

Wheeler's Patent Wood Filler.

This celebrated Eastern preparation is now being introduced on this coast. For giving a natural and perfect finish to hard wood, it is unequalled.

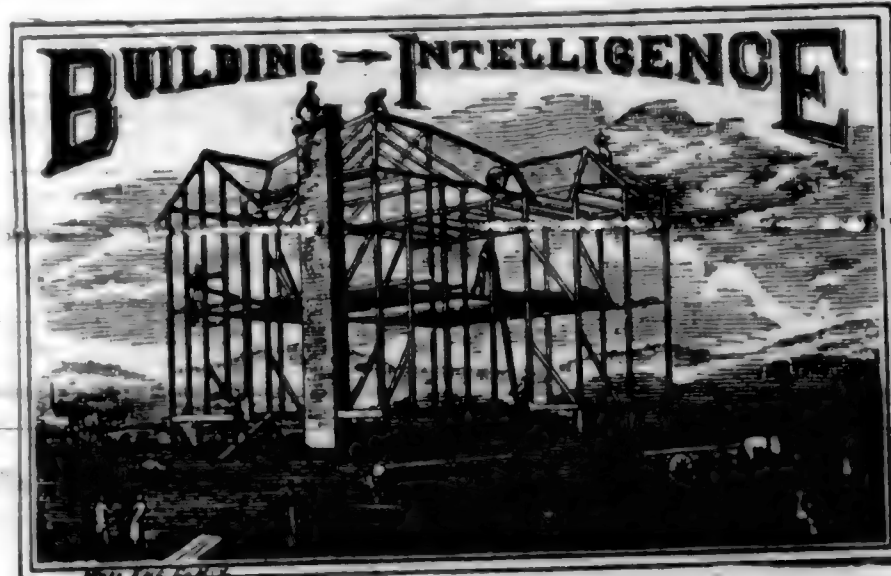
Breinig's Patent Lithogen Primer.

The best and cheapest results are obtained by the use of this Primer. It does its work perfectly; less paint is required than upon any other size or priming.

Breinig's Lithogen Silicate Paste Paint.

These paints are guaranteed to stand the climate of the Pacific coast better than any other preparation. They will last longer than the best white lead. Require only thinning with turpentine or oil, according to the character of the work.

Sample cards of colors and any information furnished as per ad. on page vi.

**SAN FRANCISCO.**

Jackson & Webster & Fillmore. Two-story frame. O. F. Wittram. A. W. P. Moore. C. A. Jackson. \$7,000.

Jackson, cor. Buchanan. Two-story frame. O. A. Wolters. A. Kenitzer & Raun. C. E. Farrell. \$6,000.

Geary, cor. Gough. Two-story frame. O. Dr. Stoddard. A. Schmidt & Havens. C. Terrill & Slaven. \$7,000.

Golden Gate Av. nr Fillmore. Alterations. O. G. Schutz. A. Behrens. C. L. D. Frichette. \$2,500.

Larkin, nr Bush. Improvements. O. G. Schroeder. C. B. Dryer. \$1,900.

Sacramento, nr Fillmore. Two-story frame. O. Wm. Patton. C. Cook & Johnston. \$5,000.

Bush, cor. Webster. Two-story frame. O. J. O. Van Bergen. A. S. & J. C. Newson. Day's work. \$12,000.

Morton, cor. Dupont. Three-story and basement brick. O. F. Hellwig. C. Mahoney Bros. \$20,000.

Cedar Av. x Polk & Larkin. Two-story frame. O. B. Fisher. C. J. H. McInnes. \$3,000.

Sutter, nr Jones. Alterations. O. R. H. McDonald. C. B. F. Ellis. \$8,000.

Fillmore & California & Sacramento. One-story frame. O. J. McNulty. Day's work. \$1,500.

Ellis & Polk & Van Ness Av. Three-story frame. O. Capt. F. Gee. A. Schmidt & Havens. C. W. M. Fletcher. \$18,000.

Ridley x Guerrero & Market. Three-story frame. O. B. S. D. Matthews. \$4,500.

Ridley, nr Valencia. Alterations. O. J. Holmes. A. Marquis. C. H. Sheldon. \$1,800.

Valencia, cor. 22nd. Two-story and basement frame. O. J. Schleff. Day's work. \$9,000.

California, cor. Devisadero. One-story and basement frame. O. J. Busch. O. Jas. Keane. C. Moore Bros. \$10,000.

Eddy, nr Jones. Four-story frame. O. J. Conolly. C. J. Oak. \$12,000.

Seventeenth & Dolores. One-story frame. O. J. Busch. O. G. E. Voelkel. C. F. Weischohl. \$4,500.

Howard, nr Twenty-Fifth. Two-story frame. O. Capt. Spear. Day's work. \$3,200.

Treat Av. nr Twenty-fourth. Two-story frame. O. R. Gantner. C. T. F. Mitchell. \$1,800.

Bush x Sansome & Montgomery. Alterations to brick building. O. R. H. McDonald. C. B. F. Ellis. \$8,000.

O. Bush & Schmidt. A. H. D. Mitchell. O. Wilbur. \$10,000.

Fifth, cor. King. One-story brick building. O. Standard Oil Co. C. W. E. Stevens. \$10,000.

Seventeenth & Sanchez. Two-story frame. O. E. Duane. A. W. Warren. C. L. Larrabee. \$3,400.

Harrison, nr Main. Repairs. O. J. Moore. C. W. Kinsman. \$900.

Second & Folsom & Howard. Additions to building. O. J. Wieland. O. J. Hafl. \$25,000.

Fourth & Berry. Two-story frame. O. Union Ice Co. Day's work. \$7,000.

Octavia, cor. Ivy Av. Improvements. O. L. Gendotti. A. Eisen & Co. Day's work. \$1,200.

Thirtieth, nr Valencia. Alterations. O. H. F. Sammi. A. G. E. Voelkel. Day's work. \$500.

Polk, nr McCallister. One-story frame. O. J. Pfeister. Day's work. \$500.

Ridley, nr Valencia. Three-story frame. O. C. J. Holmes. A. Marquis. C. Cummings & Reiman. \$8,000.

Henry, nr 14th. Additions. O. J. G. Wilkins. C. D. B. Sprangler. \$1,300.

Fifteenth, x Noe & Market. Two-story frame. O. Mrs. C. C. McQuade. C. R. M. Grant. \$2,400.

Harrison, x 24th and 25th. One-story frame. O. B. Ahern. \$900.

Natoma, x 6th and 7th. Additions. O. P. Connell. Day's work. \$1,200.

Twentieth, nr Guerrero. Alterations. O. I. Thompson. O. T. F. Mitchell. \$800.

San Bruno Road, nr 15th Avenue. One-story frame. O. E. Sidel. C. I. T. Mitchell. \$900.

Taylor x Greenwich & Fillmore. Two-story and basement frame. O. G. Biedel. O. H. Gelfusa. C. J. C. Classen. \$4,800.

Castro x 19th & 20th. Two-story frame. O. Mrs. Banning. A. H. Gelfusa. \$2,500.

First x Mission & Howard. Two-story basement frame. O. Allyn & White. A. Kenitzer & Raun. C. Plums. \$3,900.

Battery nr California. Additions. O. C. H. Hathaway. A. Marquis. C. Plummer. \$8,000.

Washington x Gough & Franklin. Two-story and basement frame. O. A. Boquet. A. G. E. Voelkel. C. J. McKay. \$8,000.

Fair Oaks, nr Twenty-third. Two-story frame. O. Cleveland. A. Geddes. \$2,000.

O. S. E. Thompson. \$3,000.

Post x Powell & Mason. Two-story frame. O. Mrs. Adele Goodman. A. Schmidt & Havens. C. Haskell & White. \$8,000.

Taylor, cor. Turk. Alterations. O. L. Mejaason. A. Huene & Everett. C. W. B. Kreger. \$2,200.

Jones & Lincoln. Two-story and basement frame. O. H. H. Bruns. A. Eisen & Co. C. J. Bruce. \$2,700.

Sutter, cor. Franklin. Two-story and attic frame. O. J. Spruance. A. Schmidt & Havens. C. Chisholm. \$18,000.

Geary, cor. Gough. Three two-story frame. O. D. S. Whitney. A. Schmidt & Havens. C. F. Klatt. \$14,000.

Fillmore x Jackson & Pacific. Two-story and attic frame. O. J. Washburn. A. Schmidt & Havens. C. A. Jackson. \$5,500.

Sixth & Mission. Fitting up stores. O. J. Moran. A. Eisen & Co. C. Waterbury & Maxwell. \$1,000.

1010 Post. Alterations. O. J. Eppinger. A. Wolfe & Son. C. Moore Bros. \$1,000.

1916 Sacramento. Alterations. O. H. W. Newbauer. A. Wolfe & Son. C. J. Furness. \$1,500.

Tyler, cor. Laguna. Additions. A. Wolfe & Son. \$1,800.

OAKLAND.

Franklin, nr 16th. Alterations. O. Mrs. E. Merrill. C. Henderson. \$3,700.

Fourteenth, nr Filbert. One-story frame. O. G. M. Fisher. C. Knight & Littlefield. \$1,600.

Tenth and Kirkham. Three one-story frame. O. Apgar. C. W. A. Knowles. \$3,500.

Kirkham, nr Tenth. Two one-story frame. O. Apgar. C. W. A. Knowles. \$2,400.

Seventh, nr Adeline. Two-story frame. O. B. J. Kolb. \$3,500.

Eighteenth, x Curtis and Market. Two-story frame. O. Mrs. Ainsworth. C. O. B. Kimball. \$3,900.

Linden, x Seventh and Eighteenth. One-story frame. O. Mrs. Hindermeyer. C. E. Child. \$900.

Union, x Eighth and Tenth. One-story frame. O. W. F. Kroll. C. Higgins & Armstrong. \$1,600.

Eight, nr Cypress. Two-story frame. O. L. P. Burger. C. J. S. Tiffels. \$2,000.

Seventh and Campbell. Two-story frame. O. Cleveland. A. Geddes. \$2,000.

O. J. Wulf. O. J. F. Gleisner. \$3,500.

Eligth, nr Market. One and a half-story frame. O. G. W. Scott. C. Knight & Littlefield. \$1,500.

SACRAMENTO. O. Street, x 16th and 17th. Two-story frame. O. E. F. Smith. A. Babson & Seadler. C. Carle & Croly. \$4,000.

4, x I and J. O. N. G. Curtis. A. N. D. Goodell. C. Carle & Croly. \$4,500.

8th & N. Two frame dwellings. O. O. N. Hartwell. C. J. Ough. \$4,500.

ALAMEDA. San Antonio Avenue, x Park & Oak. One-story cottage. O. J. B. Patterson. C. Wasson & Pattiani. \$1,800.

Central Av. cor Third. Additions. O. C. Bahlheimer. C. A. Denke. \$1,000.

McPherson and Central Av. One-story and basement frame. O. S. Strevator. C. H. Fosse. \$1,000.

Morton, nr R. R. Av. One-story frame. O. B. J. Sedgely. \$1,600.

MERCED. Two-story and basement brick. O. Buffner & Dixon. A. H. D. Mitchell. C. Beck & Harrington. \$10,000.

MISCELLANEOUS. Colusa. Two-story brick. O. Wm. Miller. Day's work. \$10,000.

Near Town. Two-story frame. O. G. Molton. A. Matthews. Day's work. \$5,000.

Two-story frame. O. E. Graham. Day's work. \$2,500.

San Rafael. Fifth, x F & G. Two-story and basement frame. O. Barstow. A. W. Wharf. C. D. Ennis. \$4,000.

Additions to building, California Av. O. Mrs. J. Sims. C. W. Bar. \$1,000.

Petaluma. Corner B and Ninth. Frame dwelling. O. Blackburn. C. Sam. Rodd. \$3,500.

Riverside. Two-story brick building. O. F. W. Green. \$3,500.

Berkeley. Opposite Lypham. One-story frame. O. Mrs. Sedgwick. C. S. Child. \$2,000.

LUMBER.

Common Rough, up to 40 feet, per M feet. \$22 50
" 41 to 50 " " " 23 50
" 51 to 60 " " " 24 50
" 61 to 70 " " " 25 50
" 71 to 80 " " " 26 50
Refuse Rough. " " " 18 50

Common Rough, sized with planer \$2 additional on above rates, per M feet. \$25 50
No. 1 Flooring, 6 inches and over, " " 37 50
Flooring and Stepping " " 37 50

Rough Clear for Flooring, \$1 less than above rates. \$36 50
Second quality Flooring and Stepping, per M feet 37 50
Ship Plank, Rough. " " 32 50
Planed 4 sides. " " 35 00
Deck Plank, Rough. " " 33 50
Dressed. " " 37 50

Laths. " " per M 3 75
Wool Slats. " " 12 00
Shakes. " " 12 00
Redwood Posts. " " per piece 17 1/2

Rough Merchandise. " " per M feet \$22 50
" Refuse. " " 18 50
Surface No. 1. " " 37 50
" 1 x 6. " " 35 00
" No. 2. " " 35 00
" No. 1, 1 x 10. " " 37 50
" No. 2. " " 32 50
" Under 10 feet. " " 37 50
T. & G., 1 1/2 x 4 and 1 1/2 x 6. " " 37 50
" 6 in. 12 ft. and over. " " 32 50
" " 7 to 11 feet. " " 30 00
" " No. 12. " " 27 50
T. & G., Beaded, 12 feet and over. " " 35 00
" " 7 to 11 feet. " " 30 00
" " under 7 feet. " " 27 50
Half-inch Surface. " " 27 50
Pickets, Fancy. " " 20 00
" Rough, Pointed. " " 17 50
" Square. " " 25 00
Siding, 3/4 inch. " " per M 2 50
Shingles. " " 30 00
Battens, 3/4 inch, lineal feet. " " 10

NAELS.

10 to 60 pennies, are quoted at. \$4 70
" 8 " " 5 00
" 6 " " 5 50
" 5 and 4 " " 6 00
" 4 and 5 pennies, brad heads, 3/4. " 6 25
" 8 " " 6 50
" 10 and upward " 7 15
" 3 penny fine " 7 50

VOLUME IV.
NUMBER 4.

THE CALIFORNIA ARCHITECT



BUILDING NEWS.

Published on the 15th of each month
BY THE
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Advertisements alone inserted that refer to materials used in the construction and furnishing of houses, and to matters and trades belonging to the building interest.

NO OTHERS RECEIVED.

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" " 1881 and 1882, each. \$2.50
" " 1880 (only a few left). \$2.00

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SAN FRANCISCO, APRIL, 1883.

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Building Activities and Prospects.

In previous issues of this journal during the current year, we have been enabled to present most encouraging and cheering accounts of the building prospects in San Francisco. But as the months roll round we find the increase in number of contracts let, and the amount of money expended in building operations, to be much greater than we anticipated at the commencement of the building season. The unpropitious state of the weather during the period from January 1st up to the commencement of the late rains caused a general feeling of dispondency, and the almost universal opinion prevailed that failure of crops and depression of all kinds of business were sure to follow—the building interest included. But the glorious rains which came with the closing days of March and the opening days of April, dispelled all doubts as to the crop results for 1883, and caused universal rejoicing and gladness throughout the entire State and coast.

The facts stated in another article in this issue illustrates the magnificent results reasonably to be anticipated for the current year; our building intelligence report the first quarter of 1883, exclusive of the report in present issue, being more than three times greater than that of 1882 up to the same period—a contrast which conclusively demonstrates that San Francisco is enjoying a splendid degree of prosperity, not merely in the isolated matter of building improvements, but generally; for it requires general business prosperities to enable or justify expenditures in the erection of buildings, the former always being the outgrowth of the latter.

Comparison of Building Operations.

A GOOD SHOWING ASSURED FOR 1883.

A few weeks ago, and one heard on all sides forebodings of dull times ahead for the balance of this year. Notwithstanding the discouraging rain prospects existing a few weeks ago, we felt confident that the building interest would be very brisk. This result was arrived at by almost weekly comparisons with the same dates in 1882.

We find in the previous year that the sum total of improvements—brick, frame, and alterations—reported for the first 3 months, amounted to

51 BUILDINGS OF THE VALUE OF \$306,060.

For the first three months of the present year we find total improvements to be

142 BUILDINGS OF THE VALUE OF \$1,013,197.

In the year 1882 we added 10 per cent. of the sum total for buildings that may have been overlooked, and for extras, etc., etc. In the amount given for this year we have added but 5 per cent. This is due to the fact that our force of reporters has been increased, and we feel confident that but few new jobs are started, upon which a call is not made by one of our reportorial staff.

Surely there is something suggestive in the above figures, which proves as correct the thoughts contained in another article in this issue, that "Capital will not remain idle."

This year promises to be one of the best in regard to building operations that this State has been blessed with for at least 10 or 12 years. Mechanics of all kinds are in demand at advanced wages. Prices of all kinds of materials

are stiff, with a tendency upward. With a bountiful harvest assured, there can be but one drawback to the general prosperity, and that will be the lack of labor to move our immense grain and fruit crops.

Capital Will Not Remain Idle.

We predict a large increase of building operations this year, from the simple fact stated in the heading of this article. Money is very plentiful and will of necessity be used where it will bring in to its owner some recompense. If the wheat crop is short, and no opportunity for speculation be offered, then capitalists will invest their money in a *sure thing*; and what more favorable project offers than that of buying real estate and erecting suitable buildings for rent?

From careful inquiry we find that *rentable* houses are hard to obtain at present; and with the visit of the Knights a few months hence, there will be such a demand for accommodations that an empty house will be a very rare thing to find. Speculators are already at work trying to get up a corner in rooms.

A prominent capitalist visited our office during the month and inquired particular in reference to the cost of building flats. His idea is to buy lots in various parts of the city and erect apartment houses capable of accommodating four separate families. He assured us that two or three well-known gentlemen would co-operate with him in the idea he intends to carry out. His intention was to place part of his money in a flour mill, but thinks there is a much better field for investment in the erection of well built "flats." Property at the Mission has been talked of as the probable location of the houses, wisely so we think, as the cable lines soon to be in operation will cause this beautiful part of our city to be eagerly sought after for comfortable homes.

Meanwhile, we are pleased to note the evident decay of the Pine Street excitement. One thing sure, if this were not so our bonanza kings would not put their millions into real estate. The withdrawal of the money from the Nevada Bank for the purpose of real estate investment is an event well calculated to make property owners all over the city feel confident in the value of their investments, and this confidence is strengthened by the fact, that the result of the bank's investment has been only obtained after a careful review of the market, and with the certain knowledge on the part of the investors that no surer, safer, or profitable way of getting a fair percentage on their money could be thought of than the one they adopted. Surely it is well said that capital will not remain idle.

Another Proof of Prosperity.

The fact that nearly every architect's office in San Francisco is "full of work," and the entire draughtsmen's forces of the coast is fully employed, with vacancies in many of the offices for good draughtsmen, illustrates a degree of prosperity greater than has been enjoyed for many years. Nor is this confined to San Francisco; our advices from Portland, Oregon, Seattle, Los Angeles, and other points and places on the Pacific Coast, show the same state of facts, and illustrate the pleasing degree of prosperity prevailing throughout the entire western confines of our favored country.

The Gradual Decadence of the So-Called Eastlake Style of Architecture.

This style of Architecture when first introduced into California began at once to attract the attention of a certain class of property owners, who saw in the new style a chance to build fine-appearing and apparently well-constructed houses, erected in many cases to add to the value of their contiguous property.

Many scarcely gave a thought as to the manner of construction of the buildings, their sole aim being to present a showy house. This they accomplished by a liberal plastering on of "gingerbread" work, and by engaging the services of painters who were experts in the mixing of fancy colors. If Charles L. Eastlake could be brought suddenly to face with one of these imitation Chinese-colored houses (named after him), we can well imagine the looks of horror that would overspread his features, as he would gaze on the wooden foundation, painted so as to resemble moss-covered rock; hoods over windows of a chocolate color, relieved by brackets painted with a beautiful colour de mouse; window sash of a red, the brilliancy of which could only be exceeded by that of pure vermilion; fantastically beautiful dragons with large eyes, and mouths open as if to devour the beauties of the surrounding scene; the upper sash of the windows divided into small squares, so that in case of necessity they can be taken out and used for checker-boards; a few dozen strips of wood, beautifully interlaced for a cornice, giving the birds a nice roosting place for their weary feet, etc.

How grandly kind the nature of the so-called Eastlake architects all over the State must be to thus provide for the wants of every one, birds as well as men! Tears come to the eyes of the beholders as they gaze on the emblems erected on the house-tops to the memory of the great and good demons and dragons who departed this life in the centuries B. C. May their memory ever be as green—as the ideas of some of these E. A.

We are well pleased to note the evident decay of the monstrosity ideas that have been too often of late introduced into the architecture of this coast. Many houses, built, a few years ago according to the ideas then in vogue, are now being changed into a style more in keeping with the climate of California. Wood will shrink, and California redwood will shrink endways as well as any other may. The frail but fancy work adopted in many of the dwellings under notice have become so warped and the joints so opened by shrinkage, that one would imagine the houses were twenty years old instead of but three. Another cause for the cracking, twisting, and shrinkage of the fancywork lies in the fact that from the intricacies of the different parts of the work, much of it does not receive a single touch of paint. That exposed to the gaze is well covered, but all the little nooks, corners, and parts that cannot be seen from the street, although readily accessible from a staging, fail to receive a single touch of that which is absolutely necessary to prevent lumber from cracking and shrinking, and so after a few years much of the "gingerbread" has to be removed, that the house may present a creditable appearance.

In our April number, 1882, we presented to our readers a letter from Mr. Eastlake, giving his views in regard to the style of Architecture named after him. The modesty of the gentleman mentioned forbade him saying anything more than to discountenance the use of his name to the style mentioned.

Briefly stated, his views are as follows: He "recommends good honest work, no dowels, no glue, no putty or paint, without any reference to the form of style of architecture, and his remarks and recommendations referred

more particularly to furniture and inside than to outside decorations."

The grand principle of this style is contained in the two words—"honest work"; and when our architects and builders follow the true intent and meaning of those two words, they will lay the foundation for the coming new style of American Architecture.

San Francisco Chapter American Institute of Architects.

The regular monthly meeting of this Chapter was held in the rooms of San Francisco Art Association, on Friday evening, April 6th. President John Wright in the chair.

The minutes of preceding meeting were read and approved.

The Professors in charge of the various classes instituted by this Chapter reported as follows:

F. Marion Wells, in charge of the modeling class, reported that his class was well established, and the students took much interest in their study. He asked permission of the Chapter to procure casts from models in the Art Association for the benefit of the students. The Chapter acceded to his request, authorizing him to procure the necessary material, with the understanding that the bill for the same be presented at the next meeting.

Mr. Sanders, in charge of the class in drawing, reported very favorable progress of the pupils under his charge. It was the intention to have the pupils visit buildings in process of erection, and thus supplement office work by instruction in the practical part of the profession.

Mr. Pissis, in charge of the class in practical architecture, reported that he had given his class for a subject, the front entrance to the Mint. The first specimens were crude; he pointed out the defects and the remedy in each drawing, and a second trial by the students showed a vast improvement. He felt confident after another trial that their efforts would be worthy of insertion in the official organ of the Chapter.

Mr. Bryant, who is to have charge of the class in carving, was present, and expressed his willingness to give instruction as soon as a suitable place is procured. On motion, the Secretary was instructed to notify the Trustees of the Mechanics' Institute of the intention of this Chapter to establish a class in carving, and request them if possible to give a space in the fair building for the use of the students.

Proposition for membership as draughtsman was received from Mr. W. C. Jordan; Messrs. Curlett, Moore, and Pissis were appointed a committee to report on same.

A work entitled "Charitable and Parochial Establishments," was received from H. Saxon Snell of London, England. It was examined with interest by all the members present. The Secretary was instructed to notify the donor of the acceptance of the work by the Chapter, and a unanimous vote of thanks was tendered the gentleman for his donation.

A portfolio of sketches was received from the Boston Architectural Association. (These sketches are published for the benefit of the profession at large, and complimentary copies are sent to the several Chapters of the A. I. A. for inspection.) Secretary was instructed to thank the Association for the kindness shown.

A committee of two—Wright and Curlett—were appointed to consider the feasibility of procuring a permanent room for the Association.

The picnic committee reported that arrangements were being made by which the Association, during the month, could visit the red woods in the neighborhood of Duncan's Mills. Report received, and the Association decided to go. The Secretary was instructed to visit the members and ascertain exactly how many could avail themselves of the opportunity.

Short Supply of Skilled Labor in San Francisco.

During the year 1882, there was at times a decided lack of skilled labor in all branches of mechanism in San Francisco, and at no time a surplus of good workmen; so much so, that sign-boards posted on buildings, "Carpenters Wanted," and on workshops, foundries, machine shops, etc., "Hands Wanted," were of common occurrence; and as an inducement, extra wages were in many cases offered. The brick-laying forces were also inadequate for the labor purposes of 1882, and but few jobs were carried through on time. With such a state of things prevailing during the past year, what may be expected for 1883, with the showing already made in these columns, of a threefold increase in the amount of building contracts let during the first quarter of 1883. We hope that among the thousands of new-comers to this State, there are a goodly number of first-class mechanics, all of whom will find ready employment. This shortness of labor supply is not confined to building mechanics, but extends to nearly if not quite all other classes of skilled labor. From inquiries among the machine shops, boiler makers, glass cutters, and others, we learn that the same condition of things exists, especially so as far as competent workmen are concerned.

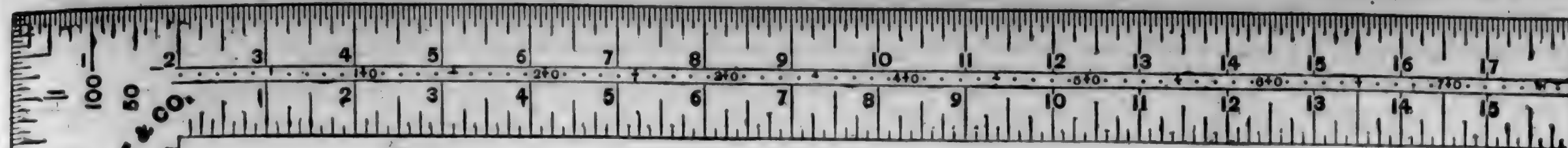
Iron Girders over Store Fronts.

The cast-iron girder device used in the erection of Mr. Somer's building on Market Street was duly noticed in this journal, and recommended as possessing special, self-sustaining features, with no rests or bearings except at the ends—the centers being sustained by a perfect trap principle sufficient to carry ten times the weight placed upon them. We notice a similar modified girder construction in use in the building now in progress of erection on Mission Street between Fifth and Sixth Streets, which spans the respective openings without intervening supports between the ends. This is a desirable result in many cases, especially where open fronts are desired, while in any case, the girder referred to is unsurpassed for solidity and strength, and is less expensive than some of the other devices sometimes used. Mr. P. H. Jackson has devoted a very large amount of time and skill in working up this girder device, in which there is demonstrated a degree of mechanical science which should commend it to general favor. It is worthy the attention of architects and owners having in hand or contemplating the erection of brick buildings.

As Seen from the Railroad.

During the past month we visited the lower part of this State. But few new buildings are to be seen in progress of erection along the line of the railroad. The towns all seemed to be resting on improvements already completed. At Los Angeles, however, one sees on all sides evidences of prosperity. Numerous buildings are in process of erection on every side, some of them being fine four-story brick buildings. At Riverside and San Bernardino many buildings are in course of construction. Since the late rains everything has changed considerably, and every one seems to feel the effect of the welcome moisture. New buildings are talked of on every hand, and we hope next month to give a large report from this section. We have made arrangements by which hereafter we will receive the building intelligence from all the principal towns.

The new and enlarged edition of the Steel Square and its Uses, and the California Architect and Building News for one year, will be sent to any address upon receipt of \$2.50.



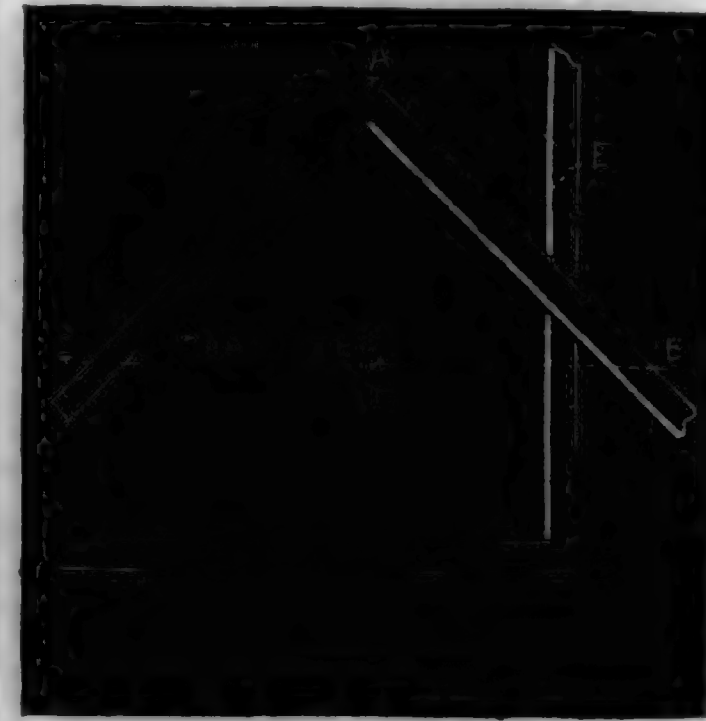
Uses of the Steel Square.

Although all the matter given below may not strictly come under the head of Steel Square and its Uses, it has been placed in this column at the request of the parties sending us the questions that are answered; several of them are regular contributors to this series of articles, and desire to have all matter and questions together. In a short time, Part No. 1 will be finished, and our articles will then be devoted to the consideration of the more advanced mechanics.

EDS. ARCHITECT: "A flask-maker in a foundry often has occasion to change a square flask into an octagon. I want to know a rule by which the length of the pieces nailed in across the corners is obtained."

An octagon is always as 5 to 12. Take a flask 6 feet across; multiply 5 by 6=30, and divide by 12=2 feet 6 inches. Cut the miter to suit the above measurement, nail the pieces in the corners of the square box, and you have the required shape. That is, to find the length of the diagonal pieces multiply the width of box by 5, and divide the amount by 12.

In answer to questions in our last:



The above cut shows at a glance how the diameter and center of a circle can be found. Place the square as shown at A B C. The line B C will be the diameter. Place the square so that the point of the square A will touch any other point of the circle as at D, draw E F. The point of intersection H will be the center of the circle.

An ellipse can be made with the square by using that instrument in place of a trammel. The tracer or rod should have pins in the required points, which can be pressed against the inner sides of the square, as the rod is moved to form the ellipse.

J. C. is informed that no regular rule can be laid down for the projection of cornices on buildings. Much depends on the style of architecture employed. To use a general rule, however, we might say that for a building 70 feet in height, the proper projection should be about 36 inches.

Too much time and space would be required to fully answer E. R. in regard to the method of ascertaining exactly the proper sizes that trimmers and headers should be framed in order to carry any certain weight. In this State it is the usual custom in dwelling houses to make the headers either one inch thicker than the common joists, or else nail two pieces of the latter together. In stores and warehouses, the headers are generally of double thickness, or same rule can be used as for dwellings. The only advantage of the latter method is that it saves the necessity of providing pieces of extra thickness just for headers, etc. Trimmers should be of same size as the headers.

L. R. suggests an improvement in the construction of a trammel. Instead of the sides of the grooves being square, they are beveled so as to resemble dove-tails. The advantage of thus doing, is to prevent the small blocks used to slide in the grooves from slipping while describing the elliptic curve.

The grinding of tools so that a perfect bevel can be formed without unnecessary loss of material, is an accomplishment only gained by close attention and much practice. One of the most common errors, especially of a novice, is to continue the grinding until a feather edge is

formed. This is removed by drawing the edge across a piece of wood; after trying on his thumb the sharpness of the instrument being operated upon, a few more touches are given upon the stone. The chances are that another feather edge will be produced, and the above operation be repeated probably three or four times. This simply means a loss of from 1-32 to 1-16 of an inch of metal unused. The proper method is to grind the tool so that the edge will be of uniform thickness, and carefully noticing the limit to which it can be brought without producing a feather edge. After the latter has been formed, the operator is left without a guide to determine the thickness of the edge. Bring the edge of your tool near perfect as possible without feathering, and then finish the operation on an oil-stone.

Steel Square Miters.

In the June number of this journal, 1882, we presented an ORIGINAL diagram, giving the figures on the square, which, if used as per directions accompanying the engraving, would enable the mechanic to readily make the miter necessary to form any given figure.

The figures as given were obtained only after much labor and study. They were verified by a practical mechanic, and we presented them to our readers as being the FIRST ATTEMPT to give the general public the information contained in the article referred to.

In a late number of the *Carpenters' and Builders' Journal* we find all our figures quoted as original matter. In the April number of the *Builder and Wood Worker* we find our figures again quoted, giving credit to the first-named journal. We have noticed the same figures in several others besides these named.

We do not object to our exchanges copying any article that may be deemed worthy of a place in their columns, but we trust, at least, that due credit will be given for articles original with the editors of this journal.



To E. F.: There are a great many preparations to coat blackboards, but the following is one of the best:

Alcohol 95 per cent. (4 pints); shellac, 8 ounces; lamp-black, 12 drachms; ultramarine blue, 20 drachms; powdered rotten stone, 4 ounces; powdered pumice stone, 6 ounces; dissolve the shellac in the alcohol, then add the other ingredients, finely powdered, and shake well. Be sure the surface of the boards are perfectly smooth and free from grease or dirt.

R. S. will find an answer to his question in the following:

The fancy imitation inlaid work now being introduced in the city is made as follows: The wood is first grained in oil; when dry, grain the whole in distemper; have a paper with the design drawn thereon, the back of which has been rubbed with whiting, place it on the wood, and with a pointed stick trace the design, then with a brush and quick varnish trace the whole of the design. When the varnish is dry, with a sponge and water remove the distemper where the varnish has not touched. This, if well executed, presents a most beautiful imitation of inlaid wood.

Articles which have been formerly glued, but broken again at the old place, should be thoroughly cleansed of all dirt and old glue by being soaked in hot water, using a sponge for the purpose. Do not attempt to scrape off the old material, or the pieces will no longer fit together. Dry the pieces thoroughly; warm the joints, reglue them, and you can be sure they will stick.

5 pounds of 4d nails are required to lay 1,000 shingles.

5 1/2 pounds of 3d fine nails are required to put on 1,000 laths.

Studding over 2 inches in thickness should have the 2 edges chamfered so that the plastering will have more room for a perfect key.

Setting out Stairs.

After determining the height of the riser from the "storey rod," the right proportion of tread must be found. Sometimes steps are arranged so that it is easier for a man to go up "two at a time" than to walk up in the proper manner. The reason is, both tread and riser are made small. When a riser is reduced, the tread must be increased; and the contrary when the riser is increased, the tread must be reduced in width. Joiners do not often break this rule, but masons very often do, notably in steps leading to and from railway stations. A simple rule may be given for finding a suitable proportion.

Take any suitable step as a standard step, that is to say, if you know of a staircase which is comfortable and easy to walk up, take it as a standard to gauge others by. Suppose you have a riser given, and require the width of a suitable tread, make use of the following proportion:

As the given riser : standard riser :: standard tread : required tread.

If the tread is given and the riser required, then—

As the given tread : standard tread :: standard riser : required riser.

To work out an example: Suppose 10 inch tread and 7 inch riser be taken as a suitable step, let 6 inch be the given riser; then by substituting the value of treads and risers for the names, we have—as 6' : 7' :: 10' : the required tread; this gives 8 2/3 or 11 1/3 for the size of a tread. Nicholson gives as a standard a tread of 12' to a riser of 6 1/2'. Working out the example given by this proportion, we get 11' instead of 11 1/3'; either of these sizes will be an agreeable step.

A rough and ready rule for the usual sizes of treads and risers is to make 2 risers and one tread equal to 24 inches.

(From a new work entitled Handrailing and Staircasing.)

Unbalanced Bids.

This article is so pertinent to several similar transactions which have occurred in this city, that it is with pleasure we quote it from the *Sanitary Engineer* of February 15th:

A case illustrating the chance for fraud which exists in the ordinary method of letting work by contract to the lowest bidder, is now pending in the Supreme Court in this city.

A small sewer was to be built in the Twenty-third ward. An estimate was made by the assistant engineer in charge of that division, giving the probable quantities of the several items on which proposals were to be based, and by which the bids made were to be compared. This estimate was approved in due course by the engineer in chief of the department of parks, and the contract was advertised by the department. Several bids were received. The one which footed up the least was made by the son of the assistant engineer, who made up the estimate of the quantities. This bid was an "unbalanced" or "gambling" bid evidently, for the prices bid for all the items were very low except for "rock excavations," which was placed at \$50 per cubic yard, while other bidders only bid from \$5 to \$7 per cubic yard for the same, but the quantity of rock excavation being estimated at only 10 cubic yards, the \$50 bid was easily balanced by the low prices on the larger items. The law requires that every contract shall be let to the lowest bidder, and the Comptroller and the Park Commissioners could do nothing but award the work to this suspicious bid. But when the sewer was built it was found that there were 297 cubic yards of rock excavation instead of 10, and the contractor's final estimate for that item only was \$14,850 for work not worth more than \$1,500 at the most. This made the work cost the city some \$13,000 more than it would if the contract had been awarded to a higher bidder on the first estimate.

The presumption of fraud in this case was so strong, owing to the peculiar relations of the assistant engineer and the successful bidder, that the chief engineer very properly took measures, in conjunction with the Comptroller, to resist the payment of the final estimate due under the contract. The contractor applied to the Supreme Court for a mandamus to compel payment, and Justice Barrett has refused to grant it, which will oblige the contractor to have the whole matter ventilated if he attempts to push his claim.

Now there was nothing inherently wrong in the contractor making such a bid as this if he had reason to believe that the amount of rock as given in the preliminary estimate would be largely exceeded in the execution of the work, provided that he had not received the grounds for his belief from his own father, who made the preliminary estimate. Many a reputable contractor has made such bids, based on his own judgment, of the unseen parts of work as opposed to that of the engineer, and has made money at it. It is sharp practice, but it is a legitimate business transaction. It is not fair, however,

to the city or corporation which has to pay for the work, and its allowance offers great opportunities for fraudulent collusion, as in this case and in the cases of the canal contracts which were ventilated by Governor Tilden a few years ago.

A remedy for the evil has been sought by engineers, but so far no efficient mode of guarding against it has been put into practice. A plan which seemed to promise efficient results was devised a few years ago by the engineer of one of the city departments, who had intended to try it in the next contracts he was to let, but it happened that his head fell into the waste basket while he was preparing the papers, and his successor was afraid to venture on any new experiments until he knew whether his own head was secure on his shoulders. The plan suggested was to enumerate the items and their quantities as usual, and to affix to each a fair price for that class of work, and foot up the total. Then require each bidder to make a proposition to do the work for a gross sum, with the proviso that he should receive as full compensation for each class of work a price bearing the same proportion to the engineer's figures that his gross bid bore to the engineer's total estimate. To illustrate: Suppose that the engineer's estimate of a piece of work was:

100,000 cu. yds. earth excavation	@ \$0.15	\$15,000
10,000 cu. yds. rock	@ 1.50	15,000
5,000 cu. yds. cut stone masonry	@ 22.00	110,000
8,000 cu. yds. rubble masonry	@ 6.00	48,000
2,200 cu. yds. concrete	@ 5.00	11,000
Total		\$169,000

Bidders would be required to name a gross sum. If, for instance, a contractor was satisfied that he could do the work for five per cent. less than the estimated cost, he would bid \$160,550.

In drawing the contract, the prices of all the items would be scaled down 5 per cent. and would be inserted in the contract thus:

For earth excavation	\$0.14 1/4
For rock	1.42 1/2
For cut stone	21.90
For rubble	5.70
For concrete	4.75

Now if this work were let in the ordinary way, a contractor who had reason to believe the rock excavation would turn out to be much greater than was estimated, and that the rubble masonry would be increased, and the cut stone masonry diminished, might bid as follows:

For earth excavation, 100,000 cu. yds. @ \$0.10	\$10,000
For rock, 10,000 cu. yds. @ 2.00	20,000
For cut stone, 5,000 cu. yds. @ 5.00	25,000
For rubble, 8,000 cu. yds. @ 11.00	88,000
For concrete, 2,200 cu. yds. @ 4.50	9,900
Total	\$162,900

which would make his proposal \$2,650 lower than the other man who bid fair prices.

If his surmise was correct, and the quantities were varied as he supposed, the two bids would stand as follows on the final estimate:

	By the fair bid.	By the unbalanced bid.
Earth, 80,000 @ \$0.14 1/4	\$11,400	@ \$0.10 \$8,000
Rock, 30,000 @ 1.42 1/2	42,750	@ 2.00 60,000
Cut stone, 2,000 @ 20.90	41,800	@ 5.00 10,000
Rubble, 6,000 @ 5.70	34,200	@ 11.00 66,000
Concrete, 2,200 @ 4.75	10,450	@ 4.50 9,900
Total	\$102,125	\$154,900

That is to say, the unbalanced bid, which was apparently the lowest, would result in costing the corporation more than three times as much as the fair bid, and would yield the contractor about 280 per cent. clear profits instead of the fair profit of 25 per cent. This is a very fair specimen of what can be either lost by careless or tricky methods of letting contracts to the lowest bidder, or saved by judicious methods. A competent engineer is as well able to judge of the proportionate prices which should be paid for certain classes of work as a contractor is. In fact, most large contractors now employ engineers to make up their figures for them, and if the proposed plan were put into practice, no attempt at fraud of the kind produced by unbalanced prices attached to erroneous quantities, could be made without being sure of immediate detection by the public and all the bidders.

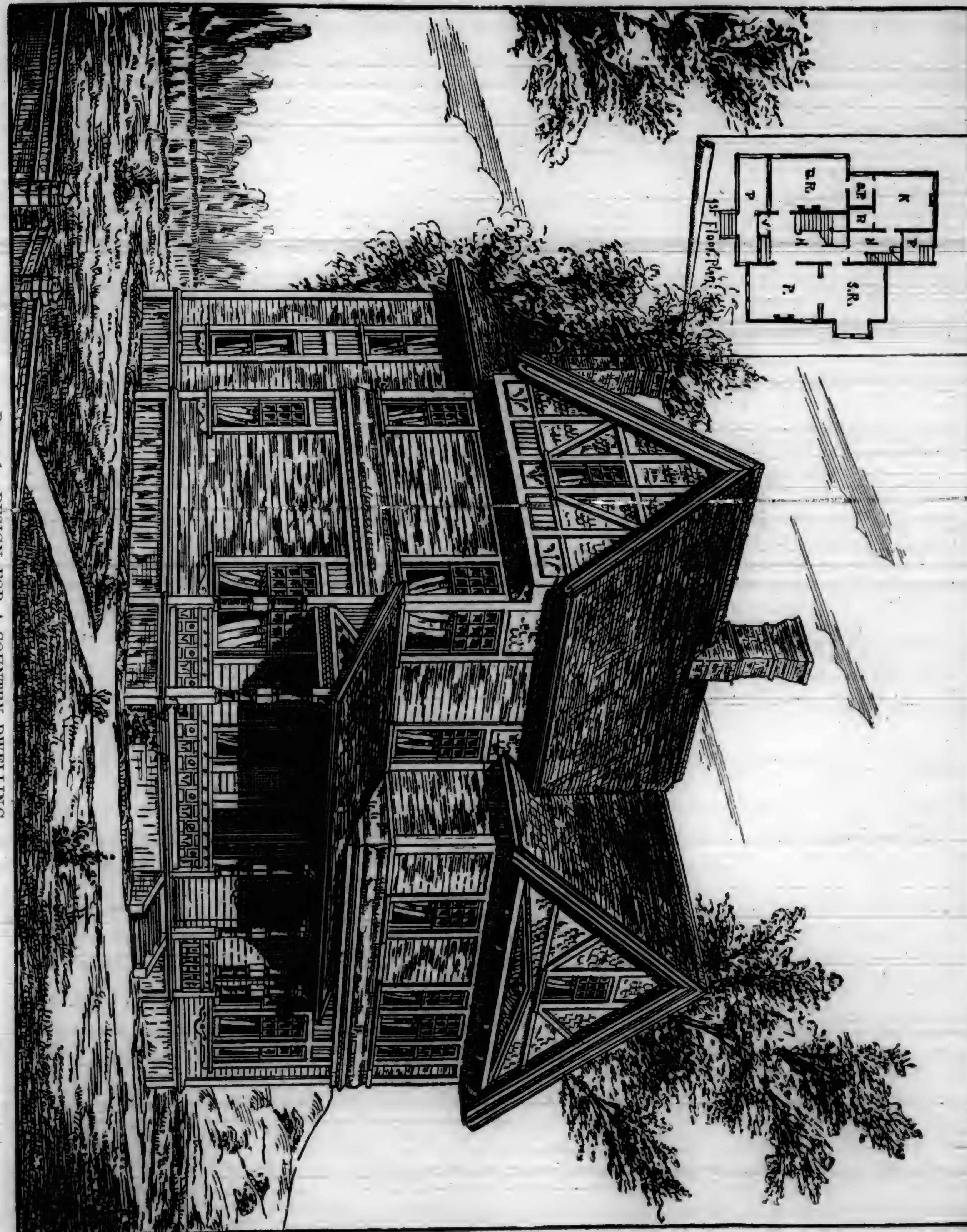


PLATE I.—DESIGN FOR A COUNTRY DWELLING.

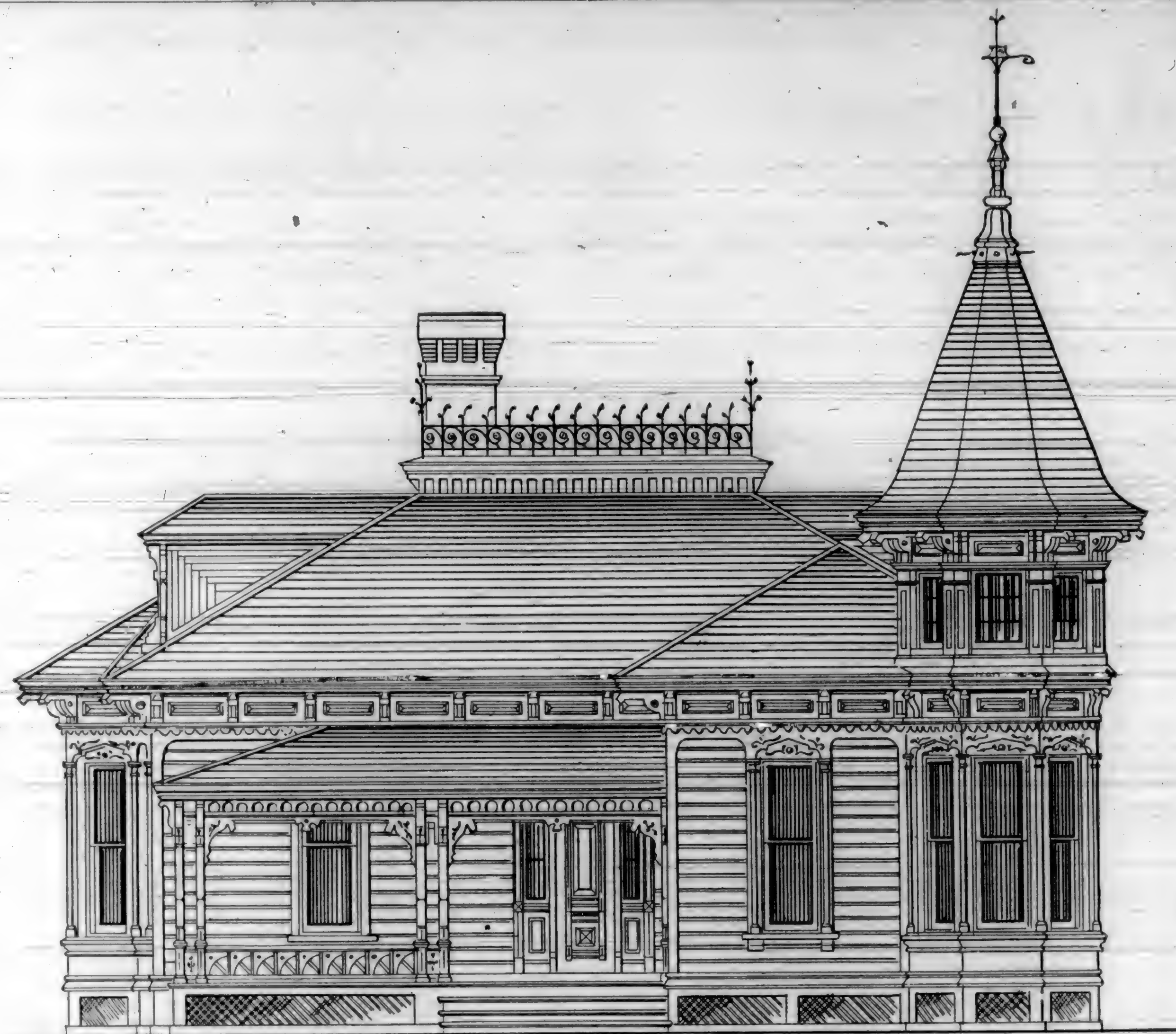


PLATE 2.—FRONT ELEVATION OF COUNTRY DWELLING COSTING ABOUT \$3,500.

Our Illustrations.

Plate 1 represents a design for a commodious country dwelling. But little attempt has been made at ornamentation, the object being to present a showy house at as little cost as possible. The windows being placed in the corners is an innovation on the present popular style of bay-windows, and is certainly much less expensive. This building can be erected for from \$4,500 to \$6,000, depending altogether upon the styles and character of finishes used.

Plates 2, 3, and 4 show the plan, front and side elevations, of a beautiful country dwelling, costing about \$3,500. This sum can be varied greatly, as almost double that amount could be used to advantage if extra nice finishes are employed. The amount quoted allows for as nice finish on the outside as is shown by the engraving and neat finishes inside. The arrangements of the rooms is such as to especially recommend the plan for a country dwelling. Stairs are shown leading to the attic. If desired, the elevation could be made 2½ ft. higher than shown, and the design thus changed into a 1½-story house. It will be noticed that the arrangement of the hall is such that in summer a perfect system of ventilation can be had, and in winter, by the use of the hall and other fire-

places, the home can be agreeably warmed in every part.

Plate 5 is an original design for a mantel.

English Wall Decoration.

There is one thing for which we cannot give the English too much praise, and that is their exquisite wall decorations. In this detail of house furnishing they are still a quarter of a century ahead of us. Some of the tile work is crude, and much of it is too sober in color; but there are public and private buildings in which the tile is employed with most exquisite taste. That there are very many gentlemen's mansions in America, where wall ornamentation is carried to a lofty, even an extravagant, pitch of splendor, I admit; but there is not one public restaurant or music hall or shop handsomely decorated in New York for every twenty in London and the minor English cities. In the theaters in England the decorating is lavish, but not tasteful. In the new Strand theater it is gaudy; and the Royalty, the Royal Comedy, the Novelty, and the other amusement halls are evidences of poor taste. But if one wishes to pay liberally he can have more comfort in any English than in an American theater. The decorations of the Savoy theater are lovely under

the cool gleam of the electric light; there is nothing at once so original and pretty as this in Paris. The French seem to care but little for comfort in public places; fresh air is not one of their needs, and they hate innovations—literally hate them. Edward King, in *The Boston Journal*.

The California Redwood.

In Humboldt County, California, the whole area of the redwood forest has been mapped and platted. There are something over 500,000 acres of that timber in that county alone. Disinterested experts estimate 100,000 feet of lumber per acre as an average if not a small yield. At \$18 per 1,000 feet the redwood of Humboldt County alone would just about pay the present national debt.—*Lumberman's Gazette*.

Index to Vols. 1-4.

All parties who desire a copy of this index should at once send to this office. We have had a large number printed, and in the confusion attending the distribution of so many, doubtless some will be overlooked. A postal directed to this office, will be answered by the immediate forwarding of a copy.



PLATE 3.—SIDE ELEVATION OF DWELLING COSTING ABOUT \$3,500.

Tinting and Coloring.

There is a want felt by many when doing a little painting on their own account as to the mode of compounding the tints or colors they may wish to employ; and it is the purpose of this article to give a few hints which may prove useful to many readers of the ARCHITECT. There is a certain taste for fixing a tone to color which must necessarily come from a little practice and observation. For instance, some prime original colors, having more strength, will produce stronger effect when mixed in certain given proportions, but when of a weaker nature a larger proportion should be used to produce any given color. To make bright-toned colors, pure pigments should always be selected, and then the tone is clear and more decided. To make simple lead color, take white paint and add a little good black and a drop of blue, adding these carefully until the desired tint is obtained.

Light gray.—Is made with black and white.

Light buff.—Take yellow ochre and lighten with white.

Lemon color.—Lemon-yellow, toned with white.

Stone color.—Take five parts of white lead, two of yellow, and one of burnt umber.

Straw color.—Add white to yellow of an orange tone.

Olive brown.—A little yellow added to burnt umber.

Oak color.—Lighten yellow ochre with white.

Tea green.—Mix raw umber, blue, and green to decide the shade.

Grass green.—Is made with yellow with a part of Prussian blue.

Pea green.—Lighten chrome green with white lead.

Bronze green.—Yellow deepened with black. Another shade is made by adding blue and umber.

Dove color.—Equal parts of white, blue, yellow, and red.

Fawn color.—Is made by mixing with white, yellow, red, and umber.

Snuff color.—Yellow with Van Dyke brown.

London smoke.—Van Dyke brown with yellow and white.

Chocolate color.—Indian red with black and yellow.

Claret color.—Vermilion and ultramarine blue.

Carnation red.—Carmine lake with white.

French red.—Indian red made light with English vermilion and tipped with carmine.

Copper color.—Yellow, vermilion, and black.

Maroon color.—Carmine with Naples yellow.

Rose color.—Carmine with flake white.

Drab color.—White lead with burnt umber.

French gray.—Light shade, white, yellow, and sienna.

Deep, white, ochre, and Van Dyke brown.

The above formula applies to oil colors, but where color in water or distemper are used, for black use drop black, as that mixes freely.

When colors are made, they should pass through a strainer, or they may be compressed with a muller or spatula on a marble slab. The latter method forms a smooth homogeneous paste paint, spreading evenly over any surface with a fine tone.

Salt and Sawdust.

The story is told in a Saginaw paper about a mill in that district that cut 18,000,000 feet of lumber annually, and the exhaust steam manufactured 20,000 bushels of salt. Thus the fuel for making the salt cost absolutely nothing. The slabs from the logs were sold for fuel at \$1 per cord. That manufacturer made a fair thing on his logs, and if all could economize the product like that, there would be but little need of both-ling about the tariff question.

The new and enlarged edition of the Steel Square and its Uses, and the California Architect and Building News for one year, will be sent to any address upon receipt of \$2.50.

Preventing Water Pipes from Bursting in Frosty Weather.

A simple method of preventing the bursting of water pipes during frosty weather has recently been patented by Drs. Buxton and Ross, and was exhibited at the late Electrical Exhibition at the Crystal Palace. A valve of special construction, called by the inventors a ventilating valve, is screwed or soldered into the end of the house main service-pipe in the cistern, and a piece of string or wire conducted from it to any convenient spot, and fastened to a nail or hook. When frost is expected, all that is needful is to unhook the spring, when the valve falls upon its seat, and air being admitted through the small pipe, which rises above the surface of the water, the pipes can be emptied by simply turning on the tap at the lowest point in the house service, the water in the cistern being saved. To obviate forgetfulness on the part of servants, the inventors have called in electricity to their aid. A thermometer of special construction is so arranged that when the temperature falls below 33°, a current is sent through an electromagnet, which releases a catch, causing the valve to fall upon its seat, and at the same time opening a small pet cock at the lowest point in the house service, and draining the pipe. The battery is cut out by the fall of the catch, and when the valve is raised again, that water may flow into the pipes, the connection is made good. The electrical part of the apparatus is by no means an essential feature, but simply saves trouble, and prevents the possibility of allowing the pipes to remain full during frost, as the contrivance is rendered automatic by its agency.—*The Building News*.

CARPENTER AND JOINER MODERNIZED.

We will send the above work in connection with the California Architect and Building News for one year, upon receipt of \$8.50.

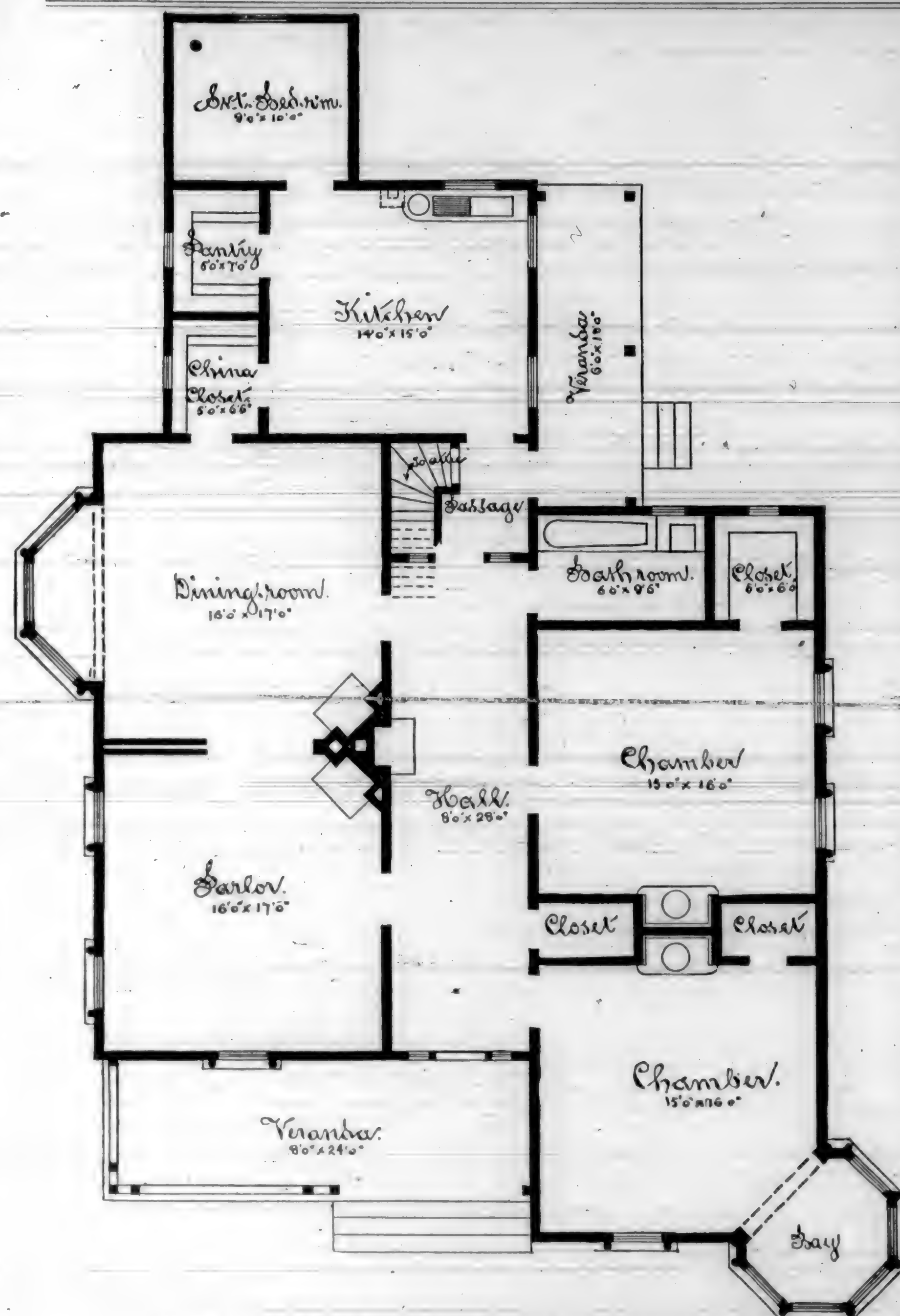


PLATE 4.—PLAN OF COUNTRY DWELLING COSTING \$3,500.

Tin Roofs.

Tin roofing, to be good, must be put on with care, well turned up and over all angles, and flashed around all openings. As it is subject to expansion and contraction, leaks are always the result if proper allowances are not made. This is provided against by a raised standing joint, which costs a little more, but pays better by lasting longer; a flat joint is cheaper, but not durable. Tin should always be painted on the outer side of the sheets before using, as the sweating from condensation of vapor causes it to rust readily. Tin roofs should be painted thoroughly every two years, and in angles every fall. Tin sheets are 10x14 inches in size, and of different thickness; sized by X, XX, and XXX. XX is the best for general use, as the metal is thin, pliable, and less liable to crack

under strain of contraction than thicker metal; anything thinner rusts through too easily. It is known among makers and dealers by different brands, which designate the quantity of tin actually used. Tin is bright, and of a silvery color; adheres in large, smooth flakes. Compositions of lead and tin, or zinc, are a dead smoky color, and last but a short time under the corrosive influences of salt air, smoke, and acids, these being principal causes of its decay.

It is stated that some kinds of woods, although of great durability in themselves, act upon each other to their mutual destruction. Experiments with cypress and walnut and cypress and cedar prove that they will rot each other when joined together, but on separation the decay will cease, and the timbers remain perfectly sound for a long period.

The Rights of Sanitation.

The time has arrived in this country for the stricter enforcement of a considerable body of miscellaneous sanitary law, and for the enactment and execution of new laws of the kind. This species of law, like all other law, has to struggle against ignorance, selfishness, perverseness, and wickedness. Underlying it will be found the well-defined principles of criminal law. If a man kills his neighbor, the criminal law inflicts the same penalty on him, whether he does the killing with poison, with a knife, with a club, or with a gun; but if he does the killing by means of beer poisoned with "mullum," by means of a backhouse in the basement of a building let to a tenant, by means of milk containing germs of scarlet fever, by means of pork containing trichinae, by means of tea containing a "bloom" of black lead, by means of wall-paper colored with arsenical pigments, by means of wine "doctored" to taste by admixture of plasterage, by means of a child sent to school bearing the contagion of deadly disease, by means of ships so crowded between decks with emigrants that each person has less than thirty cubic feet of air space, by means of a theater so constructed that even in case of alarm of fire a large percentage of the inmates are sure to be trampled to death, by means of a hospital built in defiance of every hygienic law as a monument to civic ignorance and pride, by means of a deadly drug administered by pretentious quackery—then the enactors of statutes consider their constituencies, and the elective magistrates look over their shoulders and out of the windows to observe the direction of the popular breeze. While it is very evident that public instruction must keep pace with law, it is also evident that malefactors who snap their fingers at preaching and teaching can be reached only by the infliction of dreaded penalties. The world can never be reformed by moral suasion alone.

Immanuel Kant, the most vigorous ethical soul in modern times, says: "When a man has made a worm of himself, he cannot complain if he is trampled under foot. If tenants, whose humble homes have been visited by the angel of death through the sanitary delinquency of a landlord, instead of passively submitting to their fate, would mob him and throw him into the stagnant pool under the building that he has refused to drain, or into the reeking cesspool that he has refused to clean, it would do more good than the best hygienic tract on sewer-gas ever written. If a thousand emigrants, after escaping from the foul dungeons of an ocean steamer, would turn around and abate the nuisance by burning it up—and there is some color of law for such a proceeding—it would do more public good than any act of Congress winked at by morally stupid officials. If the proprietor of an "Orange County Dairy," known to be distributing milk from premises infected with small-pox, scarlatina, diphtheria, or typhoid fever, along a street where crape on many a door already indicates the sad fruits of his deadly trade, were set upon by an outraged community and hung on the nearest lamp-post, instead of being arraigned before a magistrate and "perhaps" fined ten dollars and costs, the summary proceeding would absolutely infuse a healthy ethical vigor into the makers and administrators of law." The public needs to be told again, in the trenchant language of Kant: "Let not your rights be trampled under foot by others unpunished." As long as we have a "stump tail" state of ethics on hygienic questions in the community, too rotten and feeble to beget sanitary indignation, we shall have plenty of interested men to trample uncompensated worms under foot.—O. W. Wright.

Subscription price of this journal is \$2.00 in advance.

Waste of the California Redwood.

The wastefulness of this lumbering is one of the striking features of the scene. Only the largest trees are cut, those measuring less than two feet in diameter rarely being touched, and the ax is laid, not to the roots (though they are not thick and widely divergent, considering the height and weight they support), but some distance above, so that in very large specimens the massive stump, upon whose flat top you might build a comfortable house, stands ten or twelve feet above the ground, and contains hundreds of feet of sound lumber, which must be left to rot or burn. Then many trees are broken by their fall; so that large parts of them are useless; other parts may be knotty, or crooked, or inconvenient to drag out, and so only half of a great trunk will be utilized. Huge logs are consumed, also, in road-making and bridge-building in the hills, and dozens of small trees are crushed by the fall of their greater companions. Then, when a district is pretty well cleared of its best timber, fire is set in the brush and prostrate trunks. Feeding eagerly upon the resinous woods, half dried and broken, it gathers so much heat that the saplings are nearly all killed, and the flaky, tinder-like bark of the larger trees is singed in a way which must greatly injure and often destroy them. Moreover, these fires, fanned by the gusty breezes rushing in every afternoon from the ocean, often get beyond control, and sweeping through the oily tops and brittle trunks, spread blackened ruin over miles and miles of precious forest. Precious, however, it seems never to occur to the lumberman that these forests are; yet he is probably no more wasteful and careless here than elsewhere, and finds his match for heedless extravagance in nearly every pursuit that deals in what nature furnished us at the outset in abundance, but replaces only very slowly, giving abundant leisure for our repentance. The spendthrift lumberman is bad enough, but no worse than the wasteful oysterman or buffalo-hunter, reckless of the future. It is, or ought to be, a matter of rejoicing to everybody that the forestry people, under Mr. Sargeant's guidance, are paying especial attention to preserving, as far as possible, the magnificent forests of the Coast Range.—Harper's Magazine.

The Way It Strikes a Layman.

QUEEN ANNE HOUSES.

Of all the absurdities of modern house-building, this attempt to push in the Queen Anne style of 1700 is the worst. The Queen Anne houses are not at all adapted to the times, and their absurdity has already begun to appear. In New York the style has fallen into discredit, and it will soon be as universally distasteful as it was a year ago universally popular. The Queen Anne houses will become a drug in the market, and they will depreciate the property on which they are located. They are not healthy. Their ceilings are low, and their interiors so constructed as to be ill ventilated and poisonously unhealthy. The laws of hygiene were comparatively unknown when Queen Anne lived, and the economy of warming the houses was a great consideration. Their huge fireplaces acted as ventilators, and the homes of that day were not as badly ventilated as their aped counterparts of the present. Had they possessed furnaces, gas and plate-glass, they would never have lived in such houses. The whole style is against the dictates of common sense. The houses are a disgrace to the intelligence and taste of the country, and their costly diamond-shaped windows are only a phase of the craze for the old and ugly which has swept over America. In two years hence the style will be discontinued in the smaller cities as it now is in the larger.—Cleveland Leader.

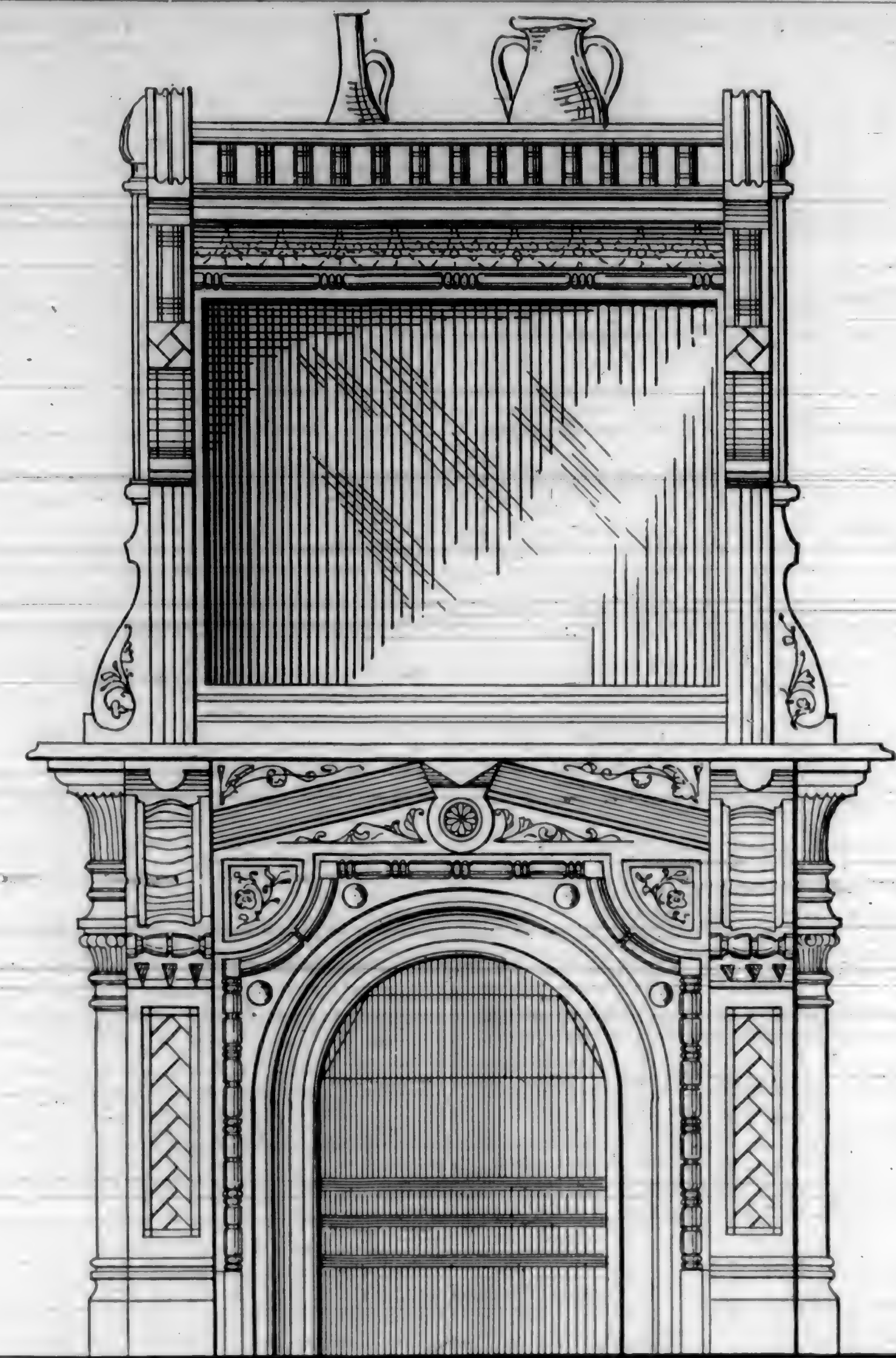


PLATE 5.—DESIGN FOR A MANTEL.

How Tacks are Made.

Described in a few words, the process of making tacks is as follows: The iron is received from the rolling mills in sheets from three inches to twelve inches wide, and from three feet to nine feet in length, the thickness varying, according to the kind of work into which it is to be made, from one-eighth to one-thirty-second of an inch. These sheets are all cut in about thirty-foot pieces, and by the immersion in acid cleaned of the hard outside flinty scale. They are then chopped into strips of a width corresponding to the length of the nail or tack required. Supposing the tack to be cut is an eight-ounce carpet-tack, the strip of iron, as chopped and ready for the machine, would be about eleven-sixteenths of an inch thick and three feet long. This piece is placed firmly in the feeding apparatus, and by this arrangement carried between the knives of the machine.

At each revolution of the balance-wheel the knives cut off a small piece from the end of this plate. The piece cut off is pointed at one end, and square for forming the head at the other. It is then carried between two dies by the action of the knives, and these dies, coming together, form the body of the tack under the head. Enough of the iron projects beyond the face of

the dies to form the head, and while held firmly by them, a lever strikes this projecting piece into a round head. This, as we have said before, is all done during one revolution of the balance-wheel, and the knives, as soon as the tack drops from the machine, are ready to cut off another piece.

These machines are run at the rate of about two hundred and fifty revolutions per minute. The shoe-nail machines, for cutting headless shoe-nails, are run at about five hundred revolutions per minute, and cut from three to five nails at each revolution.

When we think of the number of machines now being run in the United States—about seventeen hundred—and of the quantity of tacks and nails they can produce, it is as much of a mystery where they go as it is what becomes of the pins.

The tack maker of fifty or sixty years ago worked as follows: He took a small rod of iron, and after heating it in a charcoal fire, hammered it down so as to make a point; then a piece was cut off, placed in a vise worked by foot power, and the head formed by a few blows of the hammer.—The Artisan.

Bird's-eye maple is used for firewood in Michigan, and sold for \$160 a thousand in Liverpool.

The New Plumbing and Drainage Law.

The following act, entitled "An Act to grant to Boards of Health in cities and counties the power to regulate the plumbing and drainage of buildings," was passed at the late session of the Legislature of this State, and has received the signature of the Governor, and is therefore a law upon the statute books of California.

Section 1. On or before the first day of August, eighteen hundred and eighty-three, every master or journeyman plumber carrying on his trade shall, under such rules and regulations as the Board of Health of such [county] or city [and] county shall prescribe, register his name and address at the Health Office of such [county] or city and county; and, after the said date, it shall not be lawful for any person to carry on the trade of plumbing in any [county] or city and county, unless his name and address be registered as above provided.

Sec. 2. A list of the registered plumbers shall be published in the yearly report of the Health Office.

Sec. 3. The drainage and plumbing of all buildings, both public and private, hereafter erected in any [county], or city and county, shall be executed in accordance with plans previously approved, in writing, by the Board of Health of said [county], or city and county; suitable drawings and description of the said drainage and plumbing shall, in each case, be submitted and placed on file in the Health Office. The said Board of Health are also authorized to receive and place on file drawings and descriptions of the drainage and plumbing of buildings erected prior to the passage of this act.

Sec. 4. The Boards of Supervisors or other city or county officials, whose duty it is to make apportionments for the Board of Health of such [county or city] and county, shall make the necessary apportionment, and shall insert the same in the yearly tax levy, to provide for carrying out the provisions of this act.

Sec. 5. Any Court of record in said [county], or city and county, or any Judge or Justice thereof, shall have power to any time after the service of notice of the violation of any of the provisions of this act, and upon the affidavit of the Health Office or a member of the Board of Health of such [county], or city and county, to restrain by injunction order the further violation named in this act, or of any work upon or about the building or premises upon which the said violation exists, and no undertaking shall be required as a condition to the granting or issuing of such injunction, or by reason thereof.

Sec. 6. Any person violating any of the provisions of this act shall be deemed guilty of misdemeanor.

Sec. 7. This act shall take effect immediately.

The necessity of the enactment of a law which if enforced would limit and regulate the operations of that class of so-called plumbers who neither know nor care anything about sanitary sciences, and who are incompetent to fill places as competent journeyman plumbers, yet post themselves by sign-boards as practical sanitary plumbers, is an admitted fact among the competent plumbers and architects in San Francisco. Whether the bill just passed will accomplish the desired end, is a question yet to be solved. We have no questions as to the integrity and honesty of purpose on the part of those who secured the passage of the bill, and it may answer the purposes for which it was intended; but it might have been improved and made to cover the ground more clearly and thoroughly.

Section 1 calls for the registration of plumbers, which act of registration places all alike, good and bad, upon equal footing, securing no

special advantage to the competent over the incompetent, but virtually acting as an endorsement of the very class of frauds who have created the necessity for the act. Section 2 simply authorizes the publication annually of all register plumbers, thereby helping the scaly class by placing their names before the public, among the names of good men, as practical plumbers. Section 3 makes the approval of plans by the Boards of Health obligatory, and creates the necessity of owners paying the extra cost and expense of preparing such plans, or of architects furnishing them gratuitously. Section 4 empowers Board of Supervisors to make the necessary apportionment for the carrying out of the provisions of the act; but the matter of costs and expenses are seemingly left to the discretion of the Boards of Health. Section 5 empowers any Court of competent jurisdiction to issue injunctions, etc. Section 6 defines all violations of the law as misdemeanors.

The act simply provides—more inferentially than positive—that Boards of Health shall have the power to define and regulate the means and methods "for carrying out the provisions of the act," and no limits are prescribed beyond which they shall not pass. It is presumable that such Boards will exercise all proper economies, and restrict expenditures within proper bounds; but as the law reads, extravagances and waste of public moneys are possible; and a strong public opposition is created by the fact, that under the law as it reads, Boards of Health may create places for one or several inspectors at liberal salaries, and use the power of appointment for political purposes. This is not likely to be the case in the first appointment, but hereafter such a course might be pursued. Another opposing argument is entertained in the suggestion that money in many cases may qualify merit, and scheming tinkers succeed in having their botchery passed for acceptable work. This is answered by the friends of the bill, by quoting in illustration the unimpeachableness of the gas inspector, who none will charge with the slightest irregularity. But there is a difference in the two positions. The gas inspector is exclusively under the control of the Gas Light Co., with no contingencies surrounding his appointment during good behavior; while the plumbing inspector will be liable to removal at every charge of the appointing power.

The law as passed is intended to serve a good purpose, and will so operate, so long as a qualified and honest man shall hold the position of inspector. There is also this other assurance that the spirit of the law will be enforced, viz.: Every worthy plumber will be interested in its proper enforcement, and should the appointee of the Board of Health—particularly in San Francisco—fail to discharge his duties correctly, there will always be some one to discover his irregularities and report them to headquarters, with a demand for his removal. The entire fraternity of competent plumbers will recognize the importance of watchfulness, and see that their individual interests are not tampered with by any one who shall receive the appointment of inspector, in allowing to pass any plumbing work not in accordance with the plans approved by the Board of Health. And as all such plans will be on file in the Health Office, they will be subject to inspection at all proper times, and any plumber or other person who may discover improper workmanship, or any trifling with the law, will have the right to investigate matters, and make such complaint as the nature of the case may warrant.

Since the foregoing was set in type, we have been handed a printed copy of "Rules for the Registration of Plumbers," as framed by the committee of plumbers appointed by the plumber association, which fully sets forth and defines the object of the law under notice, and

develops the *modus operandi* by which the law is to be made both effectual and practical. Those rules have been prepared for submittal to the Board of Health, and if adopted by the board will qualify all seeming wants and omissions in the law as past, and put at rest all the objections we have mentioned, and all that we have heard stated. With a strict enforcement of the "rules" before us, owners and tenants of buildings may rest assured that in the future a very different class of plumbing work will be done in this city, and the hitherto almost universal growl about sewer-gas and defective plumbing work will have ended. This one thing is a fixed fact—that the movement is in no way tinctured with politics, but is the outgrowth of positive necessity, and an effort on the part of the intelligent classes of practical plumbers, both masters and journeymen, to put an end to the mechanical demoralization which has in the past prevailed in the execution of plumbing work in San Francisco. As the rules referred to have not as yet been adopted by the Board of Health, and may be somewhat changed or modified before final adoption, we withhold their publication until perfected. But they are in harmony with the rules adopted by the New York Board of Health in connection with a similar plumbing law which has worked well in that city.

The Nine-Hour Movement.

The Carpenters' and Joiners' Union as an organization, representing as its name implies, the carpenters and joiners of this city, has made public the determination of its members to demand a lessening of the hours of labor from ten to nine hours per diem, without impairment of rates of wages. This conclusion has not been arrived at in haste, nor promulgated upon the spur of the moment, but is the result of prolonged deliberation and discussion; and from the standpoint occupied by those advocating the measure, the justice, fairness, and rightness of the movement is well sustained. But strong opposition will have to be encountered, and it will require more than the mere declaration of principles and rights on the part of mechanics to insure permanent success. We remember well the times—nearly fifty years ago—when the laboring classes of the country first unfolded the ten-hour banner, and resolved no longer to toil from the rising to the setting of the sun, nor to submit to that tyranny which made American freemen but little better than abject slaves, with the privileges and enjoyments of life limited to labor, eat, and sleep. The battle was fierce and protracted, but the right prevailed, and in due time the opposing elements calmed down to an acceptance of the situation.

Capital as a rule has always been arbitrary, exacting, and unyielding, demanding all that could be obtained from labor, with as small outlay as possible. "Grinding the poor" has been one of the curses inflicted upon humanity, and the source from whence has sprung the greater moral and social degeneracy of our race; and the great Author of all wisdom, truth, and love has pronounced in sacred history his utter and absolute condemnation of those who oppress the poor and make merchandise of the labors of human kind. The spirit of tyranny in some form more generally follows the acquisition of wealth. Yet we frequently read accounts of pleasing exceptions, in which the rich extend sympathy, relief, and comfort to the less fortunate, who live but little better than from hand to mouth, and of many good-hearted men who have acquired fortunes, doing noble things. But the underlying—the worm at the root—rule is, as far as labor is concerned, to utilize it to the advantage of capital, upon the most advantageous and economical terms. In manufacturing, building, and all other connections, the number of hours of

labor and the pay of operatives become prominent factors. But few scruple at severe exactions to further their own interests, and the cry of "cheap labor" has been and is heard all over the world. And eyes eager for wealth have been and are turned in directions where the services of men and women can be had at least cost and with the shortest cessation from toil. The instances are few in which the financial and individual rights, interests, and comforts of the workers are first considered and fixed upon a broad and liberal basis. Long hours of labor and small pay to workers possess a fascination which blinds the minds of the larger number of employers of labor. Every one who expends money very naturally seeks to obtain the most that can be had for his outlay, but there is a rule of right and fairness, the going beyond which is neither just nor equitable.

We are well aware of the fact that the subject under discussion presents a thousand points of argument pro and con; and while we endorse and advocate all good and right movements calculated to advance the interests and better the conditions of the masses, especially those of the skilled labor classes, we advise caution, good judgment, and patience on the part of the Carpenters' and Joiners' Union, and mechanics generally. Too much haste and immature action have thwarted many a good purpose, and proved destructive to innumerable good causes.

The creation of a general sentiment in favor of any movement, and the pacification of adverse opinions, will prove far more powerful in any case than all the peremptory and arbitrary actions that can be resorted to; the former being conservative, convincing, and aggressive, while the latter tends to antagonisms and oppositions. The farmer who attempts to plant his fields without first removing the stubble and preparing the soil will have but poor return from his sowing.

In this view of the case, we presume that the carpenters and joiners have reviewed all the probabilities, and are prepared to meet the issues and responsibilities involved. The permanency or failure of the movement is yet to be decided by practical experience. If, as all present conditions indicate, general prosperity is to continue in San Francisco, and the demand for skilled labor increased, the nine-hour rule will likely become a success, until a break-down in prosperity occurs; and even then the rule may be sustained, leaving the matter of wages to be regulated by any future stringency or reversal of building activities; for it may reasonably be anticipated that should the time arrive when again labor shall be in excess of demand, that either the nine hours or the rates of compensation will be attacked.

The Nine-Hour Mass Meeting.

On the 30th of March, after the foregoing article had been written, the Carpenters' and Joiners' Union assembled in mass meeting, to the number of about three hundred. Speeches were made by several of those present, and the following resolution was adopted:

Resolved, That this meeting indorse the action of the Carpenters' and Joiners' Union in inaugurating the nine-hour system, and pledge ourselves to defend and sustain them in their endeavor to obtain the concession thus demanded.

A committee consisting of twelve members was then appointed to confer with the bosses, with the view of securing the consent and co-operation of the contractors in establishing the nine-hour rule as a day's labor. The moderation and manly fairness, and the absence of rash and hasty action on the part of the Union which has thus far characterized the movement, will do much toward furthering the object contemplated, and of placing it in its more favorable

light before those who might otherwise be inclined to interpose opposition.

It is altogether likely that some employers will reject the proposition, and hurl anathemas at the proposed changes and those who have promoted it, with no fair or intelligent consideration of the arguments favoring the project. The contractedness and selfishness of some minds render them incapable of weighing facts and arguments not in accord with conclusions arrived at by them from premises exclusively one-sided and limited. It is a somewhat singular fact that oppositions to such movements as the one contemplated, and all others which seek to change long-established custom, are based upon *presumed* and *speculative* effects, with but little reference to the rights, comforts, or equities of those who ask concessions or relief. But we agree with no theory or doctrine which proposes to benefit certain classes at the sacrifice of the greater number, who perforce of circumstances are compelled to operate in dependent situations. For it must be admitted that every man and woman who lives by the product of personal toil is in that sense dependent, with the contingencies of life resting upon the more or less uncertain demand for such labor. But that fact does not sanctify the means and measures sometimes adopted to oppress labor and humiliate it at the feet of capital.

NEW PUBLICATIONS.

Cutting Tools Worked by Hand and Machines.

By R. H. SMITH. The chief object of this work is to guide the mechanical student into a correct scientific way of thinking about tools, so that he may be able, aided by practice, to judge intelligently whether a tool is good or bad, to criticize its details, and eventually to design new tools scientifically. It is of comparatively little importance that he should know whether the tool is in accordance with the pattern adopted by this or that maker. The author has deemed it of greater importance to explain fully a few than to mention all kinds of tools. It is written in an exceptionally easy and interesting style. It contains 224 pages, 61 wood-cuts, and 14 folding-plates. Price, \$1.50.

Handrailing and Staircasing. By FRANK O. CREWELL.

The system of handrailing introduced is simple and accurate; by its means, the face mold can be struck out on the material from which it is to be cut without the usual labor of projection and transferring. Practical working details of the stairs are given and explained, and it is the intention of this work to remove difficulties from the paths of beginners, and induce others to study this beautiful branch of an excellent trade. Price, \$1.50.

Treatise on the Theory of the Construction of Bridges and Roofs. By DR VOLSON WOOD.

This is one of the most reliable and practical works that has yet been presented before the public for consideration. Every known form of bridge and roof construction is treated in a manner so as to give the student a correct and thorough knowledge of the subject. The examples are original, and many of them novel in character. The analysis is generally of a simple kind. Price, \$2.50.

American House Carpenter. By R. G. HATFIELD.

This is a practical work on the art of building, comprising styles of architecture, strength of materials, construction of floors, framed girders, roof trusses, stairs, doors, moldings, cornices, etc., with valuable tables giving the result of experiments made by the author in the strength of all kinds of building materials. This work is a valuable addition to the library of the architect, and almost indispensable to every scientific master mechanic. Price, \$3.00.

Cameron's Plasterer's Manual.

Enlarged and revised edition; it contains all that was in the former edition, with all necessary corrections; in addition, it gives an entirely new chapter on practical suggestions and precautions; also new illustrations and additional recipes. Price, 75 cts.

Grimshaw on Saws.

We have just received a lot of this the most celebrated work of its kind extant. Every mill man or owner on this coast, should possess a copy. In it is found the details of the manufacture, filing, setting, swaging, grinding, etc., of every kind of saw; a list of new patents; capacities of saw mills; tables of gauges, and other valuable information. 354 illustrations. Price, \$1.00.

The Carpenter and Joiner Modernized.

This valuable work contains new matter of much interest to the carpenter, stair builder, carriage builder, cabinet maker, joiner, and mason. The progress of our age is as remarkable in the building, as in the other arts, and the chief branch of it—carpentry—has had its reformations as distinctly marked as ever changing fashion demands and the requirements of modern taste look for. The modes of meeting these are fully illustrated in this work. Price, \$7.50.

Each book in above list will be sent any address upon receipt of the publisher's price.

Bricklaying.

Bricklaying is the art of building with bricks, or by uniting them by cement or mortar into various forms.

The implements used by the bricklayer are a trowel, for spreading mortar and breaking bricks when a piece smaller than a whole brick is required; a hammer for making openings in the brickwork and for driving or dividing bricks, for which purposes one end is formed like a common hammer, and the other is broad and flattened, somewhat after the manner of an ax; the plumbline, made generally of wood, having a longitudinal opening down its middle and a plummet suspended from its upper end, for carrying walls up perpendicularly; the level, consisting of a long horizontal arm, having a perpendicular branch carrying a vertical arm from which a plummet is suspended; a large square for laying out the sides of a building at right angles; a rod, usually five or ten feet long, for measuring lengths; compasses, for traversing arches and vaults; a line and line pins, for keeping the courses straight and level as the work progresses; and a hod, for carrying bricks and mortar to the workman.

Bricks are laid in courses so as to break joints, and their arrangement with regard to each other constitutes what is called the bond. There are two kinds of bond used in England and America—English, or old English, and Flemish—the former, however, being much more commonly employed than the latter.

The term "bond" generally means that part or those parts of a "built" structure which tie the other portions together.

In masonry it is a stone or brick which is laid with its length across a wall, or extends through the facing course into that behind, so as to bind the facing to the backing. Also known as binders, bond-stones, binding-stones, through-stones, perpendicular-stones, headers.

Perpend signifies that a heading stone passes through the whole thickness of a wall; binder, that it extends part of the distance across.

In what is known as heart-bond, in stone walling, there are no perpend stones, but two headers meet in the middle of the wall, and the joint between them is covered by another header.

Chain-bond is the building into the masonry of an iron chain or bar, or heavy scantling.

A cross-bond is a block-bond in which the joints of the second stretcher-course comes in the middle of the first; a course of headers and stretchers intervening.

In block and cross bond the extrados of the wall is put up in cross-bond; the intrados in block-bond.

In bricklaying, in English bond, the courses of headers alternate with the courses of stretchers. In the Flemish bond each course has headers and stretchers alternately. It need hardly be remarked that the stretchers are those bricks which are placed lengthwise of the wall, and the headers are those laid endwise.—*Brick, Tile and Metal Review*.

We have received from Palliser & Co. plans and specifications of a modern 8-room cottage with tower, also showing how it can be built without tower, with only six rooms. These plans are finely finished, and give full details of mantels, stairs, doors and casings, cornices, etc. They also send us blank specifications for frame or brick buildings, costing \$500 to \$5,000, which include two of their new blank forms of building contract. These are perfect, have been drawn with great care and precision, and have been recently published. Architects and builders would do well to write to this office for information concerning these forms, which are in every way complete, convenient, and suitable for the purposes intended.

Dry Rot and Worm-Eaten Wood.

A question on this subject having been recently asked in the columns of our contemporary, the *Building News*, Mr. W. Stevenson, of Hull, has supplied the following answer, which will be read with interest by wood-workers in general: "Dry rot," he says, "is a term applied to damp wood under process of destruction by fungi, or low forms of vegetation. The albumen and the essential oils in the wood become the food of this secondary or parasitic vegetation; the woody tissue is broken up, and the walls of the cells destroyed, an earthy, powdery matter being left as the residue. This residue bears on its face a close resemblance to burnt or charred wood. Indeed, it is akin to burnt wood, for the albuminoid and the essential oils, which escape under the influence and form the food of fires, have been consumed or absorbed by parasitic vegetation. The residue, an earthy, inflammable substance, is practically identical with that resulting from fire. Dry rot, or the destruction of wood by secondary forms of vegetation, is dependent upon two conditions—heat and moisture. To prevent dry rot, the wood is dried or seasoned, by which one of the elements is withdrawn. To guard against the return of this one element, the wood is painted or varnished, and hence the general application of paint or varnish. Where wood cannot be painted, preservatives are used, the object of which is to change the character of the wood, so far as its secretory matter is concerned. In this direction, creosoting is the most common or customary, the object of which is to poison the albuminoids and the essential oils, and so render them unfit for food to low or secondary forms of vegetable life. Salts, sodas, and metallic injections have the same effect, but they are in large degree soluble in water, and in course of time become weak or disappear, and consequently they are not so largely or generally used as creosote oil. The amount of moisture necessary for the support of this secondary vegetation is very large. This is supplied by humid or stagnant air, or by damp walls or subsoils, and hence it follows that wood subject to passing air, or brought under the influence of vegetation, is free from this disease or dissolution.

"Worm-eaten wood is wood injured by mechanical action, i. e., by animal life. The same conditions are imperative to the support of this form of life as to the above, but the amount of moisture necessary in this case is very small compared with that required for the support of vegetation. Wood to be worm-eaten must be subject to damp, humid, or stagnant air, and it must be a sweet wood or the sap of a bitter or pungent wood. Ash, elm, walnut, birch, beech, and lime-tree are sweet woods, and very subject to worms. Oak and resinous wood are bitter, pungent, or unpalatable, and, except in the sap-wood, are fairly free or proof against the attack of worms. Under certain conditions, as in the roofs of churches covered down with lead, where condensation of the atmosphere ensues, and the wood absorbs the moisture, the heart-wood of even oak will fall a prey to the action of worms. In some cases the necessary moisture is supplied by the ends of the beams being inserted in walls, the materials of which are porous stone. Here the damp ends of the beams will be riddled with worms, and sponge-like, they will crumble away, and, if not supported, will fall clear off the walls. The heart-wood in this case seems to have lost its pungent qualities and to have become soft with long saturation; but, not having been seized upon by fungi, to still retain its albuminoids, and to be sufficiently endowed with them to form the food of worms.

"As to the worms themselves, they are the grubs or larvae of the furniture beetle (*Anobium striatum*), better known as the book-worm, an

insect that will bore through volumes in search of the book-binders' paste, which is composed of flour or albumen. The beetle is subject to four stages of life—1st, the egg; 2nd, the grub or larva; 3rd, the pupa or chrysalis; 4th, the perfect or winged insect. The parent deposits the egg, which is provided with a supply of albumen, as in the eggs of birds where we recognize it as the 'white of the egg.' Moisture and food are thus supplied to the insect, and heat is supplied from the rarefied atmosphere of the summer season. The egg is hatched in the hole or crevice in which the parent deposited it, upon which the instinct of the animal teaches it to bore into the wood. At this stage it is small, and has exhausted its stock of food. Its boring operations are performed by powerful forceps or mandibles attached to the head, by which it detaches fragments of wood, not for the sake of forming a habitation, as some observers believe, but for the purpose of food, the object being to extract the albumen from the wood as the particles are passed through its intestines. The result is, that the grub-worm, or larva, increases in size as it bores in and along the wood. It will avoid touching or breaking into the neighboring chamber, and in its tunneling operations shows a remarkable instinct—one worthy of most careful study. When the grub or worm has attained its full size, it will be found to be possessed of a black head and a long, round, fatty body, at which stage it changes to the pupa. The insect is then enveloped in a case or cocoon, from which, after absorbing the fatty store or albuminous compound secreted by and in the body of the grub, or larva, it emerges a perfect winged insect, in which state it has power to liberate itself from its prison of wood. I have known them in this stage, when propagated in limewood carvings, to bore for the painted surface, and to actually bore through sundry coats of paint to effect their escape. The parent insect will not bore through, or lay eggs in or upon the paint, but will reach the naked wood through some crevice or joints between the junction of two pieces of wood. In the mature insect effecting its escape, it will bore through foreign matter, like paint, that would be poisonous to the young grub or larva. This is owing to the fact that the perfect insect is not boring for food and sustenance, but merely to effect its escape from its prison home."

CARPENTER AND JOINER MODERNIZED.

We will send the above work in connection with the *California Architect and Building News* for one year, upon receipt of \$8.50.

Reduction of Postage.

The Post-office Department will soon issue a circular in view of the reduction of letter-postage, which takes effect October 1st, calling the attention of postmasters and the public generally to the fact, and admonishing the former to cut down the stock of stamps kept on hand. No steps have yet been taken toward the issuing of a new stamp other than that the head of Washington, which now ornaments the three-cent stamp, will be printed upon the new two-cent issues. The color and design for the stamp have not yet been determined, but will ere long, so that in the intervening six months everything may be made ready for the change. The Canadian Government has decided not to follow the example of the United States in establishing two-cent postage.

The *California Architect and Building News* for one year, with a copy of the *Carpenter's Pocket Companion*, will be sent to any address upon receipt of \$2.50.

Buying vs. Building.

The statement often made that it is cheaper to buy than to build, even when followed by the large qualification—if one can find what suits him—is erroneous. It is true, there are fore-closed mortgages, auction sales of household goods, and pawn-brokers' shops; by means of which real estate and personal property change hands with little regard for actual values, and chances to buy at low rates are often found. So there are men who build houses for themselves, which, proving unsatisfactory, their owners are willing to sell for less than their cost. There are others who, through change of residence or inability to pay their debts, are compelled to part with their homes at a pecuniary sacrifice; and speculative builders not infrequently push their enterprise so far during prosperous periods that when the real estate pendulum swings to the off-side they are compelled to unload at any price, even if such one-sided operations upset them into the slough of bankruptcy. All these things are common enough, more's the pity. Yet it is a mistake to suppose that on legitimate business grounds it is cheaper to buy than to build. Old homes cannot well be compared with new, for their relative values would be largely a matter of taste and opinion, affected more or less by change of position and the varying circumstances of different cases. It should be remembered, in favor of the new, that wooden houses as commonly built deteriorate rapidly, and the cost of improvements and repairs will increase with age—expenses that ought not to exist during the first five or ten years of the life of a new building.

As regards the houses built for sale and those built by their owners for their own occupation, there is no good reason why the latter should cost more than the former. For the common impression to that effect there are several reasons. It is assumed that the same principle applies in house-building as in some other kinds of business; and the more extensive the manufacture, the cheaper will be the product. This is true to a very limited extent only, because, as a rule, each house differs from every other in some degree, and because the best results in building require a large proportion of skilled, intelligent workmen. Another reason for this opinion seems to be based upon the most solid of all grounds—every-day experience. Men wishing to build for themselves are offered houses that are satisfactory in size and quality, at lower prices than any estimates they are able to get upon what seems to them the same thing, modified slightly to suit their special needs. But in the majority of cases they are not the same thing. When a man follows the building of his own house, either in the actual work or through minutely drawn plans and specifications, he expects and demands at every step, from the mouth of the drain to the top of the smoke flue, a perfection and thoroughness in all the materials and workmanship visible and invisible, that are not often found in houses built "for sale," but which he would not care for in his own if he had not seen it until it was completed. In brief, whether he intends it or not, he virtually expects the house he builds to be better than the one he would buy, not only better suited to his needs, but better in construction. For the same thing it would cost him no more to build than to buy, but he is never quite satisfied with the "same thing."—*The Builder*.

Carpenters should remember that fresh glue dries much more readily than that which has been once or twice melted. The finest ordinary glue, or that made from white bones, absorbs twelve times its weight of water in twenty-four hours; from dark bones the glue absorbs nine times its weight of water, while the ordinary glue, made from animal refuse, absorbs but three to five times its weight of water.

Building Prosperities of Portland, Oregon.

Building operations in this fair city of the North-west, are at present very lively, and from advices received from architects and builders, the present year will outrank any previous record in the number of new buildings erected.

From the columns of *The Commercial Herald*, a new aspirant for public favor, and from its appearance and the ability of its editorials, well worthy of support, we are enabled to present the following record of new buildings now in process of construction:

Brick building soon to be constructed on corner Fourth and Yamhill streets. Size 100x100, 4 stories in height. Two story frame, corner East Park and D streets; owner, P. Taylor; contractor, J. C. Bennet; cost, \$6,000.

J. Slavic is building a two-story frame residence, corner Sixth and Clay, to cost \$3,800.

F. Opitz will construct a three-story brick block on the north-west corner of First and Pine at once.

Work has begun on the new Presbyterian church, corner of Fifth and J streets, East Portland.

Cleghorn & Bunting are rebuilding the old Eagle hotel, on Second street, between E and F, at a cost of \$10,000.

H. H. Lone has under construction, on the south-east corner of Taylor and Ninth, a two-story residence costing \$2,000.

The Long Island House, on the north-west corner of Front and C streets, will soon be replaced by a four-story brick.

Henry Weinhardt will soon commence construction of a four-story brick block, corner Second and Oak streets, 95x100.

Mrs. Vantine has a block of five residences under construction on Seventh, between Taylor and Yamhill, to cost \$18,000.

Work on J. W. Cook's new brick block on Front street, between Ash and Pine, is progressing rapidly. It will cost about \$35,000.

W. E. Robertson has commenced construction of two handsome residences on the south-east corner of Taylor and East Park streets.

A handsome residence is about to be constructed by Hon. H. W. Corbett, for his son, in the vicinity of Bishop Scott grammar school.

Captain Lewis Love will erect another large frame block on the south-west corner of Front and Clay, immediately back of his new hotel.

H. Fleckenstein has in course of erection a block of handsome residences on East Park, between Montgomery and Harrison, to cost about \$25,000.

Work on the dock and warehouse of W. S. Ladd, at the foot of Taylor street, is being vigorously prosecuted. It will cost about \$25,000 when completed.

H. E. Dosch, of Akin, Selling & Co., has a two-story dwelling-house in course of construction on Taylor, between West Park and Eighth, to cost about \$3,000.

Foundation is being laid for Labbe Bros.' handsome four-story brick block on the north-east corner of Second and Washington. It will contain six stores.

J. A. Strowbridge's new three-story brick block on the north-east corner of Second and Yamhill will be 75x100 in size, and cost nearly \$50,000 when completed.

Reconstruction of the J. C. Ainsworth building has been commenced, and a third story will be added to its previous height. Contractor, F. W. Lewis; cost, \$20,000.

Goddard & Frazier have leased the property on the north-west corner of Sixth and C streets, and will commence the erection of a three-story lively stable at once.

Workmen are busily engaged tearing down the old stone foundation on the south-east corner of

Front and Morrison streets, preparatory to the erection of a brick block.

A. H. Johnson will soon erect a four-story brick building to occupy the 100 feet square on the south-east corner of First and Taylor streets. It will cost about \$100,000.

Workmen have moved the dwelling on the north-west corner of Fourth and Alder streets, and Mrs. Burk, owner of the property, will erect a building 25x60, for business purposes.

The excavation has been made and foundation commenced for Fred Bickel's new brick block, corner Front and C streets. The building will be 100x100, and cost about \$50,000.

The two-story brick on the south-west corner of Front and Stark streets is to be torn down to make way for a handsome brick building three stories in height, to cost about \$20,000.

The buildings on the lot adjoining the corner of First and Clay streets, east side, are being removed, and are to be replaced by a three-story brick. The property is owned by W. W. Spaulding.

Plans have been prepared by E. M. Burton for a row of three double residences for J. M. Kenworthy, of East Portland, to be erected on Seventh street near the Episcopal church. They will cost about \$12,000.

A building will soon be erected by Messrs. D. P. Thompson and M. S. Burrell on the New Market block, north-east corner of Second and Ash streets. It will be 100x70 feet, and three or four stories high.

D. Goodsell has let the contract for a three-story frame block 50x70, on Third street near B. The building is to be completed by May 1st. The first floor will be occupied by stores, and the upper floors be fitted up for lodging rooms. Its cost will be about \$10,000.

C. A. Malarkey has leased the quarter block on the north-west corner of Fourth and Morrison streets, and will remodel the present buildings into business houses, adding a new frame building to fill out the entire space leased.

Architect Sherwin is preparing plans for three handsome dwellings, to be erected by Hon. Geo. H. Williams on the half block immediately adjoining the fine residence he is erecting for himself near the Bishop Scott grammar school.

At a meeting of the board of trustees of the Odd Fellows' Orphans' Home, held last week, the plans and specifications of the building prepared by architect Krumbin were formally accepted. The cost of the building will approximate \$10,000.

Construction of a \$200,000 flouring mill, and \$700,000 elevator in Albina, \$250,000 iron works, \$500,000 hotel, and \$1,500,000 depot in Portland, and several hundred business blocks, stores, residences, etc., in Portland, East Portland, and Albina, during the coming season, will give to our city a building boom such as has never been witnessed in the North-west. It is likely that not less than \$5,000,000 will be expended in new buildings alone during 1883.

The *Ledger* says the Episcopal college projected at New Tacoma is certain to be built. C. B. Wright, of Philadelphia, formerly President of the Northern Pacific Railroad Company, has pledged Bishop Paddock that if his friends would raise \$50,000, he himself would add thereto \$100,000. The Bishop, who is now in the East, announces that a large proportion of the \$50,000 has been raised.

The old foundations on the ground immediately north of the National Hotel are being renovated by Canuto & Zanello. They have undertaken the contract to prepare them for a magnificent four-story brick to be erected thereon shortly. The material used for the foundation will be entirely of stone, and the extra work will probably amount to \$20,000. The building will have a frontage on Front street of 100 feet.

The Willamette Iron Works have purchased the block bounded by Third, Fourth, G and H

streets, paying \$75,000 therefor, and will erect thereon a building for their new works. The entire plant, when completed, will have cost the comfortable sum of \$250,000. The building will cover the entire block, and will be two and three stories in height, built of brick, stone, and iron, and will be completed by the last of September, but the company cannot move in before the first day of January, 1884. When finished, it will be the most complete and best arranged foundry west of Pennsylvania, and the largest on the North Pacific coast.

The authorities of the Taylor street M. E. church, have purchased of Mr. Skidmore for \$14,500 a half block on the north side of Taylor street, between Tenth and Eleventh. It is proposed to erect on the new site a very fine tabernacle, costing from \$35,000 to \$40,000.

A commodious wharf will soon be built at Montesano.

Farmington, W. T., is to have a new steam flouring mill.

The Port Blakely saw-mill is cutting up logs as briskly as ever, at the rate of 180,000 feet a day.

A number of parties are looking at the Sinslaw country, with a view of building a saw-mill there.

The Oregon Improvement Company will soon begin building a fine wharf at Seattle, 240 feet long, running from Main to Washington street. The wharf will be built so as to leave a sixty-foot slip at the foot of Main street.

To Remove Clinkers From Stove Linings.

Once in a while we see in the papers directions for removing clinkers from the linings of stoves. Prevention being better than cure, I propose to show how they can be prevented. Three years ago I put a new lining in a No. 3 Magee heater, and no one would imagine, from examining it to-day, that it had been used more than a week. With a piece of iron about half an inch wide, bent to reach the whole lining, I scraped the surface of the lining, shake down lightly, and then put on coal. Kindlings will be required if the fire has been left to get too low, but it is better to do this earlier, as it keeps a steadier fire, and takes no more coal. I think I can explain it on correct principles. When the fire is the hottest, there are no ashes; but as the heat has decreased, the ashes have formed and settled down against the lining, and shaking does not wholly remove them. If more coal is added, the heat is sufficient to fuse the ashes on to the lining, and there they stay. Each time this is repeated more ashes adhere, and it does not take long to spoil the lining. I scraped these ashes off thoroughly the first thing, and none adhere, and it seems that the lining will never wear out.

There is another thing to be noticed. If one stirs a coal fire at the top, in the center, the fire generally goes out, because cold air goes up through the centre; but by scraping around the outside of the fire, and leaving the center undisturbed, the air going up around the fire slightly cools off the lining, and the coal in the center retains its heat sufficient to burn up again quickly without kindlings, if the replenishing has not been too long delayed. The grate must be let down often enough to prevent the accumulation of clinkers in the bottom. Once or twice a week I let down my grate, replace it, and put in some wood, then some of the live coals on the top, when it burns up immediately. I then put on a hodful of coal and close the stove, and have a fire at once without the heat having gone down, and so keep a good fire all winter. This can be depended on: that scraping the ashes from the lining before replenishing a fire—every time—will effectually prevent clinkers from adhering.—*Ex.*

Shrinkage of Redwood Lumber.

"Shrinkage in lumber varies according to the tree from which it is made. Oak will shrink in drying a half inch to the foot, while the redwoods of California show no perceptible change, and the heavy eastern or South American woods lose but little."

We have noticed the above "clipping" in several of our exchanges, and we are compelled to notice it on account of a decidedly wrong statement contained therein. "Redwoods show no perceptible change" in shrinking. Evidently the author of that statement is not acquainted with the wood he seeks to describe.

Redwood has the peculiar faculty of shrinking *endways* as well as in width. One needs to visit but very few of our dwellings to thoroughly convince him of this fact. It has been found (by actual experience) necessary to insert the following clause in the specifications under which the contractor is held. "All the rustic and flooring to be stacked *V* shaped on the ground within ten days after the signing of the contract."

This precaution is absolutely necessary. The contractor seeks to pick out in the first place the driest lumber for all his finish work. It is then stacked on the ground and exposed to the weather for about 30 days. The joints in the rustic are made so well that they are hardly discernible a short distance away. Unless the lumber is extra dry, it will be but a short time before the joints begin to open; in many instances, so much so, that a liberal use of putty is necessary that the building may present a creditable appearance.

In wainscoting, when partly green lumber has been used, the shrinkage is often very noticeable. In fact red wood is like almost every other kind of lumber. If wet, it shrinks considerably end ways and side ways. If perfectly seasoned, it is one of the finest woods for general use. Where wide lumber is necessary, it takes the palm, as we can furnish perfectly clear lumber 10 ft. wide, and of any length from 10 to 30 feet. Of course 10 ft. is a great width and is only intended for fairs, exhibitions etc. But as a rule, redwood lumber is placed upon the market here, having a greater average width than any other class.

We make the above statement for the benefit of our eastern friends who are daily becoming more and more conversant with our splendid redwood lumber. It is statements like that at the head of this article that bring a great many truly good things in disrepute and we are not at all anxious that our grand California homogenous commodity should be in the least discountenanced by those who seek its use, and then condemn it because it shrinks, having been led to believe that no such results follow from its use.

San Francisco Chapter, American Institute of Architects.

THE regular meeting of the above chapter was held in the usual place Friday eve, May 4th, 1883. The President John Wright presided.

The committee on obtaining a permanent room for the association reported progress.

W. C. Jordan was elected a member as Draughtsman. The committee on classes reported as follows: Mr. Sanders remarked that the members of the classes were progressing finely. He thought it was a mistaken idea of the young students to favor the course of study in any one particular class. They should all receive attention and each class be regularly attended by each pupil. The members of the Chapter were requested to devise some method by which increased attendance could be secured. Mr. Pissis reported that much better progress had been made in his class over the preceding month.

The Secretary was instructed to procure the sketches made by the Students during the late excursion to Duncan's Mills, and arrange them for publication in the June number of the *California Architect*.

An anonymous communication was received concerning the foundations of the Garfield Monument. The Chapter refused to consider the letter on account of no signature being attached.

A Mountain of Lime.

ONE of the most interesting objects pointed out to us while accompanying the late Press Excursion was a mountain of lime, situated near the town of Colton, in San Bernardino County. The mountain stands alone in a valley, and from its summit can be seen the Eden of the southern portion of our State, with its magnificent groves of oranges and lemons. Vineyards grace the landscape at every turn, and grand old San Bernardino mountain looks calmly on, carrying one's ideas back to the beginning of this world as so vividly portrayed in the GREAT BOOK.

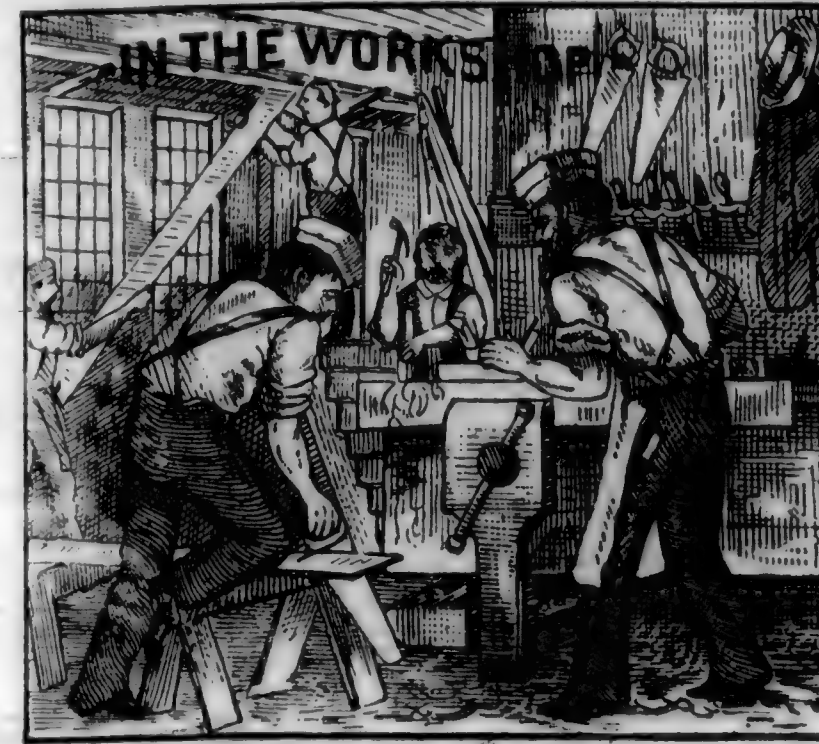
We went over to the mountain, regretfully leaving our friends in Riverside, that we could be able to give our readers a description of the manner in which is fostered one of the great "to be" industries of the state.

Brother Holt, of the *Riverside Press*, succeeded in obtaining a complete description of the works. Our own time was too limited to obtain full information, and so we quote from our brother editor's notes.

"Two furnaces are now in operation, with a capacity of 175 barrels daily. The furnaces are 32 feet in height, one 4½ feet and the other 5½ feet in diameter; of slightly oval shape inside, lined with the best Scotch key fire-brick. The bottom is a square 12 feet high, each side 12 feet wide, braced within and without with heavy iron bars. From this rises a circle of ¼ inch boiler-iron, 16 feet high, separated from the brick circle by six inches of sifted wood-ashes, thus giving an elastic backing to withstand the expansion and contraction of the brick-work. A cast-iron ring, 1,900 pounds in weight, surmounts the circle, and above all stands a large wrought-iron hopper where all moisture is expelled from the rock before it enters the body of the furnace. Two arches on the north

side of the square and two directly opposite hold four oil-burners, styled the Parsons & Northey hydrocarbon injectors. Crude petroleum stored in large tanks on the hillside above flows into iron tubes set under arches, where it is met by a jet of superheated steam, and forms with the accompanying air a hydrogen gas of tremendous heat-producing power. This flame is under perfect control, and is as easily regulated as an ordinary lamp. The calcining of limestone, which requires sixty to seventy hours in a kiln fired with wood is here accomplished in six hours. At regular intervals the draw-door is opened, and an iron car receives the red-hot lime, which is then dumped on the brick floor of the cooling room, 60 x 30 feet, where it is barreled after cooling. The barrels are then wheeled into the warehouse, 80 x 40 feet, which fronts on a siding of the S. P. R. R. From the time the rock is broken in the quarry it is on a descending grade until it is loaded into cars as marketable lime. The natural advantages of the location are great, and no pains has been spared to utilize them. In the quarry we observed the same character of solid, permanent work. High walls of stone and wood prevent the escape of rock while blasting, and a face of excellent limestone, 60 feet high, where one blast can throw down a hundred tons, allows a facility and cheapness in mining which we have never seen equaled. The rock lies in uniform layers, at an angle of 45°, and between these layers are found small veins of natural cement, gypsum, and alabaster. A judicious addition of these elements has given to this lime its high reputation for tenacity, hardness, purity, and hydraulic properties. Wherever it has been used, in brick-work, plastering, and finishing, cement-pipes, concrete-work, and whitewashing, the universal verdict has declared it superior to any lime hitherto used on this coast. It has been easily introduced into all parts of Southern California, and has even been shipped into Texas. The petroleum used is obtained at Newhall and is about 32° gravity. Oil from Puente has also been successfully used. Two large boilers, heated by oil-burners, furnish alternately the steam required. A neat and commodious boarding house has been built, where twelve employes are lodged and fed, a few rods below the works. A cooper shop will soon be added, and large contracts for staves are being filled by our lumbermen in the mountains.

The entire cost of the plant will not fall far short of \$30,000. A royalty is paid to the Pacific Improvement Company, who have given a long lease of the property to the Colton Lime Company. Chas. N. Felton, President of the Pacific Coast Oil Company, is largely interested. Other prominent stockholders are J. E. Condict, President Central Gaslight Company, of San Francisco; Timothy Paige, Esq., and Dr. John Campbell, of San Francisco; E. A. Edwards, A. H. Miller, and D. W. C. Franklig, of Los Angeles, and L. F. Olmsted, of Colton, who is general manager of the company.



SETTING EDGE TOOLS.—In using the chisel for work that needs to be finely finished, the most common mistake made by beginners is to use it too long before resetting the edge on the oil-stone. Suppose that half an hour's work shortens the blade, as measured by the exact cutting edge, by 1-200th of an inch. To bring the edge once more to its original keenness requires a certain amount of rubbing on the stone, the amount corresponding to 1-200th of an inch on the flat face. In ten minutes' work the blade will be shortened by, say, about one third of 1-200th, or 1-600th of an inch, and the amount of rubbing to bring back the edge to the original sharpness after this amount of work, is not more than one-third of that needed in the first case. Thus, if in the half hour the edge be sharpened thrice instead of once, the total amount of rubbing required will be no greater than that needed at the end of the half hour, if no sharpening has been performed since the beginning of it; while, in the former case, the edge will at no time have become more than one third as blunt (*i. e.*, the edge no more than one third as thick) as it is at the end of the half hour in the latter case. Thus, by having the oil-stone always at hand, clean, and in good condition, and by having very frequent recourse to it to keep the chisel edge constantly sharp, a great deal of unnecessary labor is saved, and the work is done more nicely. Of course this rule cannot be followed unless the oil-stone is always ready to be used; otherwise much time would be lost in getting it ready so often. This rule also cannot be adopted to so great an extent with, for instance, plane-irons, with which a considerable amount of time is lost in taking the tool to pieces and putting it together again every time the edge is set. —*Cutting Tools.*

Do nothing in building by guess-work, and in its conduct trust not too much to memory, for a jotting or two at the proper time are worth a hundred jogs on the brain, for the purpose of safe recollection.

If you would set out good work, do it by practical geometry; if indifferent or bad, by the "rule of thumb."

A fair day's work for a fair day's wages should be estimated by its quality as well as its quantity.

In planning stairs, think of your head-room from the lowest starting-point to the highest landing, or somewhere in ascending or descending stunning falls and broken limbs may accompany bruised foreheads and battered hats.

In making out building quantities do not overate them too much, for you may calculate too liberally for your own good, as well as estimate by guess-work too lowly to your own and others, loss.

Contrary to the old saying, "a carpenter is known by his shavings," he is known by the character of his work; and the state of his tools may be judged by the same standard.

The workman that makes the most noise will be often found doing the least work, and doing it badly.

Glaze your sashes with putty if you will, but make your mitres and other joints without it.

Hit the nail straight upon the head and you will save many crooked blows.

Sharpen your tools properly and you will husband your strength.

The Carpenter's Steel Square and its Uses.

WE have authority from the publishers of the above work to announce that we have been appointed

SOLE AGENTS ON THE PACIFIC COAST for the sale of the above publication. A large shipment of books are on the way, and we are prepared to supply the trade. In accordance with our letter of instruction, in addition to the above work, we are sole and only agents for

Builder's Guide and Estimator's Price Book
Practical Carpentry
Hand Saws
Plaster and How to use it.

We particularly want to call the attention of those interested that the 75 CT. EDITION of the Steel Square and its uses is OUT OF PRINT.

The new edition has been revised and 30 pages of interesting and original matter added; it is now the best work in print, upon the subject of which it teaches. It is of a convenient size to be carried in the pocket. Single copies will be mailed to any address upon the receipt of the publisher's price.

ONE DOLLAR

PLAN the attic story for bedrooms if you will, but do not stow the servants in a cock-loft between the ceiling joists and the slates, which will be a frying-pan in the summer and a refrigerator in the winter—a choke-room instead of an air-space.

A KITCHEN and its belongings should not be planned solely for the comfort or ease of the cook, but for the general health of the household, for the purer the air below the purer will that be which circulates above.

BUILD with seasoned timber or you will build to your own discredit and others' loss.

Modern Perspective.

THIS new work is a treatise upon the principles and Practice of Plane and Cylindrical Perspective. The author—William R. Ware—discusses the subject somewhat differently from that generally given, greater prominence being assigned to the phenomena of parallel planes, and use being made of the laws thus established to determine the perspective of lines of intersection and of shadows—subjects that seem hitherto to have received but little attention. The author has certainly succeeded admirably in producing a work that should be in the possession of every Architect, Draughtsman, and Student in the country. The latter two classes should feel grateful that such men as W. R. Ware and others so study their future welfare, as to lay before them the results of a life's labor. Few of our students recognize the value of such a work. They should at once secure a copy, and notice the skill with which they are gently led along under the guidance of the skillful Master to thoroughly understand the Principal Rules of Perspective. Accompanying the book is a portfolio of sketches containing 27 large plates of examples of perspective in all its different phases, viz.: Perspective of Planes; division by triangles; parallel perspective; three point perspective; perspective of shadows, reflections, circles etc., curvilinear perspective; shadows by artificial light; the perspective of converging lines and numerous others. These plates are eleven by fourteen inches in size.

We have received copies of this work and can supply any orders sent. The book contains over 300 pages. Portfolio and book go together, the one explaining the other—Price for the two together \$6.00.

THE *Art Amateur* for May contains some excellent simple designs for wood carving, from the Cincinnati School of Design, together with the first of a series of articles on "Practical Wood Carving for Amateurs, by Calista Halsey Patchin. Other articles of special practical value are those on portrait drapery, flower painting in water-colors, mural decoration, and embroidery in gold and silver. The May number concludes the fourth year of *The Art Amateur*, and the index for the last twelve months gives a vivid picture of the surprising wealth of designs and instruction contained in this invaluable magazine.

BEWARE.—*The Sanitary Engineer* gives this valuable piece of advice to house-keepers: Beware of disused "conveniences," and don't trust to the memory of any one for filling the visible trap with water. Better remove the whole fixture and seal up its outlet if not wanted for frequent use. Moreover, don't you put such an antiquated device as a pan-closet in a first-class house anywhere. Even if its receiver be ventilated, the vent-pipe may work the wrong way and deceive you.

Builders' Guide and Estimators' Price Book should be in the possession of every mechanic. Price \$2.00.

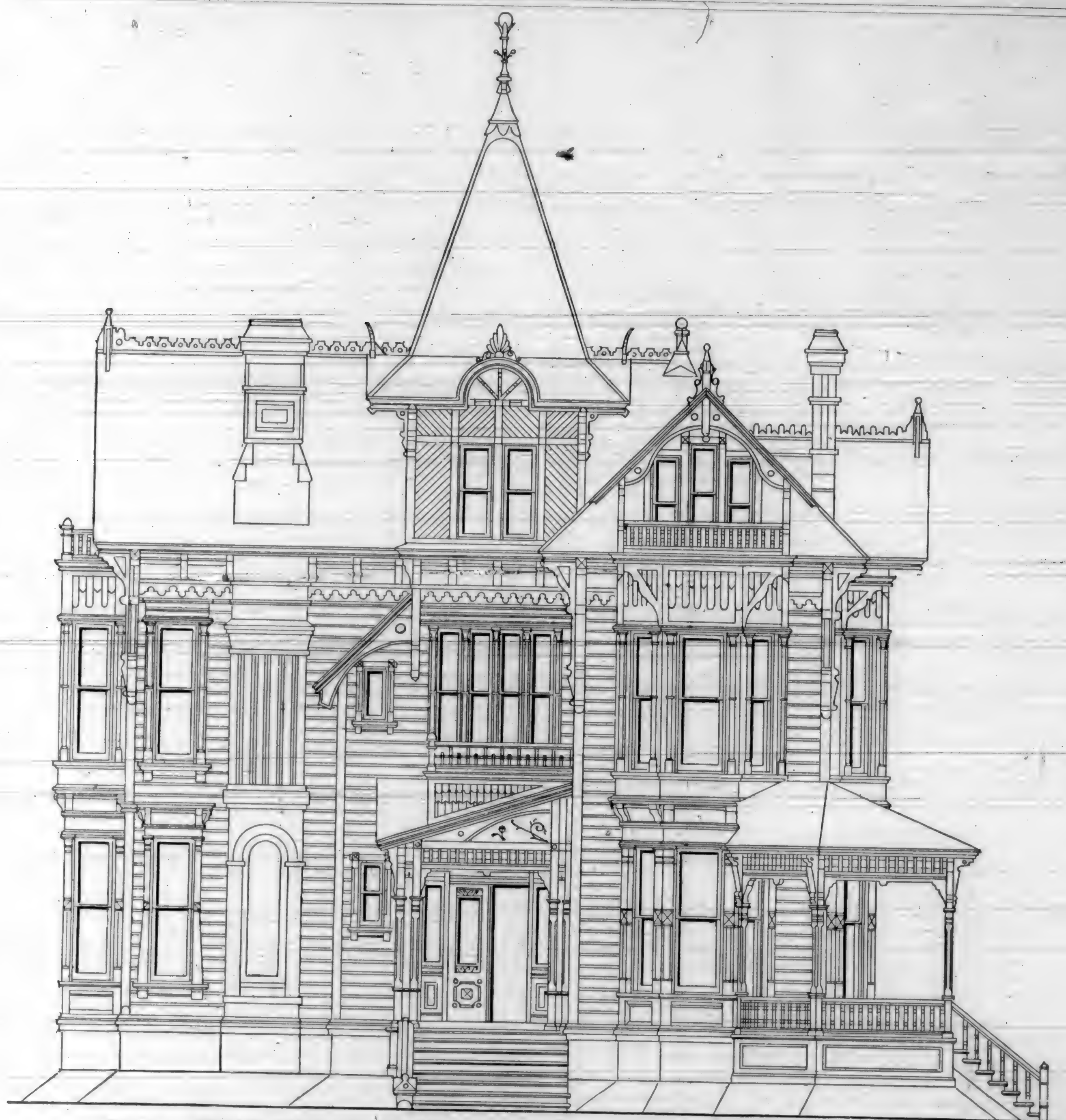


PLATE 1—FRONT VIEW OF COMMODIOUS COUNTRY DWELLING. COST, ABOUT \$7,000.

Solid and Hollow Iron Columns.

A CONFUSION of ideas is sometimes found among practical men respecting the comparative strength of solid and hollow pillars. One hears it often said, for instance, that a hollow pillar is stronger than a solid one. Now this is, as one able authority has pointed out, not absolutely the case; it is perfectly true, that comparing the strengths of two pillars of the same height and diameter, one solid and the other hollow, that the latter has the advantage of being economically stronger. The fact is, the solid column is stronger than the

hollow of the same external diameter; but the lesser area is more effective than the greater, because the central portions of the solid pillar are less useful in resisting the bending force than the metal in the circumference of the hollow pillar. But if the quantity of material in both the solid and hollow pillar of equal height is the same, the hollow pillar is by far the stronger. A simple geometrical construction will enable any one to understand this fact, by enabling us to proportion a hollow column of the same area as that of a solid one, by one of the diameters being given. It is shown, in fact, that hollow columns of the

same area of metal as a solid one, may be made to any larger diameter, their strengths increasing proportionately till a limit is reached by the shell of the metal becoming too thin to insure a sound casting. Taking an example from Downing's work, a hollow pillar 9 inches in external diameter, having an internal diameter of 8.062 inches, and a thickness of metal of 4.7 inches, or about one half inch is five and one half times stronger than a solid pillar with the same quantity of metal. A thickness of one half inch may be regarded as a practical limit in manufacture.—*The Building News*.

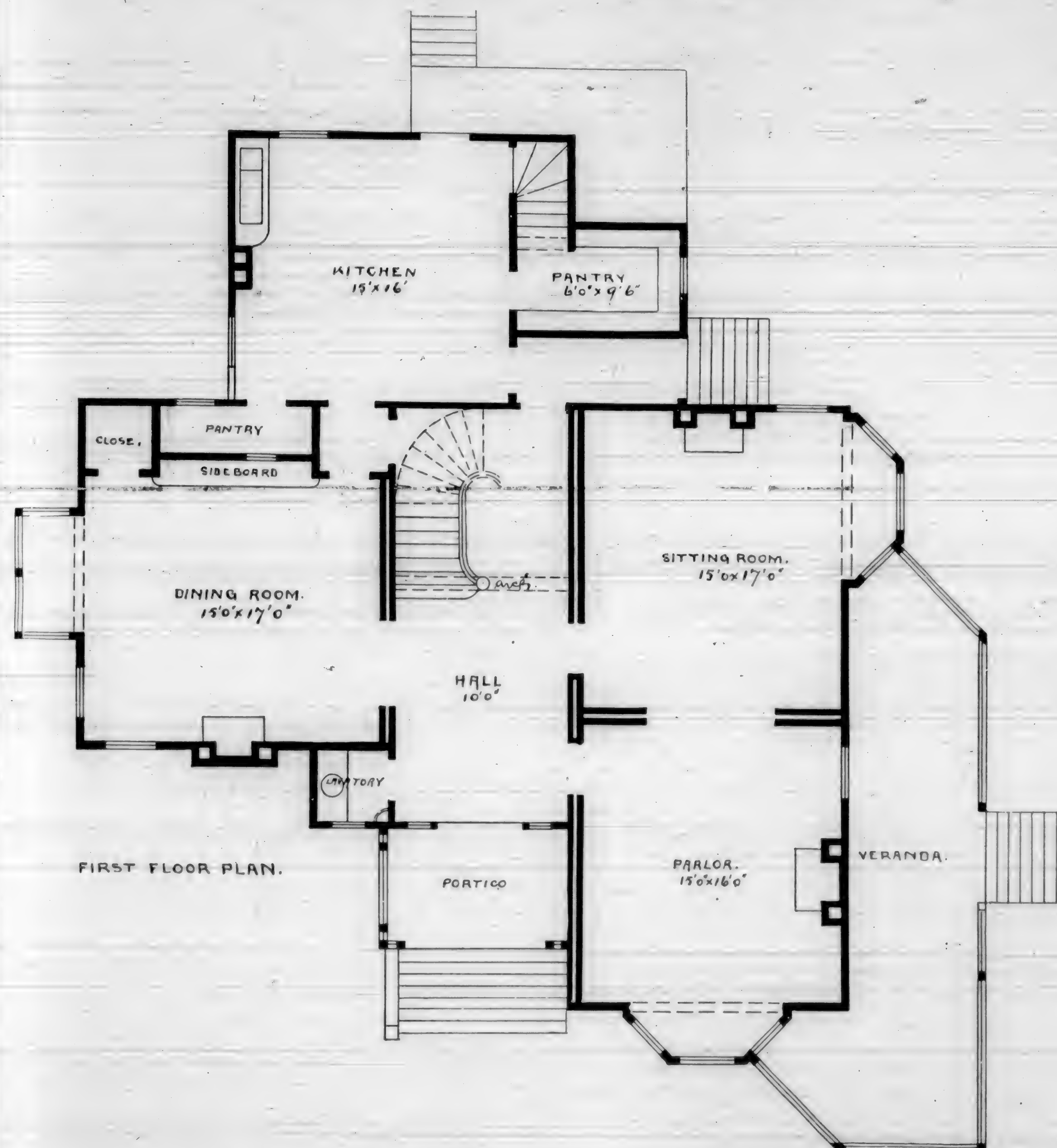


PLATE 2—FIRST FLOOR PLAN COMMODIOUS COUNTRY DWELLING.

Good workmanship needs no coat of paint to enhance the execution, for like sculptor's work, wood workmanship is best judged in the nude without drapery or color.

WET your bricks, wash your sand, slake your lime, but perish not your mortar with water, or your work will not be worth its bond.

LET no building workman be too proud to take a hint from the humblest laborer that attends him, for the experienced looker-on betimes sees more than the doer.

ARTIFICIAL, like natural drainage, is governed by gravitation, and the absence of a proper fall in either is as opposed to nature as a swamp is to health.

A HOUSE in danger, a family in peril.

THE builder that deceives the architect wrongs the client as well, and if he connives at bad workmanship he demoralizes the workman and constitutes himself a criminal.

Garden mold may be good for vegetables, but as a component of mortar it spells early ruin.

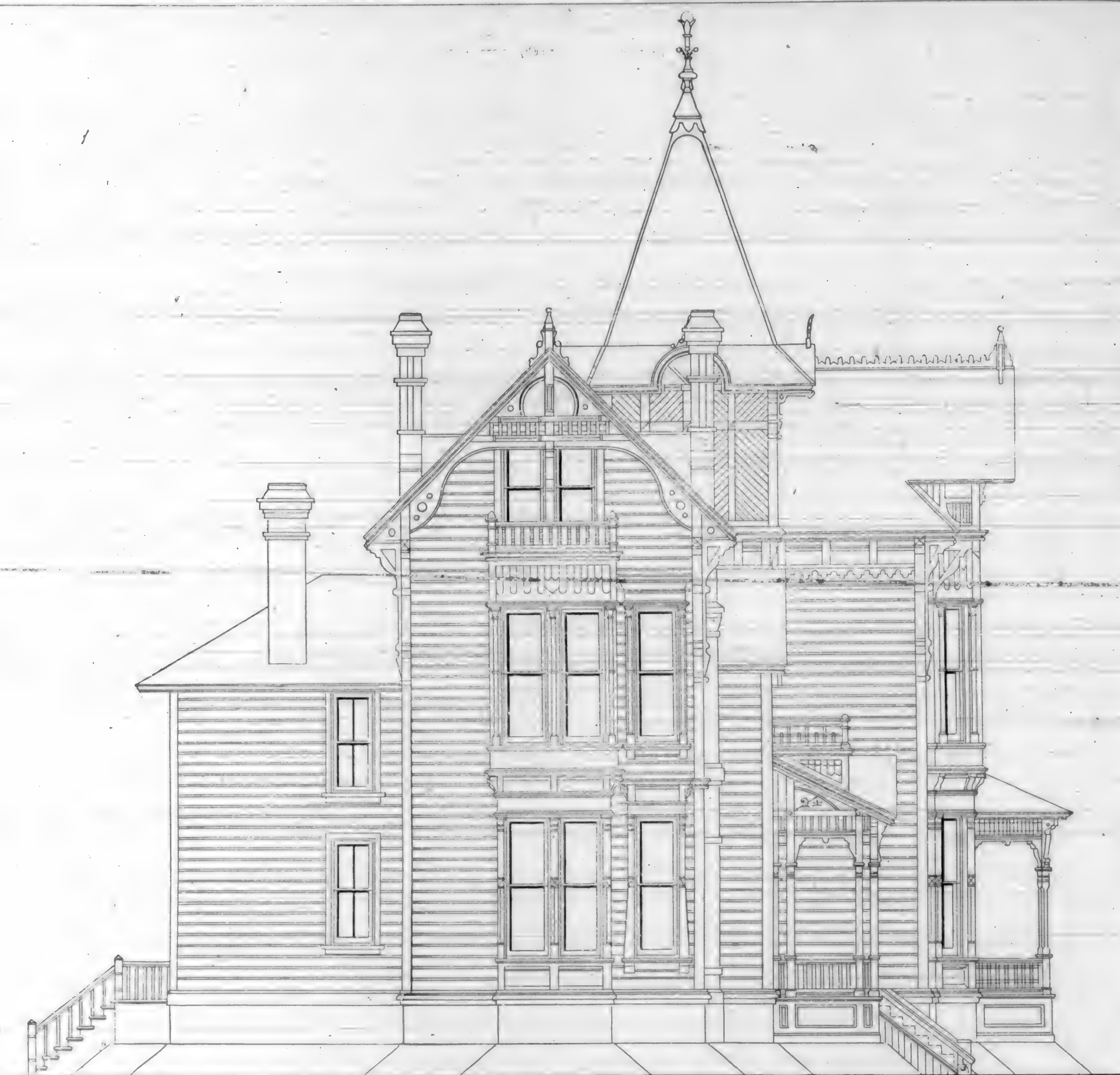


PLATE 3—SIDE VIEW OF COUNTRY DWELLING. COST, ABOUT \$7000.

Our Illustrations.

PLATE 1 presents to our readers the elevation of a neat and commodious residence, suitable for a country or suburban dwelling. Plates 3, 5 and 6 being the same house, as seen from different points. Very little ornamentation on the outside has been adopted, the main idea being to show a handsome front with as little expense as possible.

In the arrangement of the rooms, as shown in Plates 2, 4, and 7, some new and striking features will be noticed. The kitchen is a little "snuggery" all to itself, and yet is in distinct connection with the yard, dining-room, and hall; an alarm at the front door can be attended to by the servant without passing through any room. The veranda is so sit-

uated that it can be used by the gentlemen for a smoking-room.

The bed-rooms on the second floor are all well supplied with closet-room. The bath-room is in the rear; two windows contained therein, so that perfect ventilation is secured. In the attic are the servant's room, children's play-room, and a billiard-room.

This house can be built for any amount from seven to ten thousand dollars, according to finishes used.

A Plethora of Money.

In any city the amount of money loaned by savings banks on property is regarded by nearly everyone as the thermometer by which the rise and fall in the values of real estate are determined

There is an immense amount of money lying idle in this city. In fact, simply to get it out of the way and that it may earn a little something for its owners, one of our principal savings banks last month invested quite a large sum in U. S. bonds. This one bank now holds nearly \$10,000,000 in bonds of our own proud country.

One of the principal causes of this showing is the general prosperity among the working-men. There is no need whatever to run in debt. Consequently on the *pay-as-you-go-and-save-what-you-can* system, thousands of small depositors are placing their money in the banks; and it is these small amounts from a great number of people that is the cause of our savings institutions having a plethora of money.

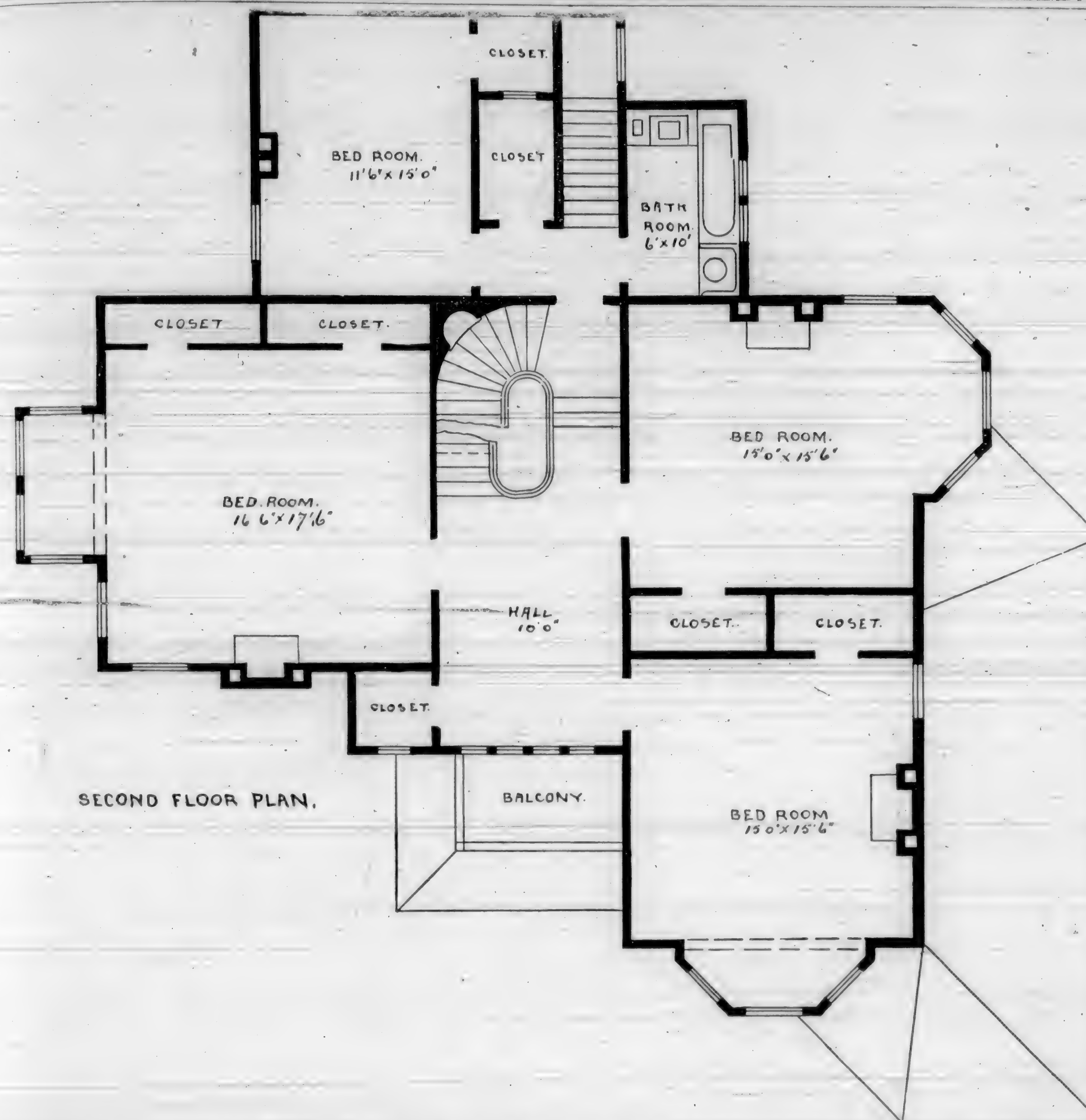


PLATE 4—SECOND FLOOR PLAN OF COUNTRY DWELLING.

Are Plastered Ceilings Obsolete?

MODERN architecture, says a correspondent, in its relation to modern discoveries of new material and the skill of artisans in the use of old material under improved conditions, both in a utilitarian and decorative view, seems to demand something of a departure from ancient methods of constructing and ornamenting buildings.

Weight of material where it does not serve to strengthen or elaborate a design, must certainly be considered obsolete in architecture. In this connection it might be well to consider the impropriety of using plaster ornaments for decorative purposes. In their representation of the vegetable kingdom they are not and

can not be true to nature in any proportionate comparison, except it may be its facial outlines. In elaborating architectural beauty or engineering strength, the same may be said with the added detraction that the more we elaborate the more we weaken the structure. Consequently the application of plaster to ornamentation is by some designers but a lingering relic of unskilled artisans, and should, they think, have no place in architectural construction, except as a modeling convenience. They reason that with the skill now being applied in the use of metals and woods of various kinds, even plaster ceilings should be considered as but a temporary and imperfect method of inclosing rooms.—*The Inland Architect and Builder.*

Wheeler's Patent Wood Filler.

WE invite the attention of our patrons to an advertisement appearing in this journal, offering certain paints and "wood fillers," which are recommended as something superior, and warranted to surpass all others in that line. Being as good as they are recommended to be, they are worth the attention of all architects, painters, wood polishers, and owners.

PERSPECTIVE is necessary in drawings; but do not carry its principles into practice in putting together workman's ip.

HOUSES may not be built from the roof downwards, though they are often burned in that direction by plumbers' fires.

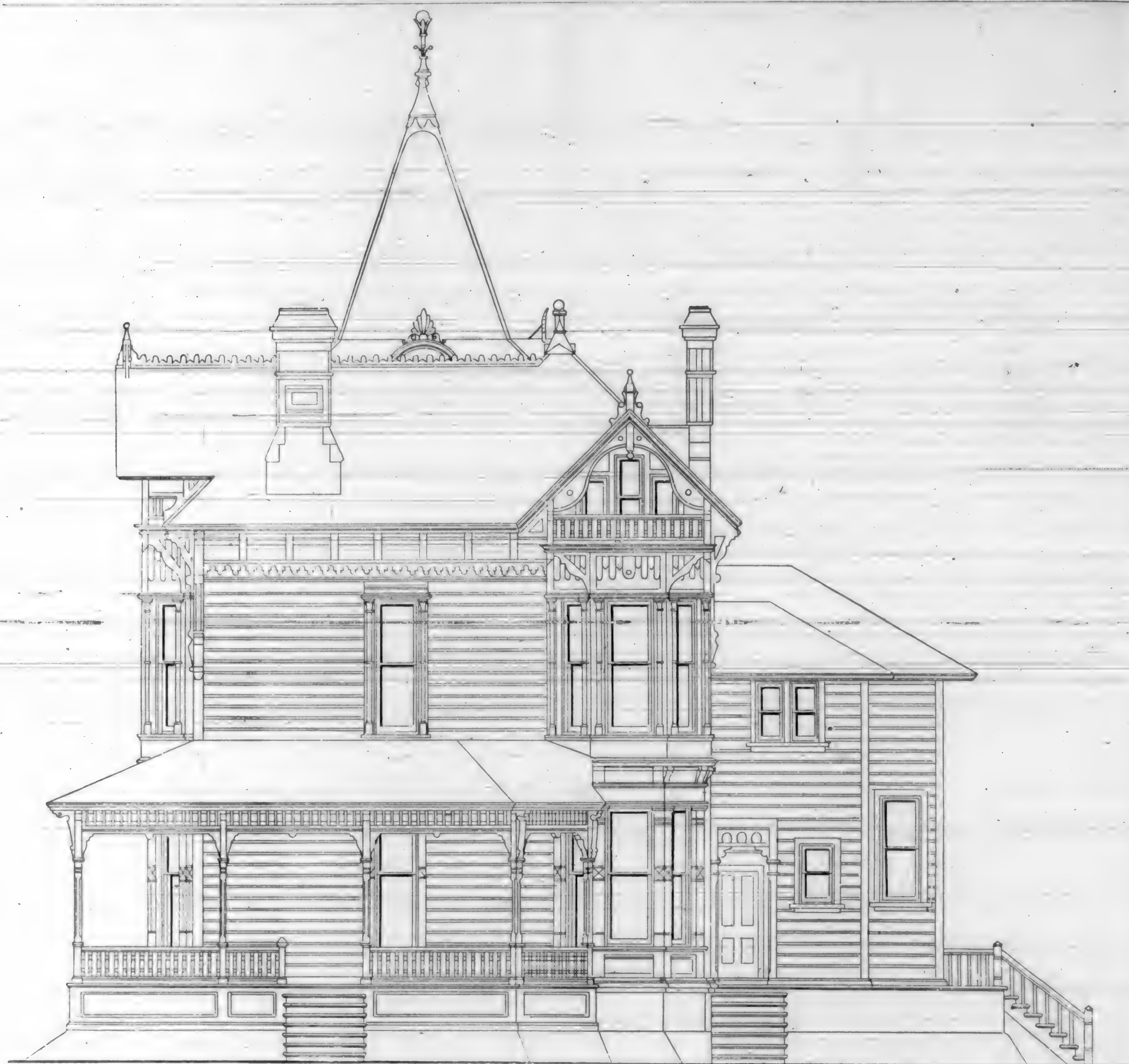


PLATE 5—SIDE VIEW OF COUNTRY DWELLING. COST, ABOUT \$7,000.

Look Out For Dampness.

It would be well for those who move into new houses in the spring to make careful inquiry as to the time when the walls were put up. The increased and unsatisfied demand for houses in this city has induced builders to press their work to completion in spite of cold weather. During the open fall the foundations for many new buildings were laid; under ordinary circumstances the work would have been postponed until spring. Once begun, the temptation to complete a building has been so strong that walls have been built up in every part of the city when it was so cold that mortar froze, if not as soon as spread, at least during the succeeding night. Such buildings are not fit to live in. The walls will be damp

for years, and will be quite sure to cause sickness. A sewer-builder related the following a few days ago: He had been summoned to a house on Prairie Avenue to discover the cause of apparent leakage from some unknown source in the basement. The occupant had an impression that the water came from a sewer. It was soon found that the water, which stood in little pools over the cemented floor, was not sewage. The conclusion was then that it came from the service pipes; but they were found to be absolutely tight. It was finally discovered that the water had been dripping down the inside of the walls, inside the plastering, and arrested by the cemented floor, had spread out over it and formed the pools spoken of. These invariably evaporated during the night, but the hollows filled again when the sun be-

gan to warm the walls in the morning, and the dripping continued during the day. Had there been a wooden floor in the basement, the water would have escaped into the earth and no one would have known it. Inquiry revealed the fact that the house had been built during the previous winter, and an examination of the mortar behind the plastering showed that it was as soft as when laid. It needs no argument that such a house should be avoided. The one in question was a fashionable Southside block.—*Sanitary News, Chicago.*

THE *Lancet* thinks that children should wear woolen next the skin, and wear longer clothing, suspending it from the shoulders and we would hear more of health.

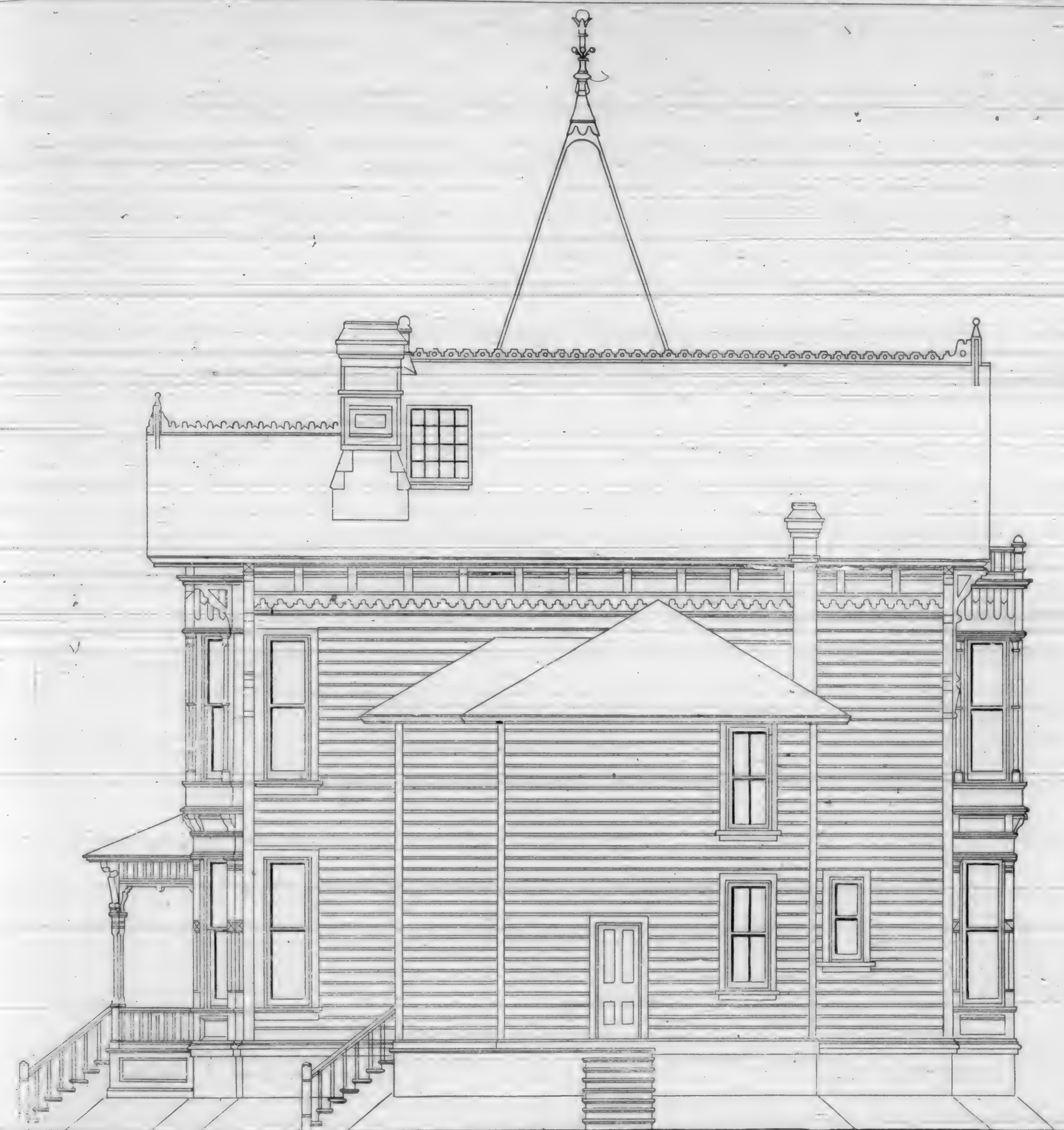


PLATE 6—REAR VIEW OF COUNTRY DWELLING.

Painting Canvas Roofs.

ONE of our readers complains that in painting a canvas roof the quantity of paint necessary to fill the canvas was so enormous, especially in hot weather, that he was quite astounded, using several gallons where he expected to use as many quarts. While this large quantity is an advantage, inasmuch as it is the resisting medium of the roof (and the larger the quantity the better in many respects is the roof), it seems desirable to obtain a coating with a less expenditure of oil and paint.

In painting carriages and wagons a very good practice has been to make a quantity of wheat or rye flour paste, and with this give the canvas, after it is laid upon the roof or panel, a good and even coat. The paste should be about as thick as that used for paper-hanging. This will leave the canvas as tight as a drum-head, and, at the same time, fill the surface sufficiently to prevent so great absorption of the oil. Glue size has the same effect and is easily applied. It is said that panels painted in this way are very durable, and that the paint never cracks or scales off. White-lead in oil colored with ochre is probably one of the best paints which can be applied upon the roof. Possibly, for the sake of its fire-proof qualities, a final coat or two of mineral paint might be of advantage.—*Metal Worker.*

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A recent decision of the Post Office Department is to the effect that a letter, after being sent, can be recalled by the sender upon his making application to the postmaster, who has authority to recall the same by telegraph.

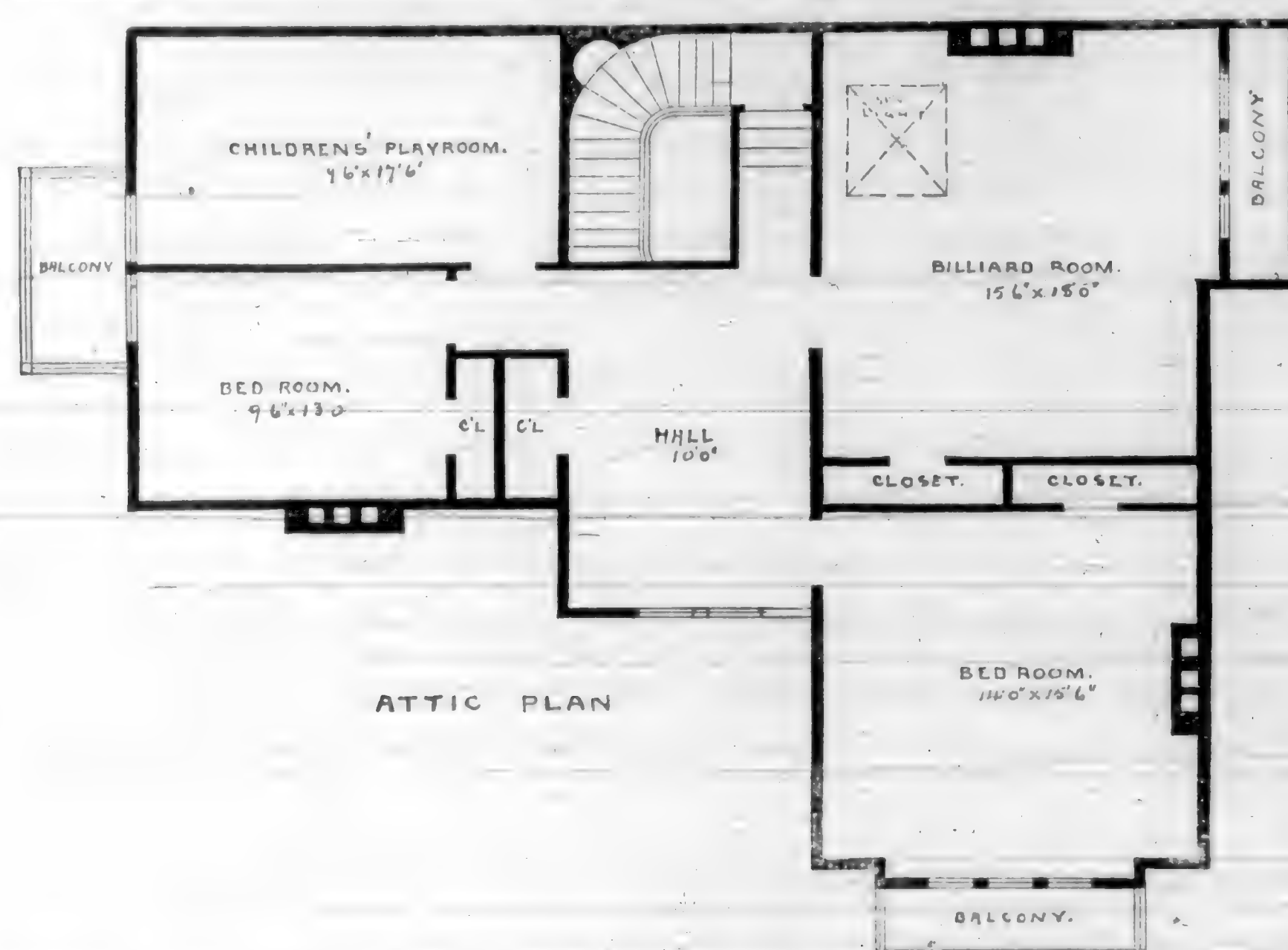


PLATE 7—ATTIC VIEW OF COUNTRY DWELLING.

The "Bulletin's" No. 1 of "New Series."

We regret that our contemporary has "deemed it advisable to present another series of similar designs by the same architect" as notwithstanding the statements of the *Bulletin*, to the contrary, the first series possessed no merit whatever entitling it to the respect of any one familiar with the science of architecture. We have yet to find the first architect or qualified builder who has not expressed himself unfavorably in reference to series No. 1. The few meritorious, copied-from-published-books-features that appeared were so unskillfully handled and were so manifestly the conception of others that the *Bulletin's* protégé received no credit from informed sources for originality; and the very stupid efforts at specification writing demonstrated the utter unfitness of the plagiarist to prepare an intelligent set of documents. In very many, if not in all of them, there were things written down in the "specifications" which have never been observed in the practical construction of the plans accompanying. We say this upon the broad principle that many of the requirements of the specifications were so thoroughly at variance with all consistent constructive practice, and so entirely unnecessary, that no competent builder ever gave them the least consideration beyond the smile induced by their ridiculousness.

The following, from the editor's remarks accompanying No. 1 of series second, has afforded much merriment to architects generally, seasoned with remarks not mentionable in a respectable journal, to wit: "It is apparent that they (the former series) have been instrumental, in a great measure, in introducing and popularizing a new style of architecture in San Francisco, as is evidenced by the

form of many of the dwellings which have been erected here within the past two years." The statement quoted is so supremely ridiculous and erroneous that it would puzzle even the *Bulletin's* man to invent another more thoroughly destitute of truthfulness. Series No. 1 had about as much to do with influencing a change in style of architecture in San Francisco as the explosion of Blossom rock in the Bay of San Francisco some years ago had to do with influencing the various dynamite plots in Russia, England, and other places across the ocean.

It is but little better than a studied insult to the architects in San Francisco to assert that a single one of them, of intelligence and standing, ever derived a single thought from anything that has heretofore appeared in the *Bulletin* or that may hereafter appear from the same source. The introduction of the Eastlake style, as it is wrongfully termed, in the Eastern States was known and understood by architects generally in this city, and examples of the style had been introduced in California before Series No. 1 made its appearance; and whatever inspirations were received leading to the change in style referred to, was from original sources, and not from the imperfect attempts of the copyist who has served the *Bulletin's* purposes of leading innocent owners, in many cases, into trouble, by inducing them to undertake—with mistaken ideas of building values—the erection of buildings at prices beyond possibilities. For, as we stated in our several reviews of the first series, not one of the plans published could, with the then ruling prices for materials and labor, and much less so at the present time, be built as required by the documents defining the materials to be used and the manner of construction, be erected any way near the cost stated.

We care nothing for the bolstering up, erroneous statements of the *Bulletin* or its protégé, that the figures of cost given have been confirmed by actual experiments. It is not true; and as we have at other times stated, we again repeat, that no one of the entire series could or can be erected for the amount published as the "total cost," making all proper allowance for the changes in price of materials and labor; more especially if all the *unusual* and *unnecessary* things called for were carried out according to the letter of the documents—a something never intended by him, if their author possessed mediocre intelligence as an architect. If not by the rules governing constructive architecture, the rule of common-sense would set aside as unwise and unmechanical many of the written requirements of the former series.

No. 1 of second series is no improvement upon those which have preceded it in the matter of "specification;" and the striking similarity of the plan to numbers of others in use removes all idea of originality. The unhandsome and disproportionate perspective elevation alone possessing features of originality in the attempts made to change appearances from scores of similar designs to be found in published books. As to the total of cost stated, no honest man competent to determine values would risk his reputation in making any such an assertion as that found in connection with No. 1 of series second, as a fair and reasonable estimate of cost. Thirty-three per cent. added will not pay the cost of erecting such a cottage in the manner required by the "specifications," and fifty per cent. more than the "total cost" would leave but little if any balance in the hands of the man who would undertake the work at that advance.

We have expressed ourselves thus plainly, not that we care a fig for our contemporary's departure from its legitimate line of publication, and seeking by unusual methods to increase its circulation, but because of the misleading and deceptive features of the case, in inducing people to anticipate results *entirely beyond possibilities*, and fixing standards of values at rates injurious to honest contractors, as no man living can carry out the requirements of the last nor either of the former issues for the "total cost" stated, without considerable loss to himself. And we hold that every attempt, of whatever character, calculated to lessen the opportunities of the working classes to receive fair remuneration for their services, is a wrong deserving the severest rebuke.

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Dr. Ayers on Sewer Gases.

THE doctor recently read a paper before the San Francisco Medical Society, giving utterance to theories upon sewer gases of a dangerous character. We had prepared a lengthy review of the practical fallacies advocated by him, but we are compelled for want of space

to lay it aside. There is nothing new in the theories advanced, as they have appeared in published works upon the subject, although the doctor's effort may have impressed those who do not pursue sanitary literature with the idea of originality.

If the doctor is correct in his assertion, that sewer gases are not promotive of "any special type of disease," then indeed is the whole fabric of sanitary science defective and false. For tens of thousands of the ablest physicians and scientific-sanitary engineers and learned men of all classes throughout Christendom have borne testimony to the fact that those gases are both dangerous and deadly in their effects upon human health; and if so, as ninety-seven per cent. of intelligent people believe, they are and should be rated as of "special type," aside with small-pox or any of the numerous malarial diseases which prostrate humanity on beds of illness, and in the order of their operations fill coffins daily. And it will require infinitely better and stronger proofs than the mere say so's of a San Francisco physician, or the author of a book, to dislodge the public mind from its reference to something which has, by the teachings of those fully competent with the doctor to judge of the nature and effects of sewer gases, and the practical experiences and observations of innumerable many intelligent people, become a settled and accepted fact.

The doctor's assault of the plumbing law passed by the late legislature of California, and his ridicule of the appointment of an "engineer" of plumbing work, simply betrays his ignorance of the subject ridiculed. The "engineer" is an imaginary personage of the doctor's invention, as the law provides for no such official. And as the learned gentleman appears not to have investigated the law sufficient to understand one of its simplest provisions, it would have been wiser on his part to have withheld assertions based upon personal, unintelligent notions. It is not only likely, but very certain, that many of those who have assisted in procuring the passage of the plumbing laws referred to are in every practical sense the peers of the learned doctor, in all matters pertaining to sewer gases, and from their practical experience in connection therewith would be able to give the doctor some good advice and information.

A Great Work.

HISTORY OF THE PACIFIC STATES.

It seems to be the fashion in this country, upon the commencement of any great enterprise, to call upon the government for aid that it might be successfully carried to completion. But in the "History of the Pacific States" by Hubert Bancroft, we have an example of what can be done by the genius of one man, unaided by any governmental aid.

For the past fifteen years Mr. Bancroft has kept constantly employed no less than a dozen secretaries, cataloguing, indexing, abstracting and arranging the material from

which he writes; and it is the great secret of Mr. Bancroft's success, that he has the faculty of utilizing labor in literary as in business pursuits—leaving to the author only the work of the artist; that of the artisan being performed by the secretaries.

We propose to notice each volume as it appears. We recommend it to our friends. We urge for it the serious consideration of good men; of all who have a family to rear, sons and daughters to educate; and we do so for the following reasons:

Firstly—Such work should be encouraged. The author, Mr. Hubert H. Bancroft, has performed this labor at an immense cost of time and money. Literary work of this kind does not pay pecuniarily. It is impossible that it should. Therefore, if the intelligent and prosperous members of the community withhold from it their sympathy and support, what encouragement is there for any one ever to sacrifice pleasure and gain to the public good?

Secondly—It is a history of our own country. Now, historical knowledge is the most valuable of all knowledge, for the reason that history is the recorded experiences of mankind. By knowing what others have done, we may profit by their successes while avoiding their mistakes. And of all histories, the history of our own country should be read and studied first, because it more nearly concerns us. Children should be educated not only to respect their parents and love their home, but to respect their country and tenderly to cherish its institutions. And how can they know about their country if books are not placed within their reach?

Thirdly—It will pay pecuniarily. The well-informed, intelligent man can make more money than the careless and unthinking. It is not necessary to talk of the benefits to society and to individuals of such a work as this; they are obvious. Therefore, we appeal, with all the strength and influence at our command, to every respectable member of this community, and say buy the works of Hubert H. Bancroft. Subscribe for them all at once, cheerfully, promptly; then read them, and speak of them to your friends, and thereby lend your support to a great and praiseworthy undertaking.

We will speak more fully hereafter of the scope of this great work. The full set will contain thirty-nine volumes. Two volumes are now ready for delivery, and it is proposed to have each successive issue finished so as to be delivered every fourth month.

In the hand-saws used in England the cutting stroke is a push outwards from the shoulder of the workman. This mode of using the tool has been perpetuated by the Anglo-Saxon race in the United States, Canada, and the British Colonies. The blade of the saw is thus thrown in *compression*, and in order that it may have sufficient stiffness to prevent it buckling, it requires to be made far thicker than if it had to transmit the same force in

tension only. The liability to buckle is illustrated by lads beginning to learn to saw, who not unfrequently injure a saw-blade by the unsteadiness of the thrust they give to it, which leads to the teeth catching on one side of the cut and a sharp bend or even a crack being caused in the blade. As it is almost impossible to remedy such an injury perfectly, the saw becomes permanently damaged. On this account chiefly, also, English saw-blades for hand-work are (and require to be) made of a much better quality of steel than would otherwise be necessary.

In Germany, Italy, and most of the European Continent, as well as throughout the chief peoples of Asia, handsaws are used in tension, the cutting stroke being a pull towards the chest of the worker. In consequence, the blades are made very much thinner than those of English saws, less material is converted into saw-dust and less exertion is required for given rate of cutting.

The English method, however, has this advantage, that a man standing upright can exert a considerably greater force in thrusting forward with his arms than he can in pulling inward. This is still more the case if he leans forward over his work because he can then throw a large portion of his weight on the saw-handle to drive it forward. The result is that if an English carpenter be pitched against an equally strong German carpenter, each armed with his own tool, the Englishman will saw through as great, or possibly a greater, length of the same thickness as the German will. But the Orientals sit to this sort of work, and planting the feet against the log being sawn, pull outwards by the contraction of all the muscles of the body. As is well known to us from our familiarity with the English style of rowing, this is by far the most powerful attitude into which the human muscular system can be thrown. Thus, unless the peculiar shape and position of his work compels, say, the Japanese carpenter, to assume an awkwardly cramped position, he is enabled, with his thin, broad, saw-blade, to get through his work with far less fatigue and with greater rapidity than an Englishman can.

Thin saws worked in tension, being extremely pliable, are more likely to make a cut that is not quite straight. The thick saw-blade of English or American make has superior stiffness, and, therefore, superior guiding power to keep the advance of the cut always in the same straight line, but this superiority in guiding power is again neutralized by the fact already mentioned of the thrust tending to bend the blade, while the pull on the thin saw tends to straighten its blade.—*Cutting Tools.*

If the Western Union Telegraph Co., as is stated, has purchased the right to use Baxter's long distance telephone, it will not be long before conversation can be carried on between San Francisco and New York with probably two breaks only.

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Architects Sometimes Wrongfully Blamed.

As a rule, in competitions on plans, where the bidding is not restricted to selected parties, there is generally some one of the number who is wild in his estimate, frequently falling fifteen, twenty-five, and even fifty per cent. below all others. The difference of from ten to twenty-five per cent. is of common occurrence; and when the bids are opened, and the low figure announced, those who have figured intelligently, very naturally feel a disgust for the low man, knowing that in the sum mentioned there is not a sufficient amount to enable him to carry out and complete the work proposed by the plans and specifications, in a workman-like manner, and pay the actual cost of materials and labor. That the more careful and correct bidders should feel aggrieved, is right and proper, as every undervaluation of work encourages owners in the belief that by a little manipulation, and unrestricted bidding, some simoleon may be found who will obligate to give a dollar and ten or twenty cents worth for every dollar received under the contract. And it being the common tendency of the human mind among all classes of people, to seek the cheapest, without regard to actualities—propositions which present a saving are generally accepted, leaving the contingencies to take care of themselves. Consequently those who name a fair and honest price for the thing proposed, are presumed to be unreasonably high in their figuring, and are rejected; while the mistaken or perchance designing low man is accepted, not upon the quantum merit of the case, but because of the offer to do for a certain sum that which others of better intelligence and more just and business-like purposes feel cannot be done for the amount proposed. If the responsibilities and involvements in such cases, fell exclusively upon those guilty of such business indiscretions, there would be no cause of complaint; for if men will deceive themselves by assuming competency in estimating, while practically ignorant of all correct rules of reaching values, a little of the sweetening of bitter experience is well deserved, and should operate as a corrective. But the fact that the bad influence of all such examples works an injury to others, makes the matter one of general interest, and brings it within the province of reasonable and justified complaint. The wrongful blame upon architects lies in the fact that many of the disappointed give vent to their feelings in disapproval of architects permitting "such fellows to figure in their offices." There may be grounds for such murmuring in some cases, but not as a rule; for every well-informed architect knows full well, and in some cases by bitter experiences, that very low figuring is premonitory of trouble; and architects of intelligence and standing are never anxious to surround themselves with making contract conditions which indicate storms and disagreeable occurrences in the future. Yet, being the managing men in preparing the papers and receiving the bids, they are generally held responsible for the blunders and mistakes

of all who are permitted to figure, although unable to know or control the figuring of any. In fact, those who are allowed to figure are generally guarded and careful not to extend any information to the architect, through fear of being "given away," and the webs of obscurity and secrecy are tightly woven around the figuring of those in the competition, so that no one may gain or use the advantages of knowing the figures of others. Consequently the architect should not be held responsible for the irregularities of bidders, inasmuch as he holds and exercises no control over the figuring, and it is a great injustice on the part of competitors to invent and express accusations reflecting upon the office in which they figure, because some one of their own class may have made enormous calculations of costs and values.

We intend no reference to those "architects" who impose upon the public by assumptions, presumptions, and artifices which never enter the minds of intelligent and educated men in the profession, who would scorn to be guilty of an unjust or unprofessional act. Nor are architects always responsible for the admission of all the parties joining in competitions, as owners very frequently of their own knowledge, or through friends, know some "good man," whose estimate is wanted, and who cannot be ruled out by the architect, except at the risk of being charged with special purposes in view, or with motives of a personal character. And further, the "low man" frequently proves to be one who has enjoyed the benefits of large experience, and whose "low figures" are wholly the result of oversight. As in one case within our own experience as architects, the contractor overlooked the entire item of labor, amounting to more than twelve hundred dollars, yet he failed to discover his error until long after the work was commenced. The building was satisfactorily completed, and the loss sustained without murmuring, but the effect was bad, inasmuch as through the error of a competent contractor a building was produced far below its value, and stands to be pointed at as a house costing only a certain sum—which is a fact as far as the owner is concerned, but not so as a whole, as the contractor sunk the amount stated, which does not appear in connection with the contract cost. Numerous illustrations might be cited, showing the absence of a fair, perfect system of figuring among the greater number of contractors operating in San Francisco and we think that complaints should be made in that direction rather than against competent architects, who understand fully that contracts let to good men at remunerative prices, are always attended with more pleasant and satisfactory results to all parties.

SPIRIT of turpentine is now made, says a contemporary, from sawdust and refuse of the saw mill. It is extracted by a sweating process, yields fourteen gallons of spirits, three to four gallons of resin, and a quantity of tar per cord.

Building Activities.

The transactions in real estate during the past thirty days indicate a healthful state of affairs generally, with a large amount of capital still seeking investment in desirable business property. The general talk favors the presumption that, before the fall months roll around, there will be a large increase in the erection of brick buildings for business purposes. At present there are but few of this class under way or in course of plan preparation. As will be seen by our monthly report, building operations are confined mainly to residence and tenement improvements, with no abatement in the number of contracts signed during the present as compared with previous months of the present, and for the same period of the past year. Contractors generally are busy, and all good workmen employed, notwithstanding the inauguration by the Carpenters and Joiners' Union, of nine hours as a day's labor.

A limited number of owners express a disposition to resist the nine-hour system, which went into effect on the first inst., but the opposition is feeble and with in a short time quiet down to an acceptance of the situation, provided the working classes continue the course thus far pursued, of making as little stir as possible in reference to the matter. It is only when movements of the kind are made unnecessarily conspicuous that material opposition is aroused and stimulated. But few owners of real estate will permit their property to remain unimproved, with the prospects of remunerative returns upon investments made in the erection of buildings, whether men work nine or ten hours per day. And past experiences prove that there is less ground for opposition to the new rule than many conjure up. For it is a well-established fact that contracts are let from time to time at nearly the same rates, even with an advance in price of materials and labor in prospect or in force. Ten per cent reduction in the hours of labor by no means increases total cost ten per cent., as the cost of labor on buildings is only about one eighth of the total value, and the increase cannot therefore apply to more than that proportion of the total sum; so that on buildings costing \$4,000 under the ten-hour regime, the extra cost figured out by the one-tenth reduction in the hours of labor would increase the total cost, under the nine-hour rule, less than \$100.

It is reasonable to presume that there will be a short lull in building improvements at this season of the year, when the greater number of those who can afford the time and expense are preparing for their usual summer vacation to, and sojourn at, the various springs and other places of resort—relaxation and pleasure. At the same time, architects generally have numerous orders in hand and plans in course of preparation, and brisk times are confidently relied upon during the remaining portion of the year.

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Value of Buildings—Results to Contractors.

THE prevailing sentiment in regard to the *Expense of building* is in many respects erroneous. Owners more generally, at the commencement of operations settle upon a sum to be expended, seldom equal to, and more frequently largely below the actual value of the thing contemplated. It is but seldom that an amount is stated, sufficient for the purposes contemplated. More is generally asked for than can possibly be obtained for the sum named, without loss to someone—if the attempt is made to comply with the demand made. Two prominent facts in this connection are worthy of notice, first that THOUSANDS of failures, ending in pro rata settlements, have occurred in San Francisco, not so much by the wastage and squandering of contract moneys as from absolute shortage in the contract amount, less than actual values. The bread-and-butter price at which the work is undertaken will not permit the slightest departure from rigid economy in every particular, nor permit less than slavish attention to the work in hand. The profit margins are as a rule inadequate to the slightest indulgence other than close application in time and personal labor, and attention on the part of the contractor; and it is only by the exercise of every saving possibility that a majority of buildings are completed, with money enough to pay the bills for material and labor.

The second fact that may be mentioned, is that of the financial condition of eight-tenths of those who undertake contracts for buildings. Aside from a few judicious, thoughtful, careful men, the contractors operating in San Francisco have comparatively nothing to show for their many years of application to building pursuits. Nor can it be charged that our master-builders are extravagant livers, for generally speaking there are but few of them who own a roof over their heads clear of encumbrances, while the greater number live in rented houses; all of which goes to sustain the statement, that the contracting business in San Francisco has hitherto been less profitable than it should have been, in view of the very large amount of money handled in building operations. All this is further sustained by the fact that but few indeed of our contractors are entrusted with contracts without bonds; a fact that would not exist, if the financial condition of contractors was such as to inspire confidence on the part of owners and materialmen. Nor is this so because they are generally considered dishonest men, for the integrity of many master-builders is not disputed; but honesty alone will not settle unpaid bills nor satisfy creditors; it requires coin to liquidate financial obligations and square accounts. Honesty in its purest sense may permeate every thought, and every intent and purpose may be pure, but if the ducats are lacking, bills cannot be paid.

It is therefore safe to say that owners, as a rule, have been largely financial gainers in

the improvement of their real estate in this city, as those who have done the work cannot make an average showing of reasonably fair financial results and profits.

We do not write this as a rebuke to owners, for if men professing competency to estimate building values, see fit to throw away their time and energies in erecting buildings for less than they are worth, owners would be less than wise not to avail themselves of the benefits thus offered.

The Plumber Movements.

SINCE the April issue of this journal we have received a copy of the code of by-laws adopted by the Master Plumber Association of the City of San Francisco, defining the organic laws and executive rules of the organization. If not as perfect as they might be, they sufficiently exhibit an honest purpose on the part of the members of the society to correct the abuses which have hitherto existed in the plumbing trade, and give clear denial to all the speculations dealt in by those who have raised or repeated the cry of a "political job" in the passage of the plumbing law by the late Legislature of California. Upon the theory that all men are corrupt, the law in question may, like thousands of others framed and passed for good purposes, be used by designing and mischievous men to work out selfish purposes. There are but few laws passed which do not in cases fail to accomplish the object for which they were made. But the law recently passed, through the earnest exertions of the principal plumbers in San Francisco, is not one likely to be allowed to fall into bad hands. Those who secured its passage have a common, general interest in its perfect efficiency; and we cannot believe that the leading men in so important a branch of mechanism as the plumbing business is universally acknowledged to be, will permit the matter to pass from their control as a body into the hands of political tricksters and schemers. The good men of the plumbing art have long felt and groaned under the profligate irregularities which have to a large extent brought more or less disgrace upon the entire craft. So many bad things have been done in the name of "practical plumbers," that a very large proportion of property owners and tenants have accepted the belief that honest and competent plumbers are as scarce as incorruptible legislators in a California state legislature. It has therefore become imperative for their own interest individually, and for the redemption of the trade, that the better class of plumbers should secure such aid and assistance in legal form—all mechanical and sanitary considerations failing—to correct the existing abuses. And now that the regulating and corrective means are under the control of the more intelligent and really practical men in the plumbing business, they will deserve all the bad things that can be said about them if in the future more perfect plumbing work is not done in this city, and a change in general sentiment in reference to plumbers brought about.

Cheap Piazzas.

PIAZZAS and porches are like parasols, they may be intended for comfort, for ornament, or for both. Probably they ought always to be both ornamental and useful, on general principles everything ought to be so, but the object of these suggestions is to indicate how the comfort of these pleasant adjuncts may be secured without the large outlay which is supposed to accompany the "good, broad piazzas and plenty of them," that form so essential a part of the air-castles of most house-builders. In its simplest form a piazza is an open shed resting against the outer wall of the house. If in the right place and of reasonably good proportion, the plain upright parts, with whatever braces are needed for strength, and the lean-to roof will not be unsightly in appearance—quite the contrary, indeed—and will afford precisely the same comfort as the more elaborate structures with turned bed-post columns, Queen Anne spindles, fantastic scroll-sawed brackets, grooves, beads, and decorations without number, and more striped paints than can be found on a dozen barber-poles. Multitudes of village and country houses are bare and comfortless both in appearance and in fact, that would be transformed into hospitable mansions by simple piazzas, which any man of common Yankee ingenuity could build for himself if he could not afford to pay for the labor. A floor of sound, narrow boards laid an eighth of an inch apart on rough joists resting upon boulders or brick piers, will last for many years, and a boy can make it. Plain, square pieces of timber, or small tree-trunks cut in the grove and stripped of their bark would serve for posts, and a roof made of sound, seasoned, matched boards, not more than four or five inches wide, the edges painted as they are laid, and both surfaces above and below well painted afterwards, will not even begin to leak till long after it has paid for itself a dozen times over in good solid comfort. Even if after a dozen years a few drops should come through in a driving rain, or from melting snow, it is not a serious matter. We don't keep our soluble groceries nor our best silk dresses on an open piazza, not as a rule, and the tightest roof in the world will not prevent the rain and snow from blowing in beneath it. Such a plain, simple piazza built where it can be pleasantly used and large enough to serve as a semi-out-door apartment is vastly preferable to the high, narrow, formal affairs that are evidently added to the main structure, not because the builder desired to increase the comfort and convenience of the occupants, but because he hoped to increase the external beauty of the building. To build a piazza when it is not needed and cannot be used, is like parading an open parasol in the shade, or hoisting an umbrella when there is no sign of a shower.—*The Builder.*

FROM a study of the maximum temperatures naturally occurring, Mr. L. Liebermann says that a mineral oil, the flashing point of which exceeds 60 deg., may be safely used in all parts of Europe.

Practical Suggestions.

ALL sorts of devices have been made and many patented to prevent the rain from beating in under the bottom edge of an outside door in a driving storm. Many have undoubtedly noticed a great heavy, unsightly piece of inch-and-a-half plank with one edge beveled off, and nailed on the bottom edge of a door to prevent the water from being blown by the force of the wind under the door and into the room. In severe storms these old-fashioned weatherstrips have not accomplished what they were made for.

A much better and more workmanlike way is to take the door from its hinges, then with a carpenter's plow, holding a $\frac{3}{8}$ -inch iron, make a groove about $\frac{3}{8}$ of an inch deep in the lower edge of the door—that is, across the lower ends of the door-stiles and the lower edge of the bottom rail, taking care to have the inward edge of the groove project when the door is in place—from $\frac{1}{8}$ to 3.16 inches beyond the rabbet of the doorsill. After you have made the groove, with a rabbet plane work off the outward edge of the groove until you bring it nearly to a point on the outward edge of the door. This finished, the door can be put in place.

This manner of fixing a door prevents any unsightly strips of wood on the bottom of your door, yet it works well in the case of severe storms.

Some may ask what is the reason. It can easily be explained. The rain beating against the face of the door runs down to the bottom edge, and when the wind is strong, and the space between the door and sill is considerable, the water is blown across the lower edge of the weather strip and door until it reaches the inside edge, where it drips down on to the floor.

With a door made as described the wind may be strong enough to blow the water up the incline on the bottom edge of the door, but if it abates, even only for a short time, the water will run back and drop off the front edge or be blown back again up the incline.

If the force of the wind is so great as to drive the water into and across the groove it will run down the inward edge of the groove and drip off into the rabbet of the door-sill.

Thus it will be seen that it is quite important that the inward edge of the groove should project beyond the edge of the rabbet in the door-sill.

Possibly in extra hard storms, where the door is in a very exposed position, a little water may be driven under a door made this way, but it will be small, and not sufficient to cause any annoyance.

I have often wondered why carpenters and builders always put down door-sills in rooms where all the floors are to be carpeted. In my own house I have taken up all the door-sills between my rooms, and have run my carpets from one room into the other. This is especially desirable when carpets are all one pattern and rooms are used in connection. Carpenters could leave the door short enough to swing over

an ordinary carpet, while the removal of the door-sills will aid many a housekeeper in sweeping.

When sills are used, odd bits of oilcloth must be got to cover the sill, and even then along either edge it leaves a good-sized crevice for the accumulation of dirt.—*Rivet, Mechanical News.*

Driven Wells.

Good drinking water is just as essential to health as pure air; but it is not always easy to determine if water is pure through the sense of taste or sight; water that contains considerable organic matter is sometimes offensive to the sense of smell; but this is not always the case. The best method of testing for organic impurities is to drop into a tumbler of the water just enough "permanganate of potash," or of "Condy's fluid," to give the water a pinkish color. Any organic matter contained in the water is precipitated after standing an hour, the water losing its color or becoming brownish. If, however, there are no impurities to be acted upon, the water remains of a pinkish color for hours. This is a very simple test, and a valuable one, and were it more frequently employed, and its indications heeded, there would be few cases of fever. The best plan to get pure drinking-water is by means of what is generally known as the "driven well" but which by our plan is nothing of the sort. We have seen an open well, the water of which was dangerous to health, within ten feet of a "driven well," in the water of which no impurities could be detected. It is almost impossible to find an open well of perfectly pure water, and it is hardly possible to find a driven well where the water contains impurities.

The easiest way to make a "driven well," is to get a piece of iron or steel pipe, six feet long and one and a quarter inches in diameter; make a cutting edge at one end by beveling off inside the end of pipe, with a half round file, drive this pipe down a foot or two and then draw it up, and the earth from the hole will be found inside the pipe, and can be pushed out with an iron rod. Repeat this operation until you have gone six feet; then couple an inch pipe, six feet long, to your cutting pipe; continue this till water is reached, then attach a short piece of pipe having small holes in it, and a plug in the lower end, to your inch pipe, and drop it into the little well you have dug; screw on a pump and you have a well complete at about the price Mr. Green charges for the right to drive a pipe into the ground. In the decision of the Court in regard to the Green patent, the judge said, that where the earth was raised up and taken out of the well, it did not infringe Green's patent, which holds good only where a pipe is driven down so as to push the earth aside. But everybody knew that.

It has always seemed remarkable that any one should have bothered with Green's patent, when the plan above described is in all respects preferable and is hampered by no patent.

Though small it is just as much an open well as if it were six feet in diameter, and any one has the undoubted right to construct such wells. If stones are encountered they may be broken and penetrated by attaching a piece of round steel, one inch in diameter and two feet long, to the end of the inch pipe. The lower end should be drawn down to a blunt point. We constructed a well on the above plan, using an inch galvanized pipe, and the supply of water is abundant for twenty families.—*Hall's Journal of Health.*

Draughtsmen and Our Draughtsmen's Registry.

DURING the past two years or more numerous applications have been made at the office of this journal by practicing architects in San Francisco, and others from Portland, Seattle, Los Angeles, and various other portions of this State and Coast, for competent draughtsmen; the very reasonable conclusion prevailing that as the representative and official organ of the profession, its management should possess special information in reference to those desiring employment as draughtsmen, and those needing help. These conclusions were and are correct, and with the view of perfecting a system which would place us in communication with the entire draughtsmen's forces in this city and elsewhere, we prepared a registry in which to enter the names of all draughtsmen, charging the sum of \$2.50 to each party registering, which amount was intended to operate as a perpetual fee for all time, without increase or renewal. Under this arrangement we have been able to secure engagements to many who might otherwise have remained idle, and suffered a loss in time and wages many times greater than the cost of registration, and some who have availed themselves of the advantages offered have formed advantageous co-partnerships and are doing well. But our motives have been by some misjudged, misrepresented, and theorized and magnified into an attempt on our part to perpetrate a wrong, accompanied with the illiberal idea that our interest in the matter was stimulated by the petty and insignificant sum charged, rather than the truthful, honest purpose to assist and place in ready communication both employers and employes. There is so little of reason or veracity, and so much of absurdity in the insinuation, that we should not refer to it were it not that the majority of human minds are ever ready to receive and accept as true any and every statement listened to which affords the opportunity for enlargement and furnishes the basis for gossip and slander. As beasts of prey become more savage by the taste of blood, so do most of human kind give more heed to false representations intended to hurt and defame others. There is a relish and flavor in untruths which satisfy and please the unrefined moral taste of multitudes, who prefer to feed upon the false and untruthful rather than seek the sweet sustinements of honest fact, and who are ever ready to magnify mole-hills into lofty mountains and attempt to reduce the silvery

orb of night into a map of moldering "green cheese," by exaggerated representations.

The fact that more or less time is consumed in all cases, and sometimes inconveniently so, in respectful courtesies to those calling for information in this connection; that letters are received and answered, postages and sometimes telegraphic expenses involved, are not considered by those who would have us serve their interests at our own cost and expense. We are willing at all times to expend both time and money in matters of a general character by which our patrons may be informed, instructed, and benefited; but those of the side personal interest assume a different aspect, and it seems to us strange that any intelligent young man should permit himself to reach or accept conclusions so foreign to actual facts as those involved in the subject-matter of this article.

As further proof of our disinterestedness as far as the fee is concerned, we state the fact that we have found situations for a number of draughtsmen who have been short of funds without exacting the fee, but have not entered their names upon the registry. And we shall continue to aid any and all who may call on us, giving preference to those who comply with registry requirements when the supply is in excess of the demand.

Cisterns.

A WRITER in the *Lumber World* presents some facts with reference to cisterns that may prove of interest to the readers of this Journal.

Cisterns of various sorts and sizes may be very cheaply and speedily made. The largest sizes should be made oblong, not more than twelve feet across, to turn brick arch over conveniently, and as long as needed. Round cisterns are best when not more than twelve feet in diameter, and as deep as necessary, though the draft of water is rather hard when more than twenty feet deep, when pumped by hand. To build a cistern, if circular, the earth should be excavated in the shape of an egg, longest down, and rounding at the bottom, making the surface of the excavations as smooth and neat as possible. Three feet from the top dig out a shelf the width of a brick, laying the brick for the arch in cement or hydraulic lime-mortar of as good quality as can be procured. Lay a course of bricks in the mortar all round the shelf, pointing the spaces well between the bricks and behind them. When this is completed, all the spaces being filled up, begin another course about one and one-half inches out from the other, filling in all pointing as before, so that the cement, when set hard, will bind and hold the course of bricks firmly. This will draw in the cistern three inches. Continue in this way, until the hole is about the size of a flour-barrel, filling in the soil around the arch and above it, and building a neck about two feet high to finish off. The earth around ought to be fully a foot higher than the level, to turn off drainage and keep out surface-water. When this is done the interior of the cistern may be

plastered on the earth, when it is firm and solid, placing a large stone or platform of bricks immediately under where the water will fall, in the bottom, and to support the pump-tube, if one is used. When an earth-wall is not used, bricks should be laid in courses from the bottom, in cement, with much care, and backing each course well behind with dry sand, that the pressure of the water may not cause leaking, which is very often the case if not properly done.

Cement-mortar is usually made of two parts dry mortar-sand and one part of hydraulic cement. The bottom and walls of the cistern must be well plastered and completely covered with this mortar, without any breaks in it anywhere, at least one-half inch thick. It is best not to get it on too thick, or it may slide down to the bottom. This will dry enough in twenty-four hours to be well covered with a wash of hydraulic cement as thin as it can be laid on with a whitewash-brush. The whole should be carefully gone over with this wash, that all porosities or cracks in the plaster may be thoroughly filled and covered up. Two or three coats of this wash are better than one, as they will render the cistern as tight as a bottle. The more coats of the wash that are put on the less water will soak away through the pores of the plaster, and the tighter it will be. This is a point of considerable importance, and should always be carefully attended to.

It is, of course, convenient, when you decide how large a cistern is wanted, to know how large it ought to be made to hold the required quantity of water. For every foot of depth of the following diameters the cistern will hold:—

For 6 ft. diameter	7.	barrels of 30 gallons.
" 7 "	9.598	" "
" 8 "	12.598	" "
" 9 "	14.42	" "
" 10 "	19.58	" "

A cistern 10 feet deep and 6 feet in diameter holds 2,100 gallons, or 70 barrels of 30 gallons each. The rule for finding the contents of any cistern is to multiply half the diameter in feet by itself. Then multiply the product by 3.1416, which gives the area of the excavation near enough for practical purposes. Multiply this by the depth in feet, which gives the cubic contents in feet. Multiply the last product by 1,728 to get the number of cubic inches. Divide the whole result by 231, the number of cubic inches in a wine gallon, and the product will be the number of gallons in the cistern. This, divided by 30, gives the number of barrels of 30 gallons each.

In conducting water from a roof to a cistern, arrangements ought to always be made for turning it off when full, as the weight of the water is apt to burst the walls if it is allowed to overflow. This should always be carefully looked after, and the conductors ought always to be turned off until the rain has fallen for some time and washed the roofs clean and clear of leaves and other trash. A small wire-screen ought also to be placed over the spout-holes in the roof. Professional cistern-builders are apt to slight their work, using too little cement, or

too little mortar, or not backing the walls well, or not washing them enough afterward to be tight. Any intelligent workman can make a good cistern after being shown how, and these often do the best work. It is always best to mix small quantities of mortar at a time, using it as rapidly as possible. A round cistern is much more economical of space, and holds more in proportion to depth of wall than a square one. But it is often thought best, in constructing very large reservoirs, to build them square. The following tables of both show the difference in wall and in area:—

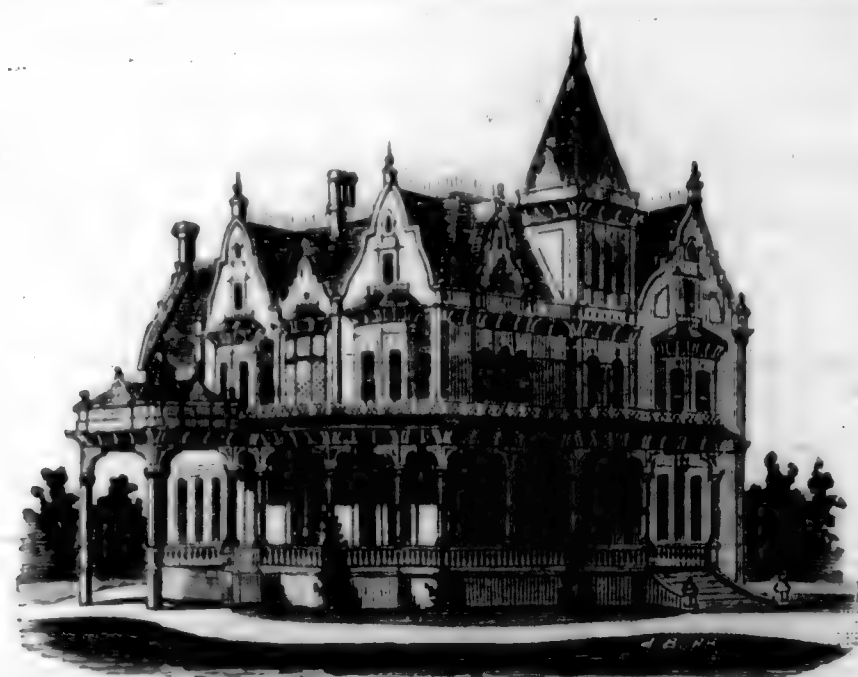
SQUARE CISTERN.			
8 feet square have 64 feet area and 32 feet of wall.			
10 " " " 100 " " 40 " "			
12 " " " 144 " " 48 " "			
ROUND CISTERN.			
8 feet diameter have 50 feet area and 24 feet of wall.			
10 " " " 78 " " 31 " "			
12 " " " 113 " " 37 " "			

A 10-foot round cistern, it will be seen, has less wall than an 8-foot square one, and has 14 square feet more surface. Consequently, round cisterns are cheaper and larger than square ones, as well as stronger. In estimating the cost of a cistern the following details are useful. A brick is 8 inches long, 4 inches wide, and $\frac{2\frac{1}{4}}$ thick. A wall need not be more than a brick thick, if carefully laid in cement and well backed with dry sand, so the pressure of water, when brought against it, can not force it out of its place to cause a crack or a leak. When laid flat and lengthwise, seven bricks will make a square foot of wall. A 10-foot round cistern, 12 feet deep, will have 372 square feet of wall, and will require 2,600 bricks for a 4-inch flat wall, if the entire surface is laid upon bricks. But if only an arch is turned of bricks, and the cement-mortar is plastered on sound, solid, clay earth, not more than 1,000 bricks will be needed. Sometimes a wall is laid up with bricks placed on edge, when about 1,700 will cover the entire area, walls, bottom, arch, and all, but this is not a safe method unless a skillful workman attends to the job.

Mix the cement and sand dry before making mortar, as thoroughly as possible, placing the sand on planks, using it about an inch thick, then an inch of cement, and another inch of sand. Then mix and work thoroughly while dry. It is better to pass the whole through a screen, even if the sand has been already sifted. In wetting down, it is best not to mix more than a bucket-full at a time. In plastering the walls always begin at the bottom, allowing each course to set and get hard before putting on another, or the whole may slide down in a lumpy mass.

EDS. ARCHITECT.: "Please settle a difference of opinion by stating the proportion between the load a given floor will bear when the joists are not bridged, and the same floor thoroughly bridged, with two rows of herring-bone bridging."

A floor will not bear any more weight by being bridged. The advantage to be gained by bridging lies in the fact that an individual joist is strengthened thereby, thus increasing its power to resist a concentrated load upon it, such as a heavy book case, safe, etc.



Improvements at Portland, Oregon.

W. S. Strahan is erecting a one-story, double house on D Street between Twentieth and Twenty-first.

W. B. Todd is building a house on Eleventh Street, between H and I, for A. Nollke. The cost is about \$2,000.

James Hyland is having erected four cottages on Eleventh Street, between Stark and B, for Hugh Gearin of Oregon City. They will cost about \$4,000.

E. M. Burton has made plans for three double residences, to be constructed on Seventh street near the Trinity church. They are for J. M. Kenworthy, of East Portland, and will cost \$12,000.

James Cumming has about finished a new store building on Eighteenth and B streets, for A. T. Smith. It is two-story, 20 x 50, and cost \$2,000.

M. S. Rosenblatt is having built a dwelling-house on the corner of Eighth and Alder streets. Sedge & Jenkins are the contractors. The cost will be about \$5,000.

There are the frames of three houses on the half block bounded by H. Twelfth and Thirteenth streets. One will be for Mr. Owen, and one of the smaller ones is for Mr. Sheath.

The foundations for J. A. Stowbridge's new block, on Second and Yamhill streets, are well under way. It will be three story, and will cost as much as \$50,000.

R. Weeks is building a dwelling, corner Lowndale and Alder streets. A. C. Townsend is the contractor and Neer & La Romer, architects. The cost is about \$2,500.

S. Blumauer is having a house built on Morrison and Fifteenth streets. It is a three-story residence, and will cost over \$10,000.

The work of moving the two buildings on the lot owned by John Wilson at the northeast corner of Fourth and Alder streets, has been completed. Mr. Wilson has already contracted with R. Porter for the erection on the lot of a three-story brick building, with basement, which is to contain one single and two double stores. The cost of the structure will be about \$40,000.

Mr. Roach is building a \$5,000 dwelling-house on the corner of Tenth and Market streets.

Mrs. Mary Dooling is building a cottage on the corner of Market and Fourteenth streets, to cost \$1,200.

W. W. Spaulding's new three-story brick

building on First, between Clay and Columbia, will cost about \$20,000.

A two-story dwelling for Frank Hacheney is being built on Hall between Third and Fourth streets, to cost \$2,500.

Charles. Cardinell is building a residence to cost between \$4,000 and \$5,000.

A large two-story double house is being constructed on Third Street between Harrison and Hall, to cost \$6,000. M. J. Geist is the owner.

Frank Hacheney is filling two lots on the corner of Clay and Lowndale streets and will build three two-story frame dwellings, to cost about \$4,000.

The northeast corner of First and Main streets has been cleared, and workmen are busily engaged preparing the foundation for a three-story brick, edifice for Watson and Smith. The building will cost about \$30,000.

The Catholic school, building in the Dalles will be built of brick, and cost about \$30,000.

Plans have been made for a dwelling-house to be built by J. H. Lyon, on the corner of Pacific and Morrison streets, to cost \$6,000.

The contracts for the foundations and iron-work of the new building to be erected on the northeast corner of Third and Washington streets by Frank Dekum, have been let respectively to McCarthy & McMahon and John Honeyman & Co.

The work of cleaning out the debris from J. C. Ainsworth's burned building, has been finished and the rebuilding is well under way. Mr. Krumbein, the architect, has let the contract to F. W. Lewis, to be completed June 1st. The improvement will cost \$30,000.

The main contract for Labbe Bros.' building has been let to John Robertson. This contract includes all but the foundations and the cast iron work. It is reported that the building will exceed the announced cost—\$100,000.

S. Farrell is having built a small cottage on East Park street, between Stark and Washington to cost \$1500.

F. B. Winters is building a one-story house on the southwest corner of Pacific and Taylor streets to cost \$1,500.

Mrs. E. F. Albright, on Taylor, between Tenth and Eleventh streets, has a two-story dwelling under way, to cost \$5,000.

George Cohn is building a dwelling house on the corner of Morrison and Fourteenth streets. It is a two-story, double house, and will cost \$6,000.

Mr. Cochrane is building a two-story frame building on First Street, between Clay and Market, to cost about \$2,000.

The bids advertised for by the Board of School Directors for finishing up the lower stories of the Failing and Couch schools, were opened at the office of Justus Krumbein, Saturday, and bids for finishing each building were as follows: W. B. Todd, \$4,000; W. L. Goodwin, \$5,388; Merchant & Bridges, \$6,100; Campbell & McDonald, \$6,270; Sharno & Davison, \$6,272; P. O. Lundin, \$6,280; N. O. Anderson, \$6,325. In case it is concluded to finish only the south half of the Couch build-

ing, it will be done for half the prices named.

We are indebted for the above list to the Commercial Herald. Our material men would do well to subscribe for the Herald as it contains a full account of building operations in the great North west. Terms \$3.00 per year.

Absorption of Moisture by Building Materials.

EVERY one connected with buildings of brick and stone knows the absorbent nature of those materials under the most favorable circumstances. It would astonish most people, adds the London Building News to be told what a large quantity of water is stored in the brick walls of an ordinary house after a heavy rainfall, the drying or evaporation of which must take place inside in cold weather, unless proper precautions are taken to render the walls impenetrable. The plea for hollow walls has been raised again and again, and though the system is coming to be adopted more generally less, the idea of solidity of wall structure seems to have taken too deep a hold on the ordinary building mind to be given up. Some time ago a suggestion was made that coillery owners and others who have large quantities of slag, might with profit utilize this material for building cottages and other purposes. We are not sure whether the hint was taken, but in some parts of the country the material furnishes an admirable aggregate for concrete. Where good aggregates exist, like slag, broken brick, sand-stone or furnace ashes, concrete building ought to be much cheaper than brick, as no skilled labor is required.

There is another consideration besides cost which tells in favor of concrete, and that is the non-porosity of walls so constructed. Not only does brick absorb moisture in wet weather, but it is now known to absorb animal gases as well; and here we have a condition which builders of our hospitals and infirmaries ought to be reminded of. We are not sure if concrete has been applied to any buildings in England of this kind on a large scale, but as absorbent walls are known to be injurious in harboring the germs of infection, the value of walls constructed of concrete made of burnt aggregates cannot be overrated. Slag made concrete has the great advantage of being fire-resisting, the material in its rough state having been subjected to intense heat. There is nothing in it to "kill" the cement, and the rough surface of walls built with it becomes an excellent "key" for the plastering. In the construction of walls of this material, three sizes of the slag may be used, the larger lumps being packed in layers in the middle of the wall, and the other two sizes, the larger the size of walnuts, run in with cement on each face in the proportion of eight to one.—*Manufacturer and Builder.*

THE trustees of the great suspension bridge over the East River, between New York and Brooklyn, have announced that the structure will be thrown open to the public on the 24th day of May, 1883.

The Effect of the Nine-Hour Movement.

SINCE writing another article appearing in this issue, touching upon the same subject, we have been interviewed by a considerable number of owners in regard to the nine-hour rule adopted by the carpenters' and joiners' union, and we find that a very considerable number of them are disposed not to build at present. We have repeated the arguments elsewhere appearing, that the ten per cent. reduction in the hours of labor increases the cost of buildings ten per cent., only in the cost of that one item; or in buildings where the carpenter's work is worth under the ten-hour rule—\$1,000, which indicates in frame buildings a total cost of \$7,000 to \$8,000, the increase would be only about \$100—being one-tenth added to the item of labor. But the further objection is urged, that if the nine hours is recognized by owners, it will soon be followed by a demand for eight hours as a day's labor. We hope not, as such a course will beyond question check present and promised prosperities, not so much because of the actual additional cost of building, as that public sentiment is adverse to such reduction on general principles. Consequently, it will be wise on the part of the laboring classes to be content with what they have gained in the present reduction, and not seek to prostrate building activities by attempting now, what has heretofore been tried and proved a failure. If nine hours had been accepted as a compromise at the time the eight-hour contest was waged years ago, there would have been a yielding on the part of owners, and the ground so gained might have proved permanent, instead of being a partial success, lasting but a short time.

Prescott's Patent Hangers.

THESE new hangers are fast superseding the old styles. No track is necessary where they are used, thus doing away with one of the common petty annoyances experienced by all housekeepers; when parlors are thrown open for a social dance, there is no track to come in contact with one's feet. Another great advantage lies in the fact that the action of these hangers is such upon opening a door, that the latter rises a little, and thus all wear and tear on carpets is entirely done away with. They are very easily applied, and are not visible with the door open or shut. Another great advantage is that they are not affected by shrinkage of either the door or studs. In case they get out of order, they are very easily got at to be fixed. They are made of all sizes and the price is no greater than the old-fashioned sheaves. Many of our architects are adopting them, and they can be found in the residences of many of our wealthy citizens. For full information apply to the agents, Dunham, Carrigan & Co., 110 Front Street.

SHORE up carefully if you would pull down safely.

Women as Architects.

WHY should not American women become architects? They push into all the polite and impolite professions, and architecture with its branch of "house decoration" seems an easy and fitting employment for one who has taste and a head for business. A lady who has recently died in London was a shining example of what can be accomplished by her sex in this department of art. Miss Rhoda Garrett, says the London Times, was the daughter of a country clergyman of small means, and one of a large family. She broke through the restrictions of home life, which are much stronger in England than here, and determined to carve an honest independence for herself. She entered the office of an architect, and having learned the trade, so to speak, set up for herself as a "house decorator," taking another lady into partnership. She soon rose to eminence in spite of delicate health, and found time to be the author of a little volume on "House Decoration" which has passed through six editions. Her social and professional life is a strong argument in support of the belief that women—ladies—may quietly succeed in "business," and attain not only money for their own needs, but fame of a high order.—*The Builder.*

About Chimneys.

THE following suggestions from the *American Artisan* for the cure of a troublesome fault of chimneys, raises the point whether it is not better to omit the inside plastering of smoke flues, relying for safety upon good bricks, good mortar, well filled joints, and, if need be, thorough plastering of the outside of the shaft, after it has been carefully inspected. We have several inquiries from subscribers as to the remedy for the formation of creosote in chimneys, which often runs down the walls of rooms, staining carpets and walls and causing much damage. The cause of this state of things, we venture to say, is owing to defective draft, and this often arises from the mason not smoothing the plaster on the inside of the chimney, which causes it to protrude and arrest the progress of the smoke, causing the consequent condensation into a liquid deposit. This may be remedied by attaching a brick to a rope and smoothing off the inside of the chimney. The trouble may arise also from a crooked chimney, in which case the remedy is plain, but the cause we have first assigned will be found to be a common one, and it would be well for those troubled with liquid oozing from chimneys, to look to the state of the inside mortar.

No matter how well arranged, water-closets immediately within a dwelling are objectionable. The minimizing of the evil partly lies in keeping them as far as possible from the sleeping-rooms.

SET out your work with accuracy, and the time you will save will bring profit as well as credit to your employer and yourself.

The Draft of Chimneys.

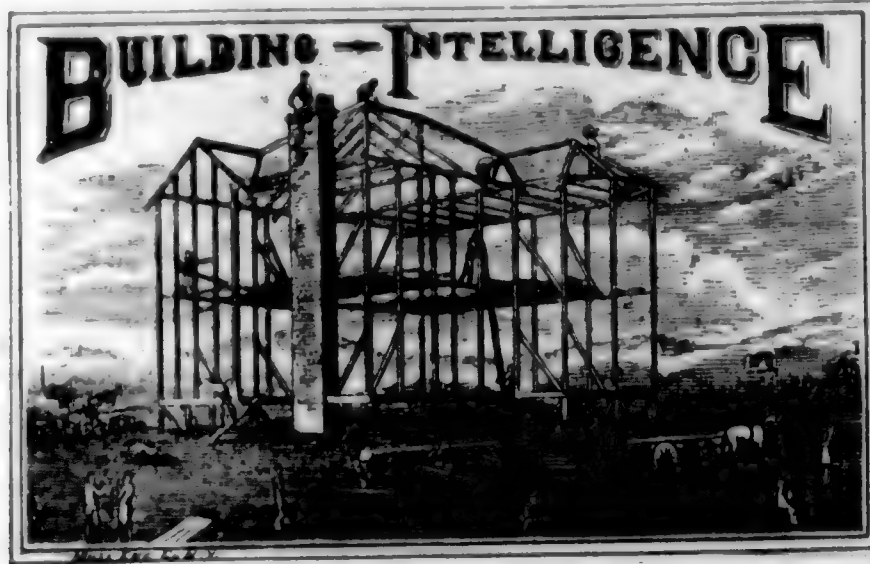
AT the closing meeting of the British Association Lord Rayleigh read a paper before the mechanical section on the effect of wind on the draft of chimneys, based upon experiments made with tubes and a fan driven by hydraulic power. He stated that a horizontal wind would usually promote a draft, except in cases where the chimney opened out upon a large expanse of wall, and so was indirectly affected. The cure in this case was to carry the chimney higher. When the wind was inclined downward to the chimney at an angle of thirty degrees and upward, there was a down-draft, and the maximum up-draft was produced by wind inclined upward at about the same angle. The simplest thing to prevent wind blowing down a chimney was to erect a T-piece on the top. In that case a vertical or inclined wind favored the draft, and the effect of a wind blowing through the T-tube was practically nothing. Mr. Park Harrison suggested as the only real remedy an increase of draft. If all the chimneys in a house could be made to open into a common cloaca, a down-draft would hardly ever occur.—*The Builder.*

Action of Open Fires.

THE way in which an ordinary open fire-place acts to create circulation of air in a room with closed doors and windows is as follows: The air is drawn along the floor towards the grate; it is then warmed by the heat which pervades all objects near the fire, and part is carried up the chimney with the smoke, whilst the remainder, partly in consequence of the warmth it has acquired from the fire, and partly owing to the impetus created in its movement towards the fire, flows upward towards the ceiling near the chimney-breast. It passes along the ceiling and, as it cools in its progress towards the opposite wall, descends to the floor, to be again drawn towards the fire-place. It follows from this that with an open fire-place in a room the best position in which to deliver the fresh air required to take the place of that which has passed up the chimney is above the projecting chimney-piece and at any convenient point in the chimney-breast between the chimney-piece and the top of the room, for the air thus falls into the warmer upward current, and mixes with the air of the room without perceptible disturbance.—*Furniture Gazette.*

TO REMOVE bolts that have rusted, without breaking them, the most effectual remedy known is the liberal application of petroleum. Care must be taken that the rusted parts are reached by it, and some time must be allowed to give it a chance to soften the layer of rust before any attempts are made to remove the bolt.

TO CLEAN MARBLE.—Chalk, powdered, and pumice stone, each one part; soda, two parts. Mix with water. Wash spots, then clean and wash off with soap and water.



SAN FRANCISCO.

Bush & Webster. Two-story frame.
O.—J. Goodrich.
A.—W. E. & S. S.
C.—J. F. Farness.
\$8,500.
Market x Fremont & Beale. Four-story and base, brick.
O.—Mrs. M. Coleman.
A.—A. Laver.
C.—C. H. Jackson.
Geary x Jones and Leavenworth. Three-story frame.
O.—Mrs. Merrill.
A.—Moser.
C.—Binet.
\$7,500.
Natoma x Sixth and Seventh. Three-story frame.
O.—N. C. Doyle.
A.—Moser.
C.—P. Liberty.
\$7,500.
Sacramento cor. Powell. Three-story frame.
O.—N. Gray.
A.—McDougal & Son.
C.—A. Jackson.
\$20,000.
Guerrero x Twenty-fourth and Twenty-fifth. Two-story and basement.
O.—Dominican Sisters.
A.—B. E. Henriksen.
C.—J. Klein.
\$20,000.
Bush x Kearny and Montgomery. Three-story brick.
O.—A. W. Bowman.
A.—Percy & Hamilton.
C.—J. Cox.
\$8,800.
Mason & Union and Filbert. Three-story frame.
O.—C. Richert.
A.—Moss.
C.—C. C. Classen.
\$5,000.
Taylor cor. Bush. Alterations.
O.—T. L. Lyons.
A.—Moser.
C.—R. P. Sanchez.
\$2,000.
Franklin cor. McAllister. Three-story frame.
O.—B. Windhaus.
A.—Geiffuss.
C.—E. Dryer.
\$18,300.
Quincy Place near Pine. Four-story brick.
O.—Champion.
A.—W. P. Moore.
C.—G. Richardson.
\$2,000.
Fourth near Bryant. Two-story frame.
O.—J. O'Neill.
A.—Townsend & Wyneken.
C.—Plummer.
\$6,500.
Grove x Fillmore & Steiner. Two-story frame.
O.—C. B. Spivale.
C.—R. P. Traxler.
\$7,000.
Valencia cor. Twenty-third. Three-story frame.
O.—A. B.—F. Crowley.
\$18,000.
Harriett x Folsom and Howard. Two-story frame.
O.—C. B. Folsom.
A.—Townsend & Co.
C.—J. J. Scott.
\$2,200.
Fifteenth corner Church. Two-story frame.
O.—and B.—C. Johnson.
\$2,500.
Henry x Castro and Noe. One-story and basement frame.
O.—J. H. Schell.
C.—E. B. Spangle.
\$1,400.
Twentieth x Dolores. Two-story frame.

O.—A. Miller.
C.—A. Klahn.
\$2,000.
Battery cor. Sacramento. Alterations.
O.—Campbell.
A.—Geddes.
C.—J. J. McCready.
\$16,000.
Shotwell near Eighteenth. Two-story frame.
O.—J. G. James.
A.—G. A. Bordwell.
C.—Gray & Stover.
\$4,500.
Turk corner Hyde. Three-story frame.
O.—J. Van Ness.
A.—Geiffuss.
C.—Kipp.
\$22,000.
Harrison x Seventh and Eighth. One-story brick.
O.—Cutting Packing Co.
A.—F. F. Smith.
C.—J. F. Grant.
\$30,000.
Guerrero cor. Eighteenth. Two-story frame.
O.—F. A. Hornblower.
C.—S. C. Thompson.
\$8,000.
Twenty-first x Guerrero & Dolores. Two-story frame.
O.—G. Brown.
A.—O. G. Moore.
C.—Kinsaid & Baldwin.
\$5,500.
Guerrero near Twenty-fifth. One and one-half-story frame.
O.—Harding.
C.—F. W. Kern.
\$1,500.
Buchanan near Oak. One-story frame.
O.—H. T. Wenzell.
A.—Schmidt & Havens.
C.—Terrill & Slaven.
\$3,000.
Seventeenth near Church. Alterations.
O.—and B.—J. Patterson.
\$2,000.
Fifth near Berry. One-story brick.
O.—Standard Oil Co.
C.—Quinn.
\$2,000.
Geary near Van Ness. Alterations.
O.—L. Westerfield.
A.—Schneider.
C.—W. Waterbury & Maxwell.
\$2,500.
Polk cor. Grove. One-story frame.
O.—W. B. Dolan.
A.—Bester.
C.—C. M. Mason.
\$10,000.
Eighteenth corner Jessie. Two-story frame.
O.—Mrs. Dowdell.
C.—J. Blake.
\$3,000.
Church x Sixteenth and 17th. One-story frame.
O.—F. Horning.
\$1,100.
Sanchez x Sixteenth and Seventeenth. One-story and basement frame.
O.—Quast.
C.—J. Williamson.
\$1,000.
Folsom near Beale. Two-story frame.
O.—J. Pendergast.
C.—J. Fitzpatrick.
\$15,000.
Stevenson near First. Three-story brick.
O.—Pacific Power Co.
A.—W. F. Smith.
C.—W. M. Fletcher.
\$18,000.
Mason cor. Chestnut. Seven-story frame.
O.—and B.—J. Fay.

\$11,000.
Piercer Ellis. Tank frame.
O.—J. McGinn.
C.—Sanchez.
\$1,000.
Polk cor. Clay. Three-story frame.
O.—W. Wilkinson.
A.—Wright & Sanders.
C.—Robinson.
\$10,000.
Shotwell x Nineteenth and Twentieth. Two-story frame.
O.—and B.—W. Lewis.
\$2,000.
Valencia near Twenty-second. Alterations.
O.—O. Brand.
C.—T. W. Hansbrough.
\$1,200.
Twenty-eighth x Sanchez and Noe. One-story frame.
O.—Mrs. M. Gillen.
C.—A. Flood.
\$700.
Tenth x Market and Mission. Alterations.
O.—Thomas & Co.
C.—Leonard.
\$600.
California x Fillmore and Steiner. Alterations.
O.—C. Nobmann.
A.—G. E. Voelkel.
C.—Cook & Johnston.
\$5,500.
Stockton cor. Union. One-story frame.
O.—Mrs. C. Dunn.
A.—J. Devlin.
C.—J. J. McCready.
\$27,000.
Clay corner Hyde. Frame dwelling.
O.—Mrs. A. M. Conroy.
A.—Wm. Curlett.
C.—J. P. Crichton.
\$9,500.
Devisadero near Sacramento. Frame dwelling.
O.—L. W. McGlauffin.
C.—C. Adams.
\$4,000.
Masonic Cemetery. Tomb.
O.—Mrs. Jane Brickwedel.
A.—Wm. Curlett.
C.—Geo. Griffith.
\$2,100.
Sacramento cor. Octavia. Alterations.
O.—Judge Sanderson.
A.—Wm. Curlett.
Days work.
\$7,500 (about).
Eighteenth corner Jessie. Alterations.
O.—H. E. Underwood.
A.—Schmidt & Havens.
C.—Vnn. Plums.
\$1,000.
McAllister cor. Fillmore. Two-story and attic frame with stable.
O.—L. Hentrich.
A.—Schmidt & Havens.
C.—Wm. Plums.
Total cost \$2,100.
Van Ness x A x Hills and Eddy. Two-story frame.
O.—A. Anspercher.
A.—Schmidt & Havens.
C.—T. C. Riddell.
\$15,000.
Vallejo cor. Larkin. Alterations.
O.—J. H. Bremer.
A.—Schmidt & Havens.
C.—H. Inwood.
\$8,000.
Jones x O'Farrell and Geary. Three-story frame.
O.—J. B. Payard.
A.—Schmidt & Havens.
C.—W. Langstaff.
\$7,000.
Sixth near Harrison. Two-story frame.
O.—H. Russ.
C.—Conrad & Miller.

\$20,000.
Frame building.
O.—H. Luse.
A.—Theo. Lenzen.
C.—J. Lenzen.
\$1,000.
Frame building.
O.—Hartman & Norman-dieu.
A.—Theo. Lenzen.
C.—J. Lenzen.
\$900.
Meridian Road. One-story frame.
O.—F. A. Taylor.
A.—J. O. McKee.
C.—G. E. McDougall.
\$2,175.
First near Second and base-ment frame.
O.—T. S. Montgomery.
A.—J. O. McKee.
C.—Mrs. M. Stewart.
\$8,900.
University Grounds. Two-story and one-half-story frame.
O.—J. E. Richards.
A.—J. O. McKee.
C.—W. S. Boyles.
\$6,800.
Fifteenth corner Empire. Frame dwelling.
O.—A. Landy.
A.—J. O. McKee.
Days work.
\$1,800.
SACRAMENTO.
Seventh and O. Two-story and basement frame.
O.—Mrs. E. B. Crocker.
A.—Goodell & Dillman.
C.—Madden & McGinnis.
\$10,000.
J. Seventh and Eighth. Fitting up store.
O.—C. H. Gillman.
A.—N. D. Goodell.
C.—J. White.
\$287.
Ninth x I and J. One-story basement brick.
O.—A. Meister.
A.—N. D. Goodell.
C.—C. R. Croly.
\$2,400.
J x Seventh and Eighth. One-story and basement brick.
O.—A. Coulter.
A.—N. D. Goodell.
C.—E. A. Boyer.
\$1,500.
910 J. Two-story brick.
O.—Chas. Barnes.
A.—A. A. Cook.
C.—J. White.
\$2,200.
1700 K. One-story frame.
O.—H. G. Cook.
A.—A. A. Cook.
C.—J. White.
\$8,350.
LOS ANGELES.
Three-story brick building.
O.—St. Vincent Society.
A.—Kysor & Morgan.
C.—M. Fitzguala.
\$25,000.
Brick building.
O.—C. Duenmoran.
A.—Kysor & Morgan.
C.—Bell & Haskell.
\$7,000.
Frame residence.
O.—O. W. Childs.
A.—Kysor & Morgan.
\$5,000.
Two-story brick building.
A.—Kysor & Morgan.
C.—C. Andrews.
\$14,500.
Brick building.
O.—San Franco Estate.
A.—Kysor & Morgan.
C.—C. Willard.
\$15,000.
Frame residence.
O.—J. Walker.
A.—Kysor & Morgan.
C.—J. E. Wood.
\$7,500.
Agricultural College. Ontario. Three-story brick building.
A.—Kysor & Morgan.
Days work.
\$15,000.

C.—C. S. Martin.
\$2,000.
Tenth near Center. One-story frame.
O.—A. Heland.
Days work.
\$1,500.
Emery Station. Two-story frame.
O.—C. Diederichsen.
C.—W. R. Lord.
\$2,100.
ALAMEDA.
Pacific Avenue. One-story frame.
O.—H. Koppitz.
C.—A. Denke.
\$2,200.
Pacific Avenue near Oak. Two-story frame.
O.—Mrs. Stahl.
C.—W. R. Vogt.
\$3,000.
Pacific Avenue near Willow. Alterations.
O.—Westfall.
C.—C. F. Carlson.
\$500.
Faru and Santa Clara Aves. Two-story frame.
O.—D. Straub.
C.—Cellarius.
\$4,000.
BERKELEY.
University Avenue cor. Sixth. One-story frame.
O.—J. B. Henley.
A.—Meeker & Banks.
C.—G. A. Embury.
\$1,700.
Center. Two one-story frame.
O.—C. Band.
C.—A. H. Broad.
\$3,400.
Berkeley Way. One-story frame.
O.—C. Band.
C.—A. H. Broad.
\$1,400.
University Avenue. Two-story frame.
O.—Dr. F. H. Payne.
C.—C. R. Lord.
\$1,300.
Ellsworth. One and one-half-story frame.

O.—Wood.
A.—Spencer.
C.—G. A. Embury.
\$1,550.
Frame church.
O.—Catholic Society.
A.—B. J. Clinch.
C.—G. Embury.
\$7,500.
One-story frame.
O.—Capt. Henley.
C.—G. Embury.
\$1,700.
MISCELLANEOUS.
Mountainville. Veteran's Home.
A.—McDougal & Son.
C.—Ingerson & Gore.
\$15,700.
Chico. Two-story frame.
O.—F. C. Lusk.
C.—Swain & Hudson.
\$20,000.
Riverside. Two-story brick block.
O.—J. R. Newberry & Co.
A.—Seymour & Stevens.
C.—Davis & Porter.
\$5,000.
Walla Walla. Frame dwelling.
O.—E. Buchanan.
A.—Allen & Whittemore.
C.—A. B. Waterman.
\$4,155.
Benicia. Planing mill.
O.—J. B. McKenzie.
Fresno. Two-story frame.
O.—F. F. Eggers.
A.—Geiffuss.
C.—Kipp.
\$22,000.
Bolinas Bay. Two-story frame.
O.—Capt. Handerson.
A.—H. D. Mitchell.
Days work.
\$2,000.
San Rafael. Two-story frame.
O.—Mr. Butler.
A.—Wright & Sanders.
C.—Robinson.
\$10,000.
Colusa. One-story frame.
O.—C. Rimer.
C.—J. S. Steward.
\$1,200.

MARKET REPORTS.

LUMBER.		
Common Rough.		Price.
up to 40 feet, per M feet.		\$22 50
" 41 to 50 "		" 23 50
" 51 to 60 "		" 24 50
" 61 to 70 "		" 25 50
" 71 to 80 "		" 26 50
Refuse Rough.		14 50
Common Rough, sized with planer \$2 additional on above rates, per M feet.		25 50
No. 1 Flooring, 6 inches and over, " 4 " and under, and 1 1/4 x 6		32 50
Flooring and Stepping		37 50
Rough Clear for Flooring, \$1 less than above rates.		37 50
Second Quality Flooring and Stepping		25 50
Ship Plank, Rough		32 50
" Planed 1 side		35 00
" 2 sides		35 50
Deck Plank, Rough		33 50
" Dressed		37 50
Laths		per M 3 75
Wool Slats		12 00
Shakes		12 00
Redwood Posts		per piece 17 50
Redwood.		
Rough Merchandisable		per M feet \$22 50
Refuse		18 50
Surface No. 1		37 50
" 1x6		35 00
" No. 2		27 50
Rustic, No. 1, 1x8		37 50
" No. 2		32 50
T. & G., 1 1/4 x 4 and 1 1/2 x 6		37 50
" 6 in. 12 ft. and over		35 00
" 7 to 11 feet		32 50
" under 7 feet		27 50
" No. 2		35 00
T. & G., Beaded, 12 feet and over		30 00
" 7 to 11 feet		27 50
" under 7 feet		25 00
Half-inch Surface		27 50
Pickets, fancy		20 00
" Rough, Pointed		17 50
" Square		15 00
Siding, 1/2 inch		per M 2 50
Shingles		12 00
Pattens, 1/2 inch, lineal feet		1c
NAILS.		
10 to 60 pennies, are quoted at.		\$4 70
" 6 "		5 50
" 5 and 4 "		5 50
4 and 5 "		6 00
6 "		6 25
" "		6 50

The California Architect and Building News.

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1880 (only a few left) \$2.00
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Any one failing to receive a complete index will be supplied by sending a postal card to this office with their address.

A Building Boom.

COMPARISON OF THE FIRST SIX MONTHS OF 1883 WITH THOSE OF OTHER YEARS.

THE present outlook of building operations is such as to gladden the hearts of every material man and property owner on the coast. At the beginning of the year we remarked that the building interests were alive to the grand future of this city, and that this year would be one of the most prosperous known in its history. We do not wish to be known as prophets. The very hackneyed phrase—too common in newspaper literature—"we prophesy an increased activity" &c., has never appeared in our building reports.

All the deductions and intimations of future business in building circles have been given after very careful inquiry among our business men and architects. To the latter class especially are we indebted in a great measure for so successfully placing before our readers, almost a complete record of buildings as they have been erected. And we take this means of publicly thanking the architects for their kindness in giving us the various items to enable us to present such results as we do in this issue.

We repeat again what we have said before, that we will not report a building until the contract is let. Our relations with architects are such that we hear, and in fact know of many buildings that "are in the market" long before the contract is signed. It would be manifestly unjust to the architect to report such items until everything is settled.

We find that in the first six months of 1882, there were reported of building improvements—brick, frame and alterations—

281 BUILDINGS, OF THE VALUE OF
\$1,238,910.

For the first six months of 1883, we find the total number to be

424 BUILDINGS, OF THE VALUE OF
\$2,464,898.

This is truly a good showing, and the result appears more remarkable when we take into consideration the fact that, so far, this year, there have been but few large single buildings erected. We have had no Phelan Blocks, Sugar refineries, Eagle Blocks, etc., to swell the grand total. From the first of the year there has been a steady demand for good dwellings, and as yet it is unabated.

Some of our cotemporaries—daily papers—a short time ago laid great stress upon the fact that the erection of so many buildings for "flats" would cause a great many to desert the old-fashioned buildings for the more modern dwellings. This, they argued, would result in

a great many idle non-rentable houses on account of their lack of modern conveniences. These after being idle awhile would be rented for much lower figures, and thus cause parties to move from the "flats" to their old residences again.

The journals indicated did not give the property owners the credit to which they were entitled. In numerous instances, as soon as a tenant left one of the old-fashioned dwellings, the landlords immediately went to work renovating and re-modeling, and introducing the "modern conveniences" necessary. And to-day there are but comparatively few vacant houses to be had.

The amounts given for this year so far, are almost 50 per cent greater than for the whole year of 1880.

Architects generally are busily employed on sketches, plans, etc., for these patrons, many of whom are at the springs. After the 4th of July we may look for a steadily increasing business. Good workmen are now scarce, and the "boom" may receive a set back by the high price of labor and the disposition shown by the material men to add on every cent possible to their goods, whenever they think the public will submit to the imposition.

Still Onward and Upward.

We are compelled to again enlarge this journal to meet the requirements of those who are gathering in the golden shekels by giving to the general public a full description of their wares through our advertising columns. Several ads. have been sent to us from the East during the past month, which we were compelled to decline. We do not insert any except those that relate strictly to the building interests and the furnishing of houses after completion.

We would also notify parties sending us ads. that unless their order is accompanied by a deposit, or suitable references given, we cannot insert the same. This rule is imperative.

During the past month we have enlarged our editorial corps, and it will be our aim, in each issue, to present a journal, the peer of any now printed. Further improvements are in contemplation, and we will use our best endeavors to merit the confidence reposed in us, by establishing an architectural and mechanical journal that will of necessity be found in the offices and dwellings of every property owner, architect, contractor and the trades generally.

A PORTABLE ice-freezing house is the subject of a patent granted to Mr. A. Von Krause, of West New Brighton, N. Y.

Our Original Table of Steel Square Mitres.

WE prepared, arranged, and published in the June No., 1882, of this Journal an original article, accompanied with an illustration plate, giving the figures on the steel square by which the various mitre cuts from a triangle to a 16-side polygon could be made. This table we found reproduced in a late number of the *Carpenters and Builders Journal* without credit, and afterward in the *Builder and Wood Worker* with credit given to the first-named journal. That the table in question was *extracted* from our columns admits of no question as it cannot be found in the same form and with the same figures in any book extant. We claimed no new discovery in mechanical science, but did and do claim the tables as worked out by us to be original and certainly convenient to the mechanical portion of the readers of this journal, as well as the journals which have copied us.

We challenge the editor of the paper mentioned to refer us to a page in Nicholson, Hatfield, Bell, Hodgson, OR ANY OTHER AUTHOR, which contains the information we claim as being the first to produce in the manner we did.

In our April issue we noticed the plagiarism provoked by the fact stated that the *Builder and Wood Worker*—a journal edited by competent and intelligent gentlemen, who, realizing the value of the table, and knowing it to be of recent originality, having never before seen it in print—gave credit to the journal from which they copied—hardly an excusable error, as the *Wood Worker* received the article in question about the same time as the other journal did through the columns of this journal, and might have given credit where credit is due.

In our April No. we noticed the facts in issue, and charged unfairness on the part of the *Builders Journal*, at which the editor takes exception, and by vagaries seeks to make it appear that we are not entitled to special credit in the preparation of an article, which simply uniforms certain valuable and familiar facts, which for long years seems to have remained stowed away in the great store-house of our contemporary's unrevealed intelligence and knowledge—unpossessed of interest or importance sufficient to justify their publication, until we arranged and produced them in form rendering them worthy of reproduction.

If our table of "MITRE CUTS" were old and familiar, how is it they have never appeared in print, prior to publication of this journal? And how happens it that they were so speedily reproduced in the journals named, after we published them? The attempt of our contemporary at sarcasm is very vague and feeble, and by no means disposes of the fact that the article in question was *extracted* from the columns of this journal without proper credit.

Our worthy brother editor has placed himself in a peculiar position. He intimates that the mitres in question were made according to the figures given TWENTY YEARS AGO. And

yet in a book published by him only FIVE YEARS AGO he does not give the information in question.

Again, in his own book, he gives the figures on the square necessary to use to form an octagon as 7 to 17. Passing strange indeed it seems to us, that an editor TWENTY years ago should know the figures as WE published them, then writes a book only FIVE years ago, giving the figures as above, then in 1883 copies our figures and gives them as they ought to have appeared in his own work—7½ to 18. There is not a mechanic worthy of the name, that does not know that 7 to 17 will NOT give the octagon mitre. And the deduction is fair that if the editor mentioned does not know what figures will produce the octagon mitre, he may not know what will produce the more simple mitres and certainly cannot be expected to understand those for the more difficult cuts. However, he may have learned, since the publication of his book in 1878, the proper figures on the square for an octagon cut, which he will find correctly given in our table, together with a number of other cuts, to which he may not have given the necessary "labor and study" to become familiar with. Other examples may be quoted from the book mentioned to illustrate the danger of living in glass houses and attempting to throw stones.

The concluding paragraph from our contemporary's article deserves no notice from us as it does not state facts as far as either that journal or ourselves are concerned.

Mechanics' Lien Law.

THE following letter was received in time for the May number of this journal, but was overlooked until too late for publication:—

SAN FRANCISCO, April 11, 1883.

EDITORS OF THE CALIFORNIA ARCHITECT—Dear Sirs: It would be very useful to many of your readers if you would give in the ARCHITECT a statement of the law at present in operation in California in the matter of mechanics' liens on buildings. These laws have been recently changed, and there seems to be at present much doubt among persons interested in the subject as to how the law stands. Yours truly, A SUBSCRIBER.

"A Subscriber" is in error about any change in the lien law by recent legislation. It stands now just as it did in 1880. In the July number of this journal for that year there will be found, page 64, a full digest of the law as it then stood, and as it now stands, making owners liable for all claims and demands for material furnished and labor performed, without regard to the sum of contract. There is at present a case before the Supreme Court of this State, involving the question of owners' liabilities beyond the contract amount. Should a decision be rendered upon that point before our July number is issued, we will give it in this connection.

It should always be carefully borne in mind that in bare wires, out of doors, erected for the purpose of conveying electricity, there is always more or less danger to person or property.

The Mysteries of Metals.

NOTWITHSTANDING the wonderful progress, says an exchange, that has been made during the last half-century in the construction and working of the useful metals, there is yet a vast deal to be learned. The metals when pure are commonly supposed to be simple elements, yet there are some reasons for supposing that it may be proved that at least some of them are compounds. Even the great Faraday gave utterance to the thought that the dreams of the alchemist might yet be realized—that gold and other metals might be found to be compounds, and that means might be devised whereby those compounds might be separated and afterwards so differently reunited that the baser metals might be converted into precious. The changes which are wrought in iron and steel by converting, annealing, and hardening processes are far from being understood by the most advanced metallurgists of the present day. The mysteries of hydrogen gas and its intimate relations with iron are as much a puzzle as they were fifty years ago, and the theory advanced by Graham, that hydrogen is a metal, is still maintained by many chemists.

It is only a few years ago that absolutely pure iron became known to scientists, and it is now shown to be a metal almost as "unstable as water," and still found in the laboratory as a great curiosity. What had previously been known as a pure iron was shown by Jacobi to be a compound of iron and hydrogen. He first separated the two so-called elements. During the process the iron increased in volume, changed from a dark to a silver-white substance, very ductile, and so soft as to be nearly as readily cut as lead. The experiment proved that hydrogen played an important part in hardening and tempering—as much so as carbon—but how or why none know to this day. It is found that much more difficulty is experienced in rolling and otherwise manipulating gold in a factory where much electricity is generated by the action of machinery than in a room where no machinery is in operation, and where, consequently, frictional electricity is absent. The trouble is manifested in a disposition of the edges of the plates of thin bars to crack. Many other peculiarities, already known, might be mentioned, and there is no doubt that closer observation will largely increase the number of curious and yet inexplicable phenomena connected with the working and general characteristics of the metals, both useful and precious.

GREASY COLOR.—The painter is frequently annoyed by having his paint or varnish crawl, or draw up leaving bare spots, when applying it over a painted surface. The cause is what is known as "greasy color," that is, if the paint was not mixed with oil it is a greasy pigment, such as lamp-black—but the most common trouble is too much oil. To overcome the difficulty wash the surface, or simply rub a damp shammy over it, or if it be only a small spot that appears "greasy" blow the breath upon it and the crawling will be overcome.—*Painter's Magazine.*

USES OF THE STEEL SQUARE.**Application of the Steel Square in the Construction of Roofs.**

"Construction is the Anatomy of Architecture."

WHEN the term ROOF first became to be used to denote its present significance, we have no means of determining. In the Bible we find the word "housetops" used in many places, and from the description given we infer that the roofs or coverings used were nearly flat, just sufficient pitch being given to shed water. Among some of the oldest ruins now found—those in Bashan particularly—the roofs are almost flat; they were made of large flat stones, laid in a species of cement, and to this day, such was the quality of materials used, that water will run off the parts of the roofs remaining standing, with no leaking between the various stones used.

Other roofs were made of boughs of trees laid close together and covered with earth, the top being of a kind of clay cement, that was impervious to water. These roofs were well adapted also to protect the inhabitants of that part of the country from the excessively hot rays of the sun.

In the building of Solomon's Temple, the small part that was roofed was covered with boards and these with gold and silver. This may be said to have been the first metal roof ever constructed.



FIG. 1

In pictures of "ye olden times" we find the roofs to be of similar shape to our engraving, simply boughs and branches of trees covered with leaves and earth. This perhaps answered for small gatherings. When large parties congregated, the difficulty of getting

branches of trees long enough to form a roof of only one pitch, suggested to some one the idea of adding on an addition similar to that shown in Fig. 2.

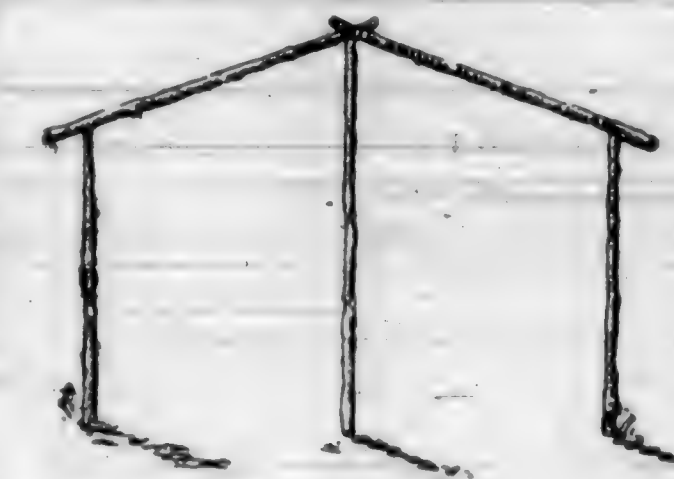


FIG. 2

In this simple manner was founded the grand principles of the construction of roofs. The supports to the ridge necessarily occupied much space, and, being in the way of the throngs that visited the great fairs held in ancient times, no doubt some thoughtful mind conceived the idea of so binding the ends of the boughs together that the roofs were almost self-supporting.



FIG. 3

In an old work we find an illustration similar to Fig. 3. The boughs were crossed and tied together with some material then in use, and a wooden pin being used to further strengthen. Braces were used as shown, and thus a considerable span could be made. This theory of the gradual development of the construction of roofs seems natural. We cannot give the date of this improvement, as the chronicles in reference thereto are very indefinite.

When hewn timber was introduced in the various parts of buildings, the natural genius of the people then in existence, led them to give their roofs

all kinds of fantastic shapes, and these crude efforts were seized upon by some of the master minds, and a uniform and distinctive style of architecture was accorded to each. We in our day but imitate our predecessors in the art of improving and excelling the ideas of the generations immediately before us.

Going back to the time of the ancient Greeks, we find the roofs nearly flat, composed of large marble slabs, neatly grooved together so as to be impervious to water. They did not have the same idea of architecture that was possessed by the stately Romans. An observer justly remarks in regard to the latter, that "I have not seen the remains of any Roman buildings that have not been roofed with vaults and arches."

We also find that in the construction of roofs in the Norman and Gothic periods, the tie beam is wholly lacking. In lieu of these we find the necessity of using immense buttresses to withstand the immense outward pressure of the roofs upon the walls. Owing to the manner in which buildings are now erected, the tie beam is one of the principal factors in a well constructed roof.

The exact period in this world's history when the use of timber for framing roofs became general, is not exactly known. The first authentic accounts place it about the year 1325. From this period we find the roof taking more prominence in the architecture of buildings.

We do not pretend in these articles to give a full and accurate description of the history of the architecture of roofs. We only show how the gradual development of the principles of their construction may have been formed, and the remarks made are only incidental to a discussion of the principles of the scientific framing of roofs.

WE are sole agents on the Pacific Coast for the works published by the Industrial Publication Co. of New York. We also keep a full supply of works issued by W. T. Comstock.

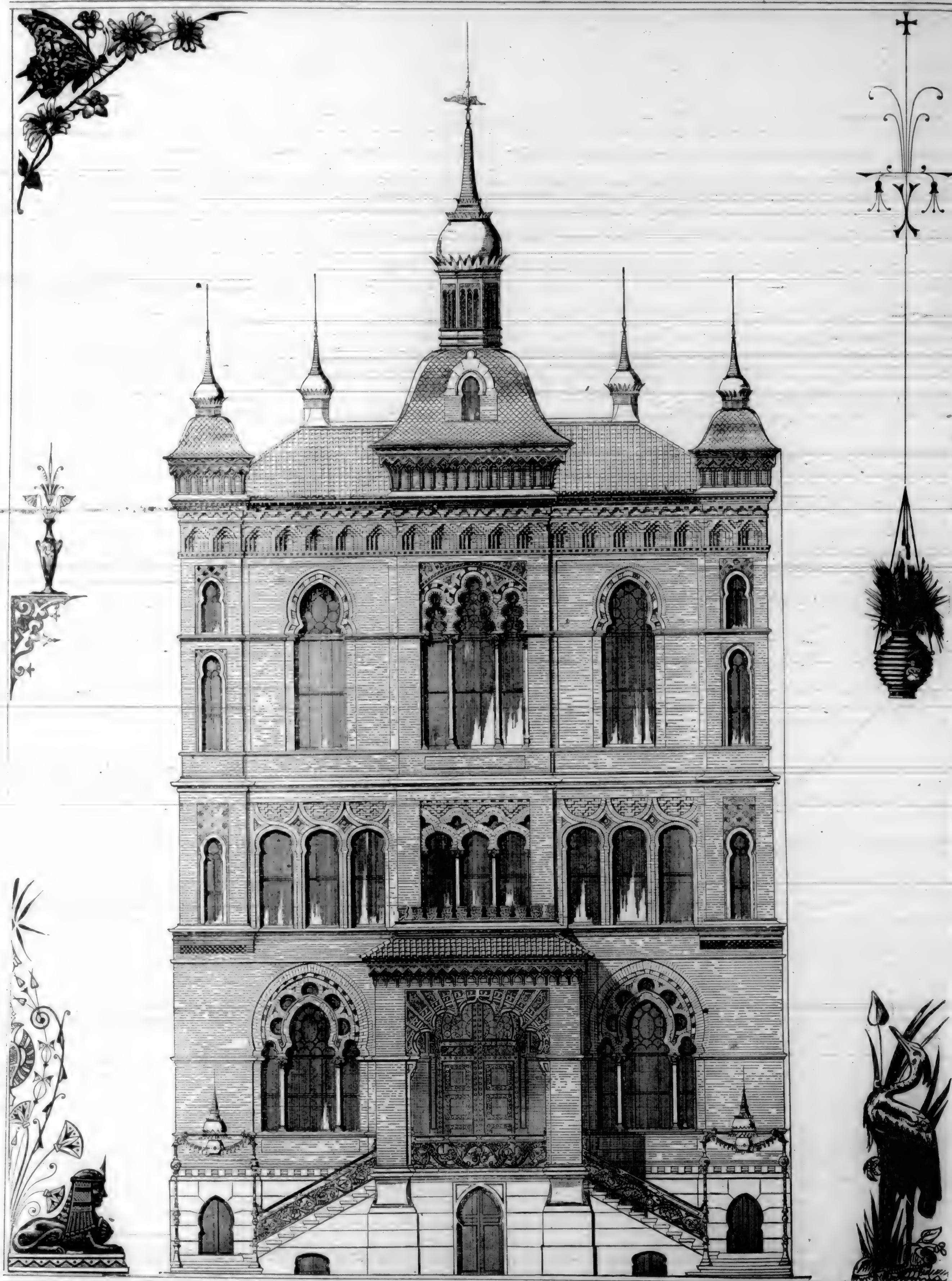


PLATE 1.—FRONT ELEVATION OF THE BUILDING FOR THE PROGRESS CLUB OF NEW YORK. Guastavino & Gruvé, Architects.

New York Street Architecture.*

THE MORESQUE.

NEW YORK streets have never recommended themselves for their architectural beauty, and it is comparatively recent that any material advances have been made in the construction and reconstruction of city fronts. The fault has been, I think, with all American cities, that buildings have been put up running about the same size and general appearance throughout an entire block, and each succeeding street a counterpart of its predecessor, the cornice extending along the same sky line, and the brick or brownstone showing no ornament other than the prescribed number of iron sills and keystones, properly painted and sanded. It is true, to some extent, that the cities of Europe construct their buildings with very much this sameness of effect, but it must be allowed that the monotony of the Parisian residence is entirely different to that of the New York dwelling, inasmuch as the French exterior is broken with frequent balconies, with misplaced windows, with a pretentious *porte cochere*, with a profusion of decoration in the stonework, all tending to divert the attention from the point that they are so frequently repeated, and weariness to mind and eye is avoided by the repetition of agreeable details.

The disposition appears to have been aroused now, however, to beautify exteriors, and some of the efforts in this city are noticeable; the universal revival of the Moresque forms in decorating and furnishing has finally affected architecture and that style at present prevails more generally, I think, than any one other. Many of the façades have been constructed of iron, though iron is but little in favor with us. It has its advantages, of course; it may be moulded into a great variety of forms and shapes, restricted only in the feeling that those figures are not to be so clean cut, sharp, decisive in outline, as would be demanded of the same pattern in stone; it is admirable for those large, indefinite-appearing patterns where the details are not expected to be studied, and a little clumsiness is looked for in the figures; yet it is capable of beautiful effects. Nothing is finer than the sweep of a delicate, airy arch, apparently so fragile and weak, whilst capable of bearing the most substantial sort of a roof or supporting thousands of glass sashes. All these merits and most desirable qualities are recognized by our architects, though, notwithstanding them, they have emphatically and unmistakably discouraged the further or increased employment of iron, and its pretensions as a constructive element are ruthlessly and eternally doomed. To many its purposes seem to be so entirely distinct from architectural ends, that they are persuaded against its use as an architectural adjunct. Certainly in its natural condition as a metal, it would never be exposed in the façade of a building; it is, therefore, painted, and grained, and sanded, until it looks like absolutely nothing upon the face of the earth that is supplied by nature.

* This article and the illustrations were prepared expressly for this journal by A. Curtis Bond.

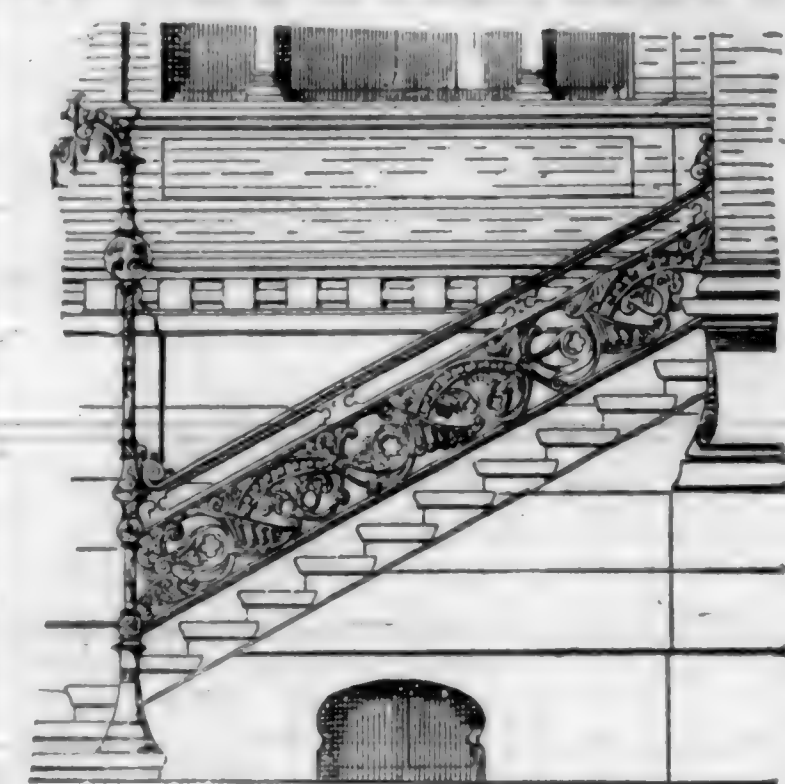
One great merit of iron is its entire freedom from the restrictions of style or form. Stone and brick have been used in every conceivable manner; if one seeks a renaissance home, and intends building of stone, the model for that stone renaissance dwelling is forthcoming at once; if a Moresque residence is desired in brick, the most elaborate example of brick Moorish construction is at hand. But the wildest architect of the crazy epochs of the renaissance never thought of iron; the suspicion of using any metal, excepting for decorative purposes, never occurred to the designers of the Alhambra. Thus our young architects have now an entirely new material, from which they can make entirely new styles; they run no risk of inconsistency or anachronism; so far as precedent goes, or is concerned, a twelfth century gargoyle would set admirably upon the volute of a Corinthian capital, or the corner of a Tuscan roof—provided it be of iron. Nevertheless it is not popular, and while we have a number of buildings with iron fronts, I doubt very seriously whether they will ever attain popularity or even general approval.

In the Moorish style much scope is given to the use of iron, and the majority of buildings of this order put up of late, are made from this material. Some of those upon Broadway are certainly rich in their effect, and altogether more gorgeous than they could possibly have been made had their construction been of brick or stone. One large Moresque structure is particularly noticeable, having its front divided into the three sections of an inside wall space, dado, center and frieze; the line of the bottom of the second story windows marks the termination of the dado, the center space or wall proper extends to the fourth story where the frieze commences. The colors are of an elaborate and showy character, but well arranged; the lower portion is darker than that above; the wall space shows a flat color with a light frieze.

It is a question whether these buildings can be said to reflect the Moorish design; the principles of the order are not followed out, and the coloring, as now done, is at variance with good taste; such buildings are rather the combination of a variety of styles, a feature that is very often indulged in when one wishes to revive an ancient form and feels it should have some of the modern improvements incorporated with it. This disposition is sometimes an unfortunate one, inasmuch as it is seldom qualified, or rather allowed, to develop an improvement, but more often detracts from the appearance, and by combining differences, frequently serves to depreciate their beauties. There is no objection that should stand in the way of our artists or draughtsmen making use of all the features that have been utilized heretofore; but by all means let those features be the best attainable, and if it is desirable to enter a Romanesque building through a Grecian portal, let it be done in fact and in spirit, and have that portal purely Greek, not a mongrel admixture of nothing in particular.

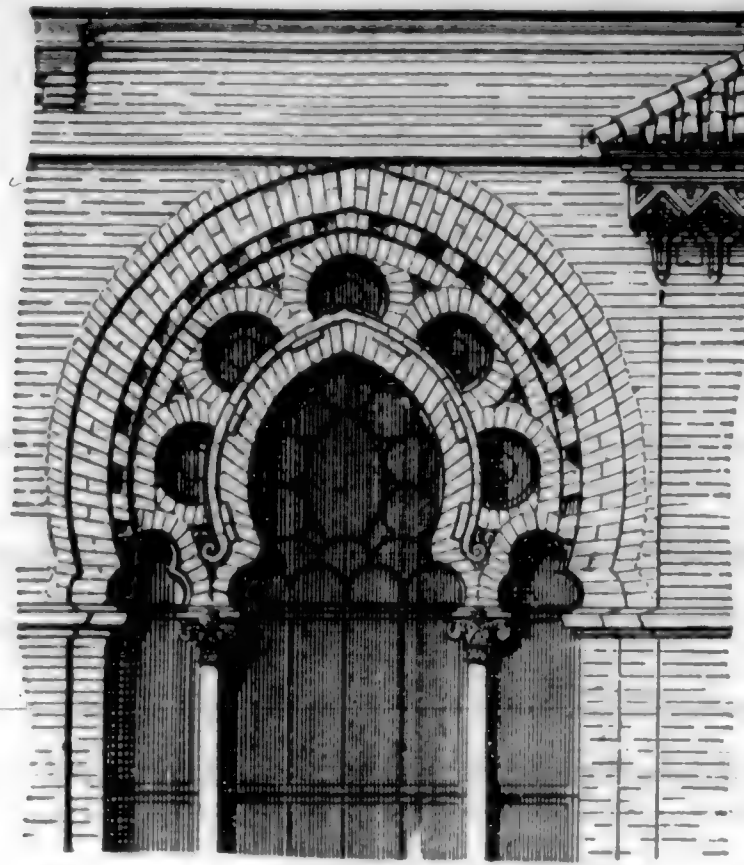
The best example of recent Moorish construction shown in New York, I make the subject of my illustration, giving the entire front, and small detail reproductions of windows and balustrade. It is Moorish in every line and every detail; the architect has followed his model to the letter, and avoided everything in the shape of modern innovations, from the balls upon the minarets, which are just of that rotundity peculiar to this order, and slightly smaller than the swell which distinguishes Jewish architecture, to the pattern of the bronze railing upon the stoop, all things are moresque. There is but one divergence from the antique, and that is the use of iron roofing and terra cotta trimmings. This fault, however, is so slight that we might overlook it.

The illustration, plate one, page 88, shows the façade of the Progress Club building, now in course of construction on 59th Street; the architects are Mr. Rafael Guastavino, a Spaniard, who has made New York his home, and Mr. F. Gruvé, who have had the good fortune to design several interesting and characteristic buildings. Plans for the Progress Club were submitted in an advertised competition, and was participated in by some of the very best of our local architects. The building is entirely of brick, fifty feet front, one hundred and two feet deep, eighty-eight feet to the top of the center tower, and will cost, when completed, \$90,000. The curiously designed rail to the stoop is of bronze in its



STAIR BANNISTER IN BRONZE.

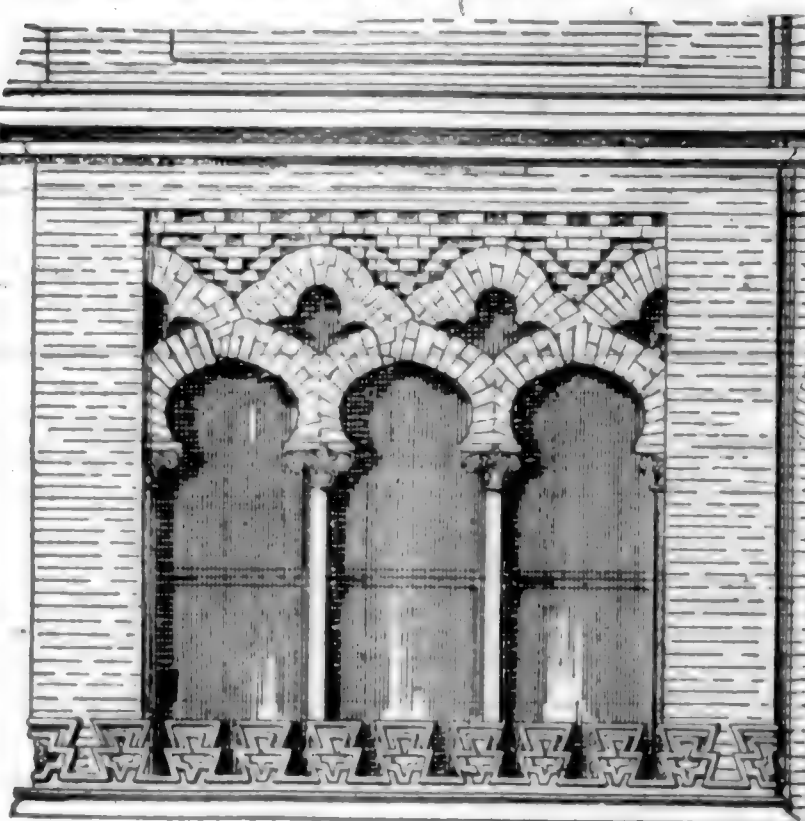
natural color, with a profusion of detail that may be more clearly traced in the individual illustration given of it. The entrance door is heavy oak, studded with bronze nails, and having a fanlight of colored glass; above the balcony-like vestibule at the entrance is a projecting cornice formed of tiles or clay pipes. The intertwining band over the windows, it will be noticed, is arranged so as to run around, over and under itself, in a true Moorish fashion. The roof and the spires are covered with iron shingles and tiles, painted being in imitation of cotta, the appearance the same, with the advantages that iron is much cheaper and of course more durable, if the difference in this latter quality was thought worthy of consideration. The balls are to be gilded, and the leaf-like ornaments about their base and crown to be bronzed.



WINDOW OF LADIES' RECEPTION ROOM.

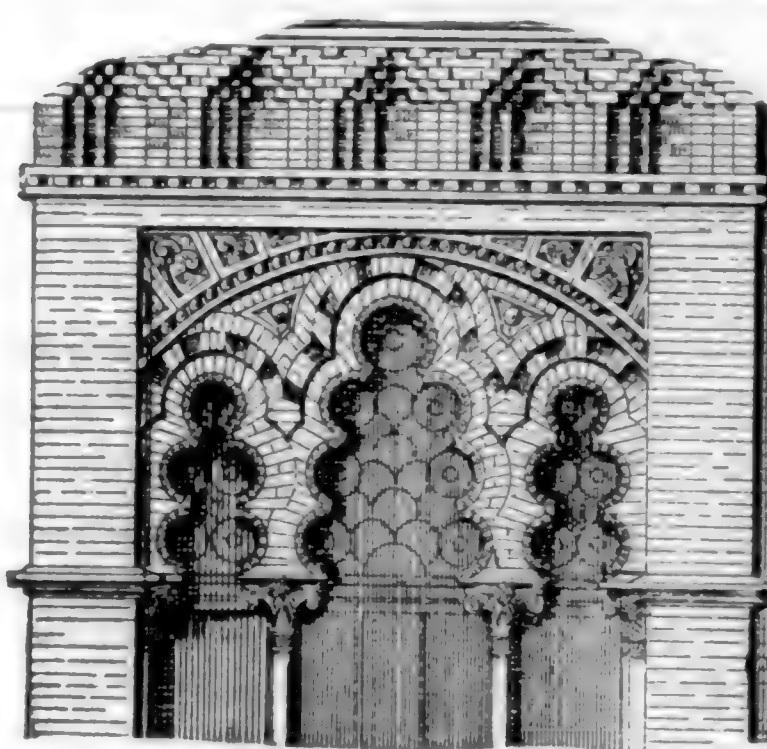
All the decorative work over the various windows is done in glazed bricks.

The contours of the arch as a principal outline is peculiarly distinctive of the true Moorish, though in one of its phases it is more or less familiar to us in the Gothic; the combi-



CENTRAL WINDOW OF BILLIARD ROOM.

nation of square and arch is another characteristic that is calculated to add the semblance of weight to a construction otherwise fragile in its appearance. The horse-shoe arch was popular with the Moorish architects in Spain, and it may be seen



CENTRAL WINDOW OF CONCERT ROOM.

in the great majority of their buildings. This arch was later broken into an infinity of smaller curves or horse-shoes, and made to intersect the sides or spring from the center of

other smaller arches, and thus was shown a succession of scollings such as may be noted in the upper central window of our building.

While I admire the Moorish designs, and delight in its appeal to my imagination, I am tempted to ask whether it is adapted to our customs and this locality; it is emphatically the style of romance and of pleasure; it enlivens the mind and inspires the thoughts; it is picturesque and striking; its interior especially encourages the dreamer and the imaginative; and how at variance is this with our dull, prosaic wintry East, where we are having snow-storms in May, have always had rectangular blocks of cheerless dwellings, all of them monotonously alike, streets solidly paved with stones that even John Ruskin would despair to make esthetic or artistic, and our amusements, entirely of an artificial character, graduating from an Academy of Music down to a beer saloon; Central Park, hedged about with "regulations that keep visitors upon the stone-paved walks and forbid any incursion upon the grass; no zoological garden, no Louvre, no art gallery, where one may instruct as well as amuse oneself; nothing, in fact, that will offer an hour's enjoyment without the imaginative-destroying element of an entrance fee, and the pleasure-killing surveillance of one of our interesting Puritanical laws. In this community, with such accompaniments, an architecture or a sentiment that breathes of the poetry or the romance of life, seems very much out of place.

S. F. Chapter. American Institute of Architects.

THE regular monthly meeting of this Chapter was held on Friday evening, June 1, John Wright presiding. Reports on the classes established by this Chapter were received as follows:—

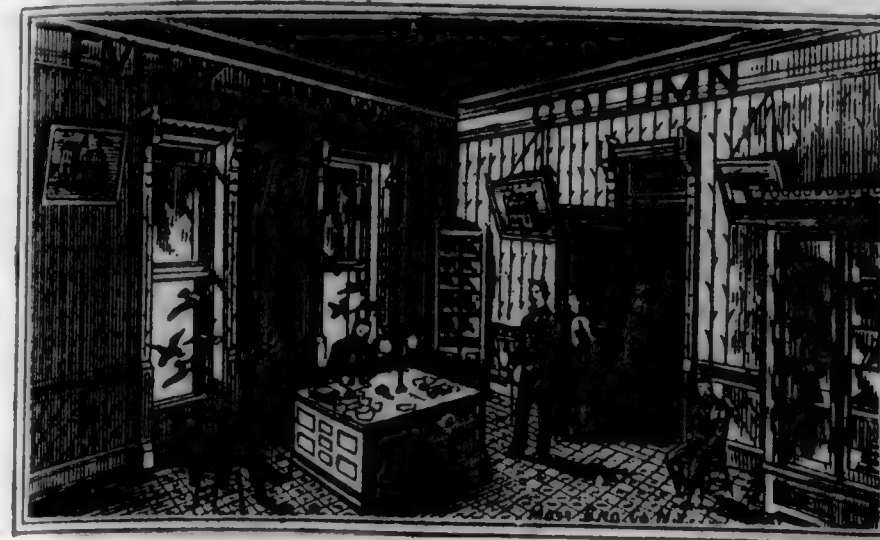
F. Marion Wells reported that his pupils were doing finely. Each one was possessed of an ambition to excel and stand at the head of the class. This was proven by the fact that the pupils were always on time to commence their work at the appointed hour and endeavored to carry out the instruction given them to fully meet the views of their teacher. Strict discipline was maintained; one of the pupils had shown neglect to his duties and was promptly dismissed. G. H. Sanders reported the progress of his class was better and better. After consultation with the members of his class, it had been decided, next season to institute classes in *Practical* instruction in carpenter yplumbing, etc. It was the aim to make the students thoroughly conversant with the *practical* work of every branch of the profession. Mr. Pissis' class was also improving. It was decided that owing to the regular time of the meeting of this Chapter next month, coming so near the 4th of July, that the meeting be postponed until the regular night in August, thus giving the members a chance to go in the country if so disposed.

A New Fashion that is also an Improvement.

ALTHOUGH it is sometimes difficult to draw the line sharply between a modern improvement and a modern fashion and to distinguish readily one from the other, there is still a great difference between the two; a distinction and a difference which a true philosophy would doubtless enable us to discover at all times. Unfortunately we cannot always stop to philosophize hence the mortification and defeat that are sure to follow when we find our dearly bought "improvements" turning into the ashes of a by-gone fashion. As a rule we must learn by an experience both painful and expensive, whether our condition is really improved by the new styles that are constantly intruding themselves in the countless details of building and furnishing our houses.

Certainly one of the most pleasant and attractive of the later fashions is that of arranging the plan of a house so that the entrance "hall" shall be something more than a long narrow passage into which the stairs obtrusively crowd and which contains of movable furniture at most one or two straight backed chairs and a "hat tree," a passage which is never dreamed of as valuable for any other purpose than a means of access to the inhabitable regions beyond. This fashion is something more than a fashion, it is a genuine improvement. Even so slight a change as to increase the width of the narrow way, making a little reception hall no more than a dozen feet square, is a great gain since the space so taken is just as valuable for entrance purposes and is also available for social use, either by itself or in connection with some adjoining apartment. The hall of our sketch is not merely a reception room, but with its fire-place, its broad light at either end, its raised gallery for music in case of a dance or a private musical entertainment—the gallery being a part of the staircase that climbs by easy stages to the second floor—with the wide entrance to the dining-room at the left, and to the parlor and library on the right. With all these conspicuous and comfortable features, it is the very center and heart of the home. The sense of cordial hospitality and welcome which one experiences on entering such a hall as this can never be imparted by one of the straight-and-narrow, formal and impossible-to-be-pleasantly-furnished halls that belong to the old-fashioned houses. —*The Builder.*

HEAVY damages have been awarded by a Chicago jury to a tenant against a landlord for misrepresenting the condition of the plumbing and sewerage of a residence. The tenant took it intending to keep a boarding-house, on representations that it was all right, but after moving in the furniture, found the sewerage in bad condition, and the hot and cold water faucets without pipes to supply them with water. The house was not fit to live in; the tenant removed his furniture and brought suit against the landlord for expenses incurred and other damages, and recovered \$3,500.



Architects, Contractors, Carpenters, and Mechanics generally are respectfully requested to furnish us items of interest for this column. We will gladly answer any and all questions pertaining to the architectural and building interests. If illustrations are necessary to explain your ideas, send us a sketch of them and we will make the cuts.

AFTER the dust has been thoroughly beaten out of carpets, and they are tacked down again, they can be brightened very much by scattering corn meal mixed with coarse salt over them, and then sweeping it all off. Mix the salt and meal in equal proportions.

WHEN you have the wood-work in a room painted, it is a good plan to have about two inches of the floor painted also; have the paint the same color as that of the base board; then if, when changing carpets, the carpet will not come close to the wall, the little space left will not be so unsightly.

AN improved automatic guard for protecting the hatchway of elevators has been patented by Messrs. Joseph Byers of Newtonville, and George Taylor, of Everett, Mass. This guard is pivoted to a post, and it is raised or lowered automatically by the movement of the platform when lowered. The free end of the rod rests in a receiving jaw or loop, one part of which is free is actuated by a spring while the other part is fixed. Both parts are provided with elastic cushions which receive and prevent the guard from rebounding.

New Publications Received.

Cottage Homes.

A NEW work, W. T. Comstock, publisher, has made its appearance. It consists of 44 large quarto plates in the styles of architecture now prevalent in the Eastern States. There are many illustrations of low-priced cottages, and this fact should cause a good sale among the interior towns. Most of the designs given are for country cottages, varying in cost from \$800 to \$5000. We have received a large number of this new work, and will forward them to any address upon receipt of the publisher's price, \$5.00.

Street, Store, and Bank Fronts.

This book contains 34 designs for street fronts for dwellings, stores, and banks. Details are also given. All the designs, etc., are drawn to scale. Price, \$4.00.

Stables, Outbuildings, and Fences.

24 plates, wooden and brick buildings, with details, showing sixteen plates, elevations and views of stables, outbuildings, and fences, and over one hundred miscellaneous details. Price, \$4.00.

Cottage and Villa Architecture.

This large work contains plans, elevations, views, sections, and details of low priced, medium and first-class cottages, villas, farm houses, and county seats, with specifications. All drawings to scale. Will be sent to any address upon receipt of \$8.00.

Artistic Homes.

44 full-page illustrations, by A. W. Fuller, Price \$4.00.

Modern House Painting.

By Rossiter & Wright. This is a very useful work as it exemplifies the Eastern ideas as to how a house should look after being finished. 20 large colored lithographic plates. Price, \$5.00.

Mechanics' Institute Exhibition—1883.

THE preliminary announcement is made by the managers of the Institute that the "Eighteenth Industrial Exhibition" will be opened on the 11th of September next, to close October 13th. The exceptionally promising condition of things in general, in this city and throughout the State, are in themselves sufficient to justify the course adopted by the management of the Institute. The grain fields of California never promised a grander return from the seed sown than that which this year cheers and gladdens the hearts and brightens the hopes and prospects of those who plough and sow that they may reap, while those who buy and sell or grind the golden grain, are made happy in anticipation of the splendid results which are assured by the harvest of 1883. Nor is this happy feature the only hope and boast of our favored State and coast, for the yield from millions of trees and vines was never better, nor ever did the golden rays of prosperity shine more brightly and universally than at the present time. None need be sad, nor any feel that their lot is hard, except those who fail to comprehend and grasp the splendid possibilities within the reach of all who strive to profit by the abundant advantages this year so profusely distributed everywhere. And if the management were all pious and devout men, they would scarcely perform their duties well, did they not add another feature to their programme, and suggest, if not ordain some method by which, amid the general rejoicing, themselves and their patrons might be led to acknowledge the goodness of that hand which has so bountifully poured its blessings upon us as a people. Ingratitude becomes not those who receive good things, and if forgetfulness of heaven's bounties by all classes be returned for the beneficence bestowed, need it be wondered at should future years bring us dry and parched lands, and stunted and desolating harvests?

In addition to all this, thousands of worthy and honorable men from abroad are expected to visit our city as Knights Templars, and it is well that nothing should be left undone to enlist their good opinion of us as a people, and make it possible that they return to their homes with kindly remembrance of the good times enjoyed by them in San Francisco, and with the fixed conviction that San Francisco as a city, and California as a State, are entitled to a high rank among the cities and States of our glorious Union.

As encouragements to exhibitors, gold, silver and bronze medals, diplomas, etc., will be awarded. Power will be provided for driving machinery, and all usual facilities afforded to give motion to the numerous inventions, and demonstrate the practical working of devices requiring motive power.

Natural products—cereals, fruits, vegetables, etc., will be allotted their proper share, and for the first time in several years, a Mineralogical Department will be instituted, showing samples of the most important ores and minerals found on the Pacific Coast. The

Art Gallery, Horticultural Department, and all others that will add interest to the exhibition, will be provided for, and the management will aim to make the exhibition of 1883 equal, and as far as possible, superior to those of all preceding years.

Improved Process of Making White Lead.

IN the United States the manufacture of white lead is conducted according to the Dutch method. Plates or gratings of lead are exposed to the fumes of vinegar, in vessels set in tan, or stable manure, which acts as a hot-bed to warm and volatilize the vinegar. As the lead is corroded, it becomes covered with the carbonate, which is removed with hammers and ground. The process is tedious, slovenly and unhealthy, and many attempts have been made to improve it, but none of them have yielded a product equal to that which results from corrosion. Microscopically examined, the carbonate of lead formed upon the metal, is found to consist chiefly of minute crystals which are hydrated, laminated and transparent. These are mingled with a smaller quantity of exfoliated particles of the carbonate, which are opaque. These particles, it is claimed, impart to the white lead its remarkable power of resinifying oils, as well as what the trade calls its body, i. e., its property of completely covering objects painted with it. By the new process workmen are not required to detach by hand the carbonate from metal which remains uncorroded, and the product is said to consist almost exclusively of the valuable opaque particles. To effect this, the lead is first brought to the porous or spongy form, by which the surface, exposed to the slow carbonating process, is enormously enlarged, the thin mass being seemingly composed of open interlaced fibres. This is put in a close chamber, and there exposed to a mixture of atmospheric air, carbonic acid, and the vapor of acetic acid. The carbonic acid, generated by combustion, is cooled and purified before it is driven into the chamber. The air passes in warm, and care is required to maintain the proper degree of moisture. The carbonate is the shape of the metal upon which it is formed, and the material is not removed until the corrosion is complete.—*Mining and Scientific Press.*

THE bee has long been a type of the industrious worker, but there are few people who know how much labor the sweet hoard of the hive represents. Each head of clover contains about sixty distinct flower tubes, each of which contains a portion of sugar not exceeding the five-hundredth part of a grain. Some patient apiarian enthusiast, who has watched their movements, concludes that the proboscis of the bee must, therefore, be inserted into 500 clover tubes before one grain of sugar can be obtained. There are 7,000 grains in a pound, and as honey contains three-fourths of its weight of dry sugar, each pound of honey represents 2,500,000 clover tubes sucked by bees.

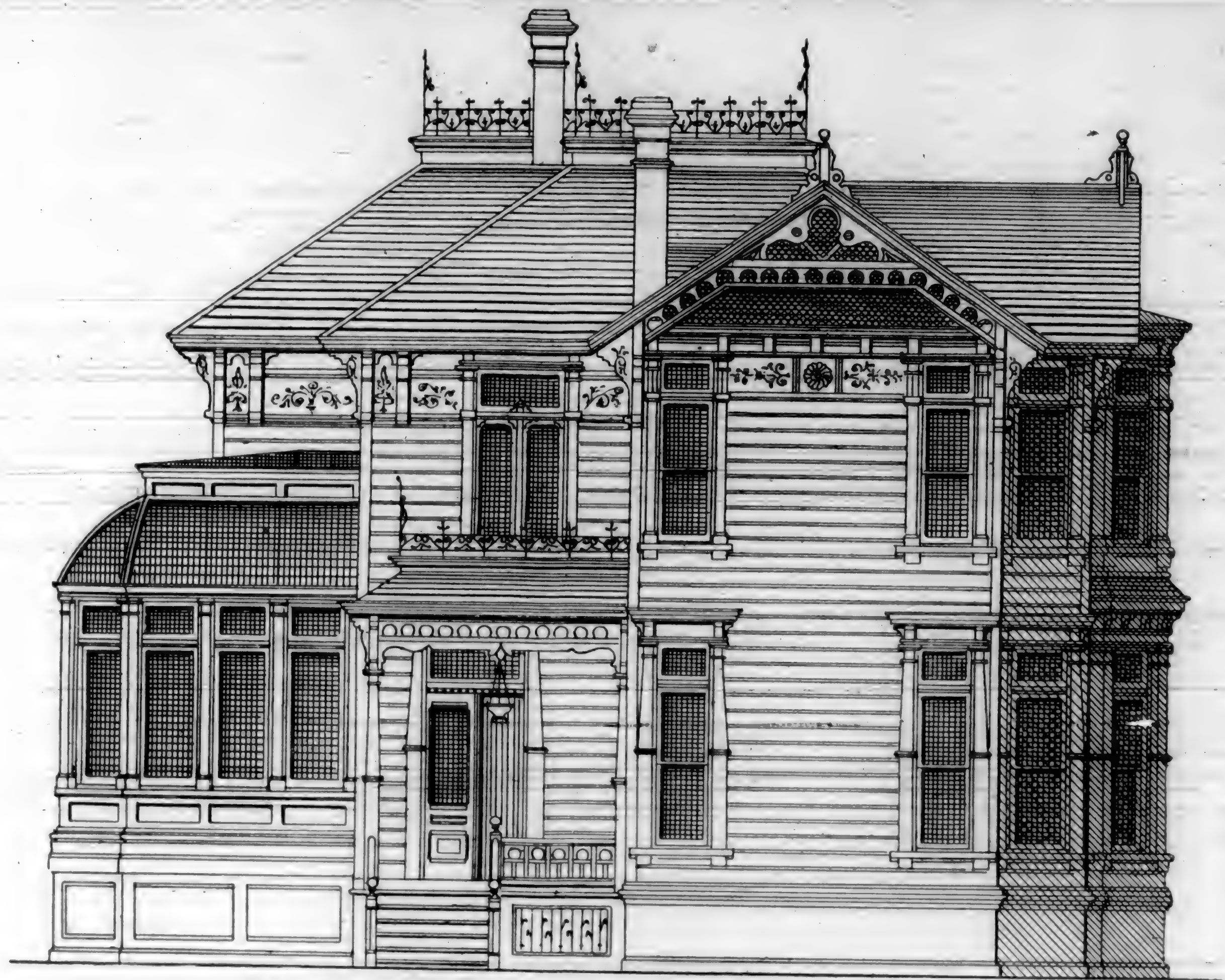


PLATE 2—FRONT ELEVATION OF A SUBURBAN DWELLING.

Will be Back in a Few Minutes.

MECHANICS should remember that "time is money." We have been very forcibly reminded of this old maxim many times since the beginning of the year. Our business relations with contractors, tradesmen, etc., are such that we have been compelled to call or send to them in regard to many things, owing to the great activity now prevailing in building circles.

The sign at the heading of this article has met our vision many times, and we earnestly request all those who of necessity have to be running in and out in order to attend to their business, to change the character of the words so as to read, "9:30. will be back in—minutes," filling the blank with the number they honestly think they will be away. A person calling will then readily understand about the time to expect to meet one at his business. Or the sign may read, "Will be back at—o'clock," filling the blank with the hour. This may seem a trivial subject to some, but to any one whose time is valuable, it is very important to know just when to meet one with whom you may have business relations.

A short time ago we wanted a carpenter to attend to some work. Our boy was sent to his

shop, and in half an hour came back with the information that on the slate was, "Back in five minutes." He waited three times that length of time and then returned to the office for instructions, having first written on the slate, "Call at—office." Two hours rolled away and still no carpenter. Being in a hurry we obtained a man at another shop, and after agreeing upon terms, we were startled by the first man sent for rushing breathless into the office. He was, however, too late, and upon conversation with him, we found that he had lost another job the same week by his sign disappointing those who would willingly have waited a day to secure his services, but felt aggrieved at calling twice for nothing, with a sign staring them in the face. "Back in five minutes." Let all remember that although your own time may belong to yourself, you have no right to cause any one to lose his time, misleading him by a wrongfully written sign. Have the time definitely stated when you will return, and use your best endeavors to be punctual at the time of your own choosing.

The article on "The Care of Fixtures" (p. 102) should have been credited to the *American Engineer*.

Floors Weakened by Gas Pipes.

A SHORT article in the *Building and Engineering Times*, on the subject of weakened floors, deals very intelligently with the harm that may be done in this direction by careless gas fitters. It is common enough, in cases where a pipe has to be led under flooring and across joists to serve a pendant, for the pipe to be taken straight across the center of the room, and the joists notched about an inch deep all the way. Workmen who do this never reflect on the harm they are doing to the floor, nor do they know that a notch cut out of the top of a joist will seriously weaken it. This at once becomes evident when it is known that the strength of a joist, which is a rectangular beam, is proportional to the depth squared. If, therefore, a groove 1 inch deep is cut across a 7 inch deal, the reduction of strength is not only one-seventh, but a great deal more, in the proportion of 36 to 49, or a loss of rather more than one-quarter of the original strength of the beam. This somewhat startling result is due to the self-evident fact that the upper part of the joist is required to be solid, in order to resist compression, just as much as the lower portion must be capable of bearing tension; and to cut a notch in the

top of it is equivalent to removing the substance along the whole length of the joist to the full depth of the groove. This observation only applies to cases where the notch is cut out of the center of the span, which is the commoner practice. There is much less objection to cutting joists close to the end, and thus allowing the pipe to be laid round the room to a point where it can be run to the center between two joists. Or, if this course cannot be followed, the pipe may be safely passed through a hole bored in the middle of the joists. If this is not feasible, the indispensable notch may be cut right down to the middle of the joist, and the pipe thus laid across the neutral line; the space above being afterward filled with a tight wedge which will safely transmit the compressive stress.

Improvement in Bricklaying.

THE recent suggestion of a correspondent, that instruction should be given at our technical schools in the art of bricklaying is worthy of careful attention. The whole number of brick laid year by year in our large cities is simply enormous, and they go into every class of structure, from the piers of a 9x12 cottage to the walls of a warehouse or factory which in itself may consume millions. In none of these works are the builders likely to put any excess of brickwork, but the workmanship displayed in laying very many of these walls is so extremely imperfect that the question may very justly be raised whether it would not pay better to employ better workmen, provided they could be had, even at higher prices, and cause them to lay thoroughly sound, solid work. If this were done, it becomes a question whether the thickness of the walls in some of these works could not be safely reduced, thus affecting a saving even at the higher cost assumed for the labor of laying.

A serious but common defect in the laying of straight work, especially in long party walls between buildings, is the tendency to put the bricks into the interior of the wall almost wholly dry—that is, with practically no mortar either above, below, or around them. The face-work of such walls is apt to be bad enough, too, for the bed of mortar is usually spread with the point of the trowel, so that the face brick rests only on two narrow ridges, one along each edge. In a large part of such work the end joints are laid with a mere dab of mortar, taken up in the wiping off with the trowel of the bed joint, but this is apt to be not one-third enough to fill this end joint really full.

It would seem an easy thing to secure the proper bedding in the mortar of the interior filling of such a wall, and the filling of all the cross joints, but experience shows that this is a very troublesome thing to secure with most bricklayers. So hard is it to secure this that very many of the walls in stores, or even in warehouses that carry heavy weights, are in a very just sense mere dry walls, possessing little more strength than that due to an absolutely dry piling of the brick between the

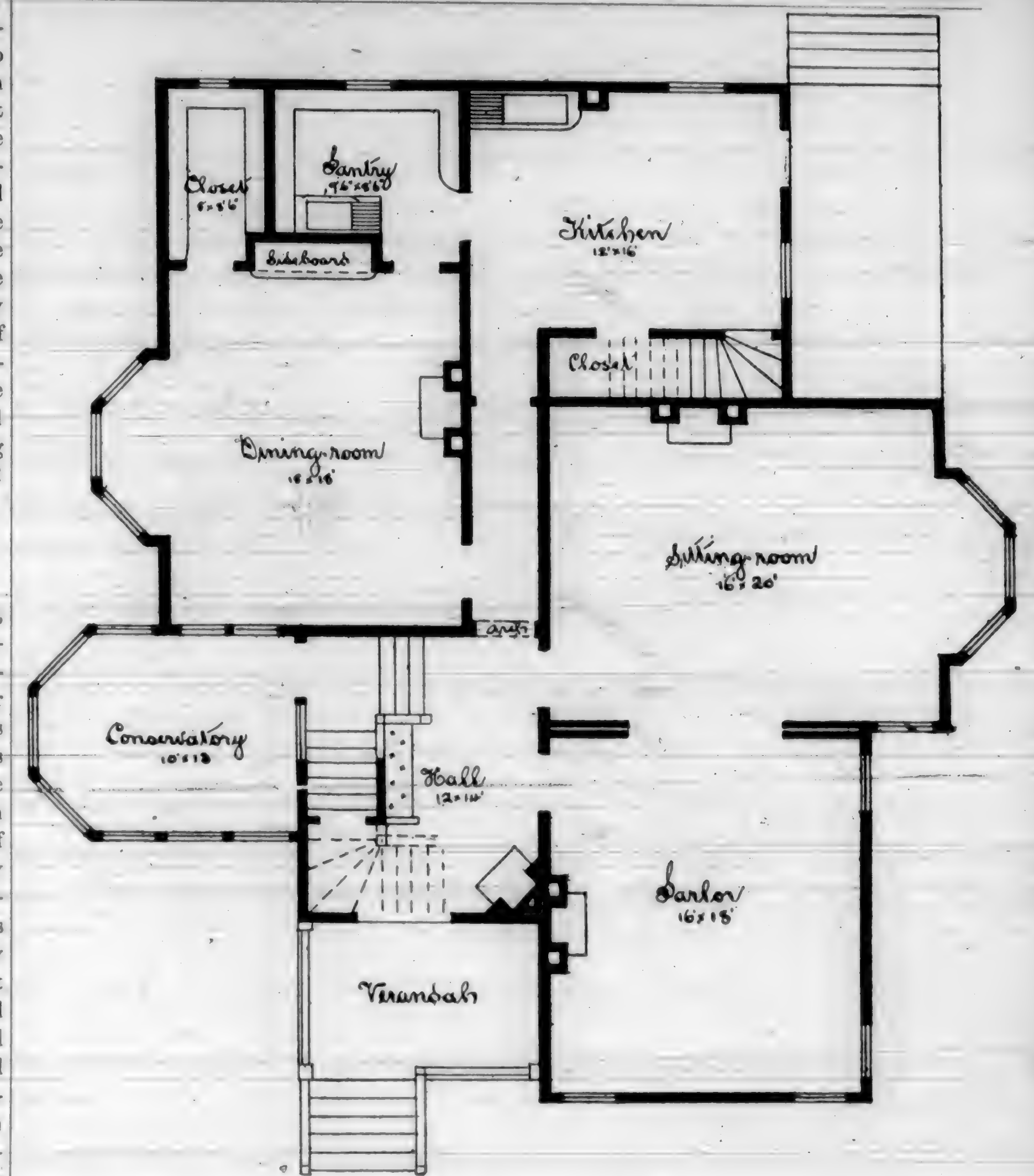


PLATE 3—FIRST FLOOR PLAN OF SUBURBAN DWELLING.

two face-shells which serve to keep the interior of the wall in place.

It is literally true of a host of these walls, which have the appearance of being solid, that they are thoroughly honey-combed with vacant crevices, and the natural consequence follows that the real strength of the wall is thereby reduced. The strength of a wall of this general character depends upon two things among others, one the absolute weight of the wall, and the other the completeness with which each brick is bedded against its neighbor. Unless this last requirement of perfectly solid work is met, the wall must be clearly more likely to yield when any stress comes upon it from any cause.

Of the need of the best workmanship in special kinds of bricklaying, nothing need be said in this connection, for the call for improvement in plain work is clearly enough marked, and will alone require all the attention and help it is likely to receive in the great crowding of instructing duties that press upon our school officers. It may be said that other

things are more needful to be attended to by our young men in schools, and this may be true. At the same time it is true, so far as practice or shop work is concerned, that subjects may justly claim attention which bear most directly upon work which is most largely in request, either in quantities done or in number of places where, if done ill, it needs amendment or correction. If 10 schools should join in sending out next year an average of 10 graduates each trained in bricklaying, even in the limited way proposed, there would be 100 centers of useful influence at once established for securing better work in this respect.—*Mechanics*.

A CROSS-CUT saw invented by an Ohio man has cutting and cleaving teeth of different altitudes, and is provided with longitudinal lines, or indentations, which are parallel with the points of the teeth, and are separated from each other by a space equal to the difference in the altitudes of the cutting and cleaving teeth.

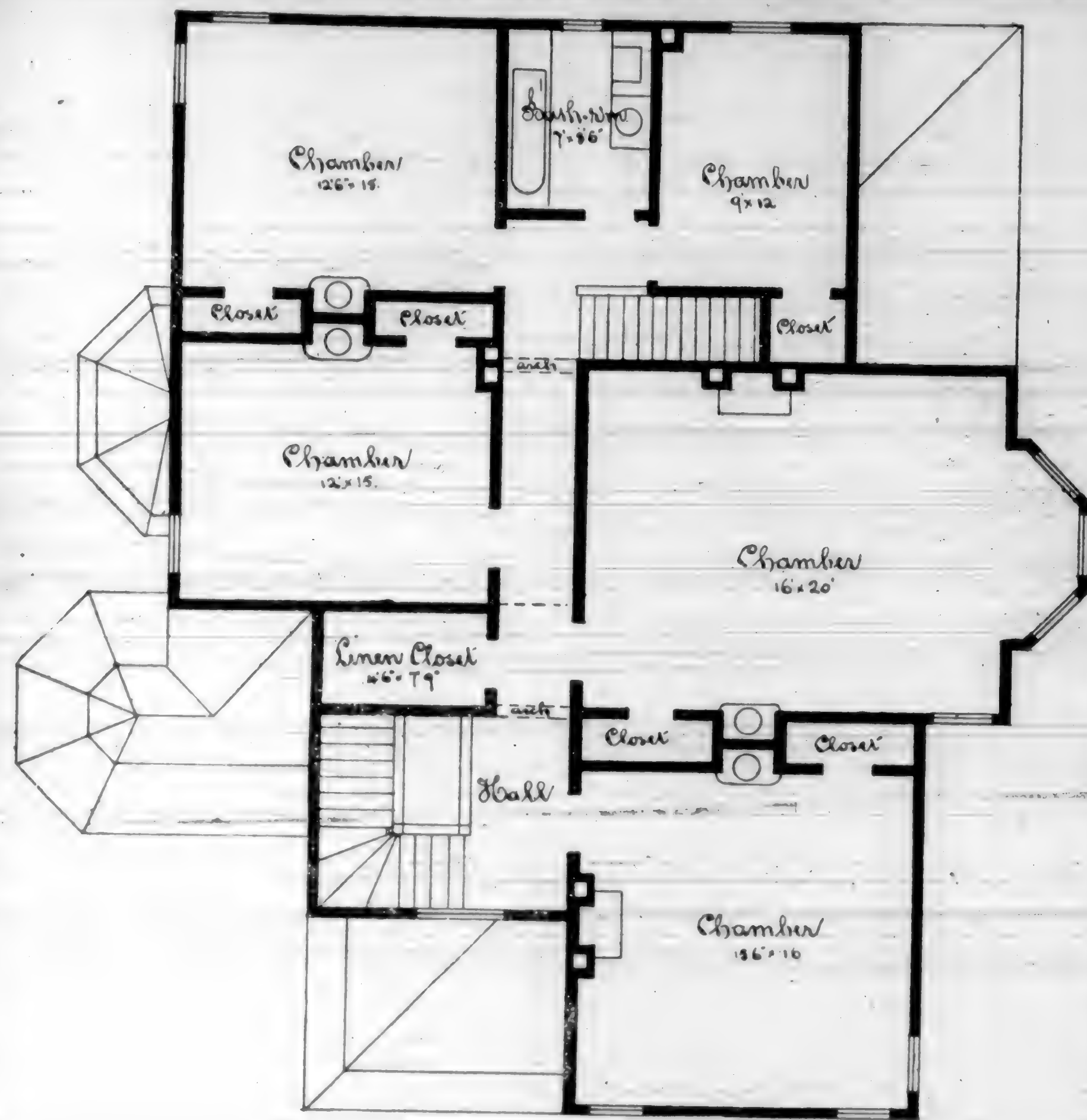


PLATE 4—SECOND FLOOR PLAN OF SUBURBAN DWELLING.

Our Illustrations.

PLATE 1, and the small detail cuts in connection therewith, were prepared expressly for this journal by A. Curtis Bond, from designs of the architects, Messrs. Guastavino & Gruvé. The article was also written by him, and we are pleased to inform our readers that hereafter he will be a regular correspondent, presenting to our readers the latest forms of architecture adopted in the East.

Plates 2, 3, and 4 are the elevation and plans of a neat suburban residence. The plans shown are very explicit and need no description. It can be built for any amount over \$5,500, depending altogether upon the styles of finishes used.

Plate 5 is taken from an old work printed 125 years ago. We do not remember to have ever seen the illustration given in any other work than the one from which we have taken it. We have endeavored to give the latest information in regard to the lessons taught by these grand piles of masonry.

Plates 6 to 10 are views and plans of a cheap country cottage. Its cost can be varied from \$2,500 to \$3,500.

The Decay of Building Stones.

THE practical scientific study of building stones, their comparative merits and their durability when subjected to peculiar local or atmospheric influences, has yet to be made. The failure of some stones to resist fire, discolorations, and the disintegrating effects of the emanations from manufacturing centers, has resulted in their decreased use and the substitution of brick. On the 30th ult., Dr. A. A. Julian, of Columbia College, read the second part of a paper on the "Decay of Building Stones," before the New York Academy of Science. His remarks were based on observations made in this city and adjacent places.

The principle that stones are more lasting when laid on bed is clearly demonstrated in the case of all the building stones. After a structure has been erected a few years, there is no difficulty in dividing the stones laid on bed from those laid on edge, as the laminations in the latter become distinctly marked; and in some kinds this can be discovered immediately after completion, as the more porous layers dry first, thereby giving the stone a striped appearance.

In brownstone a deep decomposition was noted even when laid on bed; when exposed to the heat of the sun, the change is more rapid. The attack of the destroying agents is favored by imperfect jointing, which opens a back entrance. The discoloration in Nova Scotia sandstone might be prevented if the surfaces were vertical and placed out of reach of dripping. It is too soft for lower portions of buildings, and receives and retains the street dust. Ohio sandstone resists our climate well, and when used in Western cities is discolored but not disintegrated. There are but few limestones in the city, and the decay of Westminster Abbey, London, should warn us of the danger of using fine grained limestone until we are satisfied of its durability in this climate. The decay of marble is first shown by its becoming pitted; those set on edge show the more rapid decay. Granite shows pitting, the hornblende being first attacked. The south and west side of the Tombs show decay, while the other sides are intact. The sides affected are exposed to the sun's rays.

Dr. Julien came to the following conclusions in regard to the life of stones, defining life as the period during which the stone presented a decent appearance. Coarse brownstone, best used out of the sun, from five to fifteen years. Laminated fine brownstone, from twenty-five to fifty years. Compact fine brownstone, from one to two centuries. Nova Scotia stone will probably last from fifty to one hundred years. Ohio sandstone, the best of the sandstones, one hundred years. Caen stone, from thirty-five to forty years. Coarse dolomite marble, forty years; fine marble, sixty years; pure calcareous marble, from fifty to one hundred years. Granite from seventy-five to two hundred years, according to variety.

Bluestone is as yet untried, but will prove a good building material. Some of the best building stones in this country have not yet been brought to this city.

Some of the causes that produce decay in stones are, first, solutions and hydrations of the stone and the heat of the sun.—*Scientific American.*

Chinese Customs.

THE Chinamen seem to be our antipodes in customs as well as geographically. In matters of dress they finish where the rest of mankind begin. His waistcoat is outside his coat, and his drawers outside his pants. We blacken our shoes; he whitens them. Our ladies compress the waist, theirs the feet. Our women wear long dresses, theirs long sleeves. In China the men carry the fans, and the women wear the trousers. In eatings, their customs are in striking contrast with ours. We have a soup as a first course and dessert at last; they have dessert at first and soup at last. They ignore knife and fork and spoon, and eat with two "chopsticks," both held in the right hand. They abominate beef, milk, butter, and cheese; but eat puppies, cats, rats, birds' nests, sharks' fins and snails.

With us the right hand is the place of

honor; with them it is the left hand. In dating letters we place the year last; they write the year first. Instead of saying "northeast" or "southwest," they say "east-north" and "west-south." They always speak of the mariner's compass (their own invention) as pointing to the south. Here, a mother shows her affection for her child by kissing it; a Chinese mother smells of it. We locate the intellect in the brain; they in the stomach. We pay our physicians when we are sick; they pay the doctor while they are well, but as soon as they get sick the pay stops. Here, men kill their enemies in revenge; a Chinaman gets "sweet revenge" by killing himself. They mount a horse from the right side, and when they want him to go they say "Whoa!" The men ride sidewise and the women astride. We use lanterns on a dark night, they carry more lanterns at full moon than at any other time. We place a candle in a candlestick; they put the candlestick in the candle. Their detectives sound a "tom-tom" at night to give thieves and rogues notice of their coming. We ride in railroad cars, they in wheelbarrows. We draw canal boats with horses; they with men. We sell wood by measure; they by weight. We vaccinate in the arm; they in the nose. We use a soft pillow, they a block of wood. Our store signs are horizontal; theirs are perpendicular. They launch ships sidewise, ring bells from the outside, and actually turn their screws in the opposite direction from ours.—*Christian Advocate.*

To construct a well-built and convenient house, no material should be spared in places bearing the strain of the structure; do not save material in these places, as it will almost certainly be ruinous to the building in course of time; see that those rooms which are used mostly during the day-time be clustered together as much as possible; that there is not too much hall room; still, enough to insure a pleasing entrance to the house; the stairs should be comfortable and not cramped, all entrances well perfected, and the windows so disposed that they will admit sun and light in ample allowances, and, at the same time, be protected from the storms; that is, are on the opposite side from which the heavy storms are usually to be expected.

A goodly allowance of porches on the pleasant side and at all entrances will add greatly to the comfort of your home. Chimneys should be so placed as to ensure a good draft, no matter in which direction the wind may be. Concerning the exterior, the house should be in harmony with its surroundings; do not make the mistake of placing a low, flat-roofed building in a high country, or a sharp, steep-gabled structure on a flat plain.—*The Builder and Wood-worker.*

WHEN you have determined to build, the first thing to be done is to go to the best architect within your reach and consult him as to the most expeditious method of reaching the result desired. Do this before consulting any

builder or contractor, and you will invariably find it to your advantage. The reason is plain. The architect stands as a disinterested third party between you and your mechanic, he having made a special study of the arrangement and convenience of modern structures, and being constantly employed in designing such, is better versed than any one else you could find. In selecting your plan, give the architect a short synopsis of what you consider best adapted to your wants, and the amount you desire to expend; then let him work the design up and submit it to you for inspection, which will enable you to see and correct all which does not suit you, and your house, when completed, will come up to your expectations.—*The Builder and Wood-worker.*

Consideration For Old Employees.

PHYSICAL vigor and mental activity are necessary in all kinds of employment and all sorts of business. Lacking either, the man is, in some degree, incompetent. The cases are exceptional where profitable employment is fitted to the infirm, whether physically weak or mentally slow. And yet there are cases where employment and occupation should be given to such persons, not alone as a matter of policy—to prevent mental and bodily injury—but as a duty. An employé who has spent the vigor of his best years in the service of an employer deserves something more in his last years than cold neglect. Even the turning out of an old horse to die is a subject for attention by the officers of humane societies.

If an employé is of any value whatever, he ought to earn for his employer something above his stipend; in fact, the labor of employes, combined with the judicious use of capital, should accumulate for the employer a competency, if not actual wealth. The wealth thus gathered represents in part, the excess of the value of the labor performed above the amount that has been paid to the laborers. Although the employé has no legal right to demand more than the agreed sum as wages, or salary, which he receives, the fact remains that the wages, or salary, may not represent the proceeds of his work in full.

This fact may not constitute even a moral claim by the employé for anything beyond his regular compensation, under any circumstances. It may be that the compensation was sufficient to have placed the employé, in his old age of feebleness, in a condition of comparative independence, but he may have neglected to provide for the inevitable rainy day. Employers have no special supererogatory duties towards employes of this class. Nor is it, perhaps, incumbent on them to pension off old employes, as governments sometimes do public servants. The circumstances will alter the cases. It is not to be expected that employing establishments or individuals are to become insurers against the decrepitude of old age and its attendant incompetency. But the dictates of humanity and the demands of business policy may so far go harmoniously together as to prevent the too common specta-

cle of an old, faithful employé deprived not only of a position of profit because of inability, but of occupation adapted to his failing powers. There are few sadder sights than this, and pity for the unfortunate man and detestation for his though less or perhaps avaricious employer is felt by every spectator.

As men grow old in any particular service their business ways and work habits become fixed, and all the surroundings of their secular days' employments become more familiar to them than their home life. It is like casting them adrift without rudder, oars, or chart to turn out old employes under such circumstances. Who has not felt a pity for some superannuated employé thus set adrift, as he has noticed him returning occasionally to his old haunts, and looking about wistfully on scenes of which he once formed a necessary part, but in which he is now only an incubrance and a disturbing element. Too old to start anew in another line, and possessing none of the hopefulness of youth and the ambition of mid-age, he becomes disheartened, melancholy, and perhaps imbecile, until death steps in to his relief.

There is a large manufactory in a New England State that for more than thirty years has been running with pecuniary success, employing young and old, male and female, in its various departments. When business has been dull, and the markets unstable, work has been reduced, and wages shortened, as was necessary to prevent financial disaster. But good employes were kept, if possible, even in the dullest times. There never was a strike, nor a threat of one, in this establishment. Among other humane practices and considerate measures for the comfort and well-being of their employes, this company keeps their hands even when old and unprofitable. There is one old man, now more than eighty, who has worked faithfully, for the best part of his vigorous manhood, for the company. He still works—not, however, full hours—and his employment is of so trifling a character that but for the circumstances it would be ludicrous. But the old man is proud of his employers and that he is still able to work, and is living a happy, contented life, believing that he is independent of charity and that he is still useful, if not necessary, to his employers. This is an example that might properly be followed by others.—*Scientific American.*

Genesis of a New World.

ON a beautiful summer's night, August 22, 1794, Jerome and Lefrançois de Lelonde noticed a star in Aquarius, which they estimated of the seven and one-half magnitude. Six years later they thought it of the eighth magnitude. In appearance it resembles a star which is not exactly in the focus of the telescope. Herschel had observed it in September, 1782, and recorded it as an admirable planetary nebula, very brilliant, small, and elliptical. Lord Rose and Lassell perceived that it was surrounded by a ring, which gives it somewhat the appearance of Saturn.