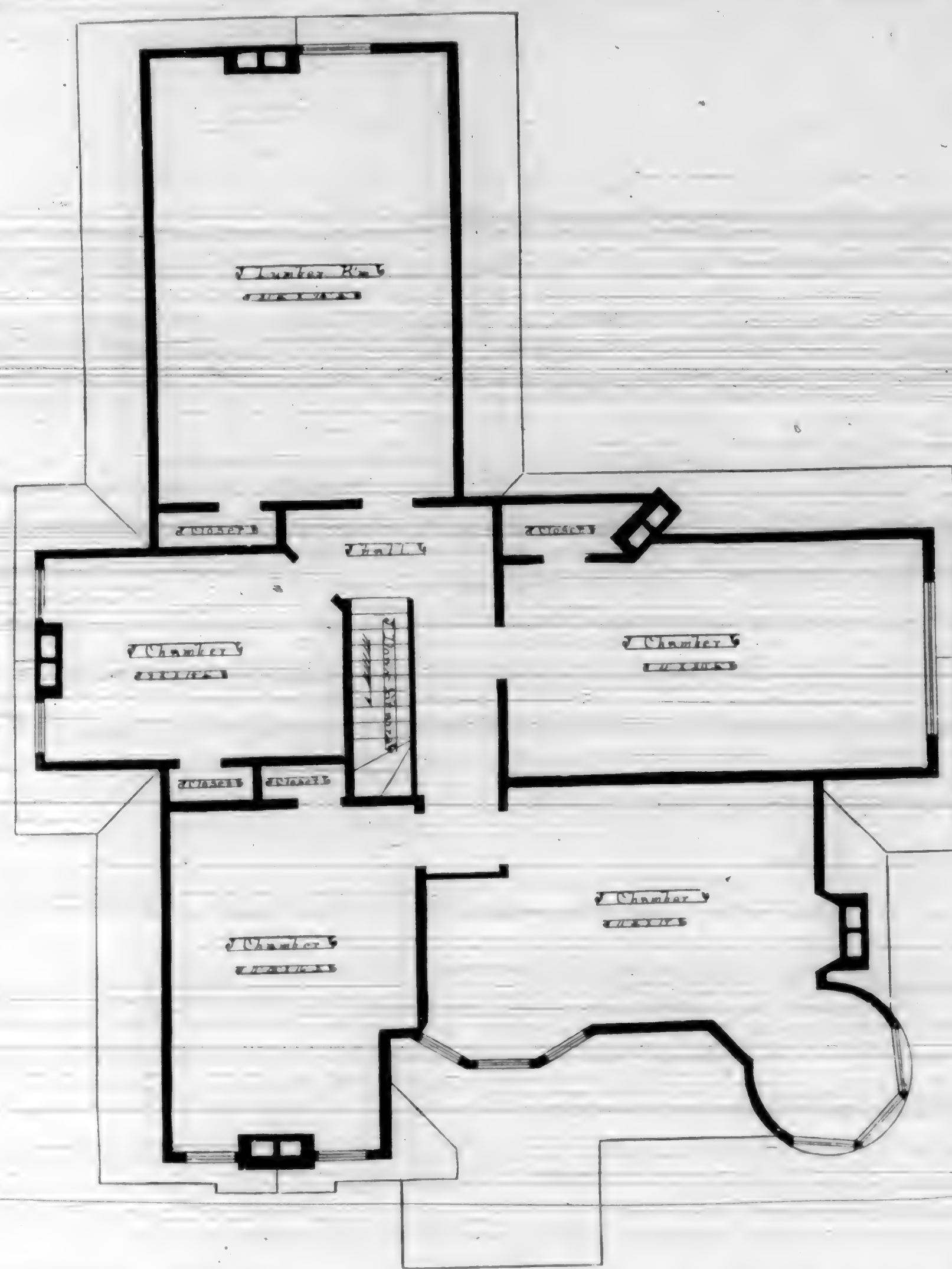




ATTIC PLAN OF \$5,000 COUNTRY DWELLING.—4TH PREMIUM DESIGN.

Restoration! vs. Ruins of Carmel Mission Church.

At the regular meeting of San Francisco Chapter, the 7th inst., the "Restoration!" of Carmel Mission Church, Monterey County, furnished a theme of discussion, during which statements were made by members of the Chapter present, who had visited the once universally revered, sacred relic of California antiquity, in the completeness of its ruins, and its solemnly grand desolation under the wear and waste of time; bowing with awe within its once consecrated, but for many years unroofed and broken walls, with reverential feelings akin to that of standing in the spirit presence of the revered and self-sacrificing Padre, who founded the mission, laid the foundations of the church, and dedicated the structure to the service of Almighty God; and whose dust of mortality lies buried beneath where worshipers once knelt in solemn acts of devotion; and, also, since then—since its *transmogrification* into what it is at

present—as much unlike the original as possible—*desecrated*—NOT restored. Its high, steep, Gothic, redwood shingled roof, and its modernized inside finish, wiping out and obliterating all semblance to the original, stone-arched, tiled roof, placed on it by the pioneer Padres of a century ago; the covering up and concealment from view, by plasterers' mortar or cement, the interior stone-work of the walls, which pleasingly illustrated the great care, regularity, and mechanical exactness with which the work was at first done; and many other departures from originality, simply reverses the order of things—the "restoration" being no less than the almost complete ruin of the once venerated ruins, thus exemplifying the entire unfitness of Father Casanova as the managing man, which position he seems to have occupied in the *modernizing* of the ancient edifice. If the reverend superintendent of the work understood the correct meaning of the term restoration, his practical demonstration of that knowledge has certainly produced a something as little like the

original as can well be conceived, short of entire destruction, so far as his judgment and ideas of things have been reduced to practical execution.

The original *façade* of the edifice remains but little altered, as far as bell and stair towers, main entrance, and its peculiar Gothic gable window is concerned, but not so with the front wall itself; the sharp-pointed, Gothic gable rising many feet—perhaps near *y* ten—above its original terminal, so mars and changes general effect that all preconceived ideas of the structure, whether derived from photographs or personal observation, are at fault.

A Lesson in Shop Management.

THE costly results of putting off till to-morrow that which not only can but ought to be done to-day are nowhere more surely felt than in a workshop. The number of failures in business which could be traced to this single cause no statistician will ever be able to compute. How in one instance the evil was pointed out and its consequences checked, is related by the *Cabinetmaker* as follows: We once worked in a shop where a specialty was made of builders' finish, brackets, mouldings, fancy finish, etc. About eight hands were employed in the room we worked in. The machinery consisted of railroad combinations, band and jig saws, panel and buzz planer, a boring machine, and a two-spindle moulder. The two planers and the jig saw had loose pulleys which were so badly worn as to necessitate throwing off the belts from the main shaft to the counter every time each machine was used. In that shop each man took an order from the order book, got out his stock, and finished the job, using whichever machines were needed. When it was necessary to use the panel planer, we had to climb up on the jig saw table and throw on the belt; when the buzz was needed, the planer must be used to stand on, in order to get at the requisite belt. If the planer was running, it must be stopped, thus delaying the man who was running it. One day after getting thoroughly disgusted, we "went for" the boss and asked him if he was going to have those pulleys bushed this year. He said he was going to "just as soon as he got time," but he let them run in this way for two whole months. One day we noted the number of times we had to throw on and off those belts. We used the planer fifteen times, the buzz ten, and the jig saw sixteen times, making forty-one times. It took about a minute to put on, and another one to throw off a belt, thus taking in all eighty-two minutes in one day. There were eight of us who had to do the same thing, so it took 656 minutes, or about eleven hours, to handle those belts—more than one man's time every day. Running this way for nine weeks would amount, at the rate of forty cents per hour, to \$212, and our boss could not find time to have the pulleys fixed. We showed the figures to him one day. He scratched his head, took them into the office, and ten minutes afterwards came out, shut down the shop instantly, and sent those counters and pulleys to the machine shop. A loose pulley that rattles has not been seen or heard in that shop since. You may go into every shop in the land and six out of ten will have one or more of these "hand shippers" in operation. How is it in your shop? If the coat fits, put it on.

The Prompt Return of Plans.

AMONG the many office annoyances to which architects are subjected, that of bidders neglecting to return plans and specifications promptly at the time appointed for their return, is one of the most provoking,—alike to the architect, and the party who by appointment is the next in order to receive and use them. Each party figuring is entitled to the full period of his allotment of time and no more; and the one who by arrangement precedes the other, is in all fairness toward his fellow competitor, and the office which permits him to figure, in duty bound to observe his time privilege, and avoid encroachment upon the time and rights of the "next man," by the prompt return of plans and specifications at the understood or specially appointed hour. In all well regulated offices where business is conducted by rule and system, each bidder is allowed one or more days, according to the magnitude of the work to be figured upon, in which to complete his use of the papers; and when more time is taken by any one of those figuring, than the days or hours appointed to him, he takes—by encroachment upon his successor's time and rights—that which he is not entitled to, and does an unfair thing; for the time of the next bidder in the order of appointment is his own; and his predecessor in figuring is in honor and duty bound to so act his part that the other shall not be subjected to loss of time, nor to any other inconvenience through failure of the first to exercise due diligence in carrying out the understanding which usually in such cases exists. There can be no consistent excuse or palliation in such cases, short of *absolute impossibilities*; and the bidder who is careless and thoughtless in this respect, justifies suspicion on the part of the architect, that the same spirit of carelessness, and lack of promptness may develop, should the not particular one to the successful bidder.

Sometimes plans are delayed and held back for the purpose of shutting out multiplicity of bidders, and lessening competition. This may work in some cases, when circumstances preclude extension of time, but ordinarily such acts simply provoke, and result in the number of parties invited to figure being largely increased, or, as has been the case in some instances, an entire change in procedure, excluding entirely those so manipulating matters.

To the architect it is unfair; involving him in disappointments, and rendering explanations necessary to explain to his client the reason why the number of bids at the hour set for opening is less than had been requested, arranged, and fixed upon; thus rendering it possible for the owner to suspicion complicity somewhere, a result not beyond the bounds of reason when irregularities of the slightest character appear, particularly in cases of "first transactions," and with owners of quick discernment and perceptive minds, qualified by business experiences to take in and apply seeming, if not actual departures from strictly correct and business-like procedures.



REAR ELEVATION OF \$5,000 COUNTRY DWELLING.—4TH PREMIUM DESIGN.

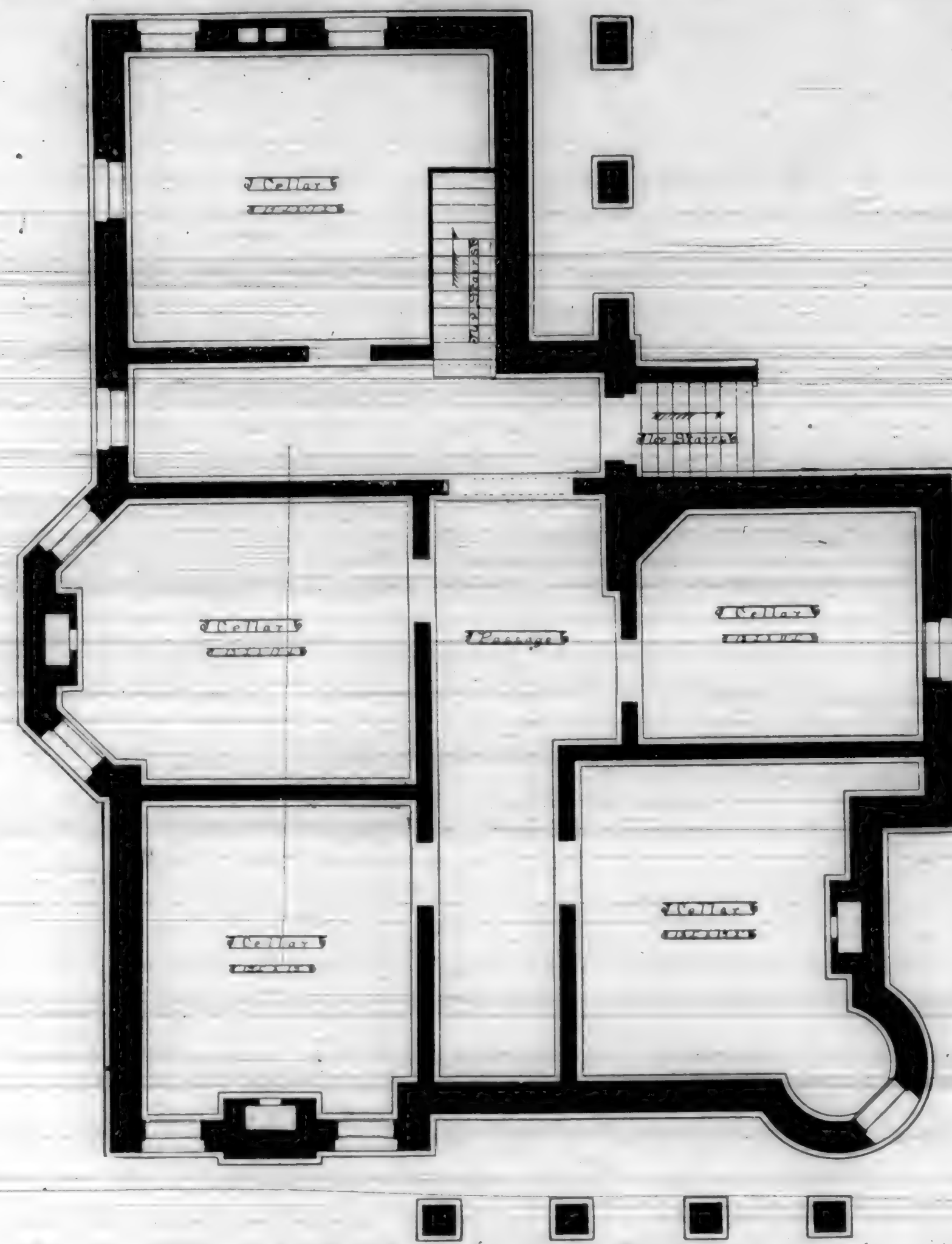
For these and many other reasons, architects have good cause of complaint against such contractors as are negligent in the matter under notice, and all such will do well by correcting their business error in this regard. Promptness in all things, it matters not how trivial, is a good rule to observe, and is one that has characterized the lives of successful men generally.

High Buildings on a New Plan.

A NEW YORK architect has devised a new plan for erecting the high buildings which are coming so much into vogue in large cities. The design is quite novel. The plan is to first erect an iron frame and cover it with a roof as soon as practicable. The walls, of whatever material, may be built at the same time the structure of iron is being built. As the erection of the iron structure will proceed faster than the enclosure, there will be no cause of delay to steady progression while the structure is being built; the interior arrangements, as fire-places, vaults, archings for ceilings and lining for exterior walls, may be put in and ready for plastering by the time the exterior parts are finished. As the iron structure would soon be roofed the work could be carried on independently of the weather. Derricks could be placed on the roof for finishing the

enclosure, and thus do away with unwieldy ones against the sides. The unusually broad piers now seen in buildings could be done away with, thus giving more space for windows on the lower floors, a thing greatly desired. The walls are to be supported by brackets, so that, if desired, any part of the exterior can be removed and repaired. The iron floor girders with the iron floor beams fastened to their sides, are attached to the outer posts at both ends, which will increase the bearing strength nearly one-half. A building built on this principle will combine elegance with security. A building of this description would be fire-proof as far as practicable for the best building constructed. Although they may be proof against catching fire from neighboring buildings, yet, when they are so filled with furniture and other combustibles liable to get on fire, would furnish smoke enough which might prove as fatal to many as flames have been in other cases.—*The Builder*.

Every property owner should subscribe for the "CALIFORNIA ARCHITECT AND BUILDING NEWS." It is the only Journal on the Pacific Coast published strictly to advance your interests. Only \$2.00 per annum. OCTOBER, NOVEMBER, and DECEMBER numbers of this year will be given free to all new subscribers for 1885.



CELLAR PLAN OF \$5,000 COUNTRY DWELLING.—4TH PREMIUM DESIGN.

Terra Cotta in Architecture.

ONE of the most marked improvements connected with the building trade in this country during the past decade, is the use of terra cotta, for purposes of architectural decoration. Ten years ago a majority of those engaged in our building trade did not know of its existence, so accustomed were they to simple brick work, painted wood, or decoration in galvanized or cast iron. Fortunately this aspect has changed, and changed for the better in more ways than one. Architects and builders now realize that in terra cotta they have a material at once beautiful, imperishable, and far less costly than a poor quality of stone, when worked into architectural detail. It is also a material that will enable them to utilize and harmonize local materials which, for obvious reasons, are often required to perform a large part in building operations. Terra cotta being composed of clay, is, by the action of fire, changed to a hard and brilliant substance; and by the judicious selection and manipulation of the clays fitted for terra cotta, work of any desired tint and color may be obtained.

It is generally conceded now that the wearing qualities of terra cotta are vastly superior to those of stone of any sort, and builders and those interested in building operations, will serve their best interests by looking into its merits.

The cuts on the opposite pages will serve to show some of the various designs which can be obtained in terra cotta. Any conceivable pattern can be made, thus insuring architects that their conceptions can be carried out in the minutest detail. Architects, as a general rule, can give the fullest information in regard to this beautiful material. Those living far off can only become acquainted with the grand improvements of the city through the agency of trade journals. Owners and others can obtain full particulars of cost, etc., of every description of terra cotta work, by addressing Gladding, McBean & Co., 1358 Market Street, San Francisco.

When a saw has cracked near the teeth, to prevent its continuing, drill a small hole at the end of the crack. This is said to be effectual.

Burning of Barns.

It is noticeable that a larger number of the burnings of barns is mentioned by the periodical press in the summer than at any other time. Some of the fires are undoubtedly caused by lightning, the moist vapor from the uncured hay making a favorable conductor for the electric fluid. But there are barn fires which cannot be attributed to lightning, to lighting of matches, to light from lanterns, nor to the invasions of careless tramps. It may be that the spontaneous combustion of hay is as possible as the spontaneous firing of cotton waste. All fibrous material, when moist, and compressed, and defended from the cooling influences of the outward air, is subjected to a heating similar to that of fermentation; and in some instances the degree of heat is sufficient to cause actual, visible combustion. In the case of recently "cured" hay this danger is as great as, in similar circumstances, other materials may be. Frequently the grass is cut in the early morning, while wet with dew; is turned twice during the day, and gathered and packed in the "mow" or the "bay" before nightfall, with perhaps a sparse sprinkling of salt. Such a compressed mass of fibrous, moist matter will heat. How far the heat will go toward generating a combustion may be inferred from a foolish trick which the writer witnessed several years ago. A large meadow of hay had been cut, cured, and cocked, previous to removal. A shower threatening, the cocks were covered with caps of canvas and left for the night. While getting the hay in, the next day, one of the workmen dropped an unlighted match from his pocket into a cock of hay, and in a few minutes it was ablaze. It afterward was ascertained that he had spoken of the warmth of the hay as he lifted it on his fork, when a companion remarked that it might be hot enough to light a match, on which he put a match into a rick, and before they had passed on five minutes the rick was on fire.

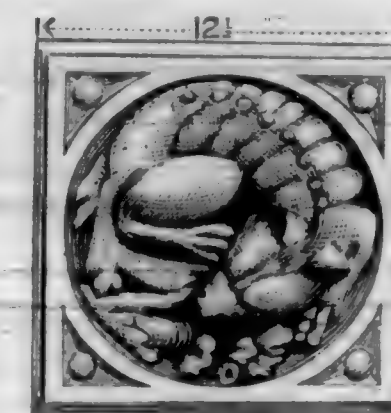
Everybody conversant with farm life, where hay is a permanent and important crop, knows that for weeks after getting in the hay the barn is warm when the doors are opened in the morning. There is an amount of heat that is absolutely unpleasant when the thermometer outside registers 60°, but which is quite welcome with the outside temperature at 40°. This barn heat is undoubtedly from the moist hay, compacted and inclosed. The cure for the possible danger of possible spontaneous barn burning would seem to be the thorough curing—drying—of the hay before it is housed. We dry all our herbs and some of our vegetables without injuring their peculiar and individual qualities. There is no reason why hay or other fodder material stored in large masses should not be rendered equally innoxious to the influences of heat by thorough drying.—*Scientific American.*

"No, sir," said a practical American, "no bric-a-brac on the mantel for me! It's a nuisance. Where's a man to put his feet?"

Architectural Terra Cotta.

DESIGNS FROM THE MANUFACTORY OF GLADDING, McBEAN & CO.,
LINCOLN, PLACER CO., CAL.

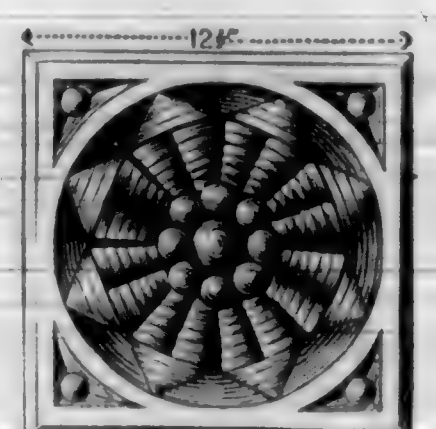
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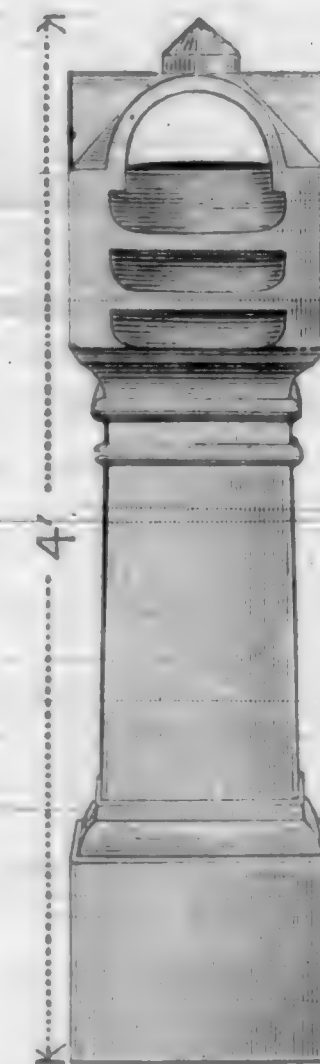


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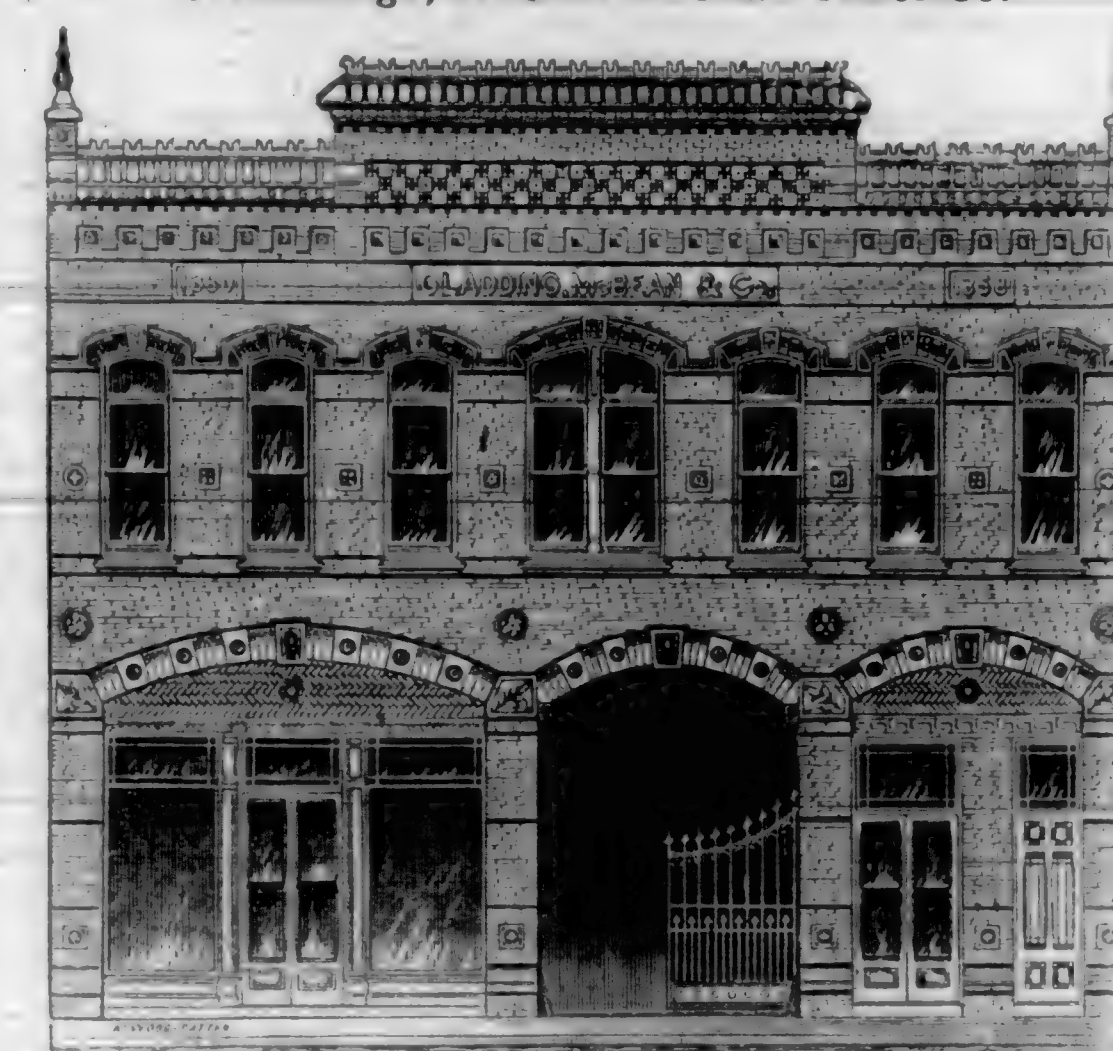


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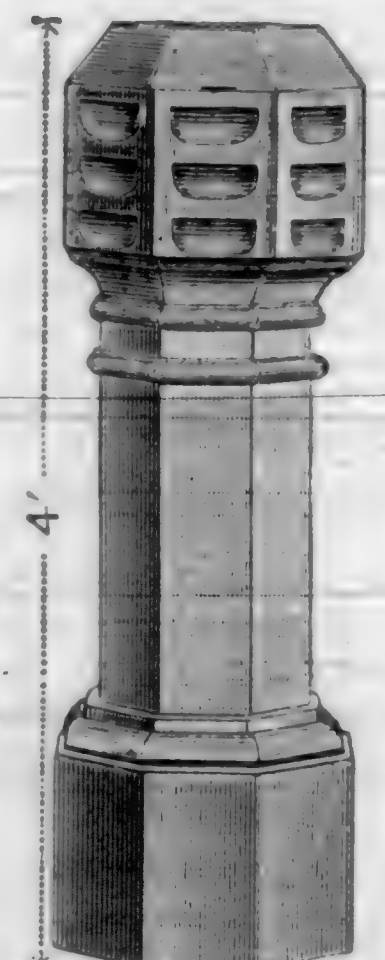
The First Brick Building with TERRA COTTA
Trimblings, erected in San Francisco.



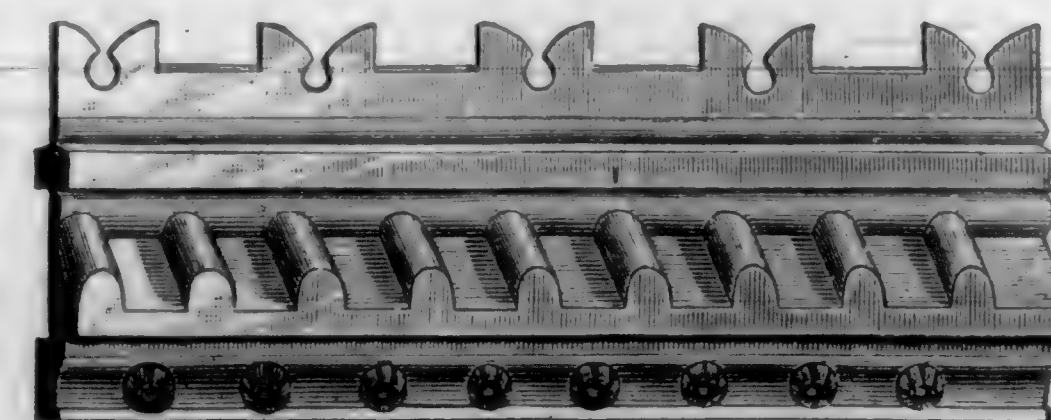
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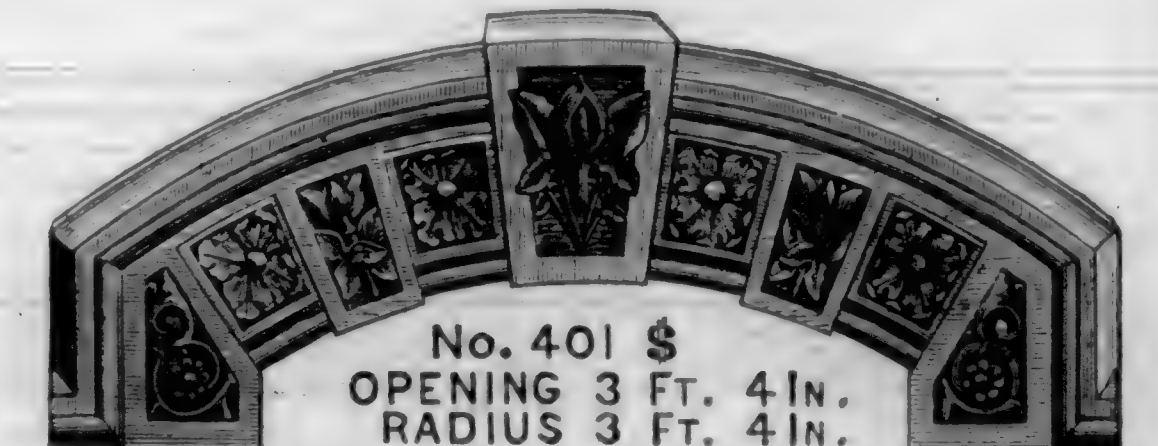
San Francisco Office of Gladding, McBean & Co.



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No. 430. 2 FT. 9 IN. HIGH. 7 IN. PROJECTION. \$ — PER FOOT.

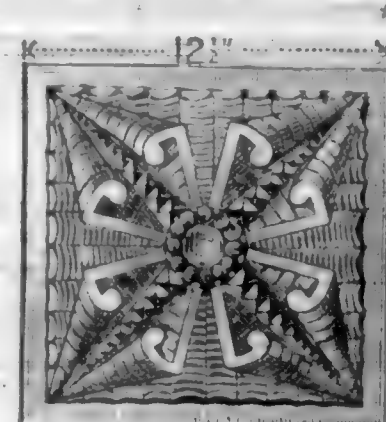
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RADIUS 3 FT. 4 IN.

Designs and Estimates Furnished on Application.

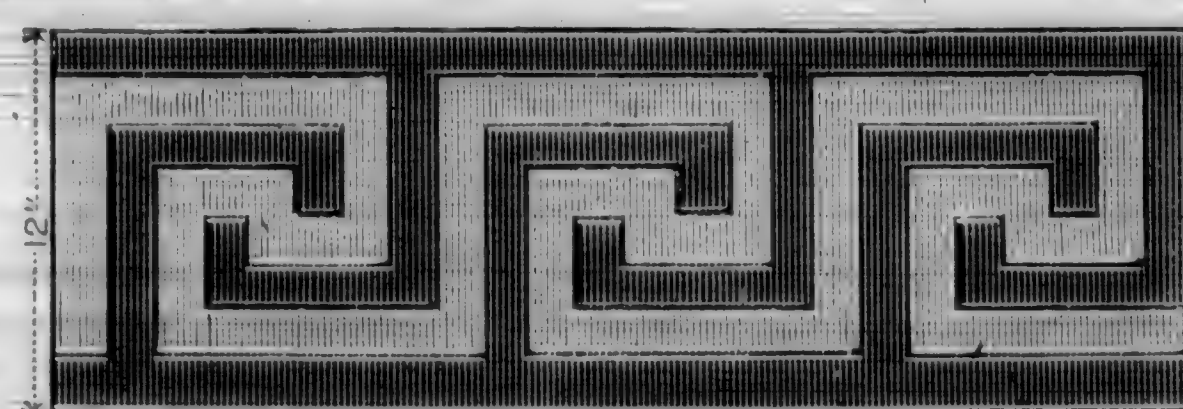
ARCHITECTURAL TERRA COTTA

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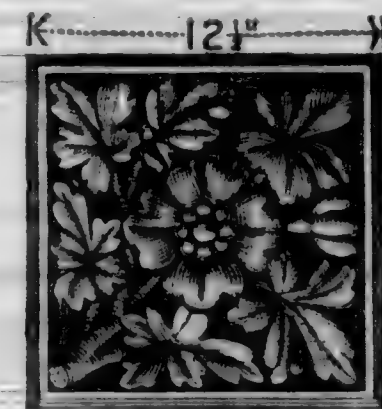
San Francisco Office, 1358 and 1360 Market Street.



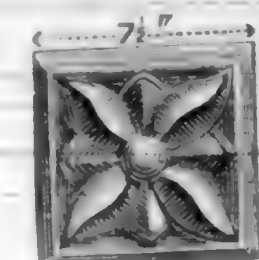
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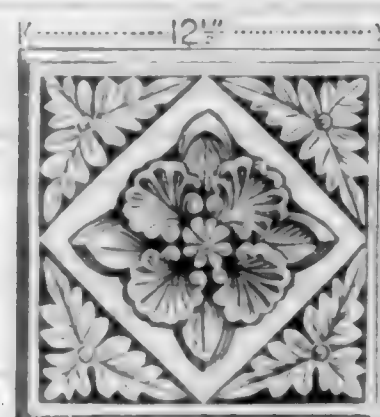
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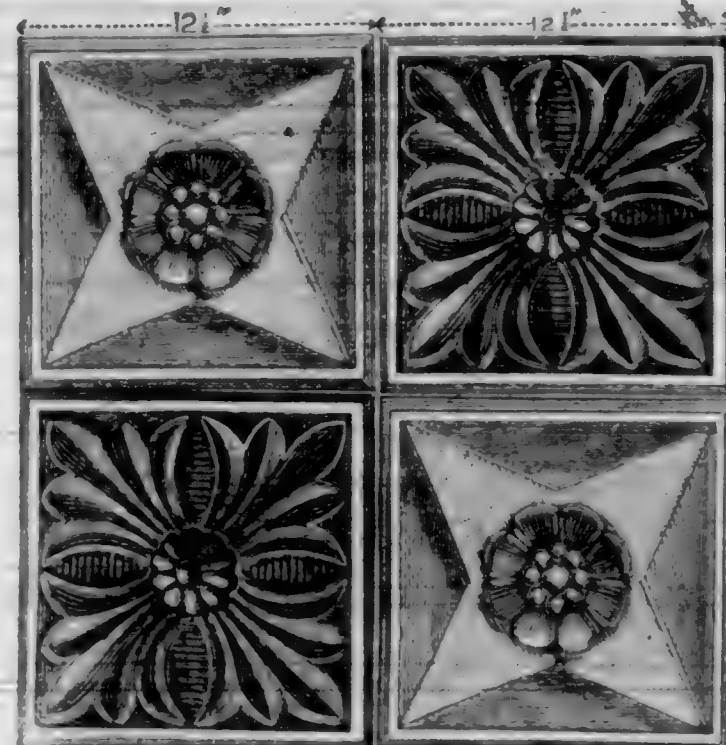
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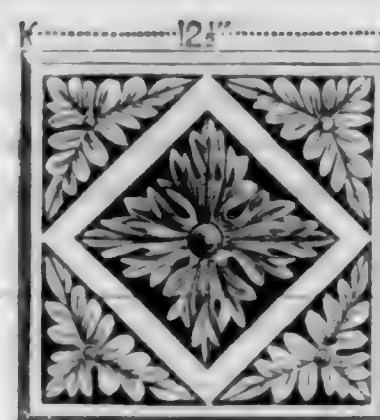


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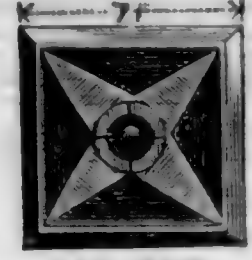


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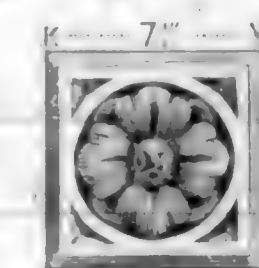
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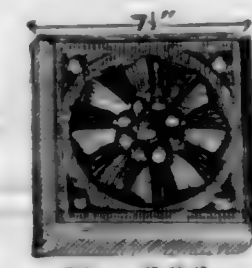
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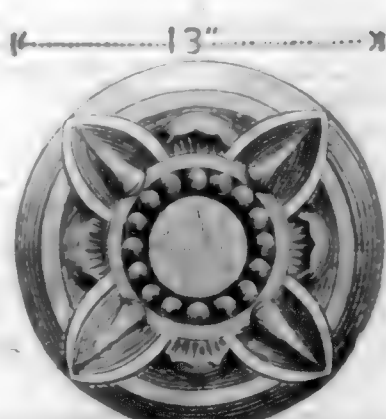
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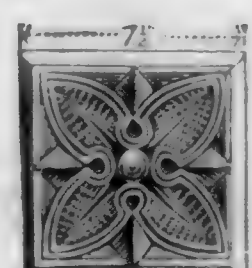
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Designs and Estimates Furnished on Application.

Practical Graining.

IN walnut graining there are many tones given to the finish through the ground-work to meet the various shades found in walnut woods. The red is the most pleasant, and for which a dark copper color ground is used. There is a slight negative to this, in a light reddish purple, made by adding Prussian blue to the previous ground. This tint is seen in some walnut and can be imitated with good effect by stippling with lighter color (water or oil). The color selected for a ground having been placed upon the work to be grained when dry, rub smooth with sand paper, and the work will be ready for stippling. The term stippling means to pounce with a brush endwise, or to flog and whiplengthwise with a flat painter's duster, or a badger hair blender. For distemper or water color use burnt umber for light stippling, and for dark add some vandyke brown. These colors are found in material stores put up in glass bottles. Mix the distemper colors in beer or vinegar to give it adhesiveness. With an ordinary paint brush put on the color over the work, only so much at a time that you can flog it before it dries.

The work when done, should show an even grain of stippling of the color, and uniform in its tone. When this distemper color is dry, it is ready for the oil colors. The amber in oil, thinned with a little turps and oil and with a drop of Japan to set the color; spread this color over your work with sufficient thickness to give a good walnut shade and only so much as you can grain before the setting color gets hard. In graining a door, the panels are done in walnut root, branches or heart growth. The mode prevailing now is to do the panel work in walnut root, the rails in sap growth, with plain wood grain for the styles. The root is worked in short whirling masses of dark color, waving round curling burls, or as seen in French root veneers like rivulets running over and around rocks in a tortuous course, with foam and splurges swaying its way in never ending struggle. It is a difficult wood to imitate, but as every effort to produce it makes a passable imitation it is allowed to pass, while future improvement in succeeding efforts will give more satisfactory results.

To grain in mahogany it is necessary to have a ground of venetian red, tempered with a little white lead. I think this beautiful wood is best imitated in water colors. Provide yourself with the burnt sienna in distemper, and proceed as in walnut to stipple the work, and when dry give it a light coat of varnish. It is now ready to receive the over-graining. For branches of this wood, you need a small piece of flat sponge; cut on one side teeth-like points of one-fourth to one-half inch apart, a stiff business card, a camel or badger blender. For panel branch put on the color, a very dark shade in the middle and light on the sides. Then wet the sponge slightly and commence to form the branch by taking out the lights by an upward movement of the sponge, holding the point toward the center, starting with point lightly, then heavy, forming a semi-circle, then draw

the sponge down with a waving motion to the sides of panel edge. Having done one side of the panel, follow up the opposite side in the same manner. Then take the card, holding it edgewise, press it on the dark parts under the point the sponge has made; open sharp lights right and left from the center to give flashes from which the former lights spring. Follow with the blender and soften the work in an upward course until the harsh lines are all blended softly together. When dry take a bristle top grainer and fill with color so that you can draw it over the work from bottom to top across the panel. The bristles should not be too wet but just enough to make the lines even in the half circle movement from side to side. Blend quickly and give the lines an upward trend, while the dropping ends are joined by the blender to the sides in one whole mass.

The other parts of door where no grain is needed, can be put in waving light and dark lines blended so as to show the transition of light and shadow. The lower and upper rails can be done by laying the blender flat on the work and draw softly across, in waves and blend to finish. The twists and curls of the mahogany when too light add more color to give the necessary effect to the work; keep the blender dry by wiping and drying. Maple and ash woods require lighter grounds; white tinted with yellow serve as a ground for either of these woods. They look well in oil or water. The maple color raw sienna, add a little umber for ash. They are formed in their curls with the over-grainer and blender; the bird's eye is imparted by grouping the finger tips together and tapping the work here and there between the waving lines of the top grainer, after which blend softly to trend the eyes to grain one direction, more in line of the various curves. The following are samples of sap growth of the pine and the Hungarian ash



and French walnut burl work. The pitch-pine requires a light ground similar to oak, and grained as in oak and oil, using raw sienna, and burnt in nearly equal parts. Wipe out the lights as described in a former number of the CALIFORNIA ARCHITECT. The graining is something of the style of oak only a little sharper in the points of the heart growth. The southern pine of Florida has deep lines, and in tone the color is deep in burnt terra de sienna. In graining, the learner should consult the natural woods, to learn from nature her own forms, and imbue the mind with all their varieties, and thus be better prepared to imitate them.

J. E. W. C.

Concrete vs. Brick Floors.

THE designer of a certain warehouse in Germany, unable to find definite data of the resistance of such floors, resolved to make trials for his own information, and incidentally for that of his professional brethren. The warehouse was of immense size, covering nearly an acre of ground, and was intended for the storage, among other things, of heavy pieces of metal, the handling of which often involved considerable shocks to the floors. The whole building was fire-proof, part of the flooring being of brick arches in cement, between iron beams, and part of concrete slabs supported in the same way. Five trial floor arches were built, each 44 inches in span, of which the first consisted of concrete, made with one part Portland cement to five parts of gravel, while the second was of hard bricks in Portland cement mixed with three parts of sand, and was covered with a coat of asphalt three-quarters of an inch thick; the third was of softer brick, in mortar containing one-half as much lime as cement, and four parts sand; the fourth was of the same brick, in equal parts of lime and cement, and five parts sand; and the fifth was of the same brick, in cement alone, mixed with four parts sand. These last floors were finished with a coat of cement, three-quarters of an inch thick or more.

Fifty-four days after their completion, each floor was loaded with pig iron to the amount of 200 pounds to the square foot. This weight had no effect, and two days later the concrete arch was tested by letting fall upon it an iron ball of 60 pounds weight. This, dropped from a height of five feet, did no harm, and another ball, of 135 pounds weight, was let fall from the same height. The first blow produced no effect, but by dropping the ball repeatedly on the same spot a crack was started at the fourth blow, and the eighth broke a hole entirely through the floor, the opening being 4 inches in diameter at the top and 24 inches at the under side.

Thirty days later the same test was applied to another part of the floor, and a hole of the same size and shape was broken through at the ninth blow of the ball. The thickness of the concrete in the middle of the span was 4 inches. Trials were made of the brick floors in the same way. The first, of hard brick in strong cement mortar, stood forty-eight blows of the heavy ball before it was pierced; the second, of softer brick, with lime added to the mortar, gave way at the tenth blow; the third, at the seventh blow; and the last, of soft brick in sandy cement mortar, without lime, at the tenth. In all these cases the hole broken through was much larger at the intrados than at the extrados. A new floor was then built of soft brick, in mortar made with two parts lime to three of cement and ten of sand, and covered with a layer of concrete, of equal parts of cement and sand, 2 inches thick. After this had set, the floor required seventy-one blows of the 135 pound weight to break it through. This protective effect of the thick layer of concrete over bricks is very curious, but aside from this, the result of the tests was decidedly in favor of the brick arching.—Selected.

(Written expressly for this JOURNAL.)

Soil as It Relates to Health.

BY GLENN BROWN, ARCHITECT, A. A. I. A.

IMPORTANCE OF THE SUBJECT.

AS OUR houses and homes rest upon, or have their foundations beneath and surrounded by the soil, it becomes important for us to know the dangers, if any, which may lurk therein. Hippocrates treated on the importance of pure air, pure water, and a pure soil, more than two thousand years ago. He considered the air the most, and the soil the least important of the three. Dr. Pettenkofer thinks their relative importance should be reversed. He concludes from recent observations and experiments, that the soil or ground has, when in a bad condition, greater evil effects than either air or water. He says that malarial and intermittent fevers originate in the soil, is already accepted. I think cholera, plague, typhus and yellow fever's source must be sought in the soil.*

The evils which lurk in the soil are the ground, air, and water, or more properly speaking the injurious germs conveyed by the movements of, or retained in the ground, air, and water.

DAMPNESS AND GROUND WATER.

The soil may be moist, or the interstices between the particles of earth filled with water and air, or the water may stand in the vacant spaces to the exclusion of air. All filth, vegetable or animal matter that may soak or be in such soil, will undergo purification or oxidation but slowly, as the free circulation of air is cut off by the water.

The Romans were evidently aware of the importance of subsoil drainage.

The archaeologist De Tucci called attention to some underground channels in the Roman hills called "*cuniculi*." These channels were examined by Tomassi Crudelli, and found to be exclusively for the purpose of draining the hills. He states in his recent work on the subject, that the ancient Romans suffered much less from fevers than those did who lived in Rome after the drains were destroyed by the invading barbarians, and less than the Romans of the present day suffer.

The above mentioned drains were not described by ancient authors, probably because of their common, every-day use.

By investigation in damp and marshy districts, and in districts either naturally or artificially drained, such physicians as Drs. Buchanan, Haviland, Seaton, and Fenton, of England, came to the conclusion that dampness in the soil is an important cause of pneumonia, phthisis, and like diseases.†

Dr. Bowditch, of Boston, concludes from written statements of resident physicians in 183 towns, that dampness of soil in any township or locality is intimately connected with the prevalence of consumption in that township

or locality.* Dr. Josiah Parkes, of England, in his excellent work on "Practical Hygiene," and Dr. J. H. Ford, of Philadelphia, in his article on "Soil and Water" in Buck's Hygiene, enumerate many instances which tend to prove the important relations between the soil and our health. They conclude that, beside the diseases mentioned, a damp or saturated soil predisposes to rheumatism, catarrh, and neuralgia.

Mr. E. F. Bailey-Denton says: "Wide agricultural districts containing isolated dwellings have been so much benefited by drainage that diseases which in former times constantly prevailed have now ceased to exist."‡

Water lowers the temperature; this in itself has sometimes an injurious effect. Water can only escape from a water logged soil by evaporation from the surface. The amount of heat, or power lost, in evaporating water from a wet soil, is appreciated by but a few. The experiments of Rankine and Josiah Parkes show that thirty inches of rain yearly falling on an acre of land, would take more than 18,590 pounds daily evaporation to exhaust it.‡ To obtain the same results with an ordinary steam boiler, would take 2,400 weight of coal. For every grain of water evaporated, heat is required sufficient to raise 960 grains 1° Fahr. ¶

The experiments of Prof. Schublet, at Tübingen, also proves the effect of ground water on the temperature of the surrounding soil and air.

"Drainage contributes to the dryness of the soil, and improves its temperature, not only by diminishing evaporation and increasing the hygroscopic powers of the soil, but by increasing the power to absorb the heat."—Ford.

The influence of temperature upon the causation of disease is undoubted. Ground water often forms conduits and becomes receptacles for excreta from cess-pools and sewers, and decayed matter from made ground or cemeteries.

In cases of this kind the interstices between the particles of soil become charged with excrement or decayed matter, and the ground air filled with germs. To quote Mr. Simon's words, the earth would be "excrement sodden, and the air excrement reeking."

THE GROUND AIR.

The character, movements, and effects of ground air have been only recently, and in a limited degree, investigated.

Its importance has been shown by the experiments of Prof. Renk and Pettenkofer, with the aid of Ricknagel's differential manometer. Professor Renk found that there was a current of air from the ground into the house for the greater part of the year. This current was found to carry dust, or small particles of matter, organic, mineral, or otherwise, of which the earth was composed. Other observers have shown, according to Pettenkofer, that this

ground air carries germs susceptible of development in suitable solutions.

The effect which the wind has upon the ground air is clearly shown by the following experiment of Pettenkofer:

He takes a long glass tube closed at the bottom and fills it with gravel. Into the axis of this tube he inserts another smaller tube, open at both ends and reaching nearly to the bottom of the large tube. The second tube is attached by a piece of rubber tubing to a glass, V-shaped or trapped tube, which is partially filled with water. (See Fig. 1.) "If a person blow, as represented in the figure, on the surface of the gravel, the liquid in the V-shaped tube will be seen to alter its position, the level side next to the person who is blowing, becoming lowered, and the other proportionately elevated. The depression of the fluid is caused by the air blown through the gravel, because it ascends from the bottom of the



FIG. 1. Pettenkofer's Experiment, (a) small tube, (b) large tube filled with gravel, (c) tube with party blowing through it, (d) rubber tube, (e) bent or V tube with water in it.

gravel through the small tube, passes through the india rubber tube, and thus reaches the water."

If a candle is placed at the mouth of the V-shaped tube, the water having been removed, the flame of the candle will be pressed aside by the current of air. From the experiment it can be easily understood how the ground air is continually moving by the action of the winds on the surface of the ground, or by the state of the atmosphere.

Artificial heat creates a vacuum and draws or sucks the air into the house, unless it is properly protected. In this way air may be brought from some distance through the ground into the house, and impurities which exist near or beneath the house, may be easily conveyed into the house by this means.

(To be Continued.)

WHAT will clean zinc and make it look bright? A.—Whiting or refined chalk in water; finish dry.

A New Idea for Boys.

BY ALLAN FORMAN.

THERE is hardly a boy who does not enjoy working with tools, and "building things," as the expression is. Of course there are some boys who are naturally ingenious and handy in various kinds of mechanical work, and there are others who do not even know how to drive a nail—an operation by no means so simple as it seems—yet they all want to learn.

Occasionally a boy will have the good fortune to find favor in the eyes of some obliging carpenter who is willing to allow him the use of the shop bench and perhaps even some of the tools. But this is always the clever boy who obtains these privileges. The clumsy boy must go on driving his nails sideways, and cutting his fingers with his chisels, until he becomes disgusted with mechanical work.

There have been several schools for mechanics established in different parts of the country, but none quite on the principle of the Gramercy Park Tool-house Association, which will begin operations in New York this autumn. This is really an association of boys in the form of a stock company, governed by mutual agreement, as any similar organization, and joined together for the purpose of maintaining a well-stocked tool-house, and providing suitable instruction in the use of tools.

Carpenter's tools of the best quality and most approved patterns will be provided from the fund, and the boys will not only be taught how to use them, but, what is even more important, how to keep them in order. While the pupils will be allowed to follow their own choice in the kind of work they do, they will be advised by the superintendent, and the products of their industry and genius are to be disposed of at auction at the end of each term, for the benefit of some charitable institution.

The shares in the association are, of course, really paid for by the parents of the boys, but the theory of self-government is carried out as if they were the *bona fide* owners of the stock. This principle of self-government in itself is an excellent thing, for it teaches the idea of individual submission to laws, which are perhaps distasteful, for the public good.

As to the main object of the association, the idea cannot be too highly commended. There is nothing which is so useful to a man in after-years as some knowledge of mechanics, which can be easily acquired in boyhood. How many a man envies his neighbor his ability to tinker a broken lock, or to arrange without apparent trouble those thousand and one little conveniences that a "handy" man enjoys making for the benefit of his household!

The use of tools teaches a boy any number of other things which are useful to him all through life. He learns much of the great principles which underlie the science of mechanics. It teaches him to be accurate in his measurements, to be careful and neat in his work, and it fosters a taste for the higher me-

chanical pursuits; and—an argument which always appeals strongly to parents—it gives the boy a place where he is enjoying himself, yet at the same time he is learning something which will be of advantage to him in future.

But the Tool Association is not confined to carpentry alone. Moulding and casting in plaster and clay, elementary chemistry, geology, and microscopic investigations, will form a part of the interesting work they have laid out for the coming season. The tool-house and laboratory are thoroughly stocked with tools and instruments. Practical mechanics have been engaged to overlook the work of the boys, and the whole will be under the direction of Mr. G. Von Taube, the originator of the scheme, who will advise with the young stockholders, and see that the rules are carried out.

A boy who could not pass many happy hours in the association's pleasant work-room must be hard to suit. The only pity is that such schools are not started in all the large cities. There can be no doubt that they would become popular.

Brass for House Interiors.

BRASS, from its composition, can only be used in the interior of buildings, and should not be exposed to damp. Its natural pale yellow color is very agreeable, and is due to the presence of zinc. It is not highly malleable, but may be cast and treated like bronze, or by a process of annealing rolled into thin rods and sheets, and worked up in the same way as iron. It is difficult to give a decided preference to either method, though they are so totally opposed in principle and practice. The present tendency is in favor of wrought brass, welded, beaten, pierced, hammered and riveted as in iron; for this exhibits the individual skill of the handicraftsman, and possesses a sentimental value that cast work, which can be produced *ad libitum*, cannot possess. The designs should be more severe and precise than if intended for forged iron, and more pierced and embossed work should be introduced. It should be sparingly used, and the redundancy of polished brass in some of the newest restaurants in London, though affecting to be the quiet and unpretending style painted by Hogarth, is vulgar. The works in ormolu, of Louis XV., and Louis XVI., which are of cast and chased brass gilded, are too beautiful to afford any scope for adverse criticism, but objects designed to be cast in brass should either be of great delicacy or great simplicity. Though the arts for working in at least what are called base metals are not yet in the position their importance in the past and in the present entitles them to, the future is full of hope, and we may trust that a time is at hand when men of exceptional power, though engaged in what have been regarded as the humblest industries in which art can enter, will be able to impress the seal of their genius on their work, and hand their names down to posterity.—*Builder and Wood-Worker.*

Make Your Own Gas.

OWNERS of country stores and dwellings should use every precaution against fire, as the non-proximity of fire engines and scarcity of water oftentimes cause a small fire to develop into a disastrous conflagration. Since the first introduction of coal oil as a means of illumination, various contrivances have been placed in the market, by which gas could be manufactured from that substance. For more than twenty years improvements have been made in gas machines, until there has been developed one that is as near perfection as scientific study and investigation can produce.

These machines are guaranteed absolutely safe in their operation, simple in construction, not liable to get out of order, and require no skill to manage. They require less attention than a common kerosene lamp. No fire is used in the process of manufacturing gas by these machines. Cost of gas will be less than one dollar per thousand feet.

The tank, containing the gasoline, is buried in the ground and is delivered in permanent pipes and fixtures to the proper distributing points. Consequently, no danger or trouble is engendered by frequent removals of the fluid. Full particulars in regard to these machines will be given by addressing A. F. Nye & Co., 609 Market Street, San Francisco, who are the sole agents for the best machine manufactured.

Queen Anne Hodge-Podge.

Architect—Well, I declare that is a pretty fair house plan for an amateur, only you have left no space for stairways and closets. Did you make it yourself?

Prospective Builder—Yes, but the only thing that puzzles me is to know what style of cottage it is. It is not Gothic, nor Italian, nor—

"No, it is absolutely nothing. As to style, it is simply a meaningless hodge-podge, to be frank with you."

"Well, what shall I call it, have you no name for hodge-podges?"

"Oh! yes. We call 'em Queen Annes."

A RECIPE for acid compound that will restore worn or blunt files to utility. Clean the files by brushing them clean of dirt and grease as well as any foreign metal sticking in the teeth; then dip in a strong alkali for a few minutes to remove all traces of grease from the bottom of the teeth; rinse in clean water, then dip a solution of 1 part nitric acid, 3 parts sulphuric acid, to 7 parts water. Time 5 seconds to 5 minutes, according to cut and wear. Rinse in warm lime water, dry, and oil slightly. Finally brush with powdered charcoal to take off excess of oil and give them the peculiar look of new files.

POWDERED glass for making glass paper, filtering varnishes, and other purposes, may be made by heating a piece of glass red hot and plunging it into cold water; it will immediately break into powder. This must be sifted and dried.

*An address by Dr. Maxvon Pettenkofer, Popular Science Monthly, Vol. XX.

†Ninth Report of Medical Officer of Privy Council, London, 1866.

*Massachusetts Board of Health Report.

†Handbook of House Sanitation, E. F. Bailey-Denton, London, 1892.

‡Journal of the Royal Agricultural Society of England, Vol. V.

Angelo's High-Spiritedness and Separation from the Pope.

POPE JULIUS II. commissioned Michael Angelo to erect a mausoleum. When he showed it to the pope his holiness inquired the cost of such a splendid piece of work. Michael answered that it would amount to a hundred thousand crowns; and the pope liberally gave him to expend twice that sum. The mausoleum was commenced. Pope Julius was so delighted with it that he had a covered way from his palace erected, that he might visit the artist at his work *incognito*. This was too great a favor not to excite the envy of a court. Ill words and unkind slanders were spoken of Michael. They reached the ears of the pope, as it was intended, and he visited Buonarroti no more. Michael came to the vatican, which had been at all times open to him; but it was not so now. A groom of the chamber stopped his entrance.

"Do you know to whom you speak?" asked the indignant architect.

"Perfectly well," said the man, "and I only do my duty in obeying the orders my master has given me."

"Then tell the pope," replied Michael, "if he wants me he may come and seek me elsewhere himself."

The insulted artist returned immediately to his house, ordered his servants to sell his furniture, and follow him to Florence; and left Rome that very night. Great was the pope's consternation. But it was too late; he had already passed the boundary of the pope's jurisdiction, and force was of no avail. The couriers reached Florence and delivered the pope's letter. Michael's answer was this: "I have been expelled from the antichamber of your holiness without meriting disgrace; therefore I have left Rome to preserve my reputation. I will not return as your holiness commands. If I have been deemed worthless one day, how can I be valued the next, except by a caprice alike discreditable to the one who shows it, and the one to whom it is shown."

Julius next wrote to the Government of Florence, using the conciliatory words: "We know the humor of men like Michael Angelo. If he will return, we promise that none shall offend him or interfere with him, and he shall be reinstated in our apostolic grace." But Michael was inflexible. Again and again the pope wrote, and still this proud and high-spirited man refused to heed him. At last the chief magistrate of Florence became alarmed. He sent for the artist, and said, "You have treated the pope as the king of France himself would not have dared. We cannot bring him to war against the State on your account; therefore you must obey his will." The magistrate promised also, if Michael feared for his personal safety, to send him as ambassador to Rome, in which case his person would be inviolable. At last Michael relented, and met the pope at Bologna. Julius glanced at him with displeasure, and did not for some time deign to speak. At last he said, "Instead of

your coming to us, you seem to have expected that we should wait upon you." Michael answered with a slight apology for his conduct, which, however, was so haughtily expressed, that the prelate who had introduced him, thought it necessary to observe, "One must needs make allowance for such men, who are ignorant of everything except art."

"Wise and generous too," was the pope's indignant reply to this speech. He turned to the prelate: "Foolish man, it is thou who hast vilified Michael Angelo; I have not. He is a man of genius, and thou an ignorant fellow. Depart from my sight this moment." And the contemner of art was forcibly driven from the room.

WHILE the inspirations of the study and practice of the science of architecture should, and in its purity, nobleness, and truthfulness is calculated to, ennoble and elevate the minds, and purify the acts and life principles of those who in these latter days profess to fill the places, as students, disciples, and representatives of the art sublime, the grand master spirits of past periods, who conceived, delineated, and reared those grand structures which have withstood the ravages of time, the elements, and physical forces and conditions through ages, reaching back through decades of centuries, and which may continue to stand until

"The cloud-capt towers, the gorgeous palaces,
The solemn temples—the great globe itself;—
Yea, all which it inherits shall dissolve,"

Yet in these modern times, the elementary and fundamental principles of true architectural science,—order, harmony, truth, and purity,—are not universal rules controlling and regulating the hearts, practices, and purposes of all those who have found or forced their way into architectural paths.

The profession, high and honorable as it is in character and teachings, is encumbered with much of the smallness and sordidness which finds place in avaricious, ignoble, and unmanly minds, with whom professional dignity and fair dealings, are but subservients and incidents to be utilized in pretenses, for the consummation of unjust and concealed designs.

This manifestation of human weakness or positive baseness is more or less distributed all over Christendom, with more prominent outcroppings in some places than in others. And while in San Francisco there are many in the profession who would disdain to do an unprofessional act, there are also many whose career and practice is unsanctified by a single impulse, or principle inspired, controlled, or regulated by any high or exalted sense of right or honor toward others. Extreme selfishness, one of the very meanest dispositions of the human mind, that which, more than any other, perverts and demoralizes the finer impulses of the heart, and holds in subjection and crushes out from the acts and deeds of common life every tendency toward "doing to others as ye would that others should do

unto you," is the impelling force—the pre-eminent rule of action, which blinds the eyes and stultifies the senses against seeing or recognizing wrong or dishonor in any act or deed which hold out the promise of gain and advantage, be the injustice to others, or the baseness of the act what it may.

It is painful to the better men of the profession that this should be, and is true; yet true it is. And so long as men of inferior qualifications—men who possess no practical or professional abilities in any reasonably fair degree, their success being altogether the result of brazen cheeks and tongues, never so well in time as when ringing out false pretenses for themselves and as false insinuations in regard to others, "the latches of whose shoes they are not worthy to unlase"—meet with favor, and are accepted by owners as—as what? Men of ability, worthy of confidence and trust? No; these are but presumptive considerations, entertained only, if at all, as among the possible things; while the controlling and influencing factor is found in the impossible-to-b-honest price, at which "professional" services are offered; which, followed up by the shrewd manipulation of words and expressions—sometimes cunningly devised, and at other times so bunglingly presented that any one of fair intelligence, not blinded by the delusion of cheapness, would be able to discern and penetrate the deception.

It is not an agreeable performance of duty to make these assertions, but it is far less pleasant to be forced almost daily to become acquainted with facts justifying all and more than the language used expresses; relieved only by the other fact, that the profession in its purity of principle, purposes and honest practices is beautiful and to be admired, and that there are many worthy architects in all cities who prefer the enjoyment of profits honestly acquired to the accumulation of greater wealth by means not in harmony with the rules of strict integrity.

Bancroft's Histories.

THIS magnificent work embraces a complete history of the Pacific States. The territory covered is the western half of North America, from Panama to Alaska, including all of Central America and Mexico, and is equivalent in area to one-twelfth of the earth's surface.

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Public Laundries and Baths.

THE establishment of public laundries and baths for the accommodation of the poor is an important means of promoting the public health, and, therefore, deserved to be encouraged, if not supported by the local Government. The housing of the poor is not the serious question here that it is in most European cities. Comfortable homes are provided in great numbers, which have the necessary conveniences for cleanliness and domestic work, but they are not within the reach of large numbers of the population, who have to content themselves with accommodations of the most inferior kind. One or two rooms must suffice for a family. The washing of clothes, cooking, and all other domestic work is performed in the apartments used for living and sleeping. Under these circumstances, home comforts are banished, and health—the main dependence—is jeopardized. For such people, the public laundry and bath would be a great boon. The disagreeable operations of washing and drying clothes could be transferred from the dwelling and sleeping apartments to an establishment fitted up with every convenience to facilitate the work, to which the wife could have access a certain number of hours, upon the payment of a small fee. The moral effect of extending such a privilege to the poor would be very great.

The public bath system admits of a still wider field of application. Wherever a swimming-bath has been established, its extensive patronage proves the need of such accommodations. Swimming-baths should be established not only as promoters of cleanliness, but as excellent means of healthy exercise. It would be well if these aids to health could be continued the entire year, but when this is impracticable they should be substituted by private baths, which should be placed within the reach of the poor by charging only a small fee. The Badeanstalt, established this summer in Cologne, one of the most complete and largest on the continent of Europe, is an illustration in point. It contains a workman's swimming-bath, the charge for a bath being not over three cents. The supply of water is continuous. Men following dirty employment are compelled to perform a preliminary ablution with soap.

The public baths in Germany are probably more elaborate and complete than anywhere else. In all the principal towns these conveniences have been opened or are in course of erection. The same may be said of England. Public baths are now being built in Dublin at a cost of \$25,000. France is not behind her neighbors in providing for the wants of the people in this respect. Swimming-baths are found in towns, large and small, standing on the banks of a river, and their use is in some cases gratuitous, while in others a small charge is made. In our cities the same liberal provision has been made for the wants of the people. It is not needed in the case of persons in comfortable circumstances, as they can af-

ford to have and do have private bath-rooms in their homes. But the poor suffer in their health from being deprived of the advantages of the bath, and for them provision should be liberally made.

The cost of the erection of these establishments need not be great, and that of their maintenance would be trifling compared with the benefits bestowed. The obligation of the municipality to incur such an expense is derived from the duty to use every reasonable means for the promotion of the health of the people. What has already been done in this matter has been very successful, and encourages renewed efforts to extend the system to its widest and most useful application.

What Constitutes Good Mortar.

MACHINISTS and engineers often have occasion to use mortar, and will value the appended information: Good mortar is a solid silicate of lime, that is, the lime unites with silica or sand to form a silicate of lime. In ancient days those who had some conception of the way the two things united superintended their mixing; but now-a-days anybody is supposed to know how to make mortar, while nobody knows much about it. Dry lime and dry sand laid together or mixed and kept dry for a thousand years would not unite to form silicate of lime any more than acetic acid and carbonate of soda dry in a bottle would effervesce. To make silicate of lime just as good as was made by the Romans, all that is necessary is to proceed intelligently. Procure good caustic, i.e., fresh-burned lime, and if you find it all powder, i.e., air-slaked, don't use it; use only clear lumps. Slake this (if possible in a covered vessel), using only enough water to cause the lime to form a powder. To this while hot add clean sand, not dirt and loam called sand, but sand—and with the sand add enough water to form a paste. Then let it lie where it will not become dry by evaporation—in a cellar, so much the better, for as soon as you have mixed the sand and lime as above, they begin to react one on the other, and if not stopped by being deprived of moisture will go on reacting until silicate of lime (as hard as any silicate of lime ever was) is formed. But if you take this so-called mortar as soon as made and lay bricks with it, unless the bricks are thoroughly wet, you stop the formation of silicate of lime and might as well lay your bricks in mud. Lime and sand, after being mixed, might lie two years with advantage, and for certain uses, such as boiler setting, or where the whole structure of brick and mortar is to be dried, the mortar ought to be mixed for one year before use, and two would be better; but for house building, if the bricks are so wetted as not to rob the mortar of its moisture as soon as used, mortar that has been mixed a month will form good solid silicate of lime among the bricks it is laid with in ten years, and will be still harder in a hundred years. The practice of mixing mortar in the streets and using

it at once is as foolish as it is ignorant, and would be no improvement. Silicate of lime is made only by the slow action of caustic lime and sand, one on the other—under the influence of moisture. Dry they will never unite, and mixing mortar as now mixed and using it at once, so as to dry it out and stop the formation that the mixing induced, is wrong.—*The Builder and Wood-Worker.*

In the Style of Queen Anne.

LET me offer a few reflections on the mania for Queen Anne houses that is now rife, and which I venture to pronounce a failure, and which, with more certainty, will be decreed a failure a generation hence. The thing is all wrong and on wrong principles. The Queen Anne architects indulged in no such ridiculous, fantastic freaks as we see now exhibited, and simply because such was entirely opposed to the nature and character of brick. Brick is a simple, honest, plain material, with a good color and hard, smooth surface—that is all. Whatever style can display these qualities best is the Queen Anne style and no other. The result of the modern caprices will be seen ten or twelve years hence, when certainly decay will have disintegrated or destroyed the whole, or when the owner's heart will have sickened of the frequent repairs and restorations. The old Queen Anne houses produced effect by the beautiful color and surface, the bricks being laid almost touching, with the thinnest wash of mortar between. The result is that no rain or damp ever gets between. The modern system of building is opposed to this, thick layers of mortar being interposed with the certain result that all the elaborate gables, etc., soon begin to separate. Bricks put together in elaborate forms have no strength, no more than stones laid on earth, but displayed in surface it becomes as firm and smooth as a billiard-table. Even moldings should be raised in the faintest degree, and the less they are the richer the effect. There is an old house out at Clapton, a "seminary for young ladies," that for design, simplicity, and pure brickwork, mixed with stone and design of outline, puts to shame all the brick phantasmas that are now covering the city. Looking at the pretentious masses that cover the new settlement of Cadogan Square or line the Embankment, one does not feel at all drawn back to the days of Queen Anne. There is a coarse, raw treatment in their embroidery, to which the brick lends itself but reluctantly. The material is too rude for such fine work. There is another fad in house adornment, which, it may be said, has run its course. This was the daubing over houses "liver-red," green, blue, etc. These efforts looked daring enough at first, but presently, as the dirt accumulated, they turned all kinds of horrid tints, and the house looked dirtier and shabbier than ever.—*Tinsley's Magazine.*

OCTOBER, NOVEMBER, and DECEMBER numbers of this year will be given free to all new subscribers for 1885.

Strength and Wear of Building Materials.

THE question of the rapid crumbling and disintegration of mineral building materials, is one that architects and builders throughout the entire country should be interested in.

A sample of material may respond favorably to all the known tests to determine its strength and elasticity, and still show evidence of short life when placed in the walls or foundations of a building. Especially is this true as regards stone. To begin with, when we estimate the value of any variety of stone for any specific purpose, we must keep in mind the circumstances and conditions around and under which it is to rest, and do service:—

1st. In the average climate of America it will have to bear in the direct rays of a July sun, a heat of 120° Fahrenheit on the outside, while inside it may not be more than 70° Fahrenheit.

2d. In winter it may be exposed to an exterior temperature of 20° Fahrenheit below zero, and an interior heat of 70° Fahrenheit above zero, or 90° of difference; and though mathematics are of no aid in enabling us to determine and point out that fine point where these opposite forces of contraction and expansion meet, that we may partially provide for it in the upward and downward pressure, it amounts to the most gigantic force known, which has an effect in destroying the molecular cohesion of the particles constituting the stone. It must give to one side or the other under the enormous force applied on that side, and reversed on the other, besides the great pressure to which it is constantly subjected by the stone above, and the resistance afforded by every stone from the very foundation until it is reached.

3d. The great majority of building-stones show upon analysis, traces of calcium, terrous oxides, etc. The larger number of buildings constructed of stone are located in cities and towns where coal is used for fuel, the fumes of which coming in contact with an atmosphere already impregnated with other elements, form those acids and gases, which uniting with the elements of the stone cause disastrous results.

It is no wonder, then, that immense walls, apparently compact and homogeneous, open in cracks, split off in layers, and burst in pieces.

4th. A stone newly taken from the quarry loses in weight by exposure by the evaporation of its natural moisture; this leaves all these minute interstices or pores invitingly open to rains and atmospheric moisture; hence when the frosts of our northern winters come, it is no wonder so many walls are out of line, and unsafe without repairing or renewal. This force of frost during the past winter, even in the South, puts to shame the power of a Corliss engine or hydraulic press.

The dilapidation produced by alternate freezing and thawing; the changes from protracted droughts to incessant moisture; from excessive heat to cold; the difference of temperature at the same moment between the opposite sides of the same block, the tendency to split off,

and the lamination of unequal densities, and many more, are all grave obstructions to the use of building stone in this climate that would sink into comparative insignificance in other countries.

That many buildings become unsafe, and innocent persons get the blame, there is not the least doubt. A magnificent structure falls with a crash, the builder is berated, the architect censured, when if the truth was known, in many instances the silent, subtle influences mentioned above had been at work, and no one was to blame.

Before proceeding farther with our discussion, we will consider the condition of material under pressure, and subjected to tension.

If we take a piece of wood, and carefully estimate the force required to tear it asunder, we will notice that lengthwise of the grain requires the greatest force. If we subject it to pressure across the grain, for every degree we bend it we find this resistance increased 11.617 per cent. (an average of thirteen varieties of wood tested), increasing in direct ratio until sufficiently bent to displace its molecules, when, of course, its strength decreases rapidly. Timbers, then, subjected to a certain tension in a building will outwear those not subjected to it. Again, a timber bearing a certain number of tons of weight for a certain length of time, will bear a much heavier weight without being unsafe, than if the timber having lain idle, as it were, should afterwards be loaded. This increase of strength is quite striking, as may be proved by the following experiment:—

Three pieces of some brittle wood, carefully made of equal size, are placed side by side, with the ends resting on some firm base, and on one is placed 100 grams, and on another 500 grams, and they are then left for a week or more in a warm, dry situation. The one bearing the greatest weight will have bent the most, and will bear more added weight than the more lightly loaded piece; while the same weight placed on number three will break it. This proves conclusively that a certain weight placed on a timber, renders it capable of bearing one still greater subsequently. A timber with all it will bear without displacement, will actually bear more additional weight subsequently, and keep on increasing in both its wrenching and tensile strength than if it be laden one-half as heavily at the outset.

Viewed with the microscope we find that the instant wood is bent out of the true the fibres become closer at the bend or angle. Now if the pressure is continued just far enough to bring these in actual contact without force sufficient to mar or bruise them, they adapt themselves to the situation, and are absolutely glued together by the gummy substances liberated by the cells ruptured in the bending.

Furthermore, timbers subjected to pressure will decay less rapidly than when not. A stick of lancewood bent double, and the ends made secure, and the same exposed to the influences of decomposition will show the effects much sooner in those portions not bent, than where the sharp angle appears; moreover, a

stick actually broken in bending will not rot so soon at the break as at some distance from it, and fungous growths rarely appear at the point of bending as soon as elsewhere.

At first sight it would appear that, subjected to constant pressure, wood would undergo the same change as iron, but experience has demonstrated the contrary. In some of the ancient ruins of Europe we notice this fact: that those portions which apparently sustained the greatest pressure, such as roof-trusses, gables, etc., were in a much better state of preservation than the joists which were merely supports for nailing, etc. All who have visited "Duckey Hall" in Lincolnshire, will recall, perhaps, in the east wing of those massive ruins, some bits of curved cornice apparently in an excellent state of preservation, while all around has long shown evidence of advanced decay. For a long time it was supposed that this round coping was of metal, but when a few years ago this wing or tower blew down it was found to be a species of deal, which had been forcibly bent and secured while green,—probably, at the time of the building of this castle, little if anything was known of steaming,—and when these boards were released from the pressure to which they had been submitted for centuries, they began to take their original or straight form; of course, but partially; nevertheless, the ends sprang apart nearly an inch when liberated, showing conclusively, that with all the influences which had been at work destroying the adjacent woodwork, these boards subjected to this pressure had not lost their power of attempting to return to their original shape.—*J. F. E., in The American Architect.*

Drilling Holes in Glass.

FOR drilling holes in glass, a common steel drill, well made and well tempered, is the best tool. The steel should be forged at a low temperature, so as to be sure not to burn it, and then tempered as hard as possible in a bath of salt water that has been well boiled. Such a drill will go through glass very rapidly if kept well moistened with turpentine in which some camphor has been dissolved. Diluted sulphuric acid is equally good, if not better. It is stated that, at Berlin, glass castings for pump-barrels, etc., are drilled, planed and bored, like iron ones, and in the same lathes and machines, by the aid of sulphuric acid. A little practice with these different plans will enable the operator to cut and work glass as easily as brass or iron.

DRYING WOOD IN SAND.—An Eastern contemporary says that small pieces of wood, such as are used by joiners and furniture makers, can be readily and effectually dried by being placed in dry sand, and then heated to 100 degrees. By this process the sand acts in the manner of an absorber of the moisture, as well as a diffuser of the heat, and the effect is uniform and complete.

"ENGINEER full; boiler empty," is the way Western paper accounts for an accident.

More Conundrums.

WE have an invalid in our family, who needs of all things, through the summer months, the free air of heaven. She cannot even climb the stairs to and from her own room in the second story. Can you tell me if it would look badly to have an upper room, detached from the main building, open on all sides, but connected with the house by a bridge or something of the sort? Hanging balconies are very well as far as they go, but I want to get further away from the house, so that we can look out in all directions. I have never seen anything of the kind, but should think it might be done. Yours truly,

To the main question, whether such an elevated external attachment to an invalid's chamber would look bad, we can only say it would depend. We can imagine situations where a magnified marten box standing on posts, a few feet, more or less, from the house, would be an entirely agreeable-looking affair. Probably in most cases it would be best to make some use of the first story as well as of the second, although, if it happened to be where the ground below was needed for a walk, a drive, a flower-bed, or some such purpose, there could be no objection to its standing upon its four bare legs, like any other independent quadruped. Probably the most satisfactory plan for it would be upon one of the southerly corners of the house, say the northeast corner of the balcony, or whatever you call it, contiguous to the southwest corner of the main house, like two black squares on a chess board. This would not seriously interfere with the outlooks from the main windows.

While you are about it, why not make the connecting link a draw-bridge, so that your invalid, after taking possession of the premises, could pitch her pill boxes overboard and snap her fingers at the doctor?

Do they make rooms without sills to the doors? Ours are a great nuisance.

The raised sills, or thresholds, whatever they may be called, meaning the piece of wood laid on the top of the floor underneath doors, may be, and often are, very properly omitted. You are quite right in thinking the high barrier between adjoining rooms a great nuisance. Of course you cannot allow a door to fit as closely to the floor or carpet as it may to the top of the raised threshold, it would not swing freely and when hung upon hinges at one side a door will sag after a time if not supported when shut. The latter fault can be guarded against by fixing a small rest of metal, or hard wood, near the jamb opposite the hinges, which would be no more unsightly than the other door trimmings, and the crack underneath is not a serious defect, unless you are very much afraid of spiders. Sliding doors are usually best hung at the top, avoiding the track on the floor; and thresholds, if used, should not exceed half an inch in thickness.

Would it be practicable to have one side of my sitting-room entirely of glass and so constructed that it could open out in summer like a roof? In that case could I have an outside stone floor level with the floor inside?

The chief objections to building a house on the flap or awning principle, that is, with the entire broad side of one or more rooms hinged at the top, and so made that it could be raised into a position nearly horizontal, would be the expense of the machinery required to move it easily, and the extra labor of building the movable sides in such shape that they would be satisfactory as outside walls when closed, and as roofs when open. Of course it is possible; all things are possible to those who have ingenuity and money. A floor for the outside part, that is, for what would be under this broad side when it was raised up, ought to be of something besides wood, for the sake of durability. Bricks, tiles, or some kind of concrete would answer as well as stone.

We live in the country, away from the region of paved walks. What kind of a walk can I make (not too expensive) all around the house, so we can get a little exercise in the open air without wet feet?

The cheapest, and, on the whole, the most satisfactory walk for the country during the seasons of dew, mud, rain, and snow, is a stout pair of overshoes. A walk of this kind can be taken up and laid down where it will do the most good, with the utmost speed and facility. It can be kept clean and dry with very little trouble, and is not expensive. Those who are accustomed to use it enjoy a freedom of locomotion that are unknown to pedestrians whose comfort depends on the condition of the sidewalks.

To speak seriously, it is amazing that country and village people pay so little regard to the walks in the streets and about their houses. We suppose our correspondent has in mind what might be called a terrace or promenade immediately around the house, a sort of "ghost's walk," from which the snow could easily be swept, and from which the water would run off quickly. A concrete or asphalt paving, like that used for sidewalks, would be the cleanest and most appropriate material for such a purpose, and probably the cheapest. —*The Builder.*

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BRICK FOR WOODEN FOUNDATIONS.

And for the necessary building of chimneys, bulkheads, nogging, etc., in the frame structures.

The substitution of brick for wooden foundations, in many of the buildings erected by the "Real Estate Associates," has now come to be a necessity. The old wooden mudsills are sadly rotting away, proving that redwood is not imperishable. This is particularly noticeable in the Mission, several of the buildings erected by the above-named Association having lately had brick substituted for wood. Several more will soon undergo the same process. Owners now are wisely concluding to stand the extra expense of brick when they first build, and not wait till wood is completely rotted out before they make the change.

CARPENTERS.

Although there has been an unusual demand for carpenters in the city, still there has been a bountiful supply of men, such as they are. The skilled mechanics have all been busy, and have put in nearly full time.

Owing to the lack of country work, we have been blessed (?) with an army of "piece-workers," who have generally, for the greater part of the year, sought odd jobs around the country. These men have found it hard to obtain employment, as a few days' trial generally lets them out; and even when a job is obtained, the rustic and flooring are soon placed in position, and then they must give way to mechanics.

WORK IN THE COUNTRY

Has been very light and scattering, owing to the generally low prices received by the farmers for their material. In 1882

NUMEROUS FIRES IN COUNTRY TOWNS

Gave the opportunity to hundreds of men to secure rebuilding contracts. The year just ending has been remarkably free from large conflagrations, and we do not call to mind a single town that has suffered enough, in this regard, to cause a hegira among the woodworkers.

WAGES FIRM.

All through the year wages remained firm, and steadier remunerative prices have been secured by mechanics than for any similar period, even the army of piece-workers not being able to reduce the wages of the regular hands.

LATHERS AND PLASTERERS.

Artisans in the above line have been very busy during the entire year—in fact, so much so that at times work has been delayed on account of a scarcity of help.

SUMMARY.

We present below a summary of building operations for the year. More than usual interest attaches to the same, as it is by considerable, the largest showing for any year of which we have a record.

	Frame Buildings.		Brick Buildings.		Repairs and Alterations.		Total No. of Bld'gs for Mo.	Total Cost for Month.
	No.	Cost.	No.	Cost.	No.	Cost.		
January	30	\$176,600	1	\$ 5,400	14	\$ 44,115	45	\$226,115
February	36	112,650	3	179,700	5	37,200	44	329,550
March	98	291,150	3	128,500	8	39,000	109	458,650
April	100	535,655	3	297,000	18	69,900	121	902,555
May	79	449,660			19	105,800	98	555,460
June	92	433,700	1	60,000	19	68,200	112	561,900
July	69	340,200	4	253,545	14	40,164	87	633,909
August	75	321,500	4	336,500	11	34,800	90	692,800
September	83	366,456	2	210,000	19	50,100	104	626,556
October	69	340,890	2	42,000	25	77,360	96	460,250
November	81	365,197	2	24,000	20	29,100	103	418,297
December	93	379,543			25	58,222	118	437,765
Total	905	4,112,201	25	1,536,645	197	553,961	1,127	6,302,807

It will be noticed that building in the latter half of the year is much greater than similar periods in any previous record.

The statement for December is a remarkable one, as it shows there have been commenced of improvements.

113 BUILDINGS OF THE VALUE OF \$437,765.

For the sake of comparison we give the figures for each year from 1880.

YEAR.	BUILDINGS.	VALUE.
1880.....	397.....	\$1,754,435
1881.....	533.....	3,790,732
1882.....	785.....	3,896,212
1883.....	803.....	5,261,689
1884.....	1127.....	6,302,857

We have given no credit in the above for money expended on the Flood mansion. The material for that building is being obtained in the East, and, of course, its value being paid there, cannot find a place in our estimates. We enter our protest against the expenditure of money East for material, the equal, if not superior article, being obtainable on this coast; especially do we regret, when we consider that the money for which the building is being erected was made from the working people of this coast, and they should have, at least, the chance to recover, by steady work, the money thrown away by assessments paid, to find its way by roundabout methods into the millionaire's pocket. In more than one instance have our Nob Hillites sent thousands of dollars East for work and materials which could have been duplicated on this coast, both in design and workmanship, and just for the simple reason that it would seem higher-toned to say this or that came from Berlin, Paris, or Kamschatka.

NOT A BUILDING BOOM.

In the general acceptance of that phrase, should the transactions of this year be classed. A reasonably busy activity has continued throughout the entire year, and in not a single instance have

ARCHITECTS BEEN CROWDED

With orders for work. True, most of those engaged in that profession have had a reasonable amount of work, but it has been obtained so gradually and steadily that at no time, without a single exception, have architects delayed their clients on account of rush of orders.

DRAUGHTSMEN.

There have lately come to this city quite a number of young men who are desirous of obtaining employment as draughtsmen. Their qualifications consist of about the following: Ability to trace drawings if not too difficult; can give directions to the head of the office how things ought to be done; able to copy specifications if the hard words are explained to them, and sundry other difficult acquirements. To all such we would say, California is not the place for your genius to show its brightness; keep away, for our people are not able to appreciate your talents.

FAITHFUL, CAPABLE MEN

Are the only kind wanted here, and if a few were to arrive of the calibre to meet the require-

ments of our architects, no doubt they would obtain steady employment.

THANKS.

We sincerely tender our thanks to all those who have so kindly assisted us in the past year, furnishing us information in regard to matters of interest to our readers.

A Success with Which We Are Pleased.

WITH this, the closing number of the sixth volume of this Journal, it is fitting and proper that we should again express our sincere acknowledgments of the manifold favors and encouragements received, and return heartfelt thanks to our friends and patrons for the liberal support extended in both subscription and advertising patronage, and to our numerous contemporaries who have manifested toward this Journal such marked appreciation of our efforts to make it worthy the high esteem in which it is held among the hundreds of publications of like class, import, and character.

It cannot be otherwise than acknowledged that its columns have not been made to subservise, in the slightest degree, the personal, professional interests of its proprietors. They have in no instance availed themselves of the privileges entirely under their control, of using its columns for their special benefit, but have freely, and with honest intent and pleasure, and without reserve, published from time to time, facts and statements of interest to others, which, if made in reference to themselves, might have justified the charge of seeking to further ends and purposes not entirely in harmony with honorable and unselfish journalism. And as in the past, so in the future, its columns will be free from all selfish interests, beyond the legitimate profits of its publication, and the proud satisfaction of having it recognized as among the very best journals of its kind published in the United States. That it has reached this pleasing attitude in journalism, is fully demonstrated by the fact that our exchange list now numbers over one hundred and fifty, among which are all the well known and most influential publications of the country, and others from London and other parts of the world.

In looking back to the time when alone, and under tremendous disadvantages and discouragements, the senior editor embarked in the undertaking, its existence seems almost chimerical. It is questionable whether, under like circumstances, he or any other living man would undertake to repeat the venture. Without a single encouraging condition, with all—mechanical, financial, commercial, and other interests prostrated, the terrible gloom that spread over the entire State through the heartless and reckless political agitations of the period prevailing in its severest form, a majority of the working classes scarcely able to procure the humblest necessities of life, all combined to render the attempt almost a fete of daring, and nothing short of indomitable perseverance and obstinate fighting against untoward circumstances, gave it birth and vi-

talities. But the worst has long since been past, and we have our sweet satisfaction in the grand result which we enjoy at this hour in seeing it advance to its present prosperous condition, and recognized in so many ways and from so many sources as an indispensable publication upon the Pacific Coast. In all this, since the earlier days of its existence, the junior editor has performed his part, and in all possible ways, to the very best of his ability and judgment, has allowed no opportunities of improvement to pass which could be secured by earnest effort and attention.

Tracing up from the commencement to the present time, a very marked difference is noticeable in the issues of 1879 and 1880, and those of the volume ending with the present number. We hope that the numbers of the seventh and all succeeding volumes will exhibit as marked a difference in the upward direction; at any rate, unceasing efforts will be made with strong hopes of success, and if our friends generally, and our brethren of the architectural profession could only be induced to put into practice some of the hundreds of promises made to us, to furnish pertinent and interesting articles upon some of the thousands of topics at their command, in architectural, constructive, sanitary, mechanical, inventive, and kindred sciences, they would thereby greatly benefit themselves and others, as well as assist in furnishing our readers with the rich fruits of many minds,—subjects analyzed and dressed up in form, theory and fact, according to views entertained, some of which may prove to be of inestimable value in ways at present not fully comprehended. Those who "cast bread upon the waters" are often made glad by its appearance "after many days."

San Francisco Chapter, American Institute of Architects.

THE regular monthly meeting of the Chapter was held Friday evening, Dec. 5th. President A. Laver in the chair.

The committee on incorporating the Chapter reported progress. The articles have been filed, and but a few minor details are to be taken to have the Chapter in working order as an incorporated body.

Emil John was proposed for membership as an Associate. Referred to Messrs. Sanders, Pissis, and Moore.

The President, assisted by Mr. Gash, then presented prizes to the pupils to whom they were awarded, as follows:—

Max. G. Bugbee received a fine box of drawing instruments as first prize in free hand drawing.

Louis Stone received Ferguson's History of Architecture as first prize in architecture.

Robt. G. Frise received a similar prize to last mentioned as first prize in mathematics.

Wm. Lee and E. A. Williams each received a copy of Rosengarten's Hand Book of Architectural Styles, as special prizes for general proficiency and progress in the several branches.

A letter was received by Mr. Laver from the Royal Institute of British Architects, request-

ing the Chapter to indorse their movement in regard to holding an exhibition of American Arts and Sciences, to be held in London in 1886. The following committee were appointed to take action upon the same: Messrs. Laver, Gash, and Wright.

The teachers of the various classes were tendered a vote of thanks for their faithful services during the past year to the pupils under their charge.

OUR ILLUSTRATIONS.

A Comfortable \$5,000 Country Home—The New Panorama Building—Rustic Cottages.

ON pages 213, 214, 215 we present the elevation and plans of a comfortable country residence, costing about \$5,000.

It will be noticed that every room on the first floor is accessible from the hall. This is an especial feature in country houses. The front hall can easily be converted into a waiting room by having curtains hung in the archway at the foot of the stairs. As a very general rule, Californians do not prefer the hall to be made into a reception room.

The sitting and dining-rooms are convenient, and with the aid of the sliding doors can be practically made into one large room. The former is connected with the back porch by the door shown, and is thus easily accessible to members of the family without going through the main hall. Abundance of closet room is provided.

The second story plan will recommend itself for the comforts shown. Attention is called to the excellent arrangement of the water-closet, being easily accessible both from bath-room and hall.

The design shown on page 217, is that of the new Panorama Building, lately erected in this city, A. Pissis being the architect.

The other designs shown are for rustic cottages for a suburban town.

Our Exchanges.

WE have made arrangements with the Editors of the following Journals, by which we are enabled to offer quite a reduction to those subscribing for any one of them in connection with this Journal.

(The figures in parenthesis denote the price of the journals alone.)

CALIFORNIA ARCHITECT AND BUILDING NEWS Terms, \$2.00 per annum.

With *American Architect* (\$6.00), \$7.00 per annum.

With *Builder and Wood Worker* (\$1.00), \$2.50 per annum.

With *Inland Architect and Builder* (\$1.75), \$3.25 per annum.

With *American Artisan* (\$1.00), \$2.50 per annum.

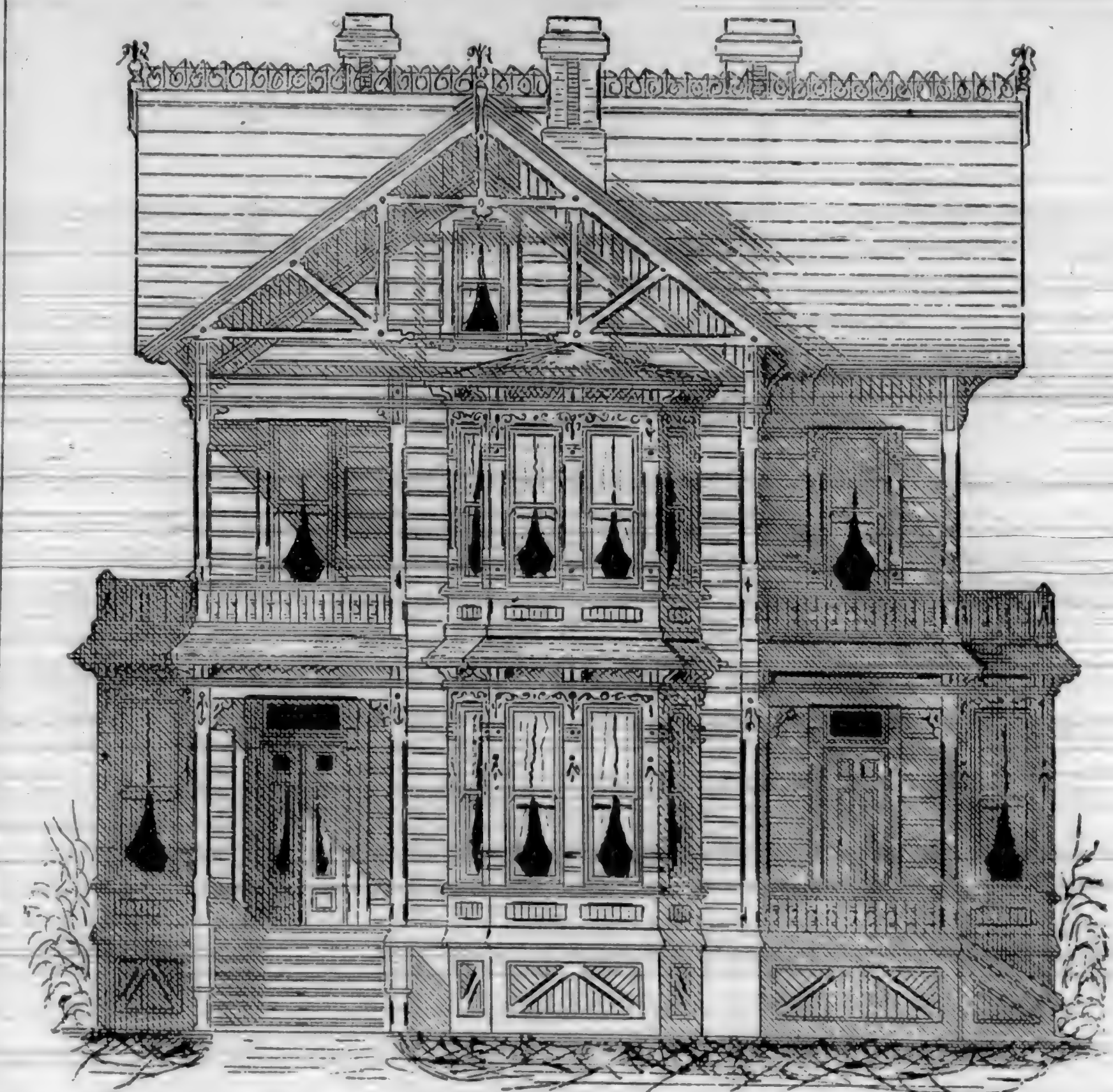
With *Building* (\$1.00), \$2.50 per annum.

With *North Western Lumberman* (\$4.00), \$5.00 per annum.

With *Scientific American* (\$3.20), \$4.50 per annum.

With *Leffels' Mechanical News* (\$1.00), \$2.50 per annum.

With *Decorator and Furnisher* (\$4.00), \$5.00 per annum.



FRONT ELEVATION OF \$5,000 COUNTRY DWELLING.

With *American Machinist* (\$2.50), \$4.00 per annum.

With *The Wood Worker* (\$1.00), \$2.50 per annum.

With *The Builder* (\$2.00), \$3.50 per annum.

With *Ha's Journal of Health* (\$1.00), \$2.50 per annum.

With *Cincinnati Building Review* (\$1.00), \$2.50 per annum.

We will add to the above list from time to time, as our arrangements are perfected with the publishers. We are prepared to furnish any journal printed at the shortest possible notice.

Chapter Incorporation.

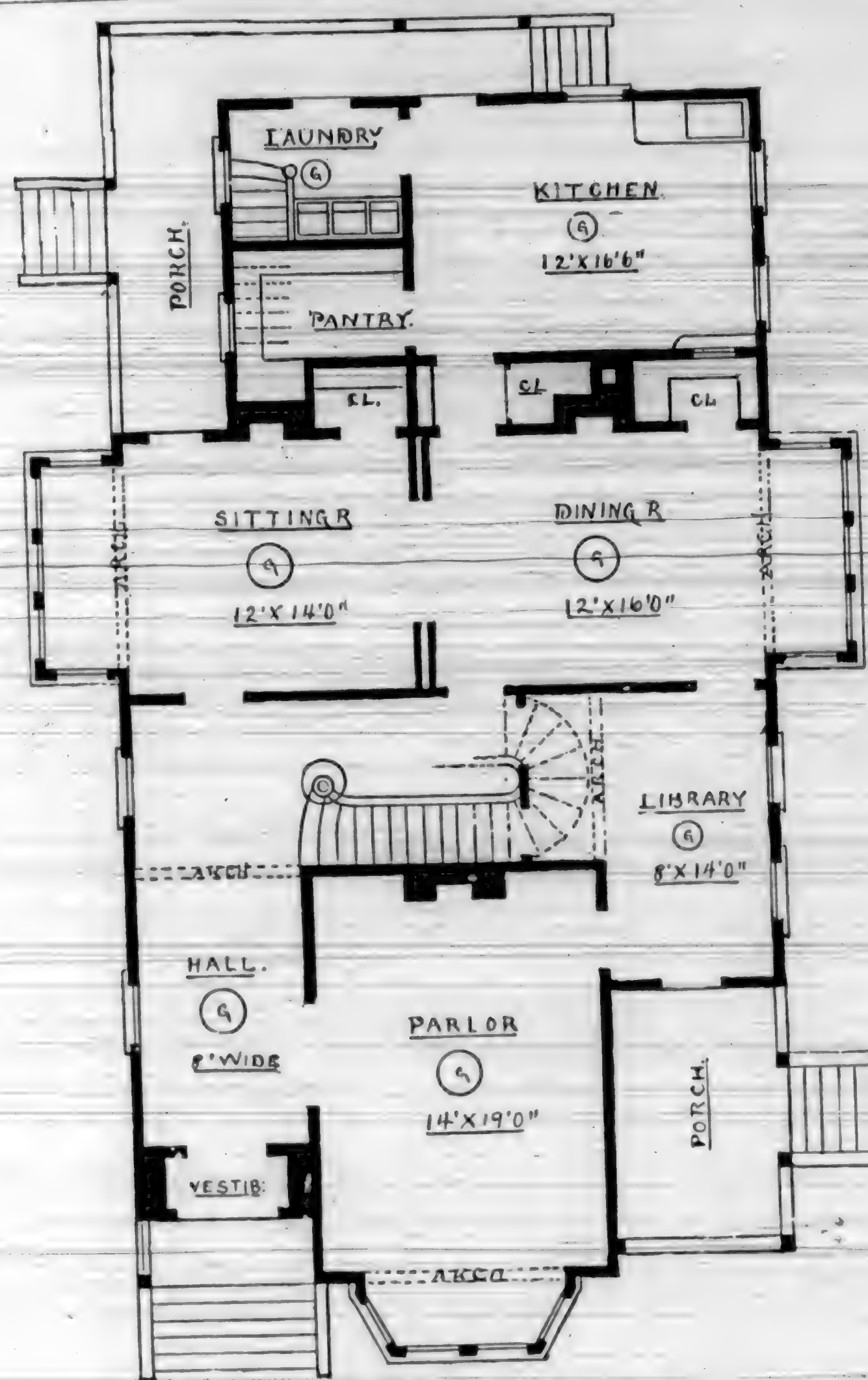
SINCE our last issue, San Francisco Chapter of the American Institute of Architects has been duly incorporated under the statute of California, in such cases made and provided, with James E. Wolfe, Wm. Curlett, W. J. Mathews, G. H. Sanders, and T. J. Welsh as the incorporating trustees. The incorporation is to exist for fifty years, a period which suggests the thought, Will any of the present, practicing members of the Chapter, or any of the practicing members of the profession, now in San Francisco, not in membership, be upon this mortal stage of action at the expiration of the Chapter period? Some of the younger students and apprentice members, in all reasonable probability, will be, and it will certainly be a source of pleasure to those advanced to the

silvery age of whitened locks—some of whom, in all human probability, will be called to pass from earthly scenes and pursuits, to the realities, whatever they may be, beyond the reach of human conception, ere even one of the five decades of incorporation shall have expired—to see the young men in the profession fostering, by their earnest interest and devotion, the institution now fixed, by the present active membership, upon a foundation which provides for its continued prosperity, with reasonable assurance that at the end of fifty years it will have grown in interest, and developed into an organization of great usefulness and influence, doing honor to the memory of those who founded it, and those who may hereafter sustain and enlarge its sphere of usefulness. Its growth, prosperity, and permanency is a matter which demands and justifies the personal interest of every well-wisher of the profession, and we hope the day will soon come when the name of not a single worthy and honorable member, of the profession shall be missed from its roll.

Hammer or Nail—Query.

"WHICH gets the harder lick—a hammer or nail—when the nail is struck with a hammer?" Both alike, except, unfortunately, your finger should happen to share with the nail in its part of the "lick."

Steel Square and its Uses. Price, \$1.00.



FIRST STORY PLAN OF \$5,000 COUNTRY DWELLING.

The Mechanic's Christmas.

SURELY the Christmas now near at hand should be hailed with pleasure by all of our mechanics. The year now almost ended has been one of unusual activity, and those who have been frugal in their habits should have enough on hand to make glad the hearts of the little ones.

Wages have been kept up to the full standard for all desirable help throughout the year, and the immediate future is full of promise. Even with the work now in progress a goodly portion of our laboring population can command steady remunerative wages for a larger part of the time.

We wish one and all of those whose labor has done so much to beautify the city, a hearty and merry Christmas, and many a happy New Year.

A Bar of Square Wrought Iron, Supported at each end, and a load placed in the center, will bear much more weight when placed flat than when placed on one corner. The difference is about as six to five.

Mechanics' Liens.

A BILL for a new mechanics' lien law was drawn up lately by representatives of the various trade unions assembled at the State Bureau of Labor Statistics. It modifies the existing law in this, that it gives laborers a prior claim over material men, where both have filed liens. As the matter now stands, liens on buildings are ranked as follows: First, all persons other than the original contractors and sub-contractors; second, the sub-contractors, and third, the original contractors. The first class consists of mechanics, material men, artisans, architects, and laborers of every class. It is now proposed to eliminate from this class the material men and subordinate their claim to that of the mechanic, artisan, and laborer. The proposition commends itself to justice and appears to be in conformity with sound principles of equity, for it is obvious that the furnisher of bricks and lumber and iron and glass and mortar can better stand a loss than the laborer, whose food depends on his daily earnings.

In actual practice, as all persons who have built houses will testify, the lien law more frequently causes hardship to the man who has a house built than to the builders and mechanics. It is quite a common occurrence for a man who has had a house liened by some workman whom the contractor has failed to settle with, and this after the owner has fully paid the contractor. In Chicago and Kansas City knavish contractors have made a practice of cheating their men, collecting full pay from the house-owner, and then leaving him to fight it out with the mechanics. No remedy for the evil was ever discovered.—*Chronicle*.

Decrease of Lumber Imports.

DURING the past sixty days there has been a less quantity of lumber shipped to this port than for any similar period in over two years. This is accounted for by the desire of the lumber merchants here to reduce stock on hand. As will be seen by our Building Intelligence, there are more buildings now under way than for any December month of which we have a record. The local demand is unusually large, and if the opening months of 1885 show the same activity in building circles as at present, by March the stock on hand will be so greatly reduced that the mill-men will endeavor to convince the public that lumber is scarce, and thus pave the way to a general rise.

We are pleased to learn that several South American orders of large amounts have been received for lumber. The mills furnishing these orders will have the lumber shipped directly therefrom, so the "big yard across the bridge" will not be made any smaller by the orders received.

Some time ago it was proposed to frame a law by which it would be unlawful for a railroad company to increase their rates after having once made a reduction. The same principle ought to be applied to lumber, so that our capitalists and builders could calculate ahead of time, the price for which they could erect buildings, or make other improvements.

Modern Architectural Designs and Details.
Price, \$10.00.

SPECIAL OFFER.

BOUND VOLUMES OF THIS JOURNAL TO NEW SUBSCRIBERS FOR 1885.

Upon receipt of \$3.25 we will send a bound volume of this Journal of either 1880, 1881, or 1882 and the full year's numbers of 1885. We have had an extra number bound of the years mentioned, and make this offer to increase our subscription list. We are bound to increase our list, so that the end of the year 1885 will witness not less than

TEN THOUSAND

Paying subscribers on our books.

Work and Wages.

THE naming of a day early in the spring of 1886 for a convention of representatives of all the labor organizations in the country, whereat steps shall be taken to make the legal working-day in every part of the country no more and no less than eight hours, makes it very desirable to expose the fallacy of the "eight-hour movement." As we have never seen it put in a more simple and understandable form than has lately been employed by the Boston Herald, we reproduce its arguments at length:—

WILTON, Me., September 29, 1884.

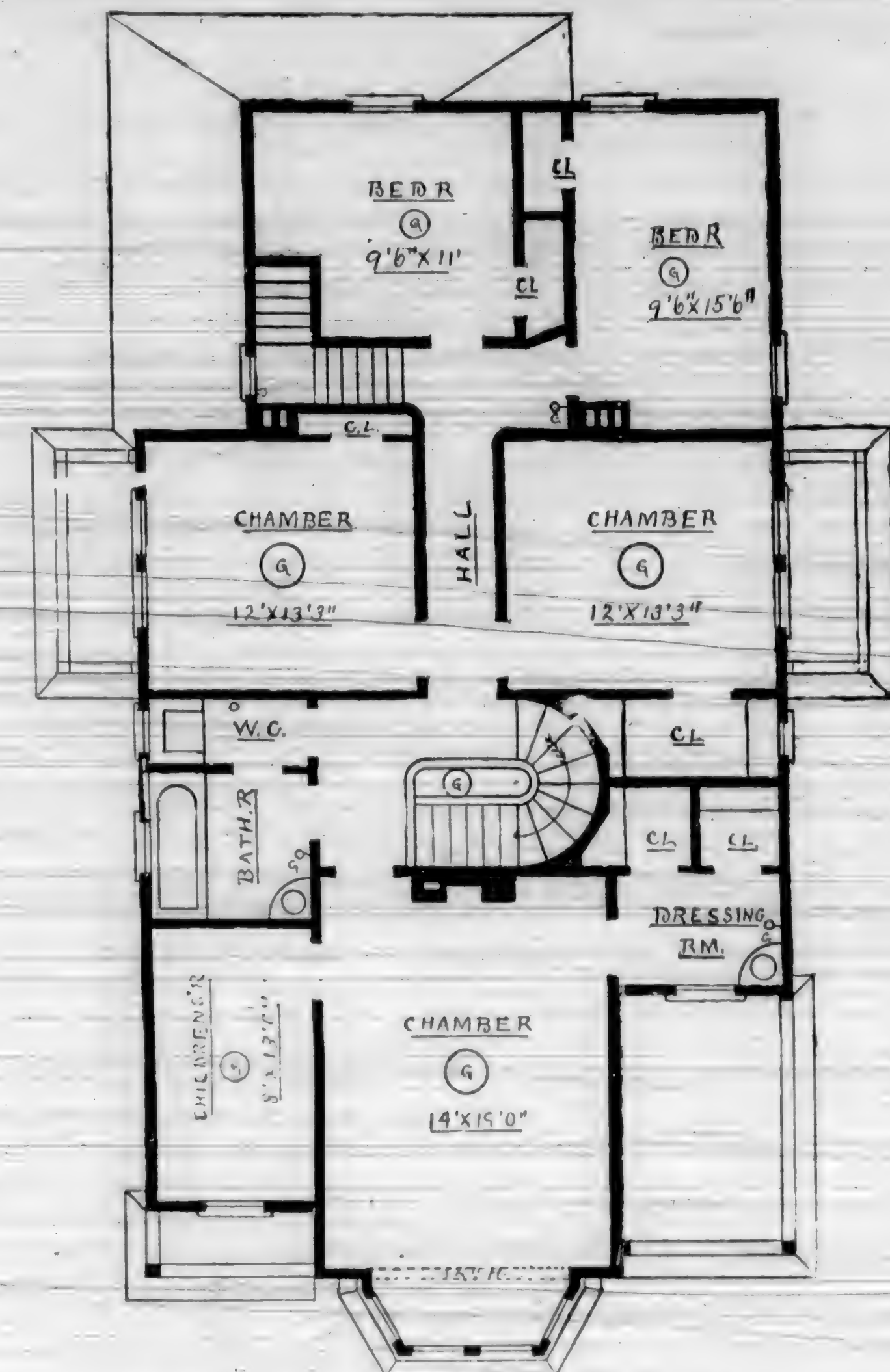
TO THE EDITOR OF THE HERALD.—In conversation recently with a gentleman from New York, a contractor and builder, and an ardent disciple of B. F. Butler, he advocated the passage of a law making eight hours constitute a day's work. He urged that its adoption would be immediately followed by a rise in wages, because it would create a demand for twenty per cent. more labor.

Now, I am confident this reasoning is incorrect, but I am unable to demonstrate its fallacy to my entire satisfaction, so I appeal to you to set me right.

If it will not trespass too largely upon your time and space, an answer through the columns of the Herald will greatly oblige, F. A. R.

The fallacy conveyed in the above assumption is a common one, and runs through all legislation in this country on industrial subjects. Thus, if the assumption were correct that a rigidly applied eight-hour law would be immediately followed by a rise in wages, on account of the demand for twenty per cent. more labor, then if work were restricted to two hours per day, there would be a still greater increase in wages on account of the demand for eighty per cent. more labor, that is to say, the less time a laborer worked, the more money he would receive, and hence, with two hours' toil out of the twenty-four, he would make very much more money than he now does by the steady strain of ten hours per day.

This is a delightful theory, and for the good of humanity it is a great pity that in its practical execution certain obstacles are met with which seriously militate against its efficacy. If it were possible of application, the entire problem of procuring for human beings in this world a happy and contented existence would be at once solved. With plenty of time for study and recreation, even the commonest workingman could be both a student and gentleman of leisure, while the scale of pay would be so high as to place every one far beyond the possibility of want. But, as we have said above, there are one or two slight obstacles in the way. If under an eight-hour law but four-fifths, or under a two-hour law but one-fifth, of the wealth is produced that is now the result of ten hours' labor, then necessarily there would be only four-fifths, or one-fifth, of the amount to divide among the workers and the capitalists. As a man cannot by taking thought add one cubit to his stature, so the people of a country cannot by legislation produce any more wealth than their daily work enables them to produce. Wages are paid from the wealth which labor produces, and if this production is restricted, then there must



SECOND STORY PLAN OF \$5,000 COUNTRY DWELLING.

of necessity be a corresponding shrinkage in the rate of wages paid. If men could turn out as much in eight hours as they can in ten, then the rate of wages might be the same in either case; but not unless the results of work corresponded. To give a broad example: According to the census of 1880, there was produced that year in the United States wealth approximately amounting to \$7,500,000,000. Of this, fully \$6,500,000,000 worth of wealth, or \$130 per individual, was used up during the year in supporting the life of the community, leaving a margin of saved or reserved wealth of not quite \$1,000,000,000. Now, if the work of the entire community had been cut down twenty per cent. in amount, we should have produced in the year \$1,500,000,000 less of wealth. If we had continued our consumption at the same rate, not only should we have laid nothing aside, but we should have begun the year 1881, \$500,000,000 worse off in wealth than we were when we began the previous year. On the other hand, if the united work of the community had produced wealth to the amount of \$15,000,000,000, then

there would have been very much more to divide among all classes of the community. The consumption of wealth would have been much greater, and yet the surplus revenue left over could have been considerably larger than it was. In short, where there is a large production, there is of necessity large wages, where, where there is small production, the wages are correspondingly low. So long as time remains an element in production, the longer that a man works, everything else being equal, the greater will be the amount of wealth he will produce, and the larger the amount of wages that can be paid him. In order that there be no mistake, we would add that it frequently happens that a man can produce more wealth by the work of ten hours than by the work of twelve, fourteen, or sixteen hours per day, for the reason that the strain upon his physical and mental powers by continued application makes it impossible for him to perform careful and effective service during these long periods of time.

House Plans—a new work. Price, \$2.50.

Panorama Building.

THERE has lately been erected in this city, a building that is different in construction from any that has as yet been built. Our engraving presents a very correct view of the Panorama Building.

It occupies the 50 Vara lot on the southwest corner of Mason and Eddy Streets. The building is in shape a polygon of sixteen sides, and is 126 feet in diameter. The outside walls are fifty feet in height, the apex of the roof being seventy-six feet. The building is strongly put together, and is admirably adapted for its intended purposes.

The entrance is broad, with rooms each side for ladies' parlors, etc. After passing the portals, two corridors are seen. One of these is intended for an entrance-way and the other for exit. These corridors are darkened so that a person entering from the street will gradually lose the effect of the outside light and be prepared for the different rays from the interior.

At the end of the corridors are winding stairs, four feet six inches wide. These lead to a platform in center of building. This platform is thirty-five feet in diameter and is capable of holding about 400 people.

From the platform, a grand view of the panorama may be seen. The picture extends clear around the whole building and is in size 48 by 380 feet. The first painting to be placed on exhibition will be the "Battle of Waterloo," the work of Joseph Bertram and L. Sargent.

The arrangement of the shades to regulate the lighting of the interior, is a novel one and much credit is due to its originator. The architect of the structure is Mr. A. Pissis.

To Our "Mechanic" Patrons.

WE have been favored in the past with numerous most excellent and well-written articles from the pens of patrons who toil for their daily bread—mechanics whose thoughts are largely the result of practical, daily experience—the hours of study with such being but few, and those more generally after the physical forces have been subjected to the strain of a more or less "hard day's work." So excellent have some of these articles been that they have been copied into numerous other journals and thereby given publicity throughout the length and breadth of our country; and beyond this, European journals have also copied, so that those, in many cases, who have given an hour or two to placing their thoughts and conceptions in shape for the columns of this Journal, have furnished matter read by hundreds of thousands of their fellow-men; and although they may never meet with merited, personal responses and acknowledgments, they nevertheless have done good work, which, if not otherwise compensated, may meet its reward in that grand hour when "every man shall receive according to the works done in the body." Prominent among these is "J. E. W. C.," whose articles have been well received, and largely copied. Mechanics of California

are not hundreds of you allowing the golden opportunities at your disposal to pass unimproved, in not availing yourselves of the facilities presented through this journal to develop the mental, intellectual, and practical powers of mind and thought, which in so many are allowed to remain dormant through passive indifference and neglect, thus depriving yourselves of the benefits which never fail to follow in those who seek to improve themselves and their fellow-men by revealing and making known every best thought which earnest reflection, meditation, and free expression brings.

We have again and again proffered space in the columns of this Journal to all of every class, mechanics as well as architects, engineers, inventors, assigners, scientists, producers of material and devices, and all others, and our proffer has been accepted by many, but we again ask that many more may join the number, so that our seventh volume may be honored with numerous well-written articles, pertinent and expressive of new ideas, or of old in new dress. The abilities are not lacking; it is the absence of *will and purpose*, and in some, a selfishness which belittles and dishonors; a fear to "give away" that which, concealed, is of but little value, but which sown broadcast may carry joy to thousands. Individual human thought and knowledge are limited to the years of human life, if held in bondage until the hour of death, with which all thinking ends, and that which has been in our power to make useful to others, passes away with us, unless we fructify and enrich the soil of our existence, by scattering broadcast the seed of thought which God and nature has caused to form in us—for what purpose? to rot and perish in ourselves? No, but that we may plant them in other minds to grow and bring forth other seed, and harvests of rich, ripe fruit. Brethren, reflect and act accordingly. The columns of this journal are open for you, and we invite you to come with the best you can give, and if any have good thoughts and ideas, and feel to lack the word clothing necessary to make them presentable, come, and we will help you dress them up in the best style possible, according to our abilities so to do.

Brass in House Furnishing.

WHILE brass has at all times been employed for artistic purposes, it has been subject in this respect to the laws of fashion, being resorted to at one period more than another. From the mediæval age it has been continually patronized, however, for ecclesiastical furniture and its accessories, as in altar frontals, pedestals of fonts, and symbolic devices. The present tendency of decorative art toward rich and attractive colors, in material and in surface tints, and the freedom imparted to design, owing to the breaking up of former set styles, with the prevailing taste for the most cheerful possible aspect to interiors, and an improving standard of elegance and refinement, have led to a greater prominence

than formerly was given in the use of brass furniture.

In cabinet work, builders' hardware and the ornaments that pertain to a well-furnished room, this metal has a well-defined sphere of employment. Considerable originality, with much good taste, is shown in the designs of the brass furniture brought out. Resort to fire-gilt gilding prevents all liability to tarnish, and this gilding, through the variation in hues that can be imparted to the surface, multiplies artistic effects, whether used separately or in combination. The surface of brass takes satin finish, dead lustre, brown bronze, and oxydized silver. Tiles and enamels in delicate y tinted designs associate admirably with brass in furniture and general decorative work, so also dark woods. A quality decidedly favoring brass is that its beauty is enhanced by artificial light.

There is no question that in dealing with this metal, American art exhibits higher taste in furniture than in the greater proportion of that turned out in England. As a rule it is simple, and, if apparently less ornate, is more satisfactory. The elaborate ornament at low cost in the abounding English work is due to the employment of sheet metal stamped in imitation of wrought work, the moulds ensuring often an undesirable amount of uniformity.

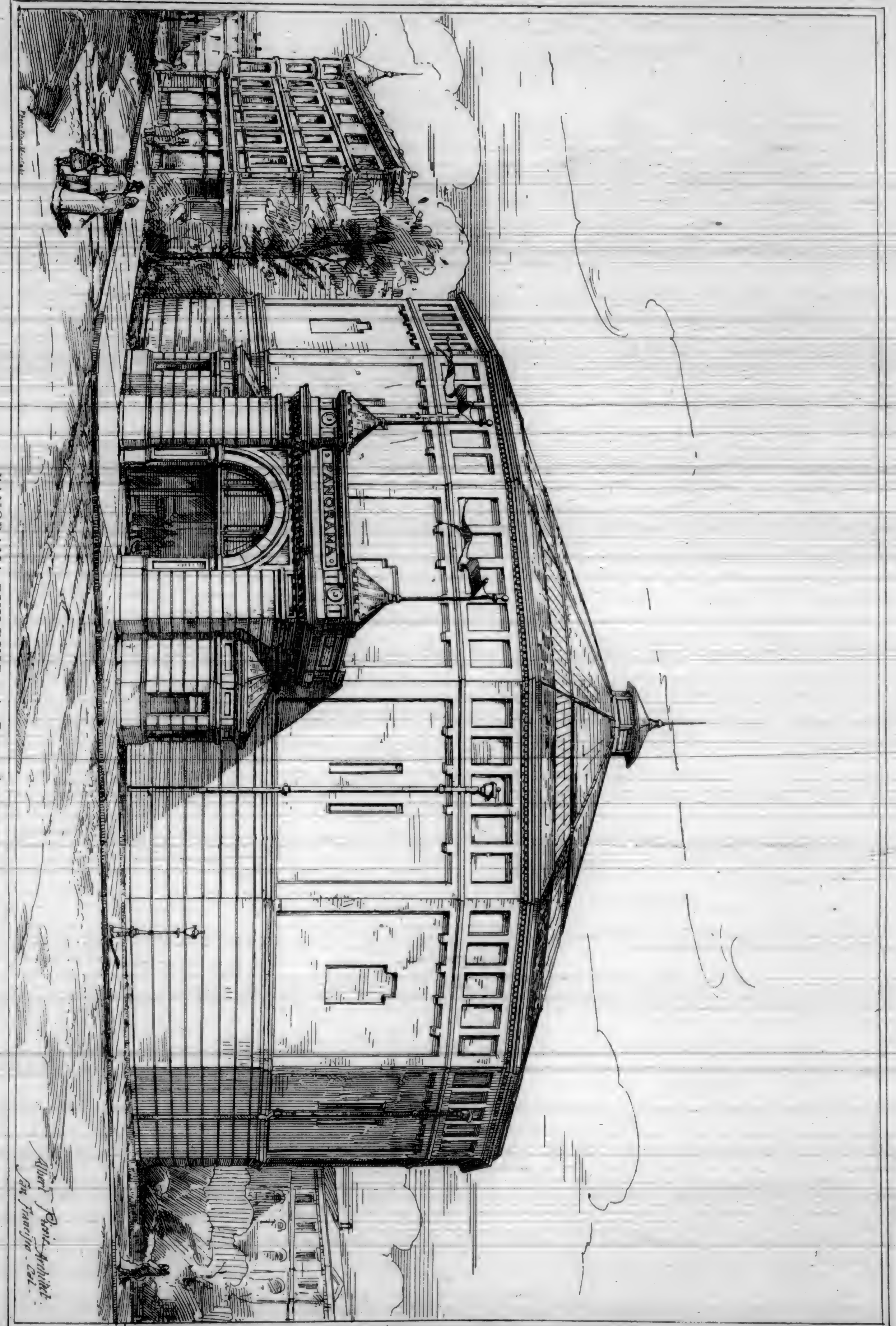
The pieces of stamped in sheet metal, entirely composing an article, are riveted together. Stamped is used for picture frames, but is always wanting in the ancient wrought work for this purpose. It suits well such articles as coal and fire-wood boxes, of which some fine old examples are to be met, also for fire and stove screens. Owing to the thinness of stamped metal it is unsuitable for fenders; in fenders preference should be given to perforated designs of naturalistic forms conventionalized, or to mounted bars with standards.

Some admirable brass fire-gilt mantels, broad and lofty, and constituting imposing mural decorations, are finding their place in the city mansions. Other metal than brass, particularly hammered copper and oxydized silver, are frequently introduced in these for contrast and giving depth to the designs with other scenic effects, whilst painted tiles in brass panels, in diapered and other forms, line the several recesses.

Steel is well combined with brass both in fenders and fire and dog irons. One use to which raised brass work is well applied is for lining the backs of open fire-places, the design being commonly small diapered forms with central figures, or tiles sunk in panels. The rough filing of the surface off so as to give it a surface of rough and irregular sparkling grains for a coating, set off with burnished edges or terminals, was a favorite mode of decoration under the first French empire, particularly for chandeliers of the corona style, in the way of massive pendants.—*Decorator and Furnisher.*

Universal Assistant and Complete Mechanic.
Price, \$3.00.

PANORAMA BUILDING.—A. PISSIS, ARCHITECT.





DESIGN FOR A RUSTIC COUNTRY DWELLING.

Wages and Material.

FOR the convenience of many of our readers, we give the price of some of the building materials used, and labor in connection therewith:

Rough Lumber.....	\$18 00 per M.
Surfaced Lumber.....	33 00 " "
Lath.....	3 50 " "
Shingles.....	2 50 " "
Nails.....	2 75 " keg.
Hardware.....	Cheap.
Lime.....	1 50 per bbl.
Cement.....	\$2 25 to 4 50 " "
Plastering.....	28 " yd.
LABOR.	
Carpenters.....	\$3 50 per day.
Masons.....	5 00 " "
Cabinet Makers.....	3 50 " "
Hod Carriers.....	3 00 " "
Laborers.....	2 00 " "
Plumbers (and help).....	6 00 " "
Glass, mantles, roofing, etc., can be had at low rates.	

We print the above in answer to several questions received.

Architect's services are placed by the laws of the Chapter at \$15.00 per day.

Draughtsmen command from \$1.00 to \$5.00 per day according to ability.

CAN you explain how it is that although water expands in freezing, a piece of wet board when frozen is smaller than at any other time? That it is so I have proved repeatedly, although I have heard the fact disputed. A.—The expansion of water ceases at the moment of congelation. Ice contracts by cold more than wood.

The Wall as an Architectural Feature.

PROFESSOR ROGER SMITH gave an interesting introductory lecture on this subject to the architectural students at University College, on Friday, the 3d inst., of which the following remarks formed a portion:

The preparation for building a wall is, as every one knows, to find or make a foundation. A bad foundation is literally, as well as in a figure of speech, at the bottom of most of the failures that occur in walls. When a good foundation is secured, the success of the wall is rendered possible. What is a good foundation? The best is one that is perfectly immovable and incompressible, such as rock. The house built upon a rock is the one safe to stand. Next to this, and only one degree less good, is the foundation which may yield or compress slightly under a load, but will do so with perfect uniformity. Soft, irregular, shifting foundations and those exposed to the action of water, frost, and air, are among the most notoriously bad ones. The ordinary London foundation is clay, in some cases mixed with loam or sand. In building on it great care is necessary; the foundation must be carried so far below the surface that frost will not penetrate to it. To secure this in the London climate you should go 4 feet deep, and even more.

The surface round the building should also be protected so as to prevent the percolation of water. The weights of the different parts of the wall should be as nearly uniform as possible, and they should not be extreme. Four tons per foot superficial is quite enough.

It has become a practice of late years to form a kind of artificial rock of concrete upon the foundations of earth or clay, composed of small stones and lime or cement. This concrete, which hardens into an incompressible slab, admirably spreads and distributes the weight, and is of great use in preventing disaster. In the case of very bad foundations enormous quantities of concrete are often employed, and with success. The base of the wall, like the concrete, is below the level of the ground. It is, to some extent, a modern improvement, or, at least, it hangs on to the modern notion of building thin walls. In the Middle Ages, when walls were immensely thick, it was not very often customary to build them with spreading footings; now it is usual, and a most useful custom it is. Walls in London are required by law to be twice as wide at the bottom of the footings as they are themselves. Of all the properties a wall can possess I think stability is the most noteworthy. Of old this was sought in great thickness. The Romans first showed that constructive skill would enable men to build walls thinner than had been customary, and yet stable. Our modern walls are vastly thinner than those of the Romans; but then there are few modern buildings for which we expect, or could desire, a durability like that of ancient Roman work. Good materials, good putting together, and strong cement, with some amount of protection from weather, are what we must rely upon for the preservation of our walls. Homogeneity, or the use of materials all of one sort, would seem at first sight to be essential to the construction of a good wall; and yet, though many ancient walls like those of Munich, and, I believe, those of Athens, were practically homogeneous, the walls cleverly put together by the Romans of three or four different sorts of materials have proved, some of them, to be all but indestructible.

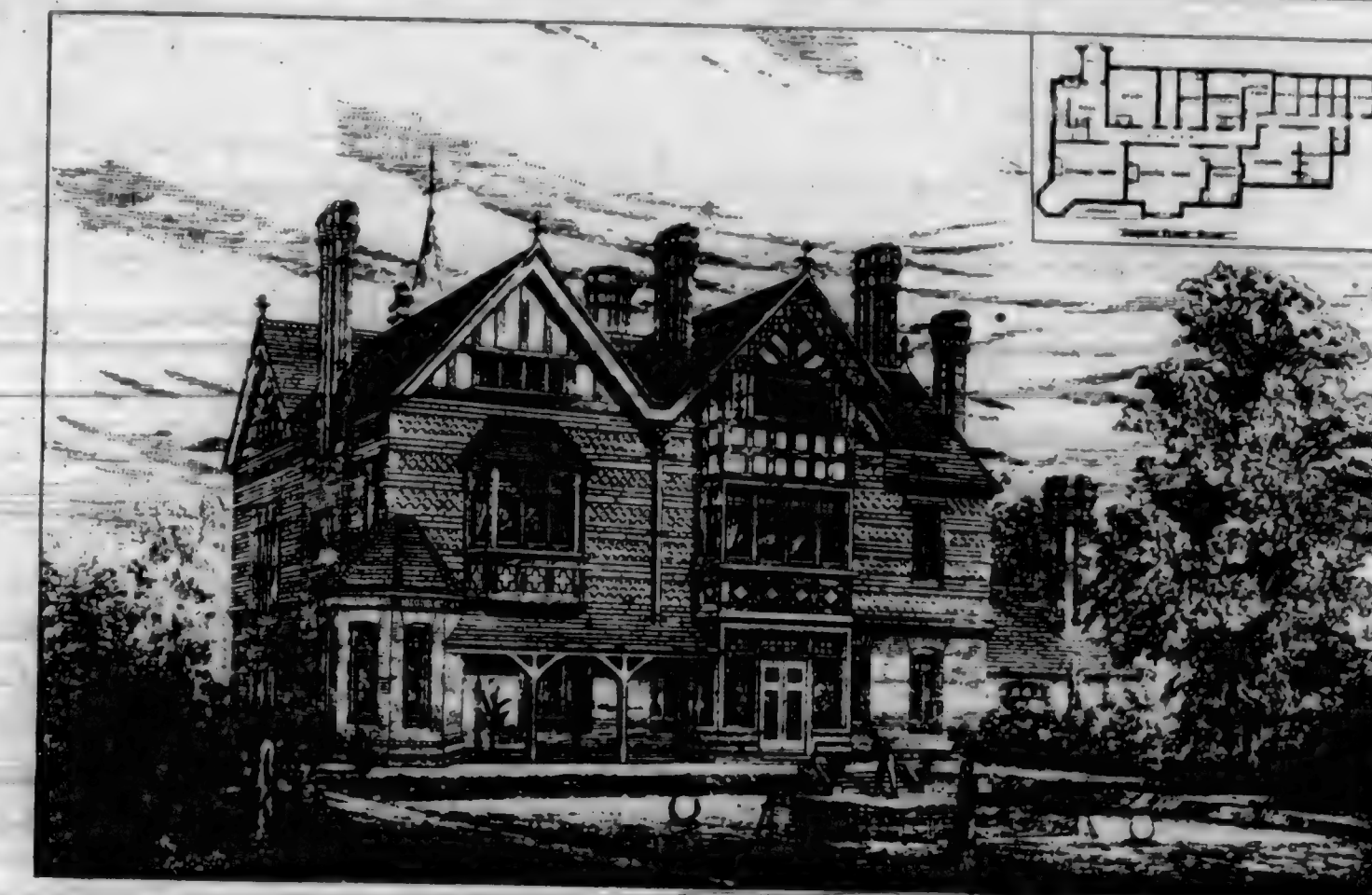
Uprightness is essential to stability, and to look safe a wall must be obviously upright, though a tapering form, like the pylon of an Egyptian temple, also looks strong, and really is so. Length was the ancient way of giving importance and dignity to walls; height is the comparatively modern way. In the early ages of the world, and in the ruder stages of the development of modern nations, it is extent that is relied upon where an effect is to be produced. The greatest of the temples of Egypt, for example, the temple of Ramse, with its dependencies, extended over about 2,000 feet, or more than the third of a mile. The rude stone avenues of prehistoric origin to be met with at the spot of the same name in Brittany, extend over about a mile and a third of country; and, as another example of a different kind, I may recall to you the Roman wall which stretched right across the north of England. As the power of building, and skill in the production of architectural effect increased in any nation, height was more sought after than extent; but it was, with a few exceptions, reserved for Christian and modern architecture to attempt with suc-

cess buildings in which height is the main feature.

Straight lines and right angles seem to have been almost the only rule in very ancient work, such as the Egyptian and the Assyrian. The Greeks first introduced curved walls in their theaters. The Romans continued and extended their use, and introduced polygonal shapes, all of which have obtained ever since. Colored materials are to be met with at all periods of the world's history; but as their use always has reference to the architectural effect of the wall, we will postpone them to the second part of the lecture. Having now looked a little at our wall, let us try to look into it as far as we can, and perhaps an architect can look further into a stone wall than some other people, notwithstanding the old proverb. What, then, are walls made of? You may lay it down as a general rule that a wall must be made of something that lies ready to hand.

In many cases the fact that the material of which some small or ornate object is to be made comes from far is a point in its favor. We prefer Italian marbles to Devonshire, or to the serpentine of Cornwall, not because they are always more beautiful (for they are not), but because they are Italian. But for wall building so much and such heavy stuff is wanted that it never does to bring it far. Accordingly, in localities where nothing else is to be had, walls are built of earth. In Devonshire, for example, cottages, barns, and the walls of gardens and orchards are commonly of earth, and they are warm, solid, and, if well taken care of, durable; but moisture must not be allowed to get into the heart of them, or they will soon crumble. Next to earth is a material not, so far as I am aware, known in England, but once in use in the East, sun-dried bricks. Vitruvius says that the walls of Babylon were built with sun-dried bricks laid in bitumen; and it is supposed that they were largely used in Assyria and Babylonia, and that some of the shapeless mounds which now mark the site of ancient structures consist of a mass of what was once sun-dried bricks.

Next, of course, we should come to brick, the material only too familiar to the London eye, and the refuge of builders throughout the world and of every age who, like the London builder, were not so fortunate as to have stone within reach. In Egypt and many parts of Italy there are remains of brickwork of great antiquity, and in Lombardy, North Germany, France, Belgium, and our own country, brick has been extensively used, and is in use at the present day. Bricks were not always of the sizes and shapes we are familiar with. The Romans made them flat, more like our tiles, and in many European countries they have been used considerably smaller. The size is a good deal influenced by the weight. An English brick can be held and managed by an artisan with one hand. If it were much larger or much heavier it would take two hands, or even two men, as were probably employed on the Roman bricks. The most refined kind of brick is called terra cotta. It is



A COMFORTABLE COUNTRY HOME.

of the nature of brick, but bears the same kind of relation to it that marble does to stone or silver to pewter.

Terra cotta is, in theory at any rate, the most appropriate ornamental substance to employ with brickwork, and though there are some practical difficulties in the way of using it, when these are overcome it is an admirable material. The best and most desirable material for wall building is, however, stone. Every sort of stone that is in the least degree deserving the name of stone has been made use of for the purpose of wall building,—from flints, which are some of them as inconvenient in shape for the mason's use as potatoes would be, up to the hardest granite, the finest and truest freestone from our many excellent limestone and sandstone quarries, or the beautiful and precious marbles of Greece and Italy. There are stone walls in Greece and in the Etruscan plain, which have come down to us from remote antiquity, made of large polygonal stones unwrought or but slightly wrought—and coarsely fitted together without mortar. There are others in Egypt of the finest polished granite with joints so close and true that the edge of a sheet of paper cannot be got between the blocks; but as remarkable in its way as these specimens of consummate handicraft is the construction of the Roman walls which were often made of small stones, such as we make macadamized roads of, set in a tenacious mortar which has hardened till it is as strong as the stone itself, and steadied at intervals by the introduction of a bond-course of flat bricks or large stones. With this mode of construction, which could be carried out anywhere, the Romans built vast works, the ruins of which remain all over Europe.

There is quite as much to learn about stone as about brick; in fact, a great deal more, as for example, how to select stone, for, owing to the ease with which many sorts of stone are acted upon by the weather, there are many precautions to be taken in the selection or use of material. I will just name the three cardinal ones, which are these: First, select for use stone from a quarry, and from a bed in

that quarry which experience has shown to be durable. Secondly, let that stone lie in the building in the same way as it lay in the quarry, or, as masons would say, bedwise. Thirdly and lastly, take such precautions as will insure that no moisture gets into the inside of your wall, or into the heart of the stones that compose it. The materials I have named all of them require to be held together by some sort of cement if the wall is to be durable and weather-tight. Lime is at the bottom of all the cements in general use, and its faculty of hardening after being calcined and slaked, and, as it hardens, of adhering to the surface of the stones or bricks with which it is in contact, is invaluable. Mortar is made of quicklime and sand. Cements and hydraulic limes are compounds (natural or artificial) of lime and other substances, chiefly alumina, which enables it to set harder, and under water, and more rapidly than in its unmixed state. I need hardly point out that where the heart of a wall is of many rough stones laid with much mortar (a substance more or less incompressible), while the face is formed of few well-dressed and square stones laid with little mortar, there must be great risk of the two parts of the wall behaving differently the one from the other when weight comes upon it.

This happened in much of the work of the builders during the eleventh and twelfth centuries in England,—the period of the Norman style. Professor Willis has gone so far as to say that if a Norman tower has not fallen, that circumstance throws great doubts upon its being Norman. Certainly an immense number of them have fallen, and as an example of failure, happily anticipated before there was a fall, I may remind you of Peterborough, where the core of the Norman piers carrying the great central tower has crumbled, and the piers have arched, and have been taken down within the past year. Different from the practice of building composite walls is another which I will only just mention, that of building hollow walls as a protection against damp. We have by no means exhausted the list of materials for walls if only

your patience will hold out. A modern material which I will just name, but not dwell on, is concrete, excellent if well looked after, dangerous otherwise; cheap if used in large quantities, and where there are few features or irregularities, but far from cheap in small or intricate buildings; very strong, very durable, and sometimes valuable where nature yields few materials for walls of another sort. Timber has been used time out of mind for the walls of houses, and even churches and dignified buildings, in the spots where it is plentiful. There is evidence that timber buildings were in use in Assyria, Egypt, and Lycia, from the curious fact that ancient remains of stone or marble are actually cut into shapes that imitate timber; indeed, the whole system of architectural treatment in use in Greece is a kind of petrification of timber construction. The countries of Europe where timber buildings are now mostly to be met with are Sweden, Norway, Russia, and Switzerland. They are in many ways excellent.

A timber wall is by no means a bad protection against weather; but it is liable to catch fire, and so is quite unfit for use in cities. Many railway stations in England, however, are built of timber, and any one of these will serve to illustrate a cheap way of building timber walls. In Sweden, whole logs, halved at the angles, are used, and a wall far more solid, durable, and weather-tight can be obtained. The same method is followed in Russia, and you may see a good specimen at the Health Exhibition in the Russian house at the back of the dairies. Timber framing filled in with plastering or with brick-work in the spaces, called usually half-timbered work, is an excellent material for walls if done with the solidity and liberal use of strong timbers that was common in England in the sixteenth and seventeenth centuries. In Lancashire and Cheshire, in Worcestershire and Gloucester, in Kent and Surrey, and in other parts of England you may find many fair half-timbered walls, and even here and there one still lingers in London or the outskirts.

We have in these later days taken to build our walls of glass, as at Sydenham, and of corrugated iron, as in many temporary rooms and churches, and each has its uses. The newest material for wall construction in England (though not, I believe, new in China and Japan) is paper. At the Health Exhibition a very serviceable little cottage walled and roofed with paper may be found. It is known as the Willesden Cottage, and I think I may say from some little experience of it that its walls are by no means the worst within which I have been sheltered in my life-time. We will now leave the construction of walls and turn to their treatment as an important factor in architecture. A wall, as we look at it, ought to have three parts: Its base, which, though below ground, ought to be represented by some description of plinth or base-moulding; its body; and its top, which may be a coping to throw off water, or may be the overhang-

ing eaves of the roof which it carries. These, then, are infinitely varied, but they are generally all to be seen in any wall that is architecturally satisfactory to the eye. The different ways of dealing with a wall as an architectural feature may perhaps be grouped as follows:—

1. Emphasizing construction.
2. Masking construction.
3. Varying the outline or plan of the wall.
4. Enriching the surface of the wall.
5. Color.

Of the method of emphasizing construction, which is our first division, a very ancient and obvious one is to use large stones. This was a favorite plan with the Egyptians, and the Greeks, especially in archaic times. Great stones were used in the Pelasgic walls, large remains of which still exist in Greece and in the Etruscan plain in Italy. These stones were usually polygonal, very carefully fitted together, built up without mortar, and they impress the spectator very much by the appearance of savage strength which they present. Stones of very large size occur in Greece and in Egypt, and in Syria stones remarkable for their dimensions and for the way in which their outline is marked round with a broad, round mark.

Another mode of emphasizing construction, which the Jews seem to have taken a pride in, is the employment of large corner-stones. When a wall is built of small or loose materials, it is not easy to make the corner strong; in fact, in parts of England the towers, which would otherwise be square, are round, because there is little else but flint to build with, and with flints you cannot make a square corner. It is usual, on account of this tendency to weakness, to fortify the corner by building it of larger stones or better than others; and the Jews seem to have attached some semi-superstitious importance to the top stone at the corner of a building—perhaps a more really appropriate place for a famous stone than our foundation-stone, which rarely, if ever, is part of the foundation. These stones at the corners come up again in Roman work, and still more frequently in the styles derived from Roman. The famous long and short stones at the corners of Saxon buildings, the well-marked quoins of Gothic ones of all ages, and the carefully-wrought, rusticated, and raised quoins of Renaissance buildings, all go upon the principle of marking construction. In simple and homely structures, built of materials with a fine surface on good color, any method of marking the structure of a wall is successful.

In Cumberland and Westmoreland, where many varieties of stone, rich in color, are met with, the walls of humble churches, or even cottages, are sometimes quite a sight to see and admire, from their beautiful and varied tints, especially if a method of walling be adopted which allows the natural cleavage of the stone to be seen without any tooling. Another and an opposite mode of emphasizing treatment, if not construction, consists in ex-

aggerating the squaring and dressing given to stone, and bringing it to a surface of the utmost smoothness. In the later part of the Gothic period, and in much of the Renaissance architecture which followed it, the whole surface is rubbed, and no trace of the tool is left. The same completeness of workmanship was also to be met with in Greece and in Egypt, and wherever we encounter it the spectator seems to be made sensible of the immense pains and care that have been lavished by the builders upon their wall; and to a less extent the same effect is produced by the selection of materials with a fine texture of surface, and a good color, like choice bricks. A wall consists of stones and joints, and one way of marking the construction is to make the joints more conspicuous than they naturally would be. We have seen that in ancient Jewish masonry a drift or breadth of finely-tooled work surrounds the margin of the stone. In some Greek work we meet with a severe square sinking at the joint, and in Roman work with a more strongly-marked channel. There are many other ways of emphasizing construction to which I have not time specifically to allude, but may say generally that any treatment of a wall which makes its materials or its construction evident almost invariably adds a natural and, so to speak, a spontaneous grace to buildings.

We have heard a good deal about the origin of "Queen Anne," but it has been reserved for the *Athenæum*, in a review in its last issue of Mr. R. P. Pullan's "Studies in Architectural Style," to invent a new and completely original history of the birth of that remarkable phase of art.

"The fact is," says our contemporary, "that as with the Dutch builders of the originals of the so-called 'Queen Anne' types, our architects desired to catch the favor of people whose awakening taste had only taught them to hate the formality of current fashion in design, and, owing to the ignorance and incapacity of the workmen at their command, they were compelled to be satisfied with coarse mouldings and vulgar modes of ornamentation. With the old Dutch builders (one ought not to call them architects whose utmost merit was sincerity) the results of their circumstances were closely analogous to our own. When the Dutch nation had achieved its freedom, the ecclesiastical arts, which had previously been welcomed in secular service (and had fructified in the town halls of Damme, Ypres, Brussels, and less admirably, Louvain), were not tolerated by a race which in the white heat of persecution had become a victorious people. The Dutch nation would have nothing to do with the art of their enemies. When the ar against the hated German and Spaniard was over, skilled craftsmen, with their long-inherited facility and just artistic technique, were simple nowhere. Peace following brought abundant wealth and the never-failing desire to build. The crude skill of incompetent workmen had to be appealed to. The result was that inorganic, blundering, and pretentious style which our popular architects have agreed to call 'Queen Anne.'"

Seth Babson.

THE subject of this sketch is a native of the State of Maine. Shortly after his birth his parents moved to Newburyport, in Massachusetts. At a very early age he developed a passion for mechanical employment, which, at a later date, developed into a taste for architecture. With his father's assistance (who was a prominent builder), and other professional and practical teachers, Mr. Babson acquired a familiarity with the rudiments of architecture, and at the early age of eighteen, designed and erected several dwellings, and a business block, without assistance from his teachers.

In 1849 he sailed for California, arriving in San Francisco on the 6th of April, 1850.

Shortly after his arrival he went to Sacramento, in which place he remained until 1874. During this period he followed the practice of his profession as an Architect. Many of the finest buildings at Sacramento were designed by Mr. Babson, principal among which were the residences of Charles Crocker, Gov. Stanford, Judge Crocker's Art Gallery and Library, and the Sacramento Savings Bank.

In the latter part of 1874, Mr. Babson changed his residence to San Francisco, where he still remains in the business.

Mr. Babson is an active member of the San Francisco Chapter of Architects.

Timber and Tools

It is a fact well known to mill-men that it is not always the harder woods, in the ordinary acceptance of the term, that are the most wearing to the saws. Many practical persons marvel at this and wonder to themselves why a piece of timber showing small crushing tension and other strengths, requires more power to work into lumber, and at the same time wears out the saws and cutting tools faster than other varieties of timber, the strength of which, in most respects, is greater. A log of black walnut and one of burr oak of the same size worked into the same sized stuff will show widely different results on both saws and machinery. If we attempt to rive or split these logs, the walnut will work much easier than the oak, and so far as the various strengths are concerned, the oak is superior by far; but when cut into by tools of any description, the walnut will present much greater resistance than the oak, and the same is true as regards many other varieties of hard and soft timber.

If we take a longitudinal section of these comparatively soft timbers which are so hard

on the cutting edges, we will find the minute pores or interstices filled with minute glistening particles or crystals, and, subjected to chemical analysis, we will find them composed of silica, one of the very hardest minerals known, while with the hard, easy-working woods, they will be found nearly or quite absent by both the microscope and analysis. These little particles, so finely divided as to be insusceptible of ordinary touch, are really a better grit than ordinary sand, and are the means of cutting off the fine edge of cutting tools, as saw teeth, plane irons, and the like.

Two plane irons, made of a fine quality of steel, as near alike as it was possible for a skilled mechanic to make them, were each hardened in our laboratory by means of mercury, then finely

temper along the minute edge, which, however, would not extend back sufficient to materially affect the wearing and cutting properties of the iron if in constant use.

The iron used on the piece of walnut showed a scratched, notched appearance all along the minute edge, and by the aid of the most accurate means of measurement at hand, these notches were all of the same depth, but different distances apart, proving conclusively that the particles of grit or crystals which caused them, by being harder than the best mercury-hardened steel, were all of the same size and evenly distributed, as far as regards depth of deposit in the grain of the wood. The small spaces of the iron edge between these notches, or scratches, were found nearly as the entire edge appeared originally, showing again that the cellular tissue of walnut, outside its mineral deposits, was really softer than that of oaks, hence, were it not for these deposits, the timber would cut much easier. Of course, if the iron had been drawn back, and again shoved through, the notches would have been more apparent and general, increasing each time, and distance showed until the entire cutting edge had been of itself cut off.

Consulting the laws governing plant or vegetable growth, we are told that all food before becoming fit for assimilation must be reduced to its gaseous state. If this be so, the question arises, How, or by what methods of plant-growth and assimilation, is it possible for silica to appear in its original crystalline state among the tissues of the growing or matured tree? while it is universally known that this variety of wood grows only where this mineral is abundant in some of its modified forms. This, however, is not of great interest to manufacturers, just how it gets there, but that it is present is shown conclusively. To get rid of it, even were it possible, would destroy the beauty and general characteristics of walnut, and to overcome its action on tools, rapid motion and softer iron is the best, safest, and most efficacious method.

—*Lumber Trade Journal.*

What is known as French polish is made in a great variety of ways; but the simplest consists of one and a half pounds of shellac, dissolved in one gallon of spirits of wine without heat. Copal sandarac mastic and gum Arabic, are frequently used in making French polish, partly with the view of making the varnish of a lighter color, and partly to please the fancy of the polisher; the proportions of the different gums are varied almost infinitely, but with little advantage.



CAL. ELEC. ENG. CO.

SETH BABSON.

[Written expressly for this JOURNAL by J. F. ELSOM.]

A SERIES OF ARTICLES ON STRENGTH AND QUALITY OF REDWOOD.**Comparison with Other Woods.**

FOR some unaccountable reason our articles on this and kindred topics have gone astray, but we suppose that a profession overworked as the postal authorities have been during the past few months, in distributing such mail matter as would best promote secular interests, have had but little time, and still less disposition, to keep the run of matter which, to them, is of much minor importance. If, however, the average architect may appear a trifle unprepossessing with his apron and business suit when compared to white-handed, well-dressed postmaster, and his dude-like corps of laquays and assistants, nevertheless the architect generally has an intellect sufficiently well balanced to know when he gets what he buys, and is not prone to mingle to any great extent with politicians, at least it is beneath the honor and dignity of a good artisan to become a professional politician, and away up beyond the most presuming aspirations of the professional politician to ever occupy any elevated position among the architects of America. We know that it may be inconsistent with the apparent object of an article with this caption to even speak of politics. Craving pardon then, for this digression, we will proceed to our business. Suffice it to say, that the late presidential contest showed conclusively that much timber used for political purposes in the contest just past, was found rotten to the core, though all the external evidences indicated, when the chips be an to fly, that the timbers of the platforms and scaffoldings were sound, and at the best, indulgent reader, none of it would comparatively, or rather metaphorically speaking, withstand without internal fracture the torsion, crushing, and other important strengths that characterize the redwood of California, about which we now write by means of laboratory data obtained from actual results of tests made for the benefit of our investigating friends.

The strengths of this peculiar and interesting timber are many and varied, and though architects and builders are wont to consider all materials, the strength of which, as compared with such timber as oak, hickory, and the like, has a strong tendency to prejudice for or against, they should bear in mind that not only the compactness but the cellular constructions and molecular cohesion of the particles constituting the wood, exert a powerful influence in furnishing resistance to other pressures. Again, the chemical constituent of wood of various kinds, indigenous to North America and the British possessions, is by no means of secondary importance in determining the value of various timbers for industrial purposes, hence portions of a structure made entirely of one kind of wood, even from the same tree, will be found to show evidences of disintegration, decomposition, and decay much sooner than some other portions. These seeming para-

doxes are by no means difficult of explanation when we take into consideration all the known features which characterize a given variety of timber. In the spirit of sentiments like, we will add in conclusion that where we subject a given piece of wood to chemical inorganic analysis, we have represented all the constituent elements of the soil in which the tree grew, and its organic elements show conclusively the influences of atmosphere, sun, and rain, to which the external portions were subjected during the various stages of its growth.

In order, then, to place ourselves in a position to be understood by all, we made, and are making the tests of other woods than the "red" of California, and by glancing at the results in the following table a comparative estimate of value can be placed upon all timber, insofar as relates to weight, tension, crushing, transverse, torsion, elasticity, and their resistance. It will be understood that samples for making these tests were selected at random from the expositions, care being taken to secure like sections, and subjecting them all to the same laboratory influences previous to making the tests.

	Weight lbs.	Tension	Crushing	Trans- verse	Tor- sion	Elasticity
Acacia	47	16,000	150	140	152,000	
Apple	50	19,000	150	120	1,500,000	
Ash	45	16,000	9,000	120	1,400,000	
Beech	50	16,000	8,000	120	1,500,000	
Birch	50	15,000	5,000	130	1,500,000	
Box	60	18,000	10,000	130	125	
Cedar	55	11,000	6,000	100	100	
Elm	37	13,000	10,000	75	700,000	
Fir	38	12,000	6,000	80	75	2,000,000
Larch	40	9,000	10,000	100	80	100,000
Lancewood	60	23,000	150	150	120	
Locust	60	20,000	100	150	150	
Lignumvitae	75	12,000	10,000	250	150	
Mahogany	60	16,000	8,000	160	220	
Maple	50	10,000	100	220		
Oak	50	17,000	10,000	150	180	1,500,000
Pine	40	10,000	8,000	100	65	1,750,000
Redwood	40	12,000	5,998	80	76	2,000,000
Spruce	30	17,000	6,000	120	1,600,000	
Leak	45	15,000	12,000	180	150	2,400,000
Walnut, white	42	8,000	7,000	100	200	
Walnut, black	40	8,000	8,000	150	130	

Ordinarily speaking, the foregoing table might be considered as having been carried too much in detail, but if the reader, interested in the qualities of timber, proposes to follow us through, it will be found necessary, quite often, to refer back to this table, as we will not have reason to note figures hereafter. The reader will merely use for future reference.

California redwood, though these tests of various strengths do not strictly correspond with the figures published heretofore, for reasons that different sectional grain was explored as will be explained further on, presents an intermediate resistance to these pressures, and it will be noticed that in some respects it is the superior of oak.

In order to stand a direct pressure from above, a timber must have a compact structure, or what is termed a close grain. else, with this fibrous cellular tissue, is liberally interspersed the air cells, hence by coming together the harder particles or grain being so widely separate, wear and bruise each other; but should we place the timber on what is termed the edge, and then submit the pressure, we find this resistance increased proportionate to the nature of the elements found in these grains.

Hence the increase varies in different woods. In the California redwood it amounts to over seventeen and two-thirds per cent., and when a single grain is isolated and subjected to pressure by crushing, the resistance is greater than any wood grain in the entire list, for, as subsequent tests proved, these are composed nearly entirely of gums, resins, etc., put together in such a manner as to furnish great resistance to pressure, in fact four complete sets of appliances were broken before it would crush, and then the indicator pointed to 11,9215 pounds crushing strength to the square foot.

On the strength of this hypothesis, it is reasonable to suppose that when two pieces of this variety of wood or timber are united at the proper angle, it would stand a much greater pressure than many, in fact, most of the hard woods.

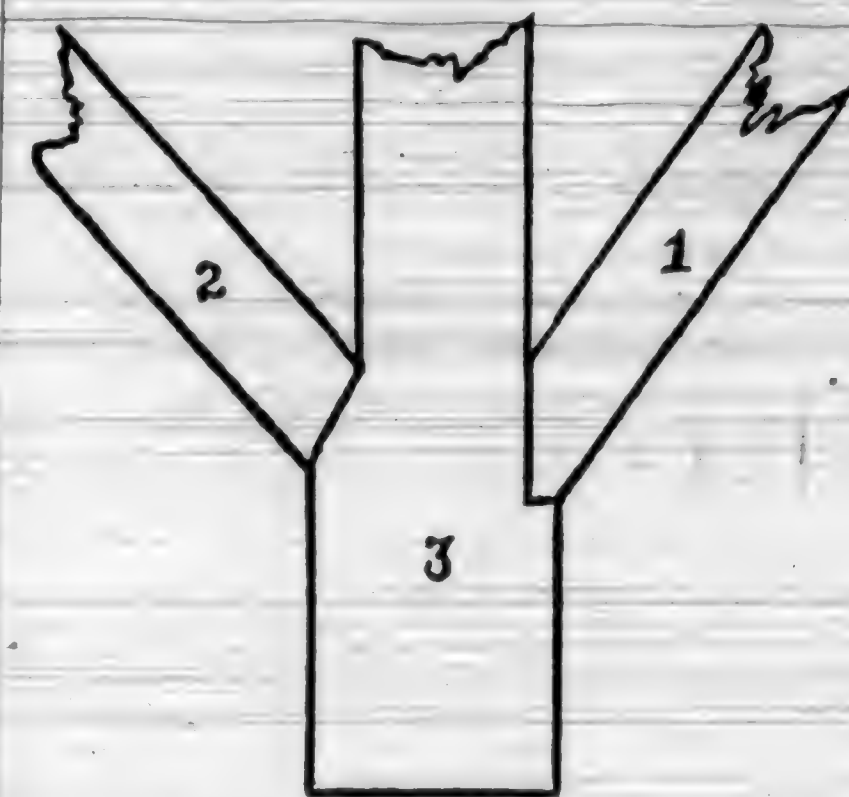


FIG. - No. 1.

It follows, then, that if we use redwood for post and braces, that No. 2, will stand a much greater pressure than No. 1 inasmuch as with the former the grain of the wood came together in such a manner that the entire weight to which subjected will fall on the grain of the timber, comparing the post at the proper angle to withstand an immense amount of pressure direct, whereas with the latter the grains would actually come in contact only at the base, which at the shoulder represents but the merest fraction of the grain surface of the mitre, hence is the only place where an obstacle to direct pressure is met. In any event, we consider No. 1 as being the poorest manner of joint imaginable, but with hard, close-grained woods it might under certain circumstances be admissible. We are not, however, to discuss the merits of joining in this letter, hence will the pertinency of this conclusion to the architects themselves. Assuming that the two joints were both right and proper, otherwise No. 2 is about five and one-half times stronger than is No. 1 when both are made of the wood of which we treat.

For bridge building and other purposes where struts, plates, and collar-beams are used, we have obtained the best of results as to the strength of this wood, as compared with all varieties tested. For instance, as will be seen by the accompanying illustration, Fig. 2, there is a splendid opportunity to bring these grains

together at the proper angle to ensure great strength; for it will be seen by again referring to the table that all the tests of strength to which the timbers are subjected in this cut, California redwood stands high, and if the logs were properly sawed, that the grains exposed would each run in the same direction, the collar-beam from wood sawn that the grains would stand on edge, and the angle of the ends of the straining bar where it comes in contact with strut, such that the crushing strength of the latter would form a perfect triangle, in other words, that two hypothenuse basis would be apparent to one perpendicular by all measurements. We venture the assertion that a bridge constructed of this kind of timber would stand if put together in accordance with the foregoing instructions as to manner of joining; would bear as much pressure as if made of any other of the same size and weight, with a very few exceptions.

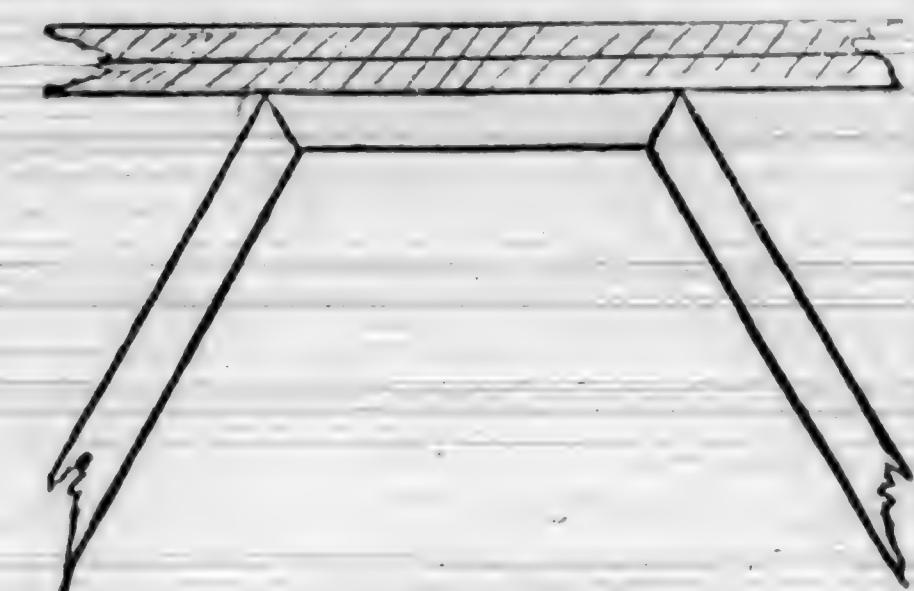


FIG. 2.

By following this line of thought still farther, it is easy to see that the uses of this timber are, to a certain extent, unlimited, inasmuch as it has been shown that under certain conditions its strength can be perceptibly increased. If, however, this timber is used on straight lines, the tests show it to be deficient in strength, especially is this true if laid so that the grain recedes horizontal. A piece standing on end shows a fair crushing strength, but is not large; but, all things considered, the very best use so far as we have determined at present to which this wood can be put, when strength is a matter of primary importance, is by means of angles.

In conclusion, California redwood possesses some striking characteristics in the matter of keeping, when exposed. We have no means of knowing by observation anything definite in relation to its lasting properties; proper, nevertheless, analysis of the wood thus far has shown an exceptionally large per cent. of the elements of preservation, such as creosote, gums, resins, and the like. So important a feature as this, in wood as abundant as we learn this is along the coast, that we have deemed it best to continue the chemical analysis still further, giving actual results, and suggesting the best means of securing the same with profit, as the demand for some of them seems to be unlimited even in California, hence at another time we will beg the indulgence of our readers, while we discuss this feature which is apropos to these articles, especially as we have to make the chemical analysis.

Mantels and Grates.

AN open fire is the soul of the room; it gives it vitality, life; it draws the household around it in pleasant, cosy chat. As the body without the soul is dead, so the room without the fire is dead also. Setting aside for the moment the mere utility of the open fire as a means of ventilation and purification, let us remember that it has its spiritual, its poetical, its aesthetic side, which is welcome to all men. As the soul is beautiful when shining out from a beautiful face, so a fire is more beautiful shining out from beautiful surroundings, and the grate and the mantel become important features in the room. Marble mantels have their beauty and appropriateness in certain places, as, for instance, in vast halls, where grand architectural effect is desirable; but, to our taste, not in a home, not in quiet domestic architecture, not in the family room where the household gathers in the ordinary daily life.

Wood mantels have all the qualities that household use and beauty demand. What a wide range they offer in color, so that all taste can be suited and all styles of decoration find a harmony! We may choose the delicate purity of whitewood, or the golden glow of pine, the fine red of cherry, or purple amaranth, or the rich grains of oak and ash, or the glow and splendor of mahogany, or the dusky gleam of black walnut, or the fine soft finish of birch, or we can bring into our service unnumbered foreign woods to make beautiful the fire-place, and set a fitting frame around our beloved fire.

And just here let one thing, and a very important one, be said: If you put wood into the fire it will burn! Many of our designers of wood mantels forget this, and their florid efforts blister and burn, to the despair and vexation of the careful housekeeper. The mantel shelf on its under side becomes a mass of blisters; the columned or bracketed sides char and blacken, and the open fire, that should give only pleasure is regarded with anxiety, lest it should have in it the terrors of a conflagration. Now all this can be easily avoided. Keep your woodwork within the line of safety. This line of safety is easily determined. We give the result of long years of experience in mantel and grate setting, of a scientific, thoughtful man, and if this rule be followed, it will result in entire safety to the most delicate wood mantel so far as burning is concerned. The rule is as follows: From the front line of your fire draw a line at an angle of about fifteen degrees, and keep all your woodwork behind that line. This is for the sides. For the top draw from the top of the fire-place opening a line at the same angle, fifteen degrees for a foot above the opening, and then change the angle to thirty-five degrees, and keep the mantelshelf and all the top woodwork behind this line, and you will have no more charred and blistered wood, no matter how hot the fire.

In wood mantels every taste may be gratified, the field for design is infinite. The Gothic, the Renaissance, the Colonial, the Queen Anne

offer themselves in all their thousand modifications and combinations to suit modern convenience. A half century ago all our houses had wood mantels; it is no new fashion. The colonial mantels were all brought from England, as in fact were all the materials for the house. Many of these houses may still be seen in Salem, in Marblehead, in Plymouth, and in many other old towns of New England. A friend thus describes to us some old mantels which would be the delight of art-lovers of to-day: "Wooden mantels are no new things. There were plenty before marble was thought of, and were of elaborate patterns. Some fifteen years ago I was present at the demolition of an old house in Maryland, built when Anne was queen of England. It contained two mantels of English oak, one at either end of the large parlor, with enormous fire-places, the mantels covering the entire end of the room, with cabinets, and shelves, and cosy nooks, and corners without stint. The pilasters at the lower parts were worn away by the attrition of several generations of shovels, tongs, and pokers which had leaned against them, but otherwise the mantels were in perfect preservation, with joints as good as new. They had a multitude of small, deeply-moulded panels, the product of Anne's time, and the wood was nearly as hard as iron."

"The facings were of large black brick, and no trace of fire was visible in any part of the woodwork, although it had been in use 160 years. The artisans of those times put their lives into a piece of work with far more persistency than is done now-a-days. It must have taken a workman an entire year to make one of these mantels, unassisted by modern machinery." In those days the chimney stack was in the center of the house, often a vast structure in itself, a tower around which the house was built. The fire-places were vast caverns; a tall man could walk into them without bending his head, and they were twelve feet or more in width. It was an old saying that there was space enough for an ox-cart and a yoke of oxen to be driven up the chimney. In some of the old colonial houses still standing in Marblehead and Salem, Mass., there are wood mantels covering the whole side of the room, with delicate mouldings worked in the solid wood, not glued on in the fashion of to-day, the panels enriched with carving of flowers and foliage in the very best style of the art.

To-day comfort has banished the vast cavernous fire-places, but the open fire is just as cheerful as of old, in its more modest surroundings. A half century ago there was a raid made on the old-fashioned wood mantels, and, with all their quaint carving and delicate mouldings and panelwork, they were swept out for kindling wood, and everybody set up in his house the black and gold Egyptian marble mantel. But the reaction has come with an increased civilization, and wood re-asserts itself. Wood mantels, tile facings, and tile hearths are now the fashion, and a beautiful fashion it is. Long may it last.—Sel.

Written expressly for the CALIFORNIA ARCHITECT.

Soil as It Relates to Health.

BY GLENN BROWN, ARCHITECT, A. A. I. A.

FILTH IN THE SOIL.

IMPURITIES in the soil are both natural and artificial. Organic matter as found in the soil originates from decayed animal matter, and decayed plants which fall and are mixed with and covered in the soil by the hand of time. According to Lyell, Marsh, and other geologists the remains of animal matter are found in great quantities in different parts of the world.

The ground may become saturated with filth from the leaching cess-pool, so common in some communities, or from leaking sewers. The ground may be filled with decayed matter from cemeteries. In either of the above cases the ground would be fruitful in deleterious matter, which not only might, but most probably would be conveyed into the house, if near the source of contamination, by either the ground water or the ground air. Made ground or soil which is filled in to bring it up to some established grade, is common in most of our cities. When composed of clean sand or gravel there is nothing hurtful in the made ground itself. When these valleys or low places are filled with rags, sticks, leaves, boots, shoes, dead dogs, cats, rats, chickens, and other animal and vegetable refuse matter, then they become dangerous to health. The organic matter will undergo decay, and particles of this putrescent matter will be carried by the ground air directly into our houses.

THE SOILS FILTERING CAPACITY.

The question of how far the soil and the different ingredients forming the earth filter or remove impurities from the ground water and air, is an important one. How far deleterious matter will travel before it is eliminated from the water and air is a most important question.

The National Board of Health, before it was rendered useless by the legislation of a thoughtless Congress, investigated this subject among other important topics connected with the health of the people. This investigation was carried on by Raphael Pumpelly, assisted by Geo. A. Smith. The report of this investigation was published in the thirteenth supplement of the National Board of Health Bulletin. In the following lines I will give a short review of the subject. An illustration of one of these experiments is shown in Fig. 2 at head of next column.

This filter consisted of a column ten centimeters high of sand resting on a copper gauze saucer. The sand was 30° to 50°, and 100° fine, i. e., screened through meshes of the corresponding number per inch. In the bottom of this bent tube was some beef infusion, or some other easily putrescible fluid. Air was made to pass through this tube slowly by aspiration. All the filters tried in this way stood the test, the infusion remaining intact.

The next experiment shows the filtering effect of the soil on polluted water. The col-

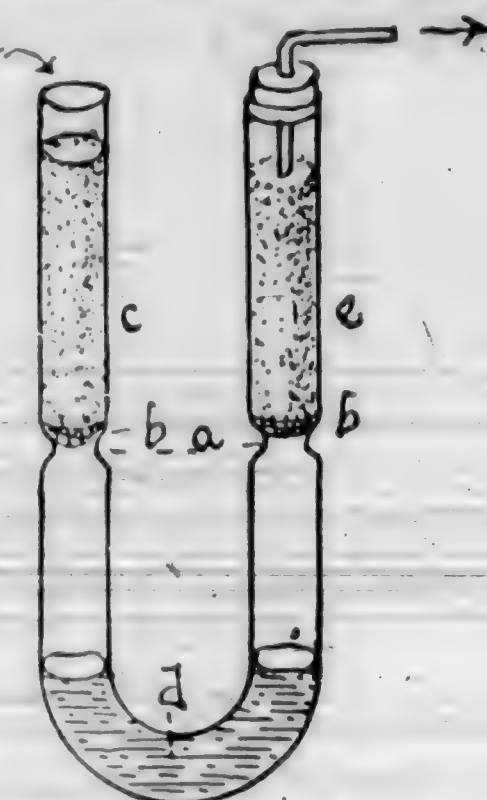


FIG. 2. Air Filter, (a) narrow part of tube, (b) wire saucers, (c, e) sand through which air passes, (d) beef infusion; arrows show direction of air.

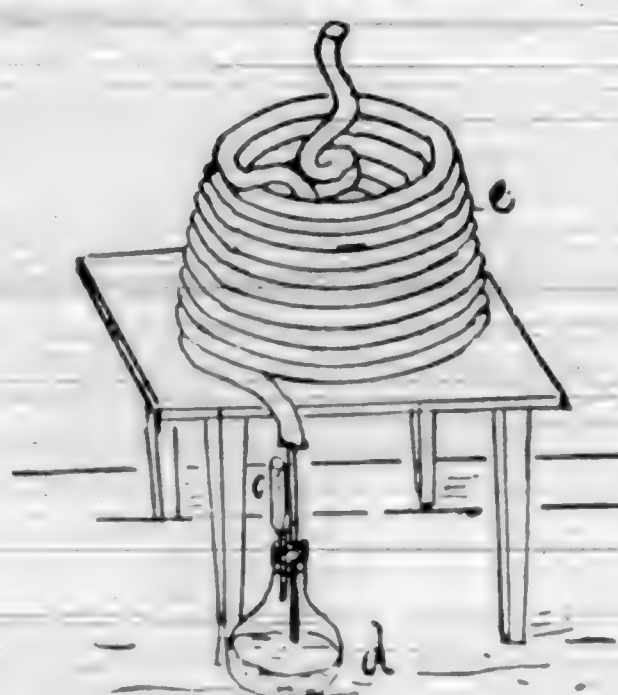


FIG. 3. Water Filter, (c) coil of lead pipe filled with sand, (d) flask with beef infusion, (e) ventilator with asbestos filter.

To obtain sterilized columns of such lengths the sand was intensely heated and poured into lead pipe which was then coiled. (Fig. 3.) It was then placed in a furnace and heated to within 250° and 300° C., and then the lower end attached to a flask containing the infusion. The flask was ventilated through a tube protected by a sterilized asbestos filter. The whole was then allowed to rest for several weeks, to be sure that the infusion had been properly sterilized. The pipe was then very slowly filled with tap water. The first water that passed through both the twenty-two and one hundred feet pipe or columns carried infection with it.

The inference drawn is that soil is an excellent filter for impure or infected air that may pass through it, but a very poor filter for infected water that may percolate through the soil. The experimenters say: "From these results it appears very clearly that sand interposes absolutely no barrier between wells and the bacterial infection from cess-pools, cemeteries, etc., lying even at great distances in the lower wet stratum of sand. And it appears probable that a dry gravel, or possibly a dry, very coarse sand interposes no barrier to the free entrance into houses built upon them, of these organisms which swarm in the ground-air around leaching cess-pools, leaky drains (sewers), etc., or in the filthy made ground of cities. . . . If the drift of leaching be towards the cellar, very wet seasons may extend

the polluted moisture to the cellar walls, whence after evaporation the germs will pass into the atmospheric circulation of the house."

Another series of experiments were made to ascertain the effect of air which either remained stationary or passed in a current over the surface of polluted water. In other words will ground air take infectious germs from the surface of polluted water and carry these germs into the house?

Fig. 4 shows an apparatus by which filtered air (asbestos filter) is made to pass, by aspiration, along the surface of the infected fluid, and then through the pure infusion at the rate of 3½ litres per day. In three flasks after six months the infusion was found intact.

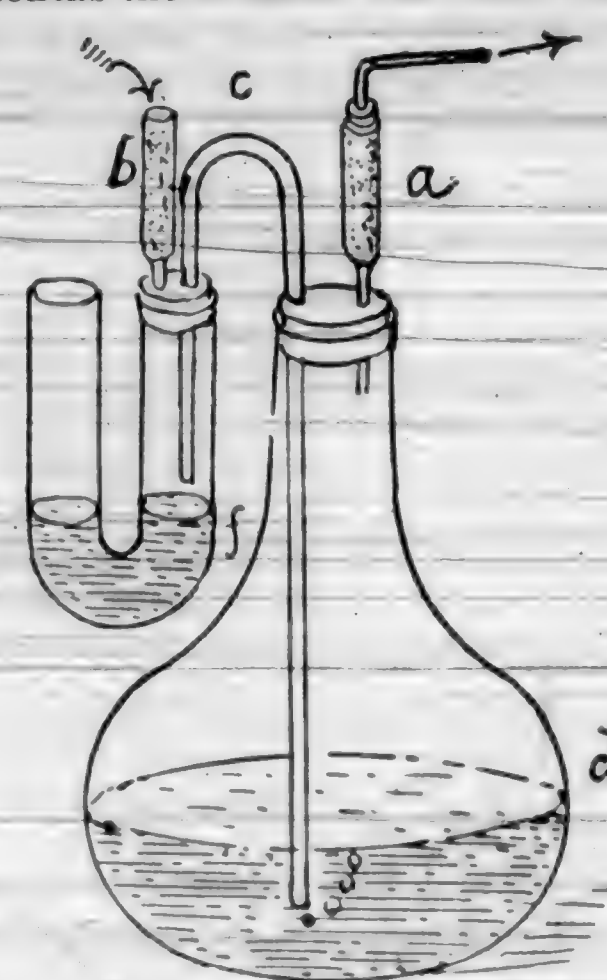


FIG. 4. Air passing over polluted water, (a and b) sterilized flasks, (c) tube connecting infected fluid chamber with sterilized infusion, (d) beef infusion, (f) infected fluid; arrows show direction of current.

To try the effect of bursting bubbles on the surface of the water, transferring germs in this manner to the air, other experiments were made. In these experiments "although the formation of bubbles, gentler than in much natural fermentation, the infusion in all three flasks became infected in a few days."

Professor Pumpelly says in conclusion: "At a normal summer temperature no germs were given off from the decomposing liquids whenever their surfaces remained unbroken, even though in some of the experiments the air was continuously conducted over them in a slow current. When the surfaces of the liquid were broken, however, by the bursting of bubbles, germs were invariably given off and sterilized infusions infected, no matter how slowly the aspiration was conducted."

To avoid the evils described, our building site must be selected with reference to the character of the soil, and of natural and artificial drainage.

Made ground is usually bad, while gravelly and sandy soils are the most healthful. If the soil is damp, or wet, it must be drained artificially. Cess-pools, cemeteries, and other local objects that might contaminate the ground air or water, must be avoided or removed if possible.

The cellar bottom, and the walls of the building to the surface of the ground, should be

coated with some such impervious material as asphalt, to keep out the dampness and ground air.

There are many good and many worthless methods adopted for protecting buildings from dampness. A discussion of such details in foundation construction does not properly belong to this article, but the author refers any one interested to his series of articles on Healthy Foundations, which have appeared during the current year in the *Sanitary Engineer* of New York.

These articles discuss, in detail, drainage and foundation construction where it relates to health.

Whims in Building.

NOTHING adds so much to the cost of building as indulgence in whims. To set out deliberately to do a "queer," "fanciful," or, as it is sometimes called, "original" thing in building is always to incur unnecessary expense. If we look through the books that contain pictures of the architecture of all ages and nations, we shall find that, without an exception, in the times all men of taste are agreed in calling the good times, the modes of building have been sensible, founded on the needs of the case, and that whatever may seem fanciful—the whole of what we call picturesque—when its charm has proved enduring, is the result of what we may call, in every case, "accepting the situation." Nothing has been done in such instances for the sake of being picturesque. Good building, good ornament, never poses. In building, as a rule, every departure from the rectangular form is an added expense. One of the things impressed on the mind of a young man who goes into an architect's office to study the profession is that, if cost is to be considered, which it sometimes is, and sometimes is not, all excrescences and projections must be avoided. A rectangular house is the cheapest. Bay windows, porches, octagonal or circular, external ends to rooms,—all these things cost money, and it is by multiplying these features that the expenses of building are often made so great as to deter people from undertaking it, for the things seem so small in themselves, it is not suspected what drains they are on the purse. If a good reason cannot be given for any so-called ornamental feature in a house, if it cannot be shown that something worth while is to be gained by making it, we may be reasonably sure that it is a fancy which will cost, as the country people say, more than it comes to. And in the greater number of cases, nothing, even in looks, is gained by indulging the fancy.—*The Studio*.

Transfer paper is made by rubbing thin, strong tissue paper with a composition consisting of two ounces of tallow, one-half ounce of powdered black lead, one-fourth pint of linseed oil, and sufficient lamp-black to make it of the consistency of cream. These should be melted together and rubbed on the paper while hot. When dry, it will be fit for use.

A Retrospective Summary of the Building Interest of the City of Woodland and Vicinity for 1884.**Marked Example of Steady and Onward Progress—One New Building for Every Third Day for the Entire Year.**

Editors of the California Architect and Building News:—Those who have watched the progress and advancement of Woodland for the last decade will see, by the following statement, that the year just closing contains the record of the most substantial improvement and growth since its foundation. The fact of a steady increase of new buildings throughout the entire year is conclusive evidence that the city is unmistakably advancing in permanent population, and is a sure index of a healthy and substantial growth. The increase in new buildings has been principally in dwelling-houses, and while some of the unpretentious home-made are not dazzling with an elaborate finish and pronounced complete, having

"No costly ornaments to beguile,
Nor clumsy carvings clog the pile."

Nevertheless a large majority of all are fine appearing, good-proportioned, well-planned, and substantially erected structures. Forty-eight from the aggregate number of buildings and improvements have employed the service of professional architects and draughtsmen.

Public buildings are: New school-house, opera house, and convent; to these three add the amount expended for the steam flour mill, and the total for the four amounts to over \$100,000. January and May were the two slack months—12 buildings, costing \$33,100; April and September the most active (as to cost)—25 buildings, costing \$75,415; December the banner month for number—29 buildings. The average number per month, 11; average amount per month, \$29,966.20; average cost of each building, \$2,703.72. The following is a monthly statement:—

WOODLAND.					YOLO COUNTY.				
1884.	Frame Buildings.	Brick Bldgs.	Addn's & Imprv'ts.		Frame Buildings.	Brick Bldgs.			
	N.	Cost.	N.	Cost.	N.	Cost.	N.	Cost.	
Jan.	2	\$11,200	1	\$2,600	1	\$1,000	2	\$4,500	00
Feb.	7	10,850			1	4,500	3	4,650	00
Mar.	7	12,400			3	4,115	3	5,000	00
Apr.	7	11,935			3	4,115	1	2,000	00
May	4	8,350	1	4,850	1	1,100			\$7,582
June	3	5,450	1	28,000	1	1,400	2	4,500	00
July	4	26,051			1	1,700	2	6,524	75
Aug.	4	6,500	1	2,000	4	16,000			2,600
Sept.	5	6,500			3	18,590	4	10,975	00
Oct.	6	10,400			4	3,490	2	3,490	00
Nov.	6	9,900			1	1,655	2	12,050	00
Dec.	21	21,410			4	5,800	4	5,000	00
Total	75	\$141,446	4	\$37,450	24	\$64,358	28	\$59,259	75

Total number Woodland, 103; cost, \$243,249; total number county, 30; cost, \$69,441-75.

By the above we see the total number of buildings and improvements number 133, costing \$312,690-75. Add to the above sum fifteen per cent. for buildings less than one thousand dollars, and all moderate improvements and outbuildings, barns and carriage houses, etc. 46,908-61

Final aggregate.....\$359,594-36
Total for 1883, 84 buildings, value.....\$204,519-00
Amount in excess of last year.....\$155,075-36

A large percentage of the buildings has been expressly intended as permanent homes of those who built and own them, and the im-

mediate occupation is sufficient evidence that no speculative boom has been the moving agency. Therefore we have no occasion to anticipate any disastrous reaction in the future, but work and hope for still better and brighter prospects with the coming of 1885, and may it be a happy and fruitful season to you and the readers of the CALIFORNIA ARCHITECT. Accept our sincere thanks for past kindness and courtesy shown during the year; for the prompt and correct manner in which you have transmitted to the public, through your valuable columns, our monthly statement of building interest, etc.

Respectfully yours, GILBERT & SON.
Woodland, December 4, 1884.

Lining for Chimneys—Browell's Patent.

THERE has lately been patented by a resident of this city an invention that bids fair to make a material change in the construction of chimneys. "It relates to the lining or protection for the interior of flues or chimneys; and it consists of a coat of black-lead, either applied separately or mixed, so as to produce a smooth surface within the flues or chimneys."

"In the construction of chimneys or flues which may be made of brick, paper, terra-cotta, metal, or other material, the interior surfaces are sufficiently rough to arrest particles of unconsumed carbon and leave deposits of soot, which, with some kinds of coal, speedily fill up the flues or chimneys so as to nearly for quite prevent its operation. In order to prevent this, I form a coating for the interior surface of the flue or chimney, which consists of black-lead or plumbago. This material may be applied in various ways. In some cases it may be mixed with water, either fresh or salt, or with other substances, and then applied with a brush or trowel and made smooth. In some cases, as in the building of brick chimneys, it may be mixed with the mortar or cement with which the chimney is lined, and then troweled down so as to produce a smooth surface. If glazed pottery should be used for chimneys, they would split or break when subjected to heat; but by the application of plumbago to the interior before baking a smooth surface will be produced which will not crack. By thus lining chimneys or flues a better draft is produced, the surface will be of such character that particles of soot will not so readily adhere, and where the chimney is constructed of paper or similar substances it acts as a protection against heat."

Jerry Browell is the patentee. He will be pleased to explain the principles of his invention to all who may please to call. We will, from time to time, refer to chimneys erected under the above patent, that those interested may see in actual practice the principles set forth by the claimant.

Builders' Guide and Estimators' Price Book.
Price, \$2.00.

LUMINOUS key hole trimmings and door knobs are said to be in great favor with the bibulous inclined person, and convenient for others. They are made of glass, and the back is covered with luminous paint, giving forth a light which may be seen considerable of a distance, on the darkest nights.

M. B. Richardson wishes to announce to his former Patrons and Architects of this City and County, that he has
Gone out of the PLASTERING BUSINESS.
 And will hereafter follow the Business of Brick Laying, Etc., a Business more Congenial to his Nature. See Advertisement on Page V of this issue.

261 Broadway, New York.

O'CONNELL & LEWIS.....

THE best arrangement for deafening floors is to have two distinct tiers of beams, one carrying the floor and the other the ceiling beneath. The ceiling beams are set lower than the floor beams, and between them. We then have the ceiling entirely separate from the floor, and there is nothing solid to carry the sound. Where this is not practicable, lay a double flooring with a layer of either concrete or felt between. The concrete will give a better result than the felt, but requires stronger beams. When the sound is to be deadened in the room containing the floor, the felt will probably give the best result.—*Scientific American*.

for working people: Send 10 cents postage, and we will mail you free, a royal, valuable sample box of **GOOD** soap. You can use it in the way of making more money in a few days than you ever thought possible at any business. Capital not required. You can live at home and work in spare time only, or all the time. All of both sexes, of all ages, grandly successful, 50 cents to \$5.00 monthly earned everywhere. That all who want to may test the business, we make this unparalleled offer: To all who are not well satisfied we will send \$1.00 to pay for the trouble of writing us. Full particulars, directions, etc., sent free. Immense pay absolutely sure for all who start at once. Don't delay. Address:

WIN more money than at anything else by taking an agency for the best selling book out. Beginners succeed grandly. None fail. Terms free. HALLER BOOK Co., Portland, Maine.

MISCELLANEOUS.

49 nie; \$1,250. One-story frame. O. A. M.
 78 Court Street. One-story frame. O. P.
 76 L. H. C. James Amesbury; \$1,210. Two-story frame.
 77 L. H. C. James Amesbury; \$1,500. Elm Street.
 68 M. Ward; C. J. Amesbury; \$1,150. Alteration and
 67 improvement. O. J. Harlan; C. Gilbert & Son; \$1.
 66 Main Street. Improvement and machinery. O. A. M.
 71 myer; day's work; \$1,500. One-story frame. O. A. M.
 65 Woodward; C. B. E. Jackson; \$1,100. One-story frame.
 72 O. G. Bierer; day's work; \$1,500. One-story frame.
 O. G. Briggs; C. Glenn & White; \$2,000.

THE question of wages for the laboring man and the advantages he may derive from a trade union, was uppermost in our mind one day last week as we were passing a large work-shop in this city just as the employees quit work for the day. "Hello, boys, how many hours do you work per day, and what do you get for a day's work?" was our salutation, which was followed by a hearty handshake, such as a mechanic only can give. In a few moments there were two or three dozen greasy, dirty, but intelligent workmen around us, all willing to chat a few minutes. The question of wages came up, and every one seemed perfectly satisfied. Their wages and hours of work are regulated by the union. We talked with one man who said he had worked at his trade twenty-seven years. "Then you are a boss mechanic?" we said. "No, I am a blacksmith's assistant," he said. "Well, you must have had a poor boss if you have worked faithfully for twenty-seven years and have never risen higher than a laborer," we said. He was a quiet man, an intelligent looking fellow, and in answer he said: "I have had the same boss for thirteen years, but I never set in to learn the trade; I have just worked for wages!" He was getting \$1.35 per day and paying monthly dues to a laborers' union "to protect the laborer in his wages." We learned afterward that the man on the other side of the anvil had only been working at the trade six years, and was getting \$4.00 per day. He set in to learn the trade, and he don't need anybody to protect him in his wages. He can get a job anywhere.—*Southern Lumberman.*

A more advanced stage is that which may be described as a drying up or wasting away of the wood surrounding the pith. It forms a hollow, first at the butt, and then spreads upward, gradually increasing in size as the tree gets older, while the defect may eventually reach even into the branches. Trees are most valuable as yielding the largest amount of good timber just prior to their reaching maturity, which is indicated by the topmost branches and branchlets becoming stunted. If, therefore, we wish to select a healthy tree for felling, we must seek one with an abundance of young shoots, and the topmost branches of which look strong, pointed, and vigorous, this being the most certain evidence that it has not passed maturity. When there is evidence of permanent decay in a tree, the best thing to do is to cut it down and convert such parts of it as will answer the purpose into lumber, and the balance into firewood.

A "Jerry" builder having obtained a plot of ground succeeded in getting a lot of building materials on credit; with these he ran up several rickety houses. A gentleman residing in the neighborhood passing with a friend remarked: "Why, what a number of houses that builder has run up, and he is already putting the lights in." "Ah, yes," said his friend, "he does not seem to have had much difficulty with the lights; the job will be to get livens in them."

Detail Cottage and Constructive Architecture.
Price, \$10.00.

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ESTABISHED 1846.

The most popular Weekly newspaper devoted to science, mechanics, engineering, discoveries, inventions and patents ever published. Every number contains a splendid engraving. The number also furnishes a most valuable encyclopedia of information which no person should be without. The popularity of the SCIENTIFIC AMERICAN is such that its circulation nearly equals that of all other papers of its class combined. Price, \$3.20 a year. Discount Clubs. Sold by all newsdealers. MUNN & CO., Publishers, New York.

PATENTS.

BUILDING INTELLIGENCE.

SAN FRANCISCO.

Larkin, cor. Willow Ave. Three-story frame. O.—Wm. Irwin. A.—Wolfe & Son. C.—W. E. Cummings. \$17,000.	Fifth, cor. Folsom. Alterations. O.—J. C. Moore. A.—H. Geilfuss. C.—P. Klatt. \$1,200.	Washington, nr. Fillmore. Two-story frame. O.—J. H. Meredith. A.—Percy & Hamilton. C.—Ingerson & Gore. \$2,270.	Ellis, cor. Buchanan. Five two-story frames. O.—G. T. Benning. A.—H. Geilfuss. C.—B. Dryer. \$28,000.	Scott, bet. Turk and Ellis. Two-story frame. O.—J. Durvey. A.—T. J. Welsh. C.—R. Doyle & Son. \$4,500.	Nineteenth, bet. Jessie and Stevenson. Two-story frame. O.—G. E. Beach. A.—Schmidt & Havens. C.—T. Klatt. \$4,500.
Folsom, nr. Twenty-fourth. Additions. O.—J. T. Sullivan. A.—Wolfe & Son. Day's work. \$1,500.	Noe, nr. Fourteenth. Two-story frame. O.—Van Glyn & Joost. C.—A. McElvoy. \$5,000.	Sutter, near Hyde. Two-story frame. O.—A. Eisenberg. A.—A. Pissis. C.—Wagner. \$6,000.	California, near Steiner. Two three-story frames. O.—Logan & Kashaw. A.—G. A. Borsdwell. C.—J. W. Dorson. \$12,000.	Ellis, bet. Laguna and Buchanan. Two-story frame. O.—Mr. Collins. A.—T. S. Welsh. C.—J. Rebnan. \$7,000.	S. E. Cor. Sacramento and Steiner. Three one-story frames. O.—Mrs. G. Better. A.—Schmidt & Havens. C.—Wm. M. Fletcher. \$5,900.
Ninth, nr. Market. One-story frame. O. and B.—M. Buzzini. \$800.	Eighteenth, cor. Church. Two-story frame. O.—R. Van Stratten. A.—H. D. Mitchell. C.—D. Spangler. \$3,000.	Fulton, nr. Devisadero. Alterations. O.—W. Geselman. C.—F. Crowley. \$500.	Eighteenth, nr. Dolores. Additions. O.—B. E. Van Stratten. C.—D. B. Spangler. \$1,800.	Howard, bet. Tenth and Eleventh. Two-story frame. O.—Kris. A.—T. J. Welsh. B.—John Blake. \$5,000.	Silver, bet. Second and Third. Two-story frame. O.—D. Cashman. A.—Schmidt & Havens. C.—Bergman & Buckley. \$3,500.
Minna, nr. Third. Alterations. O.—Mrs. Murray. C.—J. K. Dalmas. \$1,200.	Post, nr. Jones. Alterations. O.—Mrs. Flaherty. C.—D. B. Spangler. \$4,000.	Golden Gate Avenue. cor. Steiner. Seven two-story frames. O.—Wm. Sharon. A.—J. P. Gaynor. C.—R. Sanchez. \$30,000.	Valencia, near Fifteenth. Additions. O.—St. John's Parish. A.—A. Laver. Day's work. \$1,500.	Howard, near Twenty-fourth. Two-story frame. O.—Morrison. A.—G. A. Bordwell. C.—H. Munster. \$3,500.	Post, SE. cor. Leavenworth. Alterations. O.—H. Schmiedell. A.—Schmidt & Havens. C.—C. Chisholm. \$5,000.
Twentieth, cor. Folsom. Additions. O.—E. Williams. C.—H. J. Van Warmar. \$1,200.	Sacramento, near Polk. Alterations. O.—Donman. Day's work.	Shipley, nr. Sixth. Additions. O. and B.—M. Casey. \$750.	Bartlett, nr. Twenty-first. Two-story frame. O.—B. F. Hobart. C.—Terrill & Slaven. \$2,000.	Twenty-third, nr. Shotwell. Alterations. O.—Kris. A.—M. J. Welsh. C.—L. J. Fenn. \$2,500.	Scott, nr. Ellis. Two-story frame. O.—M. Kingston. A.—W. H. Bayless. \$1,500.
Hampshire, nr. Twenty-third. One-story frame. O.—M. Daly. C.—T. Mitchell. \$900.	Pierce, nr. Sutter. Alterations. O.—R. Van Stratten. A.—H. D. Mitchell. C.—D. B. Spangler. \$2,700.	Devisadero, nr. California. Two-story frame. O.—Miss Bradbury. A.—Percy & Hamilton. C.—J. C. Gibson. \$3,400.	Stovenson, near Nineteenth. Additions. O.—Mr. Eaton. C.—A. Koller. \$600.	Buchanan, nr. Fell. One-story frame. O.—J. M. Sonnichsen. A.—H. T. Bestor. C.—R. Parker. \$2,000.	Bush, bet. Sansome and Montgomery. Additions. O.—Mercantile Library. A.—Swain & Cleveland. \$4,000.
Yolo, cor. Utah. Two-story frame. O. and B.—T. Mitchell. \$2,700.	Steiner, cor. Fulton. Two two-story frames. O.—E. J. Root. A.—H. D. Mitchell. C.—J. Owens. \$10,000.	Sacramento, near Scott. Two-story frame. O.—G. Bulotte. C.—C. G. Smith. \$3,500.	Mission, No. 1729. Additions. O.—Mr. Edis. A.—H. T. Bestor. C.—C. Mason. \$1,000.		
Point Lobos Avenue. nr. Cliff House. Two-story frame. O.—A. Suro. A.—W. F. Smith. C.—R. P. Sanchez. \$4,000.	Union, nr. Kearny. Two three-story frames. O.—Picorilli. A.—W. H. Bayless. C.—J. Dutton. \$3,700.	Eighteenth Avenue, nr. Railroad ave. Two one-story frames. O.—Mr. Martin. C.—F. Bohnenberg. \$1,900.	Grove, nr. Polk. Skating rink. O.—W. B. Dolan. A.—H. T. Bestor. D.—J. McCann. \$10,000.		
Webster, cor. Fulton. Alterations. O.—National Brewing Co. A.—H. Geilfuss. C.—W. Huwe. \$10,000.	Illinois, nr. Napa. One-story frame. O.—M. Daly. C.—G. Knopf. \$1,100.	Railroad Avenue, near Twelfth Avenue. One-story frame. O.—F. Fitch. C.—F. Bohnenberg. \$800.	Page, cor. Laguna. Two-story frame. O.—T. W. Haynes. C.—J. Owens. \$1,000.		
Grove, nr. Buchanan. Two two-story frames. O.—G. W. Young. A.—Schmidt & Havens. C.—J. A. Hayden. \$9,000.	Illinois, nr. Napa. Two-story frame. O.—P. McCormick. C.—T. Sullivan. \$2,500.	Tennessee, near Sierra. Two-story frame. O.—Sullivan. C.—T. Sullivan. \$2,700.	Waller, nr. Scott. Two one-story frames. O. and B.—J. Hinkle. \$4,400.		
Stevenson, nr. Nineteenth. Alterations. O.—J. Scheerer. Day's work. \$1,000.	Kentucky, near Sierra. Three-story frame. O.—J. Kelly. A.—J. N. Newsom. C.—G. Knopf. \$5,900.	California, nr. Broderick. Two two-story frames. Day's work. \$7,000.	Scott, nr. Haight. One-story frame. O.—W. Schulte. C.—J. Albicht. \$700.		
Capp, near Twenty-third. Two-story frame. O.—J. McManus. A.—M. J. Welsh. C.—Lang & White. \$3,700.	Nineteenth, near Grove. Two-story frame. O.—G. M. Fisher. A.—S. and J. C. Newsom. Day's work. \$4,000.	Pine, nr. Central Avenue. One-story frame. O. and B.—J. F. Easley. \$2,000.	Page, nr. Pierce. Two-story frame. O.—M. McClosky. C.—M. O'Rourke. \$3,500.		
Mission, nr. Twenty-fourth. Two-story frame. O.—Mr. Thompson. A.—M. J. Welsh. \$3,500.	Twelfth Avenue, nr. N. Additions. O.—Peterson. Day's work. \$4,000.	Pine, nr. Central Avenue. Two-story frame. O.—Jas. Marshall. C.—J. F. Easley. \$3,000.	Devisadero, nr. Haight. O. and B.—Chas. Hinkle. \$17,000.		
Twenty-first, near Shotwell. Two-story frame. O.—Mr. Ebinghausen. A.—H. Geilfuss. C.—F. Klatt. \$2,000.	Post, nr. Webster. Alterations. O.—H. Goetze. Day's work. \$1,000.	Bush, corner Baker. One-story and basement frame. O.—K. Faber. C.—F. Coburn. \$1,000.	Filbert, nr. Fillmore. Two-story frame. O.—Mr. Ryan. C.—A. Wanberg. \$3,000.		
Powell Avenue, nr. Mission. Two-story frame. O.—Mrs. Chase. A.—M. J. Welsh. Day's work. \$2,700.	O'Farrell, nr. Laguna. Alterations. O.—Kaiser. C.—S. M. Hill. \$2,000.	Bush, nr. Baker. One-story frame. O. and B.—Mr. Krager. \$2,000.	Greenwich, near Steiner. Two-story frame. O.—E. H. Knight. Day's work. \$1,400.		
Church, cor. Twenty-ninth. One-story frame. O.—John J. Kelly. C.—R. Berfeld. \$1,400.	Buchanan, nr. Post. Two-story frame. O.—H. A. Cummings. A.—J. A. Littlefield. C.—R. Sulley. \$5,000.	Scott, cor. Sutter. Two-story frame. O.—J. Richardson. C.—J. G. Weir. \$5,000.	Filmore, near Lombard. Two-story frame. O.—John Stokes. C.—J. W. Hanigan. \$1,200.		
Twenty-ninth, near Sanchez. One-story frame. O. and B.—Mr. Brown. \$1,600.	Jackson, nr. Pierce. Two-story frame. O.—G. W. Bowers. A.—Percy & Hamilton. C.—Gray & Stover. \$12,000.	Scott, nr. Geary. Two-story frame. A.—W. Mooser. C.—McKay. \$4,000.	Polk, nr. Sutter. Alterations. O.—E. E. Cook. A.—W. H. Wharf. Day's work. \$1,100.		
Twenty-eighth, nr. Guerrero. One-story frame. O. and B.—J. M. Commerford. \$2,000.	California, nr. Lyon. Two-story frame. O.—J. A. Keane. A.—S. and J. C. Newsom. C.—J. McKay. \$9,000.	Broadway, near Fillmore. Two-story frame. O.—D. E. Allison. A.—S. and J. C. Newsom. C.—J. McKay. \$8,000.	Green, nr. Octavia. Two-story frame. A.—W. C. Hoagland. C.—S. Saywell. \$3,500.		
Valencia, nr. Hill. Two-story frame. O.—H. Foote. Day's work. \$5,000.	Seventeenth, near Capp. Two-story frame. O.—J. T. Kelly. A.—Townsend & Wyneken. Day's work. \$4,200.	Pacific, nr. Laguna. Alterations. O.—Mrs. Kavanaugh. A.—K. Milert. C.—J. J. Dunne. \$2,800.	Jones, nr. Vallejo. One-story frame. O.—Mr. Glover. C.—Neison. \$2,000.		
Valencia, nr. Twentieth. O.—J. J. Haley. A.—C. Geildes. C.—T. Day. \$6,000.		Van Ness Avenue, near Fulton. Two-story and basement frame. O.—Mr. Hatfield. A.—Newsom & Gash. C.—E. Watts. \$7,000.	Stockton, nr. Sacramento. Three-story frame. O.—Mr. Pedrucci. C.—Cromer. \$3,000.		
Stevenson, corner Eighteenth. Two-story frame. O.—Mrs. H. A. O'Brien. C.—I. E. Alexander. \$7,100.		Greenwich, nr. Stockton. Additions. O.—M. Rosenstein. A.—U. F. Cafo. C.—Eliad & Crisp. \$2,500.	Pacific, nr. Mason. Three-story frame. O.—Traversa Giovanni. A.—W. Mooser. C.—P. Antonelli. \$6,500.		
		California, nr. Buchanan. Two-story frame. C.—Krohn. \$6,000.	Franklin, nr. Fulton. Alterations. O.—Mrs. Eisen. A.—Curlett & Cuthbertson. C.—Perry. \$1,000.		

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CRACKS in floors, around the mould board, or other parts of a room, may be neatly and permanently filled by thoroughly soaking newspapers in paste made of one pound of flour, three quarts of water, and a tablespoon of alum, thoroughly boiled and mixed. The mixture will be about as thick as putty, and may be forced into the cracks with a case knife. It will harden like papier-mache.

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BUILDING NEWS
FORMERLY THE CALIFORNIA ARCHITECT AND
AUTHOR BUILDING REVIEW
FORMERLY THE QUARTERLY ARCHITECTURAL
REVIEW
VOLUME VI

DATE 1885

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The California Architect and Building News.

VOLUME VI.
NUMBER 1.

SAN FRANCISCO, JANUARY, 1885.

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

Is the Business Outlook Well Sustained?

THIS is a question that has been repeatedly asked us during the past month, and to it we would simply answer

WHY NOT?

Many seem to think that the building interests of this city were greatly overdone during the year just closed, and that 1885 will fall behind its predecessor in the number of new buildings erected. We can at present conceive of no cause why this should be so, and the principal reason for this conclusion lies in the fact that

CAPITALISTS ARE SEEKING INVESTMENTS

In desirable property, not simply as a speculation, but for purposes of improvement.

CAPITAL WILL NOT LIE IDLE.

And if paying investments on our principal thoroughfares cannot be found, then outside property must come in for its share of recognition. By outside property, we do not mean strictly, land on the outskirts of town; we include all the immense section of the city lying outside of what is generally regarded as our business quarter. And it is on this property that a great change will be made in the next twelve months. The section now occupied by our foundries and lumber yards, has become too valuable to be continued for their present use and purposes, and the space must give way to new interests.

THE BOUNTIFUL SHOWERS

Of the past four weeks have given an unusual impetus to farming operations, and from numerous valleys is heard the call for more help. We are well pleased to hear that our pastoral population is crying out against the "one crop" system that has been so prevalent in this State since its formation, and in the future we expect to see a much more diversified system of farming.

Taken altogether we see no reason why the building as well as the industrial interests of this coast should not fully equal in activity the year just passed away.

Building in the City.

A CAREFUL study of our building intelligence reported this month will serve to prove our assertion in regard to a continuance of building operations. Since our last statement, more than one-half of the days have been such as to stop operations almost completely on account of rain, and yet we find more buildings and of greater value started than for any similar period of which we have a record.

The following table will show the number

and value of improvements started since our last issue:—

	NO.	VALUE.
Frame buildings	62	\$247,320
Brick	2	314,000
Alterations	9	41,265
Total	73	\$602,585

In regard to our quotations, we would again call attention to the fact that we print on the fifteenth of each month, and consequently our advices in regard to improvements extend from the fifteenth of one month to a corresponding date in the following. It is important that this fact should be borne in mind.

Market Reports.

It is impossible, with the exception of a few items, to quote definite prices for materials used in building.

BRICK are firm in price. Pressed are worth from \$55.00 to \$60.00. Hard burnt, \$11.00. Softer grades, \$7.50 to \$9.00, according to quality. We do not apprehend a reduction in the near future.

LUMBER may be quoted at \$14.00 to \$18.00 for rough and \$25.00 to \$35.00 for surfaced. The market, although weak at present, has an upward tendency. No fear, however, need be felt that the exorbitant prices of last year will be realized during 1885.

HARDWARE.—A general upward tendency is being experienced in the different branches of the hardware trade. As a rule, prices have been too low; for, although a few on this coast have been benefited by the extremely low rates quoted, still thousands in the manufacturing districts have been thrown out of employment on account of the general depression. We regard it as one of the anomalies of the season that, in spite of unprecedentedly low prices, there has not been an extra demand on account thereof, and our country merchants have not signified their intention as yet to take advantage of the low prices now ruling, although there is a positive upward tendency to the market.

LIME, LATH, CEMENT, ETC., remain about the same. All the lath coming into San Francisco are substantially under the control of two firms. This will account somewhat for their steady price.

Our New Heading.

We point with pride to the new design we present as our title on cover. Many other improvements will follow, as we are determined that this Journal shall equal any now printed, both in artistic beauty and the merit of the articles presented.

The Prompt Payment of Subscription to This Journal is Requested of those who

HAVE NOT PAID UP.

We acknowledge the promptness with which a large proportion of our patrons have responded by the payment of subscription amount. Those who have not, will do a right and proper act, and will greatly oblige by availing themselves of the earliest possible opportunity to call at the captain's office and settle—or by postal order, or otherwise, relieve themselves of the burden that must rest upon the mind and conscience of every intelligent reader who understands and realizes the amount of labor and cost involved in producing a Journal of this character.

ALL WHO HAVE NOT PAID,

OWE \$2.00 for 1885, and delinquents who have forgotten their obligations for 1884, will but do an act of justice to pay up promptly all arrearages, and the amount due in advance for the current year.

Our Sixth Volume.

WITH this issue we begin our sixth volume. Our seventh volume would be more correct, as this Journal was published during 1879. We do not give credit to the latter named year, as we then used for our title, "THE ARCHITECTURAL REVIEW." In January, 1880, we adopted the broader and more significant title, "CALIFORNIA ARCHITECT AND BUILDING REVIEW," changing, after a few months, "REVIEW" for "NEWS," and commenced to number our Journal from the date of the adoption of the title now in use.

We sincerely thank our friends for the kind patronage bestowed during the past six years, and promise, on our part, to put forth renewed exertions to make this Journal worthy of the support it has received.

California Designs.

HAVING finished the series of competition designs, we will commence again in our next with sketches of California architecture.

Readers of the "CALIFORNIA ARCHITECT" will confer a favor upon the publishers, and derive material benefit themselves, by mentioning this paper when opening correspondence with advertisers. Drop us a postal card when you have written to an advertiser, give us his name, and then we will put you in the way of getting the benefit. Don't forget this.

Questions Concerning Chimneys.

THE following questions respecting the construction and operations of chimneys, with the answers thereto, are taken from the *American Architect*:

Questions.—1. Do gases resulting from combustion contract or expand when rising?
2. Should the flue of a high steam chimney be of the same area throughout, or gradually increase, or gradually diminish as it approaches the top?

3. Would it be advisable in any case to suddenly flare or contract the top of such a flue?
4. Would the same treatment apply to the small chimney of a house?

5. Is it preferable, as regards draught, to carry the flue of a house chimney vertically to the roof, or to give it an oblique, undulating course?

6. What is the proper area of flue for an open fire-place, 3 feet 6 inches wide, and 2 feet 6 inches high?

7. If a 12-inch circular flue would allow sufficient area for a given amount of smoke, is there any objection to making the flue 12 inches square, and has the latter arrangement any merits aside from economy of construction?

8. Is an 8x8 inch flue large enough for an ordinary coal grate?

Answers.—1. Gases generated in a confined space expand on emerging from it, but contract again subsequently as they lose heat.

2. In theory, the flue of a steam chimney should be cylindrical, and of the same area throughout. In practice, however, it is now not unusual to increase the area slightly with the height, at the rate of perhaps one additional inch of diameter for every twenty-five feet rise above the base, and the effect is thought to be good.

3. If such a flue were of sufficient capacity throughout, it is very doubtful whether any advantage could be gained by flaring at the top, although if the flue were originally too small a little improvement in the draught might possibly be gained in that way. In many cases, however, a cap is placed over the top of the chimney, which, of course, contracts the outlet, not only less, without material disadvantage.

4. The same principle applies to small as to large chimneys.

5. For a light it is almost best, unless the flue is large, to carry it up as nearly vertically as possible. If the chimney is exposed to down draughts from higher buildings, or hills in the neighborhood, or if it is too large for its work, change of course may help to check down draughts, and such deviations from the vertical line help to prevent the fall of soot in summer from the chimney into the room.

6. An open fire-place three and one-half feet wide, and two and one-half feet high should have a flue 12 inches by 24 inches, or 16 by 16 inches, if possible, although a flue 12 inches by 16 inches might do, if carried up nearly straight.

7. There would be no objection to using a 12 by 12-inch square flue instead of a circular one 12 inches in diameter. The circular will, however, be rather the better of the two, as being less liable to down draughts.

8. An 8 by 8-inch flue is too small for a soft-coal grate, except, perhaps, one of the miniature English ones. For hard coal or coke it may be made to do, if the chimney is high, and the flue straight; but 8 inches by 12 inches would be much better.

How to Make Wood Present a Fine, Smooth Finish.

IN going through some of our better class of houses, it is often noticeable the different degrees of smoothness and finish in various parts of the painted and varnished work. For instance, the architraves and other finish of the parlors, dining-rooms and principal bedrooms, will, if the hand be gently rubbed over the same, present a surface smooth as ivory, while that of the smaller rooms will feel a little rough, although presenting a polished surface. The difference between the two, admitting that the same amount of hand-smoothing and sand-papering have been applied to the finish all over the house, lies in the fact that in the principal rooms, the wood was first filled with *Wheeler's Patent Wood Filler*, consequently all the pores of the wood were filled, and thus a perfectly smooth surface was obtained. We are pleased to say that this *Filler* can be obtained at nearly every paint store on the coast, so that no reason exists why all the wood work of your house should not present a perfectly smooth, polished surface.

Back Saws.

BACK SAWS are getting out of use simply because they cannot be kept straight. After a back saw has been used a little, it is very common to see its owner, on taking it to use, "hit it a whack on the middle of the back" to get it straight. This oftentimes does about as much good to the saw as the "meat cutter" does to his knife when he draws it across his steel. Both cases are done more through habit than the real good of the thing.

There is a way, however, to fix a back saw so it will always keep straight. The way to fix the saw is this: first, take the handle off and shove the blade into the back so that the back will cover the saw at both ends not less than three-eighths inches; then drill a hole through the back at one end and in the middle also. Put a rivet in the middle hole, then tilt the back so that the other end will go onto the saw one-sixteenth inch further, drill a hole then and put in another rivet; then force the saw into the back at the other end until another rivet can be put in; then put the handle on and the saw is done, and will take seven times as much pressure to get it out as straight as before. It costs twenty-five cents to fix a saw in this manner.

Santa Clara.

E. H. DAVIES.

Editors "California Architect": Kindly explain to me the difference between a "Fish Joint" and a "Scarf Joint." T. M. K.

Ans.—When the beams abut end to end, and are connected by pieces of wood or iron placed on each side and firmly bolted to the timbers, the joint is called a *fish joint*. In a scarf joint the pieces overlap each other, and are bolted together. The form of lap depends upon the kind of strain to which the beam is to be subjected.

Wash Bowls.

WE have received several communications from those presenting plans in the late competition given under the auspices of the editors of this Journal, in regard to the remarks made by us upon the *lack of wash-bowls* in any of the bedrooms. We have been assured that it is not customary in country dwellings to specify wash-bowls, where the amount is placed at about \$5,000, for which sum the building must be completed.

We can assure our competing friends that there was no intention on our part to unjustly criticize any one presenting plans. Our remarks were altogether made from a California standpoint, and we only recorded such suggestions as would naturally present themselves to our subscribers on this coast, knowing that their views would coincide with our own, in regard to the lack of a *necessity*, as far as the people are concerned on this side of the Sierras.

Queen Anne Architecture.

A RECENT writer offers a few reflections on the caprices developed by the mania for Queen Anne houses. He says: The thing is all wrong and on wrong principles. The Queen Anne architects indulged in no such freaks as we see now exhibited, and simply because such was entirely opposed to the nature and character of brick. Brick is a simple, honest, plain material, with a good color, and hard, smooth surface—that is all. Whatever style can display these qualities best is the Queen Anne style and no other. The result of the modern caprices will be seen ten or twenty years hence, when certainly decay will have disintegrated or destroyed the whole, or when the owner's heart will have sickened of the frequent repairs and restorations. The old Queen Anne houses produced effect by the beautiful color and surface, the bricks being laid almost touching, the thinnest wash of mortar between. The result is that no damp ever gets between. The modern system of building is opposed to this, thick layers of mortar being interposed, with the certain result that all the elaborate gables, etc., soon begin to separate. Bricks put together in elaborate forms have no strength, no more than stones laid on earth, but displayed in surface become as firm and smooth as a billiard table. Even mouldings should be raised in the faintest degree, and the less they are the richer the effect.

Our Illustrations.

IN our last four issues we have presented the plans of those to whom were awarded the premiums given by the Proprietors of this Journal for the best display of genius in designing a house for a country dwelling costing about \$5,000.

We have emphasized "*about*," for the reason that not a single plan presented could be built in *this section* for the sum specified. This fact was taken into consideration by the committee appointed to determine the merits of the various designs, and the question of *cost* was left entirely out of their calculation, the *merits* of the various plans being the criterion upon which their decision was made. This was only just to all parties—ourselves included—and we have presented the plans according to the merit bestowed upon the same.

In our initial number of the new year we reproduce the plans and elevations of "*Tease Quare*." Under this *nom de plume* credit belongs for the same to Oliver C. Smith, Cincinnati, Ohio.

The elevations are somewhat different in character from the style generally adopted on this coast, although, in certain sections, the picturesque appearance of the exterior would no doubt form a pleasing contrast to other buildings in its neighborhood.

The architect evidently has endeavored to follow one of the ideas of the profession, namely, compactness. The entrance hall is spacious, and from the same access can be had to every room on the first floor. The parlor is large; arrangements of the kitchen and dining-room are convenient. Fault can be found with the cellar entrance opening directly into the latter room.

The arrangements of the second floor, attic, and basement are very distinctly shown by our engravings.

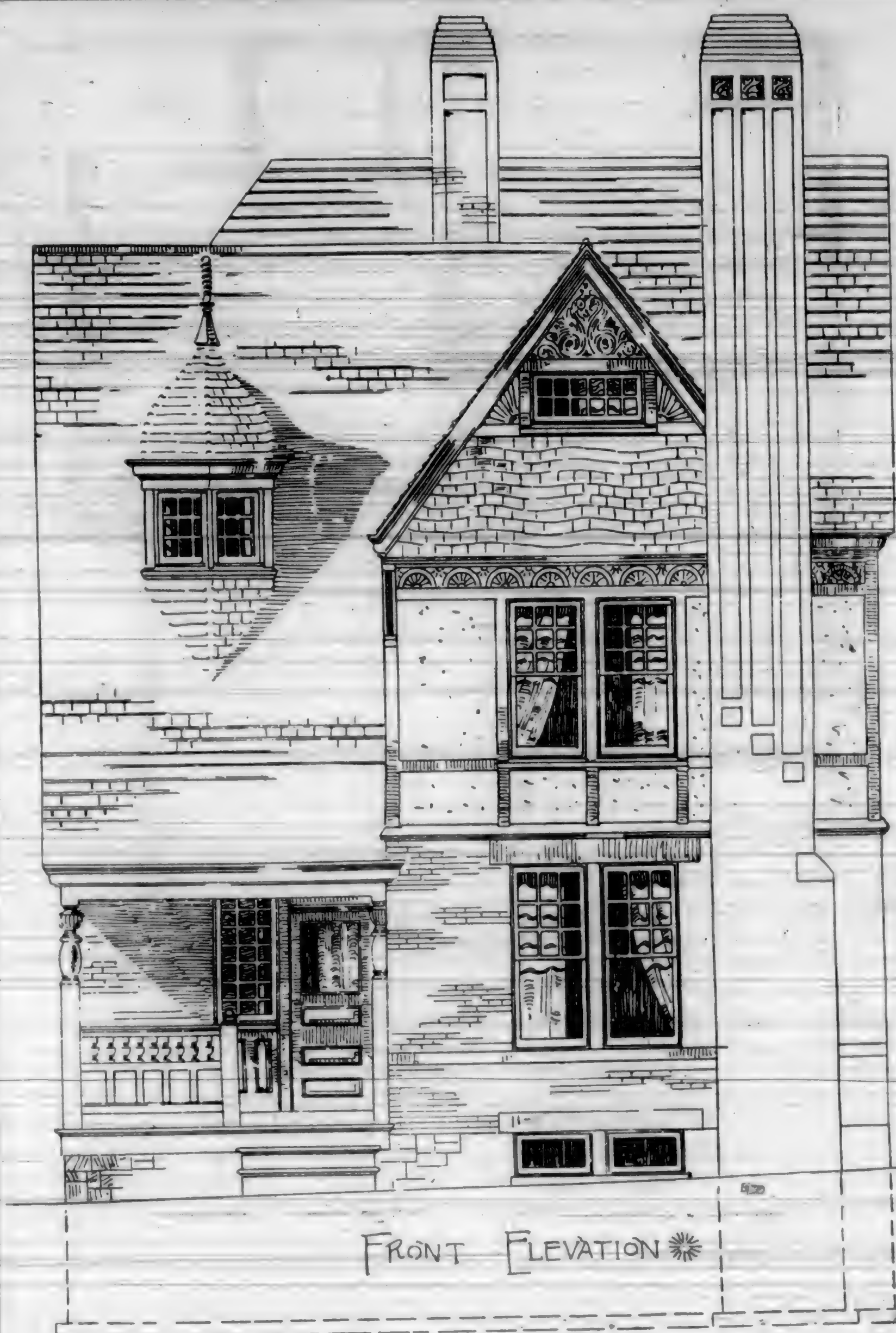
We give in full the estimate of cost and bill of quantities, as furnished to us by the designer. It will be noticed that many of the items are much below the cost of the same in this city.

We also notice in this plan a lack of wash-bowls in any of the chambers; this fact we noticed in our remarks on the various other plans presented. We have been assured, however, that it is not customary to specify wash-bowls in bedrooms, where the amount is limited to that shown in the estimate presented; that is to say, in the sections of country in which were designed the various plans presented in the first architectural competition held under the auspices of the Editors of this Journal.

BILL OF QUANTITIES.

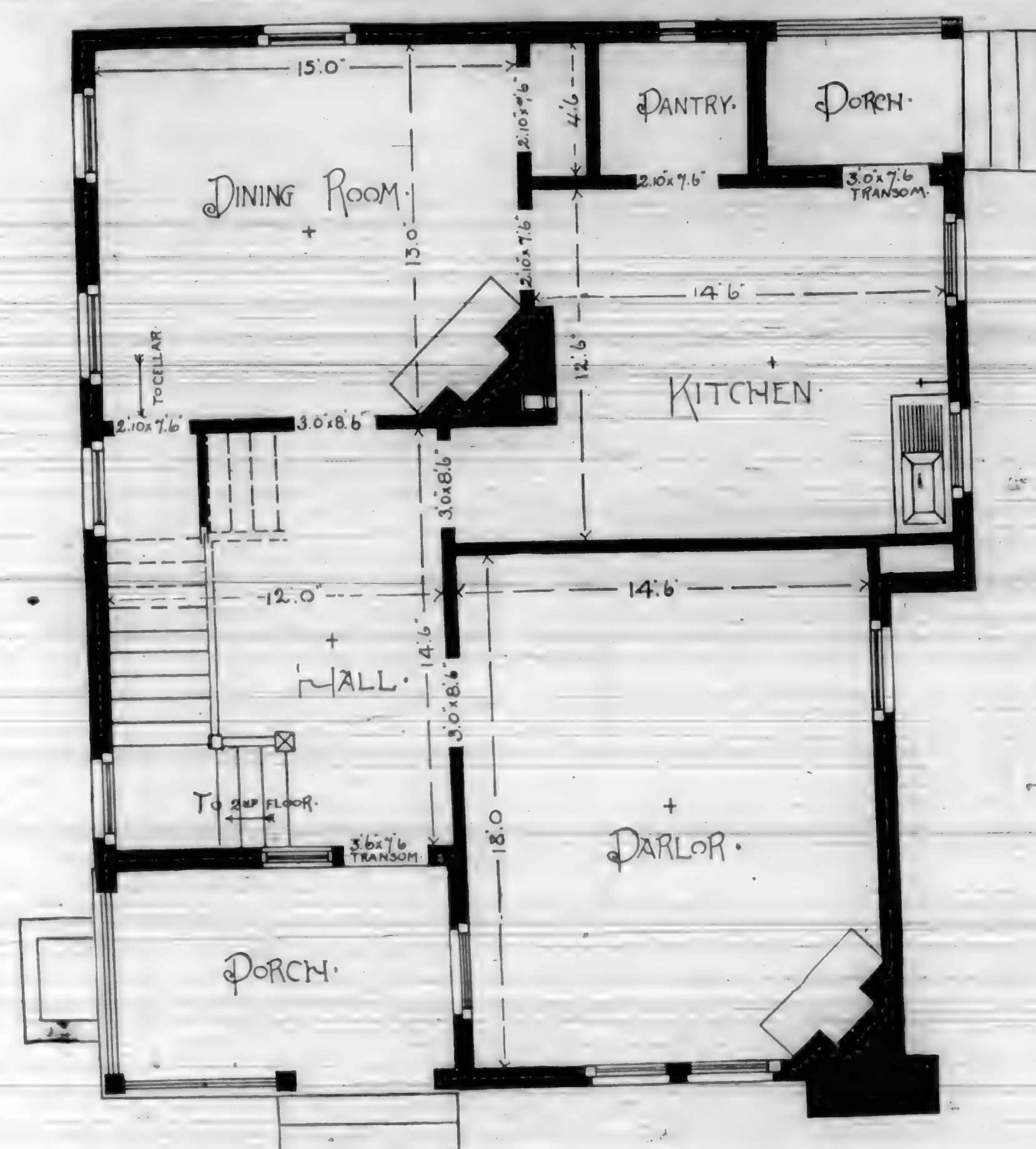
"California Architect" \$5,000 house competition; submitted by "Tease Quare."

Excavation, 250 cu. yds @ 30c.....	\$75 00
Masonry, 70 perch @ \$3.40.....	250 00
Brickwork, 23,000 (common) @ \$12.75.....	293 25
" 11,000 (pressed) @ \$42.50.....	467 50
Joists, 60 2x12, 18' 0" @ \$16.00.....	32 00
" 50 2x12, 14' 0" @ \$16.00.....	20 00
" 30 2x10, 18' 0" @ \$16.00.....	13 00
" 25 2x10, 14' 0" @ \$16.00.....	9 20
Studs, 60 2x4, 22' 0" @ \$20.00.....	18 00
" 100 2x4, 10' 0" @ \$16.00.....	11 25



FRONT ELEVATION OF "TEASE QUARE'S" PLAN FOR A \$5,500 COUNTRY DWELLING.—
SEE "OUR ILLUSTRATIONS."

Rafters, 50 2x6, 18' 0" @ \$16.00.....	14 50	Pump.....	10 00
" 20 2x6, 14' 0" @ \$16.00.....	4 50	Cistern.....	50 00
Flooring, 6,840 feet @ \$32.50.....	222 30	Iron work.....	20 00
Shingles, 25,000 @ \$5.00 per M.....	125 00	Mill work.....	500 00
Exterior plaster, 116 yds. @ 50c.....	58 00	Freestone.....	40 00
Interior " 2,820 yds. @ 25c.....	705 00	Gas fitting.....	25 00
Box frames, 20 @ \$9.00.....	180 00	Glass and painting.....	300 00
Carpet strips, 50 feet lineal. @ 3c.....	1 50	Mantels.....	125 00
Doors without transoms, 15 @ \$9.00.....	135 00	Hardware.....	150 00
" with " 5 @ \$11.00.....	55 00	Inside Shutters.....	150 00
Cellar windows, 11 at \$3.00.....	33 00	Plumbing.....	175 00
Base Mould, 1,200 feet lin., @ 9c.....	108 00	Out-side finish, 2,000 feet lineal, @ \$40.00.....	80 00
Finish (window and doors), 755 feet lin., @ 10c.....	75 00	Labor.....	550 00
Sheathing, 2,000 @ \$18.50.....	37 00		
Stairs.....	200 00		\$5,368 00
Cellar Stairs.....	30 00	Architect's commission, 5 per cent.....	268 40
Gutter linings and tin deck, 2 sqs., @ \$7.00.....	14 00		
Cast iron sink.....	6 00	Total.....	\$5,636 40



FIRST STORY OF "TEASE QUARE'S" PLAN FOR A \$5,500 COUNTRY DWELLING.—
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To Imitate Furniture Wood.

AFTER the color has been applied to the panel, take a large dusting brush of the kind used by painters, and, working the reverse way of your color, lightly pass over the surface with the tips or ends so as to blend together, as it were, the light and the dark. Quickness of manipulation is essential to obtain the desired effect while the color is wet, for it dries or "sets" very quickly. Use judgment in passing over the work, so as to vary the "beating" by turning your hand according to the various directions the veins have taken when first laid on.

Next take a piece of wash leather, damped and folded, to form a round, elongated edge, and proceed to wipe out all the light parts lying between the heavy color; then with another piece of leather fastened onto the end of a stick, and brought to a point like a pencil, proceed to cut out all the finer lines. If you find that your color sets while working, you must dab it on the surface—not rub it, else you will probably wipe off all the color. As soon as the panel is dry, you can, by the means of a flat fitch, proceed to put in all veins (or "worms" as they are sometimes called) which

cross the grain, by using a little burnt umber diluted with beer to the necessary tint. If you want the work to have dark shades on its surface, then you must work in a little Vandyke brown. These dark shades and veins can be formed with a camel's hair or sable pencil, and blended together with the badger.

Passing on next to mahogany, we shall see by examining a piece of Honduras wood that it is much easier to imitate mahogany than oak. When the ground color is thoroughly dry, smooth and level the surface so that the brush marks shall be hardly discernible. Attention to this point will materially contribute to secure a good imitation. After this, proceed as before to remove with a damp wash leather all grease and dust. You will be able to judge whether the surface be free from grease or not, since no moisture will be absorbed by such spots, but they will appear dry and shining. If necessary, you may use soap and water. Some grainers will even rub the surface over with whiting and water, which has a good effect. Having prepared some Vandyke brown ground and mixed in beer, proceed to thinly spread it over the work, and while the color is quite wet freely dab a piece of sponge over it to gain the effect of light and dark

shades, at the same time drawing the sponge a little. With your "softener" proceed next to blend the edges of the dark into the light shades, so that the eye may not perceive any broken lines or edges, and toward the finish use the softener (or badger) in the direction of the grain, or rather in the direction in which the dark veins of the mahogany are intended to run. When the work is dry, get a tint of Vandyke brown ready, and with a tool filled with a little color from the lightest of the dark veins or shades, using a drier brush to obtain the effect of a kind of over grain. These veins ought to run in the direction of the light above and below it. A little practice will soon familiarize you with this process. To gain a nice rolled mottle, as it were, a light dab of color must be given just under the lightest portion, so as to render it solid and opaque. Next blend all well together, which can be done, in the first instance, by means of the dusting brush before mentioned, while the badger may be employed for the finishing touches.—*Manufacturer and Builder.*

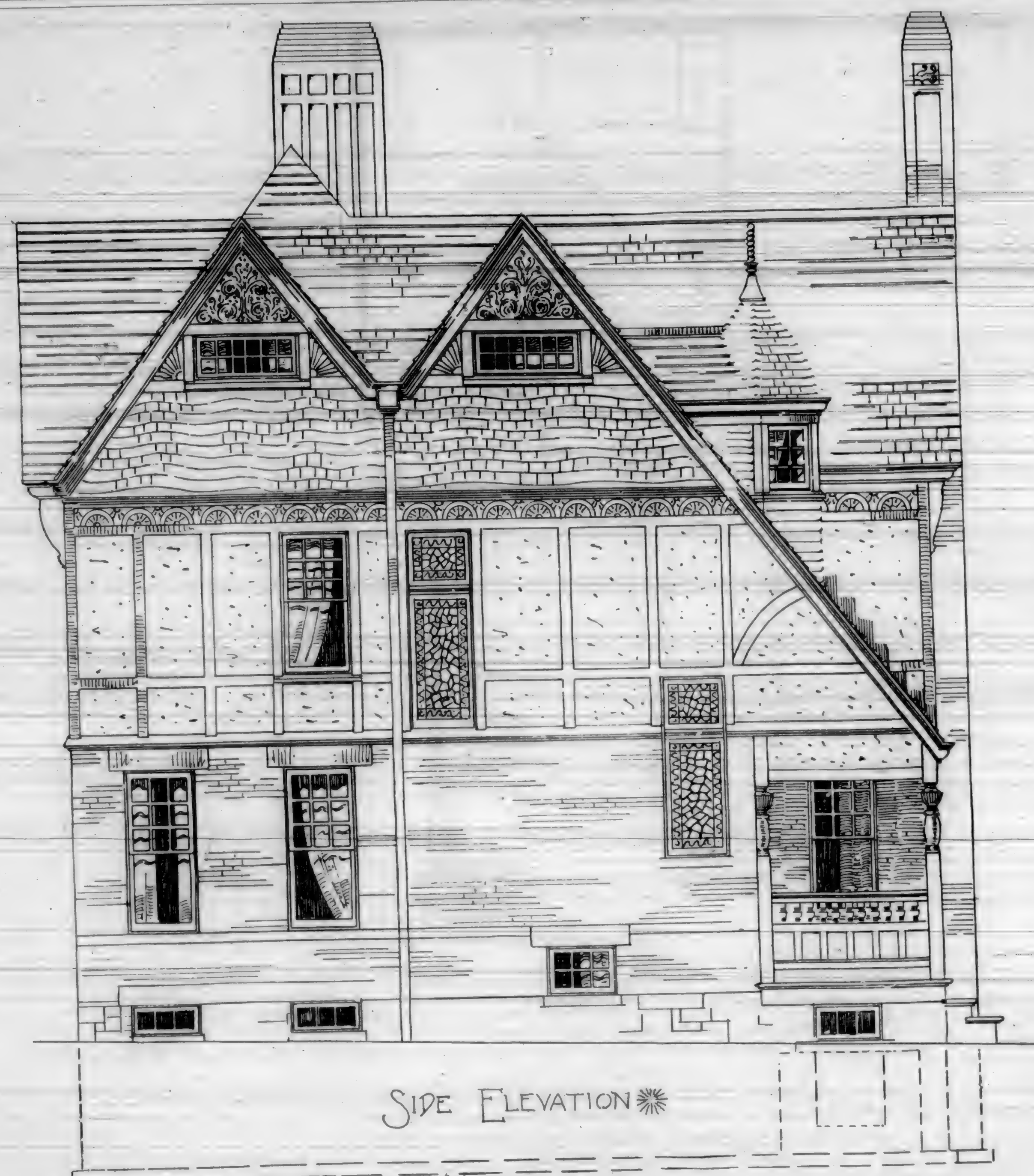
Chimneys.

A SOUNDLY built chimney vibrates, or swings from side to side, as a whole, under sudden and violent shocks of wind, and is in reality safer when it does so than when it stands in sullen and unmoved resistance. The vibration indicates that the several constituent parts of the structure are firmly compacted into one coherent, continuous, and, as it were, homogeneous mass, which can sway from side to side like a steel rod or spring, without any tendency to dissolve its continuity and break asunder at some intermediate point.

The absence of vibration, on the other hand, means that there is not this integrity of coherence, and that there are, so to speak, fissures of substantial continuity in the structure, at which disruptive strain is unavoidably developed. Sudden shocks of wind bursting upon lofty columns of brickwork in such circumstances tend to break them across at the joints where the interruption of continuity occurs. The movements of vibration are there absorbed, and converted into the less desirable condition of molecular strain.—*Scientific American.*

New Way to Lay Slate Roofs.

A NEW kind of slate roofing has come into favor. Each slate is laid in a peculiar kind of cement, consisting of liquid coal tar thickened with a cement, or, better still, a quantity of ground slate, slacked lime and linseed oil, the proportions varying according to the requirements of the case. This substance is heated until liquid, poured on a shed roof and the slates embedded in it with their whole face exposed. When of just the right thickness, the compound adheres with extreme tenacity to the slate, and cannot be detached without violence. The cost of a roof of this kind is said to be less than one of tin, and, on account of the greater surface exposed, is considerably cheaper than ordinary slate roofs.—*Ex.*



SIDE ELEVATION OF "TEASE QUARE'S" PLAN FOR A \$5,500 COUNTRY DWELLING.—SEE "OUR ILLUSTRATIONS."

*Mechanic, Take This Home; Read To-night.

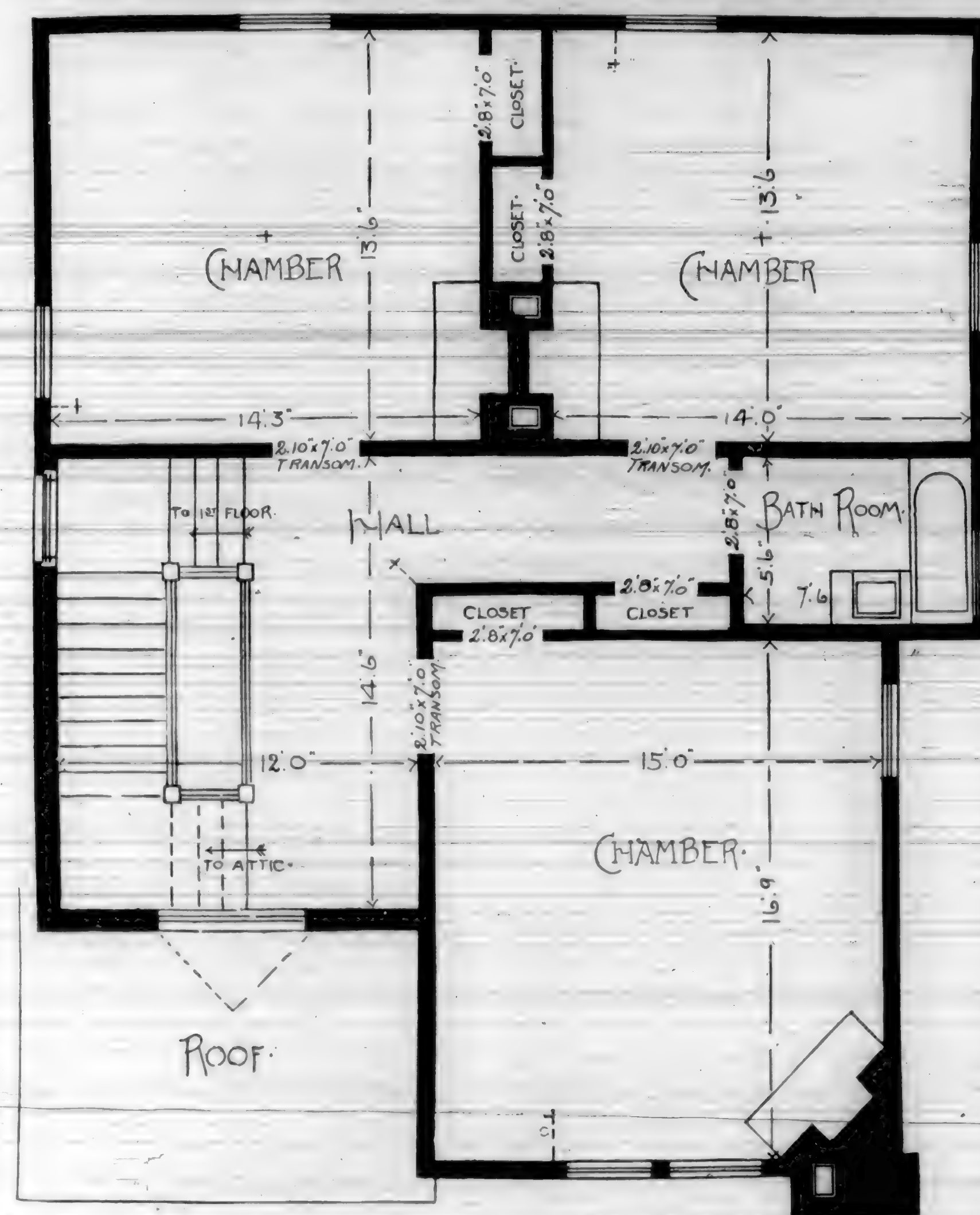
FOR a long time past we have had the pleasure of addressing ourselves particularly to the mechanics in the shops, but inasmuch as we shall not appear before them again this year, we propose to go with you and remain awhile in the sanctity of Home. The year we have traveled through together is nearly gone, and will soon be numbered with its predecessors.

*This article should have appeared in our December issue.

Many of us have reason to be merry and glad, others are borne down with grief, and with hearts bleeding and torn enter sorrowfully the glad new year by the side of the merry and gay. For once let us bury our sorrows in the graves of the past; and, dear friends, let us dig the grave deep and wide, pile it wide and high with the beautiful soil, and strive to heal the wounded heart in forgetfulness. We know how hard it is, for one year ago we placed beneath the clods of the valley an only beloved daughter, and when the waves of memory

backward roll, the heart and mind will dwell on the vacant chair. But let us all forget what has been; let the little dead number silently, and we all will look forward to the future, and center our hopes and aspirations on those who are with us yet.

We have no high-sounding platitudes, no brilliant rhetoric bespeaking the dawn of better times, no political harangue that the party in power will make the rich poorer and the poor richer. Those who have been disappointed in their choice seek consolation in



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the thought that after all this is a grand and noble country. Here we do not yield a neck for the iron heel of bigotry or strutting aristocracy. We have no hereditary titles handed down from father to son. We are freemen, and the resources of this country are beyond the reach of men or set of men to paralyze. Times will continue hard, if we are hard ourselves. Mechanics have had economy preached to them till they are weary. We say first, if you have had a clashing of prejudices during the past year, go bury them in the grave, and dig it deep and wide, and then seek happiness, and the means of increasing the happiness of others. Some say, Do not smoke; it prevents buying a home. We say, If you enjoy your pipe, smoke it; but, kind reader, fellow-worker, do your smoking at home, among the loved ones there; for, candidly, we cannot see how smoking a pipe or a of tobacco will prevent paying off the mortgage on your home. Sitting around the saloon and grocery, where smoking means treating, is where the cost

comes in. Others say, Do not drink. This is all well enough, and we say so too, when to drink means a slave to the sottish vice; but, if you feel tired and weary to-night, and are determined to have a nip, take home a small pitcher of beer, and drink with your wife at supper. This will cost you ten cents, and you know this amount will not begin to pay the treats when in the saloon. These things we do not advise, but if you must have them, stay at home and enjoy them; but, after all, they are of no real use to you, and the money spent for them can be put to much better use. Others advise avoidance of cards. If you can find nothing better, why play a rubber or two of euchre or whist. Ask Brown, whose hens scratched up your garden, and whose clothes were torn by your pup, to bring his wife over and have a few games; but bet her not spend too much time even at this amusement. Current literature is cheaper and much more satisfactory, especially that literature which discusses any department of the calling

you pursue. But there are too many demands upon the social features of father and husband to allow him the entire evenings for reading. Still others say, Avoid the theater; they are demoralizing, and give one a superficial idea of the stern realities of life. We are tired of this preaching. When working for \$15.00 per week, we occasionally went to the theater, and saw lots of good as well as bad folks there. All have enough of the stern realities, and the theater illustrates what we had better shun; often shows how to shun them.

By all means go home; be at home all you can; but when you think you must go, take some of your own folks with you. If there is any one word around which cluster pleasant associations, it is the good old Saxon "home," anglicized "home." In the original it meant a retired, close, and secure place; in the ordinary acceptance home means where the loved ones are, where the family is kept. And of all the homes of America, give us the quiet, neat cottage of the artisan for comfort that is real, for love that is pure. It is not among these where we look for petty jealousy and competitive strife, but amid the palaces of pomp and splendor where Mr. and Mrs. Nabob, aided by all that's theirs, strive to outbid their neighbor in splendor and gilded trappings. We claim to be in position to know this stratified condition of society well. Above and below the artisan is where real crime ends and begins; but with the artisan his home should be his castle. The Frenchman speaks of his *maison*, but there is no French word for home; indeed, the French in France do not need the word, for anywhere but France is emblematic of home in the fullest sense. The *maison* may be large and elegant, furnished with all the splendor and luxury that wealth can supply, but if family ties and affections do not center there, it is no home; for, as has been well said, home is where the heart is.

Again, the lovers of home are better workers. For years we have been thrown in contact with the largest factories in the land, and we have no hesitancy in claiming that in looking through any such, the lathes, vises, drills, presses, and the like, have that tell-tale look which tells one in tones not to be misunderstood who of all their occupants by day live at home by night; and the work turned out of any shop is an almost infallible criterion of the social condition of the artisan who is responsible for its character. The home and its influence leaves its impress here as elsewhere.

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Finally, when the home is left in the morning, see that your employer knows you are working for his interest, that then home comforts will follow; for, notwithstanding all that has been said of the grasping tendencies of wealth, there are but very few owners and operators of manufacturing enterprises who do not enjoy the sight of a shop full of happy workmen fresh from the hallowed precincts of home; and few indeed who will not aid and abet the worthy employe in realizing his fondest hopes as regards the possession of a happy, contented household. And our word for it, as time rolls on you will see many favors extended you by them, if they see you are on the right road, which otherwise would be withheld. As we enter this new year, let us see how many strikes can be averted, how many homes made our own. J. F. ELSOM.

What Is an Abstract of Title?

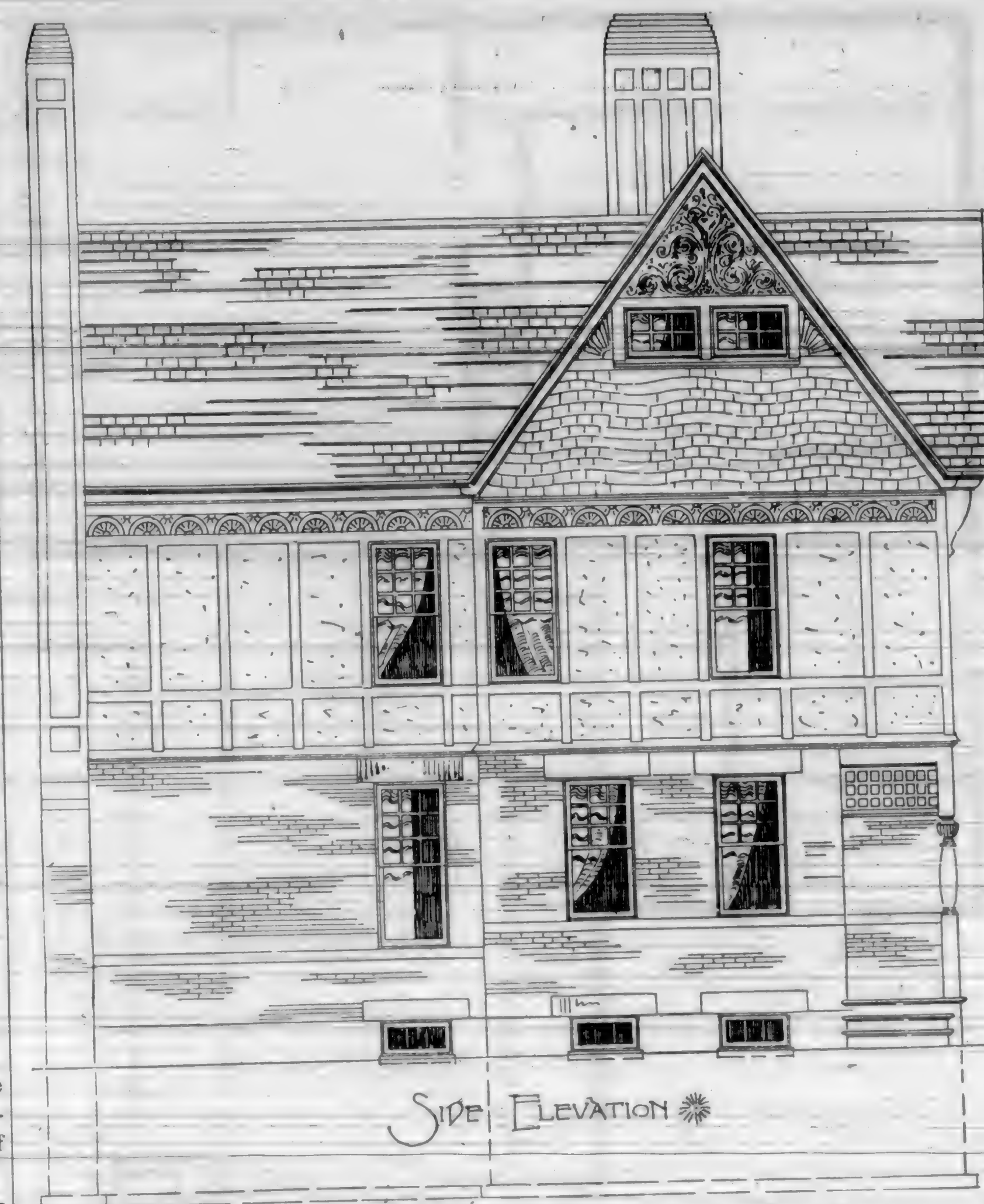
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This is a fallacy. The more complete the abstract sometimes, the greater the uncertainty of the title. The paramount consideration is: Is everything in the abstract correct according to the law, and is the property free from encumbrance, so that the title is unassailable?

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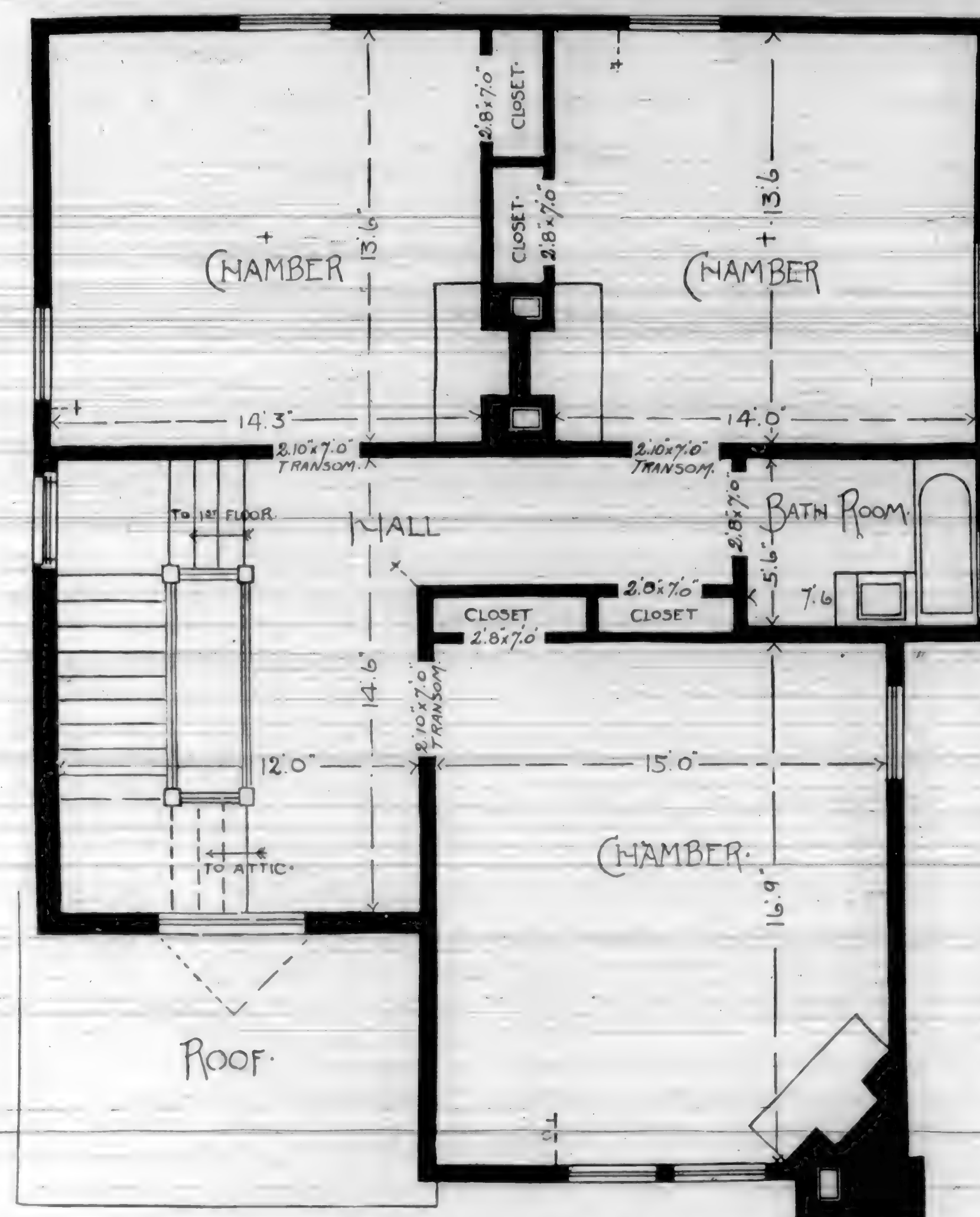
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NOTHING like the existing state of the bread-stuffs market throughout all grain-growing countries has ever been known since production and prices became a matter of statistics. What has caused it, and when and where it will end, are questions from which the most profound theorists are inclined to retire, and wait for the course of events to shed some further light. Even the *Northwestern Miller*, which is not wanting either in foresight or the logical faculty, gives up the conundrum, thus:—

The present condition of the grain and flour markets of the world is likely to long be noted

as the most anomalous and striking in the history of the commerce of this century. It has been the case heretofore that crops were abundant the world over, yet prices of cereals and their products are now below the lowest points reached in the eighteenth century, and the cry of dullness and unprofitable agriculture rises from every land under the sun. Such a situation has a meaning which the wisest are vainly endeavoring to elucidate. Theories and predictions are plentiful, but events as they occur prove the intangibility of the one and falsity of the other. Prices tend steadily downward, the monotony being scarcely broken by occasional spurts which seem to exhaust those who make them, and leave them each time weaker than before. Months ago it was announced that the bottom had been reached, but there have yet to appear signs of a bottom, so far as prices are concerned. Now more than ever is it true that one man's prediction is as good as another's, and until some certain signs become visible, it will be well for market prophets to hibernate.



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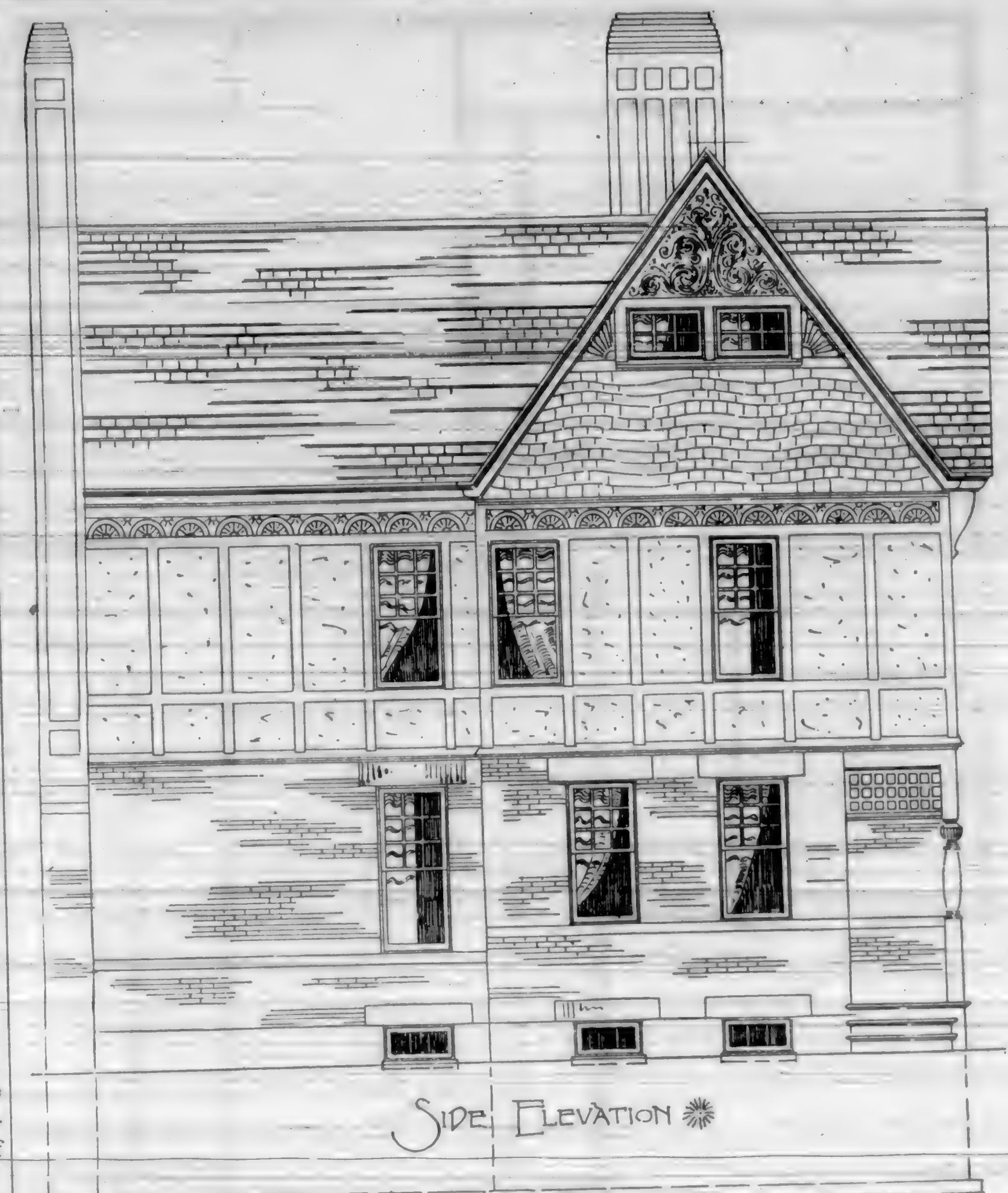
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NOTHING like the existing state of the bread-stuffs market throughout all grain-growing countries has ever been known since production and prices became a matter of statistics. What has caused it, and when and where it will end, are questions from which the most profound theorists are inclined to retire, and wait for the course of events to shed some further light. Even the *Northwestern Miller*, which is not wanting either in foresight or the logical faculty, gives up the conundrum, thus:—

The present condition of the grain and flour markets of the world is likely to long be noted

as the most anomalous and striking in the history of the commerce of this century. It has been the case heretofore that crops were abundant the world over, yet prices of cereals and their products are now below the lowest points reached in the eighteenth century, and the cry of dullness and unprofitable agriculture rises from every land under the sun. Such a situation has a meaning which the wisest are vainly endeavoring to elucidate. Theories and predictions are plentiful, but events as they occur prove the intangibility of the one and falsity of the other. Prices tend steadily downward, the monotony being scarcely broken by occasional spurts which seem to exhaust those who make them, and leave them each time weaker than before. Months ago it was announced that the bottom had been reached, but there have yet to appear signs of a bottom, so far as prices are concerned. Now more than ever is it true that one man's prediction is as good as another's, and until some certain signs become visible, it will be well for market prophets to hibernate.