satisfied with the careful forethought of his excellency in the matter of guarding the common interests against the exactions of greedy and soulless monopolies, but the quality, sanitary and pleasurable features of the case seem to be ignored; that the more durable side-walks, as compared with wood, are far more protective of health, and much more agreeable to travel over. The innuendoes of "a cat in the meal bag" is freely hinted, and may exist, but this is a speculative presumption without proof; still it is a fact that the Patent stone is the only one of those named as allowable, likely to be used, and the whole matter simmers down to the question of a corner in cement, to prove the mayor's position correct. Owners can use either of several other kinds of side-walk, but nobody wants them, and entering them in the list of usables, is an appearance without substance.

Revival of Trade.

PREDICTIONS are freely made that the coming fall and winter months will witness a substantial revival of trade. Indications of this nature are observed almost daily, in all parts of the country, and are eagerly recorded by the newspapers, the public hunger for that sort of information having been sharpened by



months and years of enforced abstinence. The history of mercantile and manufacturing business in this country presents a series of reactions, and the pendulum is thought to have swung in this case as far in the direction of low prices and stagnant trade as it can go. Manifestly, therefore, any change that is in store for us is likely to be for the better. But we think it improbable, and not only improbable but undesirable, that any new "boom" of the 1880 pattern will be experienced in the near future. If there should be a gradual and healthy recovery in our industries, chiefly

distinguished by the absence of reckless speculation and intemperate railroad-building, it would be sufficient cause for thankfulness; and for such a change we may indulge a confident hope.

Boston has more apartment houses than any other two cities in the country. New York excepted, and of the most of them it may be said that if the evil one himself had been consulted they could not have been arranged with less regard for the health and comfort of the occupants.—Boston Post.