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THE NEW ODD FELLOWS HALL OF SAN FRANCISCO. Wright & Sanders, Architects.

Interior Decoration of Business Structures.

A. C. BOND.

THE decoration of business structures necessarily possesses in many points its own special characteristics. Where carried out on an imposing scale, as in the principal apartments of banks, insurance, and commercial corporations and exchanges, it is rendered characteristically distinct from that of private residences by the more pronounced and more varied interior, constructive, and ornamental features of the building itself, multiplying forms and contributing lights and shades in carved and moulded work that allows of the most varied effects in color. Pillars and pilasters, paneled ceilings, even iron girders and brick arches—these latter presenting the combination of straight and curvilinear forms, projecting galleries, recessed apertures and stairways, loftiness and extent of area, contribute important aid to decorative effects. Richness of decoration in these offices is recognized as consistent with the commercial wealth and importance of the companies, and as indeed only doing justice to buildings, the façades, vestibules, and corridors of which command adornment corresponding to their palatial appearance within. There are private offices that, under favoring architectural conditions, but on a far lesser scale, may be said to vie with these, especially in instances where the firms are also owners of the buildings, and so have not only the pick of offices, but are assured of permanency. The constant change of tenancies, the fact that the commercial mind is not exacting as respects features of decoration, has restricted the freedom given to architects of professional decorators in this line. Yet the effect of growing taste is resulting in the introduction of more ornamental features in offices than have hitherto prevailed; light, soft tints are taking the place of glaring whiteness in walls and ceilings; wood panelings, almost essential as an accessory to decoration, is carried out through whole suites of offices; friezes and ceiling borders in oil colors, distemper, or fresco, contribute their aid, and marquetry on a moderate scale, is being carried out.

Tenants, position, and means more than ever, especially in the new and gigantic class of business buildings that have arisen, countenance well designed architectural woodwork, in which screens make such a conspicuous figure. The taste for the elegantly furnished private mansion extends to the office which it is felt should be in keeping with commanding and frequently highly decorated approaches. The decoration of offices is encouraged by the opportunities offered for distinctive individual taste, and may be said to possess a certain commercial value. That architects are seeking closer relations with decorators is an encouraging sign. It is interesting to note how closely convenience allies itself to decorative art in the internal planning of office fixtures. The offices of the new building of Mutual Life im-

press one with the richness of the mouldings that form the deep frieze and also the surface of the beams that divide the ceiling. Between the spandrels of the arches appear emblematic figures, always welcome in decoration where appropriate. The saffron-colored pillars, of gigantic size, ranged longitudinally along the center of the room and crowned with gilded Corinthian columns, these flanked by pilasters of similar design and material constitute imposing objects. The pillars and pilasters, together with the pillars dividing the corridor from the rooms beyond in conjunction with the mahogany balustrades of the gallery, surmounted by a handsome brass rail, afford, together with the mahogany furnishing, fine contrasting effects in color with the white mouldings, which are susceptible of much greater effect were they tinted. In comparing this interior with the equally ambitious one of the Equitable, we note the advantage of abundance of light in the former. The offices of a well-known commercial firm in Broad Street may be referred to for their rich and judicious ornamentation. Nothing can be finer in its way than the constructive appearance of a cedar wood screen, paneled in its upper portion with ground glass, each panel having a fire gilt brass gate. It is finished with a high cornice of brass, the post panels at each extremity having figures in the same metal. The several departments are enclosed on three sides with open woven screens of brass, offering a most lightsome appearance, practically avoiding the "cutting up" so often destructive of the scenic effect of well decorated offices. The office of Henry Clews & Co., in Broad Street, may be cited for its display of carefully elaborated ornamental details. The constructive forms and carvings of the counters and screens are in renaissance style, executed in San Domingo mahogany and cherry, the screens having a capping of finely designed brass work, the supports ornamented with medieval figures. The principal portions of the screens are in small panels. For brilliancy in the display of color in wall and ceiling, brightened by contrast with lofty paneling of the wall to half its height in walnut, the main office in the Williamsburgh City Insurance Building is conspicuous. The ante or small pilasters above the paneled dado are enriched with gilt and color in harmony with the moulded work. The darkness of the paneling beneath justifies the glow, in diversified tints, of the upper surface to prevent a gloom settling on the interior. The ground of the bronzed mouldings, as well as the surface of the ceiling, is of light olive. Even the front of the walnut counter consisting of two tiers of boldly carved walnut wood, deeply recessed, has central tiles to each upper compartment in blue figured designs on a white ground, and again by the tessellated floor.

It is well known that architects, as a body, do not favor strongly pronounced colors for wall decoration but incline to mild neutral tints, and even to fading hues in stencilled

designs; for all this there are numerous decided successes in bringing brilliant but soft tones of cheery aspect, into accord with architectural woodwork. It is to be remembered that a room is viewed under very different conditions from an oil painting. No atmospheric effects have to be compassed. Wall and ceiling continually catch the eye, and they should be rendered at least attractive. An important aid to the use of bright positive colors is found in the use of gold, often, indeed, brought in as an afterthought. It has the virtue of rendering certain hues more retiring, and by attracting attention through reflection of the light which other surfaces absorb, allows of the introduction of stronger tints than would otherwise be permissible.

In some conspicuous instances the vestibule is made an important accessory to the decoration of the interior. In that of the Mill Building, a central stairway, with huge metallic lamp stands upheld by griffins, leads to an intermediate landing, along the front of which the balustrade is continued; pillars and arches further partitioning the space, and beyond a bright effect is produced by an iron curvilinear roof with a sparkling galaxy of small beveled glass insertions. With the surrounding paneling in rich hardwood and mural enrichments, the *coup d'œil* is admirable. The entrance to the inner court, on each side of the doorway, is separated by arches and pillars. Dados of variegated marbles, polished slate of cloudy hue, are being very freely used for bases of wainscoting or as dados for vestibules and passage ways. The basement vestibule of the United Bank Building has not only its walls of marble, but the same material coats the iron girders, the only contrast to its pure hue being the buff bricks of the fire-proof arches.

The opportunity for scenic display in the open court of large business structures has been turned to excellent account by architects and decorators. The upward view presents successive tiers of galleries, the front tops of the landings formed into enriched cornices, the light ironwork of the balustrade portions in colors and often picked out with gold, the rails of polished mahogany, the variegated marble bases to paneled woodwork, or the polished surfaces of dados in rich woods of the walls facing on the galleries, the soft, subdued tints of their upper surfaces, the trimmings and mouldings of office doors with panels of embossed ground glass, the iron and glass roof, with curvilinear sides, the glass in colors or inserted in small, round, or angular cut forms, having as a counterpart the decorated tile flooring, of the landings, and the area beneath presents a *coup d'œil* that conveys impressions not hitherto realized in interior architecture, to which the apparent aerial lightness of the whole largely contributes.

Stained glass, so ornamental when judiciously disposed, finds its use within rather than in the outside windows of business structures, particularly in the small apertures of screens. Reference has already been made

to its employment in the roofing of open courts. A most striking application of stained glass to ceilings is in the "call room" of the Produce Exchange. The light falling on this ceiling of leaded panels of glass, is softened and diffused by having first to pass through a pitched roof of thick rolled glass.

The increased extent to which metal is applied to interior decorative purposes is very noticeable, particularly iron and brass. Pillars are no longer of plain, rounded, or square shafts; used in balustrades, it is made a prominent ornamentation. Brass is coming into more general use for guard rails and cappings as well as in builder's hardware, its brightness affording good contrasts; also for standards and suspended chandeliers of light design, and in antique style befitting the forms of decoration proper to the renaissance order.

WOODS FOR OFFICE DECORATION.

The number of hardwoods available for architectural woodwork is a decided advantage for the artistic designer. Honduras mahogany and cherry take the lead. Our own native oak, stained to resemble mahogany, is largely used, and white ash stained has come into request for offices. The woods in general use for best finish are cherry, mahogany, maple, oak, rosewood, satinwood, sandalwood, chestnut, cedar, ash, walnut, ebony, white mahogany, and oak. Some of our decorators use largely white oak stained to imitate Honduras mahogany. Cherry has got into high favor of late years, recommended not only by its grain and color but the large surfaces that can be obtained. Some choice foreign woods are imported to be used for inlaying, as, amaranth, amboyna, and telira wood. For bonizing, the woods most in request are: pear, holly, beech, chestnut, sycamore, and plane. For enlaying, the woods used are: box, palm, bird's-eye maple, sandal and satinwood, beech and holly.

About Bricks.

AN average day's work for a bricklayer is 1,500 bricks on outside and inside walls; on facings and angles, and finishing around wood or stone work, not more than half of this number can be laid. To find the number of bricks in a wall, first determine the number of square feet of surface, and then multiply by 7 for a 4-inch wall, by 14 for an 8-inch wall, by 21 for a 12-inch wall, and by 28 for a 16-inch wall. For staining bricks red, melt one ounce of glue in one gallon of water; add a piece of alum the size of an egg, then one-half pound of Venetian red and one pound of Spanish brown. Try the color on the bricks before using, and change to light or dark with the red or brown, using a yellow mineral for buff. For coloring black, heat asphaltum to a fluid state, and moderately heat true surface bricks and dip them. Or, make a hot mixture of linseed oil and asphalt, heat the bricks and dip them. Tar and asphalt are also used for the same purpose. It is important that the bricks be sufficiently hot, and be held in the mixture to absorb the color to the depth of one-sixteenth of an inch.

Why Can't any Man Put up a Stove?

IN your last issue my attention was called to an article in which the above question was asked. Is it possible that there are men who will admit that they cannot put up a stove as good as any one? Now, this is certainly strange. Why, it is one of the easiest things in the world, save that of running a newspaper. Anybody can do it.

The only objection to the business is, that it is inclined to produce profanity. I actually have seen ministers tackle a stove for the sole purpose of giving vent to their wrath, simply because a mule had kicked them, or that contributions were light the day before. And in order to make a protracted effort they commence by undertaking to insert a 6-inch joint of pipe into the small end of a 5-inch joint.

My opinion is that every man who intends to live a pious life should employ a tinner to put up his stove. Not but what he could do it just as well himself, but his future prospects would be brighter, and he would stand a much better chance of entering the realms above, where all is peace and happiness (the future home of the tinner and plumber, and other saints of less note).

It is an undisputed fact that ninety-nine fools out of a hundred, who have not mechanical ingenuity enough to lift a latch on a gate, think they can set up a stove. And because two large ends, or two small ends of the pipe will not go together, they abuse the tinner who made it, or the fraternity in general.

I have been at the business a long time, and have worked in a number of the States, from east to west, and never had any great trouble in fitting pipe. I think the size is very uniform, under the circumstances, as a great variety of weights of iron is used, and even the same number of iron varies in thickness. If all weights are cut over the same pattern, the heavy iron will undoubtedly make the pipe a little larger, and *vice versa*. Where a crimping machine is used in ordinary pipe, one-eighth of an inch smaller at the small end, is plenty, while one-fourth inch is necessary where pipe is drawn in with mallet.

Again, where pipe is seamed, it is impossible to have every joint just the same, although the joints do not vary enough to bother a tinner in putting them together. If the people of this country would have mechanics do their work in proper shape, they would be much better off, at least, in the opinion of

JOSH KINS THE TINKER.

—Tinner and House Furnisher.

THE Boston *Watchman* says that within the last nine years nearly 800 churches have been burned in America, mostly through defective heating apparatus.

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Hanging Doors.

WHERE no architect's services are rendered in connection with a building, the doors are generally hung according to the sweet will of the carpenter, but there are two ways to hang a door, one, so as to expose the room, and another so as to screen its contents and those who may happen to be there when the door is open. The first way may be very good for public rooms, but, in regard to bed rooms, the doors must swing so that, when partly open, they will shield the apartment from view. Architects themselves are often bothered in this connection with the views of the owners. Closet doors should be hung so that the closet may receive light from the nearest windows. Doors are sometimes made to swing out on stair landings or halls, and who has not seen two doors so placed that they strike each other when opened. It is hardly necessary to add that these methods should not be adopted.

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Overwork.

A LARGE amount of sentimental rot gets into print about men killing themselves by overwork. In nine out of ten cases of this kind, the true cause of death will be found to be something besides overwork. We all know professional and business men who work harder than they ought, and yet by taking good care of themselves in the way of diet, exercise, etc., manage to enjoy good health and wear a cheerful, hearty look. Those who die from "overwork" generally use liquors and tobacco without moderation, keep late hours, and indulge in hazardous speculations outside of their legitimate business. Late hours, liquor and tobacco engender weak nerves and upset the functions of the body, while anxiety over speculative schemes acts upon the brain. With these evil agencies working against a man, some slight exposure brings on an attack of illness, and the whole body being weakened, gives way in a very short time. The sudden illness and speedy demise baffle medical skill. The stricken family and shocked friends are told that overwork was the cause of death, and the press deplores the tendency of our civilization to kill people by overwork, when the real cause of nine-tenths of these deaths is as outlined above.—*The Manufacturer and Builder*.

To remove iron taste from new kettles, boil a handful of hay in them, and repeat the process if necessary. Hay water is a great sweetener of tin, wooden and iron ware. In Irish dairies everything used for milk is scalded with hay water.

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IRREGULAR PAGINATION

stumps, and all uncleanness. This back yard iniquity is an evil under the sun as old, at least, as the Valley of Hinnon, behind Jerusa- lem. Perhaps the architects and builders be- gan it by treating the rear of the house as if it had no rights that white folks were bound to respect; and assuming that since it is to be seen by no one but the owner and his family, it may be as bald, bare, uninteresting and pov- erty stricken in appearance as possible. In- deed, the more bald, disjointed and penurious the back side, the more gorgeous and extrava- gant may be the front. We find, now and then, an isolated dwelling occupying such a position that the need of a pleasant appear-

are concerned; for any street in a city or vil- lage, crowded with residences and without sewer and aqueduct, is a barbarous street, not fit for the abode of civilized human beings. Its general influence upon society at large is towards heathenism. Streets in villages or cities may properly be called "crowded" with residences unless the lot belonging to each house is of sufficient size to contain a well and a cesspool at least 200 feet apart, and from every other well and cesspool, with enough arable land to consume all the sewage of the house and barn, and to supply the fruit and vegetables for the family, hay and grass enough for the cow and horse. With only less magnificent distances than these between neighbors, wholesome living is not possible without the aid of aqueducts and sewers, and of scavengers as patient and skillful as those employed by Nature herself. Is it a place to which the sweepings of floors may be con- signed? These should be sent up into the sky by way of the kitchen stove and the kitchen chimney. Or for the crumbs that fall from rich men's tables, still more from the tables of poor men? These ask but a simple covered bucket to become not merely inoffensive, but a source of profit. The same is true of ashes that fall from grates.

There is in fact no earthly excuse for the conventional back yard. Beyond a doubt it is an expensive luxury, costing those who indulge in it more actual labor—not to mention discom- fort, disorder and disease—than would be re- quired to keep the entire circuit of the house beautiful and clean.

But their chief ugliness,—the reason why I give them so conspicuous a place in our out-of- door surroundings,—is the impossibility of es- caping from them, whatever we may do, upon our own premises. Whether we like it or not we must, in sheer self-defense, be our brothers' keepers. Owing for a lodge in some vast wil- derness will not answer, we must own it, and live in it, or we can have no assurance that our nearest neighbor will not build his stable, plant his onions, empty his drains and feed his chickens under our dining-room windows.

We may polish up the handle of our own front door, keep our own little patch of lawn and the narrow borders along the sidewalk across our twenty-five feet of frontage in perfect order, but if the next lot happens to be a sand bank or a mud hole waiting for a purchaser to improve it, and, in the present condition of the real estate market, likely to wait till we leave our earthly tabernacles, how miserably inef- fectual are the results of our own labor. Not wholly lost—indeed, nothing good is ever lost—but enormously discounted,—marred, as a strain of music is marred by the harsh, discord- ant note out of time and out of tune.—The Builder.

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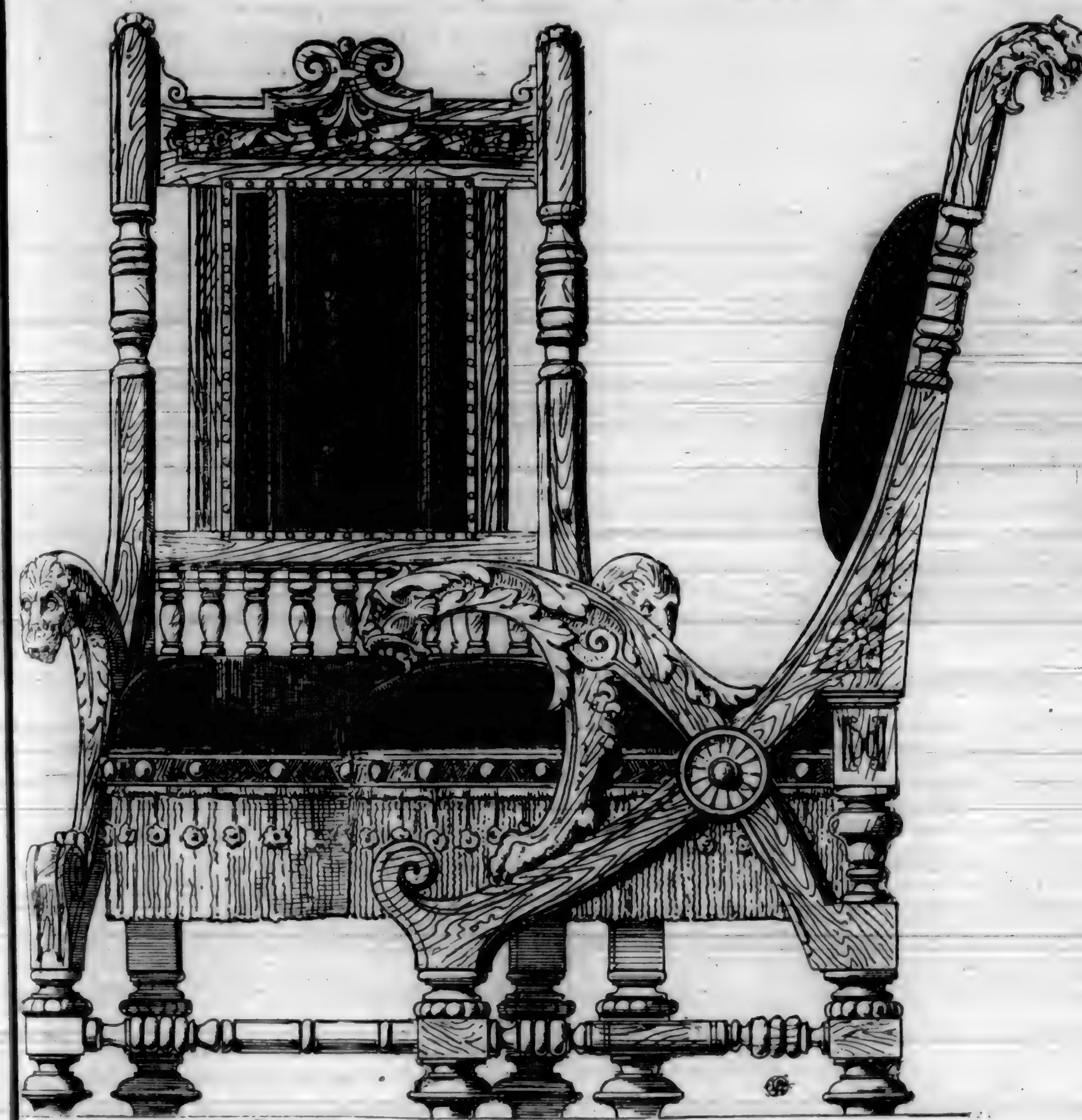
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Back Yards.

[From a lecture by E. C. Gardner.]

NATURE does not ask her visitors to shut their eyes and stop their ears until they stand before her front door. From whichever side we approach she is always gracious and cordial. We put on a bold front of paint, varnish, plate glass, marble steps, gilded bird cages, scarlet geraniums, peg-top evergreens standing on their heads, and rectangular patches of shaven lawn; while our back yards, supposed to be hidden from the public gaze, are full of dead men's bones, empty fruit cans, broken bottles, old board fences, sink drains, waste paper, worn-out overshoes, cabbage stumps, and all uncleanness. This back yard iniquity is an evil under the sun as old, at least, as the Valley of Hinnon, behind Jerusalem. Perhaps the architects and builders began it by treating the rear of the house as if it had no rights that white folks were bound to respect; and assuming that since it is to be seen by no one but the owner and his family, it may be as bald, bare, uninteresting and poverty stricken in appearance as possible. Indeed, the more bald, disjointed and penurious the back side, the more gorgeous and extravagant may be the front. We find, now and then, an isolated dwelling occupying such a position that the need of a pleasant appearance from all points of the compass has evidently been admitted. But, as a matter of fact, houses that are entirely surrounded by others, whatever their relative position may be, are the very ones that have no right to the abomination of desolation known as a back yard.

There is no more groundless delusion than this: that such a skeleton closet is a necessary attachment to a well-organized household. Is it a garden to walk in, in the cool of the day? This needs no concealment other than simple shrubbery, and vine-covered arbors will supply. A croquet ground? This surely is not to be hidden. A "clothes yard?" The weekly display of white linen, with occasional gleams of scarlet, indigo and saffron, is not unsightly among green trees and above green turf. What then, a treeless, turfless corner, crouching behind a high board fence, where empty barrels and boxes, old hen coops, coal sifters, last year's bean poles, broken wheelbarrows, worn-out perambulators, can be stored? These things are only valuable for kindling wood, and belong in the basement, the fuel room or the barn. Is it a place to empty the wash tub, and throw the tea and coffee grounds? The sewer is the place for that. If the street has no sewer or drain, the people who control it are heathen, civically speaking, and those who live on it might as well live in the Feejee Islands, so far as certain essential means of grace

are concerned; for any street in a city or village, crowded with residences and without sewer and aqueduct, is a barbarous street, not fit for the abode of civilized human beings. Its general influence upon society at large is towards heathenism. Streets in villages or cities may properly be called "crowded" with residences unless the lot belonging to each house is of sufficient size to contain a well and a cesspool at least 200 feet apart, and from every other well and cesspool, with enough arable land to consume all the sewage of the house and barn, and to supply the fruit and vegetables for the family, hay and grass enough for the cow and horse. With only less magnificent distances than these between neighbors, wholesome living is not possible without the aid of aqueducts and sewers, and of scavengers as patient and skillful as those employed by Nature herself. Is it a place to which the sweepings of floors may be consigned? These should be sent up into the sky by way of the kitchen stove and the kitchen chimney. Or for the crumbs that fall from rich men's tables, still more from the tables of poor men? These ask but a simple covered bucket to become not merely inoffensive, but a source of profit. The same is true of ashes that fall from grates.

There is in fact no earthly excuse for the conventional back yard. Beyond a doubt it is an expensive luxury, costing those who indulge in it more actual labor—not to mention discomfort, disorder and disease—than would be required to keep the entire circuit of the house beautiful and clean.

But their chief ugliness,—the reason why I give them so conspicuous a place in our out-of-door surroundings,—is the impossibility of escaping from them, whatever we may do, upon our own premises. Whether we like it or not we must, in sheer self-defense, be our brothers' keepers. Owing for a lodge in some vast wilderness will not answer, we must own it, and live in it, or we can have no assurance that our nearest neighbor will not build his stable, plant his onions, empty his drains and feed his chickens under our dining-room windows.

We may polish up the handle of our own front door, keep our own little patch of lawn and the narrow borders along the sidewalk across our twenty-five feet of frontage in perfect order, but if the next lot happens to be a sand bank or a mud hole waiting for a purchaser to improve it, and, in the present condition of the real estate market, likely to wait till we leave our earthly tabernacles, how miserably ineffectual are the results of our own labor. Not wholly lost—indeed, nothing good is ever lost—but enormously discounted,—marred, as a strain of music is marred by the harsh, discordant note out of time and out of tune.—*The Builder.*

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Hot Water Circulation.

HEAT is diffused through water in a very different manner to what it is through solid substances. When the heat is applied to the bottom of a boiler or other vessel containing water, the first effect is to expand the nearest layer of water to the fire. The first, by reason of its heat, makes this layer of water specifically lighter than the colder water which may be by the sides, and especially that above, and these layers being lighter than the cold above, it allows the colder water to descend, when the hot water naturally rises or floats upon the molecules of the colder or denser water which surrounds the hot; then the cold water from above, by reason of its extra density, immediately sinks to the bottom of the boiler, when it again becomes heated and again lighter in its turn. These succeeding fresh layers of heated water will continually carry the heat from the bottom of the boiler to the highest point of the circulating-tank, which heat, if the pipes and tanks be not too large, is finally and gradually diffused through the whole of the water within such pipes and tanks.

It would appear (from the preceding facts) plain that the colder the water the heavier it will be, while the lighter and warmer particles will rise to the surface; but even in this there is a limit, which can only go down to 40° F., and from this point down to 32° F., when the molecules of water undergo a very remarkable change. Between the above degrees there is no contraction or expansion; therefore it, bulk for bulk, does not become heavier or lighter; but we are surprised to find its bulk increase when the degree of heat is below 32° F., when it crystallizes into ice, and this expansion goes on in strict accordance to each degree of cold below the 32°; hence the reason why leaden and other pipes burst in times of frost. Of course my readers have seen ice floating on the surface of water, which will prove the above assertions in the most conclusive manner.

From the above it is plain that the circulation of hot water is brought about owing to the difference in the weight of the water at different points, caused simply by the expansion and contraction of the water itself; therefore, if the source of heat be permanent, the particles are rapidly brought into action, and the particles in a vertical tube soon become heated, and by their expansion must exert a pressure on all parts of the pipes, the branches included. Now this, together with the levity of the water in the boiler, establishes a current, when the cold water from the coils, branches, etc., commences to flow in the direction of the boiler, and thus supplying the heavy or colder water continually, which, of course, takes the place of the lighter particles, known as hot water. To find the force with which the colder water runs toward the boiler, you must know the specific gravities of the water in the flow and return pipes, the flow being the ascending and the return the descending; the difference between them will be the motive power or the effective pressure. You can arrive at this point by ascertaining the temperature of the water in the return-pipe and boiler, or flow-pipe. If the difference in heat is only a few degrees, of course the difference in the speed of circulation of the water will be accordingly; say it is only 4° or 5°, which is very small, but quite sufficient in a well-arranged system to maintain constant circulation. Let us assume that we have 8° of heat in our boiler, the return-pipe is standing at 180° and the flow to be 188°. Let the top of the flow-pipe be, say 18° above the top of return; the difference in weight will be about $\frac{1}{8}$ ounce on the square inch, and this will be the amount of motive power obtained for the circulation, no matter what may be the length of pipes attached to the apparatus; and should there be, say 50 yards of 4-inch pipes, which will contain 80 gallons of water, with a 15-gallon boiler, you will then have 95 gallons, or 950 pounds weight, kept in continual motion by the 8° of heat, or $\frac{1}{8}$ ounce pressure. Of

course the size of pipes will make a wide difference in the motive power, which increases with the size of the pipes; thus, in a 4-inch pipe you will get four times as much as in a 2-inch, and so on; but, as the resistance increases equally with the power, the actual working effect is precisely the same in all sized pipes.

Again, the motive power can be increased by allowing the water to cool down before it gets back to the boiler, either by increasing the height of the flow and return pipes, or by doubling the difference of the temperature between flow and return; or, of course, an extra power can be obtained by doubling the difference of the temperature between the return and flow pipes, when the same increase of power is obtained as by the doubling of the vertical heights; or by trebling the vertical height of the flow and return pipes, the same effect is produced as by trebling the difference in the temperature of the water.

A difference in the motive power is also made by diminishing the diameter of the pipe in such a manner that a longer amount of surface will be exposed, and in proportion to the amount of water within, this, of course, allows more cooling surface, and consequently the return-pipes can give off more heat in a given time, thus making the return-water denser, and consequently quicker in action. Of course, when you do this you have more friction, which will be readily understood from the following:—

It is certain that the sides of the pipe greatly retard the flow of water; therefore a considerable deduction must be made, in some cases to the enormous extent of 80 per cent. In small pipes there is a greater amount of friction than in larger ones, owing to the relative amount of surfaces; beside this, small pipes cool quicker than larger ones, and thus the velocity is increased, as also is the friction, so that, supposing that we have a 4-inch pipe, the amount of friction is, say one; in a 2-inch pipe there is twice as much, and in a 1-inch four times as much as in a 4-inch; and you should also know that by increasing the velocity, so in proportion will be the friction, nearly as the square of the velocity. It should also be known that in all hot-water apparatus the speed of circulation varies according to circumstances; therefore it is difficult to calculate. One thing is certain—that the velocity in all hot water is quickest in their centers.—*Sel.*

AN architectural novelty in New York City is the duplex apartment house. Its peculiarity consists in having twice as many stories in front, so far as the arrangements of the different flats is concerned, as it has at the back. This device gives very high ceilings for the parlors and dining-rooms, and economizes space by means of low ones for the kitchen and sleeping-rooms.

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N. D. Goodell.

SACRAMENTO'S PIONEER ARCHITECT.

MR. GOODELL was born on the eighteenth day of April, 1814, in the little town of Belchertown, Mass.; was brought up on a farm as a farmer till he was 19 years old, at which time he went to an adjoining town (Amherst) to learn the carpenter and joiner's trade with a Mr. Howland, where he served for one year, for \$35.00 and board. After the expiration of his time he went to Springfield, where he worked another year for a contractor by the name of Wright, after which he went into business for himself in Belchertown, his native place, and met with fair success, erecting some of the best buildings in the place, one of which being the town hall. About this time Mr. Goodell took unto himself a wife. Soon after he was married he built for himself one of the finest residences in the town, after which he had many calls not only in town, but from the adjoining towns to erect buildings and draw plans, more particularly from Ware Village. At this time it became necessary not only to work, but to study the art of building; consequently he purchased a number of architectural works and drawing instruments, and by working daytime at his trade, and studying architecture and draughting every evening, he was soon enabled to make his own drawings, also those for other parties who needed them. He had a number of calls from Ware Village; in fact he had so many from that place, he finally moved there, where he built many of the best residences in the place. Before he had been there two years, the agent of the largest cotton manufacturing establishments in that part of the State came to Mr. Goodell to inquire his price by the year to be the general manager, architect and superintendent of all their buildings, which would consist of two or three new factories, and one or two hundred new houses, etc.; the bargain was soon made, and the young man remained with the company about five years. At this time the California gold fever broke out, when Mr. Goodell made up his mind to go to California. He formed a company of twelve young men and had the honor of being elected their president. They left New York on the 29th of March, 1849, in the brig *Everet* for Panama, arriving at that place on the 14th of April, where they stayed nearly a month; finally they secured passage on a small brig by the name of *Copiapo* for San Francisco, Cal., where they

arrived on the 14th of August, 1849. They went ashore and landed at the foot of Jackson on Montgomery Street. At that time there was scarcely a house in San Francisco, except a few adobes. The next day the party went up the river in a little schooner to Sacramento, and they camped in that place under large trees between the river and where the railroad depot now stands (the ground at that point at that time was some twenty feet lower than at present, 1884). There was not a single wooden building in the town at that time, there being no lumber to build with; the consequence was the people set up poles or sticks and tacked any kind of cloth to them. As usual with all the first comers to this coast,

ness; but at last an opportunity came (in 1861 or '62), when he could practice at his former profession of architecture. Mr. H. Wachhorst, desiring to erect a building and finish the interior for a jewelry store, selected Mr. Goodell as his architect. Upon the completion of the building, such was the satisfaction given by Mr. Goodell's design, that numerous orders were given to him to prepare plans for buildings, the first being James Carrolan (10 and H.) then John Carroll, Frank Ebner, Theodore Millican, General Redington, Albert Gallatin and Charles Scudder, all of which gave instructions for plans of houses, prices varying from \$14,000 to \$40,000; then plans were prepared for the grammar school building, Sixteenth and J Streets, which cost \$60,000. Mr. Goodell was also the architect of the Sacramento County Hospital, one of the finest hospitals in the State; his plan was adopted as being the best of ten, which the supervisors had to select from. Under the direction and superintendence of Mr. Goodell, the pioneer architect of Sacramento, some two hundred of the best dwellings in the city of Sacramento, besides hundreds of smaller and cheaper ones, have been built. In the last year he has been the architect of four of the best stores and business places in the city, viz.: Waterhouse & Lester's Warehouse, J Street between Seventh and Eighth, the Grangers' hall at Tenth and K Streets, Mrs. M. E. Gregory's building on Second Street between I and J, at a cost of \$20,000 each; also Green & Trainor's Warehouse on Second Street between I and J, at a cost of \$12,000, besides some thirty other buildings of different kinds.



N. D. GOODELL.

Lime in Bricks.

MANY bricks become spoiled when they are made from clay

which contains lime in such quantity, that, after burning, the lime becomes hydrated sooner or later, and thus renders the brick useless. This may be prevented by placing the bricks, as soon as they are removed from the oven, when they are still warm, in a hole or tank, piled on each other, and throwing water over them, so as to cover them entirely with water. A few hours afterwards, when bubbles no longer come to the surface, the bricks can be taken out of the water. By this operation the slaking of the lime, which takes place in bricks not thus treated, by the slow absorption of the humidity of the air is entirely prevented, as the lime is greatly modified by the said operation.—*Clay.*

The Upper Story.

"Let him that is on the house top not come down," and let him that is groping in the dampness and the gloom of basements, back alleys, narrow, shaded streets and courts, dismal second story fronts that look out upon the blank, brown stone walls across the way, the more dreary rear parlors that overhang the back yards of the adjoining streets, or, drearier of all, the small rooms that cluster around the air shaft, let him climb or be carried to the vantage ground of the roof. If he lives in a crowded city, if it is summer time, and if he is wise he will stay there as long as his engagements will permit.

The marked tendency to build skyward in our large cities is easily accounted for by the extremely high value of floor room, whether it is twenty feet under ground or one hundred feet above the surface, but the throwing away of the uppermost floor of all, and in many cases the most delightful of all, is one of the peculiar extravagances of modern civilization for which no rational excuse can be given.

The actual cost of preparing a roof that should serve its purpose as a roof perfectly, and at the same time be permanently available as a floor, would be trifling as compared to its value in places where the close crowding of buildings implies great value to horizontal space. There are a variety of uses that could be made of such an open plateau, its chief value in cold climates being, of course, in the summer, but then it would be invaluable both in the residence and in the business portions of large cities. The hanging gardens of Babylon were not a circumstance to what the roofs of New York might be made if they were treated with the skill and economy that ought to characterize a center of modern civilization. Not that it would be expedient to make them actual gardens for fruit, flowers and trees of all sizes, but they could be made very beautiful, and far more pleasant and comfortable out-of-door resorts than the small, close yards and enclosed areas upon the ground. It would not be necessary that such roofs should be made of iron and masonry. A wooden structure properly protected by asphaltum would be secure from decay even if covered by a sufficient depth of soil to sustain a substantial turf—provided that were desirable. Still further advantage and wider opportunities could be secured by the co-operation of adjacent owners. Even in the country where ground room is of little value the advantage of the upper level would almost justify the architectural deformity of a flat roof, provided it were supplied with all the modern conveniences, so guarded that the children could not fall off if they tried, and timid people need not be afraid of jumping overboard. A place where the boys could "camp out" on warm summer nights, and where a hammock swung beneath an awning would be the breeziest and coolest of lounging places. The hot, slippery, rattling, shining, tin roof and the impassable gravel commonly found on flat roofs

give no intimation of the pleasant possibilities of the situation. If the "deck" of "French roofed" houses were devoted to such purposes of use and enjoyment there would be a reasonable apology for the usual ugliness. The climbing of stairs would keep the invalid and the indolent from improving these elevated privileges, but where elevators are in use there is no excuse for the desertion of the house top. —*The Builder.*

For Painters.

EXPERIENCE shows that the work in the paint shop is much better handled by working the men in teams as much as possible. It pushes the work along faster, with better results than when the workman is left to himself with his own individual piece of work.

Care must be taken in selecting men for teams, that there must be harmony with each other and a mutual desire to see the work go through right. The selection of partners should never be left to the men themselves, or put-up jobs may be the result, sooner or later. It is quite necessary that one man on each team should be a pusher; this method will bring out to full play the working force of each. If the right men are thus brought together, there will be a willingness on the part of each to draw the others' attention to any fault in the work, and work when finished will be more free from defects. The best workmen never fail to see something that if seen sooner might have been made better. —*Painters Journal.*

Sunlit Rooms.

NO ARTICLES of furniture should be put in a room that will not stand sunlight, for every room in a dwelling should have the windows so arranged that some time during the day a flood of sunlight will force itself into the apartment. The importance of admitting the light of the sun freely to all parts of our dwellings cannot be too highly estimated. Indeed, perfect health is nearly as much dependent on pure sunlight as it is on pure air. Sunlight should never be excluded except when so bright as to be uncomfortable to the eyes. And daily walks should be taken in bright sunshine. A sun-bath is of more importance in preserving a healthful condition of the body than is generally understood. A sun-bath costs nothing, and that is a misfortune, for people are deluded with the idea that only those things which cost money can be good or useful. But remember that pure water, fresh air, and sunlit homes kept free from dampness, will secure you from many heavy bills of doctors, and give you health and vigor which no money can procure. It is a well-established fact that the people who live much in the sun are usually stronger and more healthy than those whose occupation deprive them of sunlight. And certainly there is nothing strange in the result, since the same law applies with equal force to nearly every animate thing in nature. It is quite easy to arrange an isolated dwelling so that every room may be filled with sunlight some time in the day, and it is possible that many town houses could be so built as to admit more light than they now receive. —*Carpentry and Building.*

New Stone Saw.

A NEW sort of saw for cutting stone is described in *La Semaine des Constructeurs*, which seems to have advantages over those commonly in use, and is easily and cheaply made and operated. In place of the ordinary long steel blades, supplied with sand to enable them to grind their way into the stone, the new machine presents only a slender endless cord, composed of three steel wires twisted together, which is stretched over pulleys in such a way as to bring the lower portion horizontally over the stone to be cut. The frame carrying the pulleys is movable, so that the cord can be brought into contact with the stone, or lifted away from it, at pleasure, and the whole is kept in rapid motion, while water falling in drops from a reservoir above serves to moisten the stone. The three wires which form the saw differ from the ordinary kind in being square in section, and by twisting into a cord they are so turned as to present a succession of oblique cutting edges, which act, when set in motion, in nearly the same way as so many small chisels, while the rapidity with which the blows follow each other probably adds to the effect.

Utilizing Ashes.

A PATENT has lately been granted for the use of ashes in making mortar. It has been found that the fine portion of domestic ashes is capable of being converted with a small proportion of lime, into a mortar having, when a month old, a tensile strength of from four to five times that of common sand and lime mortar, or about 80 pounds per square inch. Sand-mortar a month old has a tensile strength of 20 pounds. Ashes and lime, mixed as beton, gives a tensile strength of 140 pounds and a crushing strength of over 1100 pounds per square inch. It will thus be seen that, by utilizing the ashes for mortar, a large part of the expense of removal could be saved, together with the whole cost of procuring sand for the purpose, and, at the same time, a very superior article of mortar be produced. In consequence of the small quantity of lime required (10 per cent.), it would be necessary to mix the mortar by machinery at a mill and deliver it ready for use. This practice prevails to a great extent in European cities on account of the superiority of milled over hand-made mortar. Ash-mortar has the additional advantages of resisting the action of water as soon as it has set (in from two to three days), and also the combined action of fire and water, the quantity of lime being so small, and the chemical union with the ash so complete that the application of heat does not produce free oxide of lime, as in the case of sand-mortar, and consequently does not swell when water is applied to the heated mortar. The ash-mortar forms when set, a silicate of lime and alumina, and hardens uniformly throughout, like cement; while sand-mortar, when set, is but an imperfect carbonate of lime, the sand furnishing the nucleus around which the carbonate forms. —*Carpenter and Builder.*

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Kitchen Cesspools are Dangerous Nuisances.

A CESSPOOL is in old English a "soospool"—that is, a "soakpool"—a place into which liquid slops and offscourings may be run, and from which, as usually constructed, it is hoped that the liquid portion will soak or drain away, thus sparing the proprietor the trouble of emptying it. The term is most generally applied, at present, to receptacles or cisterns constructed underground in the vicinity of the house, to receive the kitchen-slops and sink wastes, as distinguished from privy-vaults or receptacles intended only, or chiefly, for the reception of excreta, but it is also used by some writers as including the latter, and, as a matter of fact, a large number of cesspools receive both kinds of waste. The cesspools to which we especially refer at present are those into which excreta are not allowed to enter, but which are devoted chiefly, if not exclusively, to the reception of kitchen-waste. From time to time inquiries are received by *The Sanitary Engineer* which indicate that the writers suppose that the only dangers in house-drainage are connected with the disposal of excreta, with privy-vaults or water-closet wastes; and that if these are properly arranged the sink-slops need little attention. This is a mistaken opinion, and it is time that people learned to recognize it as such. No doubt it is true that water-closet waste is more dangerous to health than kitchen-slops; it is more likely to contain specific contagia, and is more offensive, but considered merely as furnishing material in which may be developed dangerous organisms, as decaying organic matter or filth, there is not so much difference between these two forms of waste products after all, nor is a cesspool less offensive than a privy-vault. Neither of them are satisfactory appendages to a house, but where their employment becomes a necessity the same precautions as to location, construction, etc., should be applied to one as to the other. The essential points are to prevent leakage by making them water-tight, to provide a free outlet for the gases which will be generated in them, and to locate this outlet at such a height that there shall be no danger that the gases escaping from it shall blow into the house. Such cesspools should be small, and emptied regularly and frequently. The most unwise disposition which can be made of a cesspool is to connect the upper part of it with a sewer. When a street is sewered, the cesspools on that street should be cleaned out and filled up with fresh, clean earth and the house-drainage be connected directly with the sewer. To retain the cesspool under such circumstances is to insure that all the house-waste shall be in a putrefying condition before it enters the sewer, and hence make it impossible to keep the air in the sewer inoffensive.—*The Sanitary Engineer.*

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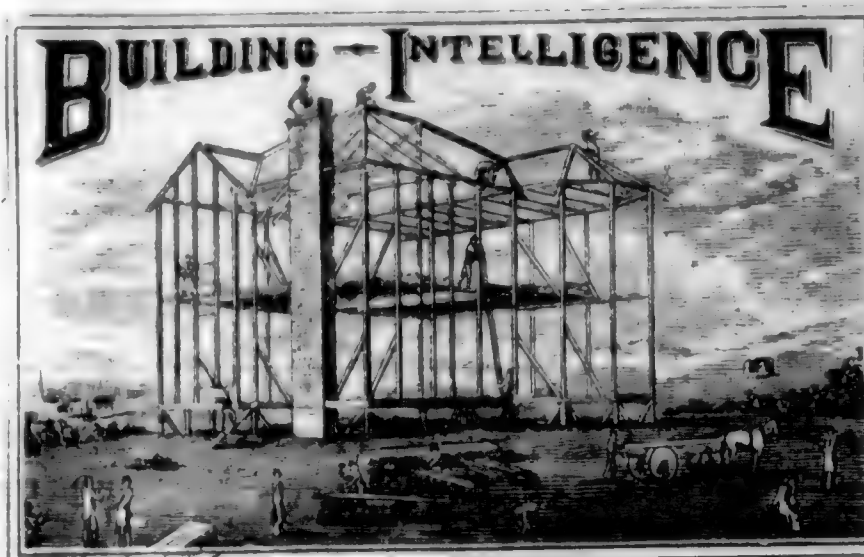
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 Battens, 1/2 inch, lineal feet. " " " 1c
NAILS.
 10 d to 60 d. " " " \$3.25
 8 d cut ore Extra per keg (over standard). " " " .25
 6 d " " " " " .50
 4 d and 5 d " " " " " .75
 8 d " " " " " 1.50
 10 d to 20 d Brad, h'd. " " " 1.50
 8 d " " " " " 1.50
 6 d " " " " " 1.50
 4 d and 5 d " " " " " 1.75
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When money is sent for subscriptions, the receipt of a copy of this journal is an acknowledgment that it has been received. Unless requested we do not send receipts.

A Healthful State of Building Activities.

NOTWITHSTANDING the slight falling off in the number and value of contracts for buildings reported this month, over the preceding months of the year, they are larger in number and amount than for the corresponding months of 1883, thus showing that the tide of substantial prosperity is still on the flow in San Francisco. Our list of improvements, as given in *Building Intelligence*, embraces in number

83 BUILDINGS OF THE VALUE OF \$635,411.

The movements in real estate, as reported in the daily journals, that sales are light, would indicate a falling off in property interests. But when the high prices asked for real estate, the almost boom in building during the past three years, the damaging rains late in the season, the disturbance in financial circles by failures, shrinkages of values, etc., are considered, the present looks well, and the future encouraging.

The considerable decline in cost of lumber, bricks, nails, and other building materials, should, and we believe will, stimulate to enlarge activities during the remaining months of the year.

San Francisco Chapter American Institute of Architects.

THE regular monthly meeting was held on Friday evening, August 1, 1884.

President John Wright in the chair. F. Marion Wells was unanimously elected an honorary member of the Chapter.

A lengthy communication, signed by nearly all the members of the craft residing in San Francisco, was received from the Metal Roofers. In it, they called attention to the fact that metal roofing is a distinctive branch of trade, and should not be done in shops in which the proprietor conducts the various industries of plumbing; gas fitting and tinning, combined with metal roofing. The petition represented that the parties referred to do not have enough work at any one branch of business, and so have to keep on men who can do a little at anything, and from necessity they must be inferior workmen. The remedy proposed in the document, is to recognize metal roofing as a distinct branch of the trade, and to allow only metal roofers to figure on their branch of work.

Communications were also received from the Master Plumbers and Painters' Association, calling the attention of the Chapter to a clause in their by-laws, by which their members are prohibited from doing work for other than

owners when the amount exceeds \$100 in value.

Also communication received from J. Browell in reference to patent chimneys. All the above were ordered placed on file.

The amendment to the by-laws was unanimously adopted, by which the number of Trustees was increased from three to five.

The following preamble and resolution was offered by J. E. Wolfe, who explained that its intent was to set at rest any doubts that may be entertained upon the subject.

WHEREAS, Some diversity of views and opinions are entertained by members of this Chapter in reference to the eligibility to membership of one member of a firm of architects, unless the other member of said firm seek membership, therefore be it

RESOLVED, as the sense of this Chapter, that individual members of co-partnership firms of architects, upon election to membership in this Chapter shall be entitled to affiliation without regard to the wishes or action of the other member or members of said firm in the same direction.

After a short debate, the resolution was unanimously adopted.

Nomination of officers for the ensuing term being in order, the following named gentlemen were proposed.

President: Augustus Laver, William Curlett.

Vice-President: T. J. Welsh, A. Pissis, and H. C. Macy.

Secretary: B. E. Henriksen, G. H. Wolfe.

Treasurer: J. M. Curtis.

Trustees: J. E. Wolfe, A. A. Bennett, B. E. Henriksen, W. Curlett, W. G. Matthews, G. H. Sanders, T. J. Welsh, A. Laver.

The resignation of W. G. Copeland was read and accepted.

The following resolution was offered:—

That a committee of five be appointed to take into consideration the Fire Ordinances of San Francisco, and report at next meeting.

A long debate ensued, which was participated in by nearly every member present. The subject was dropped until a report was received from the Committee.

The president appointed the following named gentlemen to act as such committee: Messrs. J. E. Wolfe, J. M. Curtis, Wm. Curlett, T. J. Welsh, B. E. Henriksen. Meeting adjourned.

IMPORTANT NOTICE.

The next meeting of the Chapter will be held on Friday evening, September 5, 1884. It is earnestly hoped that every member will be present, as business of more than usual importance will be brought before the meeting.

The Fire Ordinances of the City of San Francisco.

MUNICIPAL laws and regulations should in themselves be as nearly perfect, fair, and equitable as human intelligence, experience, and judgment can make them; and being so, should be cheerfully accepted and followed by those whose interests are covered or affected by them; and in all cases of violation, their enforcement should be positive, equal, and without favor or partiality in any direction, or to any person or persons whomsoever. But neither of these propositions apply in the case of the present and more recently passed code of fire ordinances in San Francisco. Although in their provisions they are very similar, and in some respects the same, as those of Chicago and other Eastern cities, they do not provide a code of regulations so nearly right and applicable for San Francisco as to meet with a reasonable degree of favor from those who are required to be governed by them; and the fact that *very many* of their requirements are so far unnecessary and impracticable that they are *never* observed by architects, nor sought to be enforced by the authorities—while in some regards, the limits and restrictions are unreasonable, unnecessary, and disproportionate, and the privileges enjoyed by some, more than is permitted to other owners and architects, naturally give rise to loud complainings, and suggest at least the wisdom and necessity of revision.

In view of the facts hinted at, the San Francisco Chapter of Architects have appointed a committee of five, consisting of James E. Wolfe, J. M. Curtis, Wm. Curlett, T. J. Welsh, and B. E. Henriksen to consider the ordinances as affecting and relating to the erection and safety of buildings, and report thereon to the Chapter, the object of which is simply to review and discuss all matters in issue and interest, and submit to the proper authorities, for their consideration and action, such recommendations as may be finally agreed upon and advised by the Chapter.

The Chapter and its committee recognize the fact that the present code of fire ordinances is the result of much perplexing attention, study, and personal, mental, and physical labors; and no reflection is deserved by those originating and recommending the present laws, as whatever defects there may be have been innocently incorporated.

In behalf of the Committee and Chapter, we are authorized to state that *all architects*, whether members of the Chapter or not, are earnestly requested to forward to either member of the committee, such pertinent points of information, facts, and suggestions as will aid the committee in perfecting their work. And as the object of the Chapter in the appointment of the committee is to secure the best possible results, *all members of the profession*, together with the fire wardens and representatives of the Board of Underwriters, will be invited to take part in the final action upon the report of the committee.

Not Degenerating—Times Have Changed.

EDITOR *Building Trade Journal*: "Ransom," in his communication in your last issue, asks the question, "Is carpenter work degenerating?" and then to some extent answers it himself, but fails to state the cause for the facts he alleges. He also objects to "the saw and hatchet brigade who lack the knowledge of good mechanics." The truth is that in the present day it is quicker and cheaper to get mill work in a city of any considerable size than to make the same work by hand as in old times. No carpenter in a city now thinks of lugging about a two or three hundred pound chest of tools, consisting only of moulding, sash, and match planes, as many in the country did in former years, in addition to the ordinary chest of tools which came into everyday use. Nowadays fine office and store fixtures and much other work comes from the mill in such shape that a couple of ordinarily clever workmen with only a shoulder box full of tools between them will put it up more rapidly and fully as well as did the thoroughly trained carpenters of old times after making the fixtures by hand. The proportionate number of carpenters who are "good wherever you put them," is decreasing from this and the fact that when a man finds himself particularly fast and good at any particular branch of the business, he follows that in preference to any other and finds it more profitable to do so. A saw and hatchet brigade with very little experience and a natural aptitude for handling these useful articles can lay as much flooring in a day as the same number of skilled carpenters who have served an apprenticeship of years, and if the skilled workmen have grown gray in the service they will probably find the others outworking them. A builder who pays a skilled workman \$3.00 a day for such work cannot compete with another who gets as much or more work from each man and employs men who know nothing but this at \$2.25 to \$2.75 per day. It is true that in this case the last-mentioned builder must keep a few skillful men to do the finer work, but in a city where the buildings are mostly brick or stone, the work on them, such as laying joists and flooring, is hardly deserving of the name of carpenter work. The builders do not want to remedy, as "Ransom" expresses it, "this great trouble," nor have they any object in keeping one or two apprentices about their shops when at any time they want them an advertisement will bring them a hundred men. When the supply of carpenters so greatly exceeds the demand that the wages of good workmen are actually less than those of hod carriers, I cannot see the advantages of apprenticing a boy to the trade. It seems to me that "Ransom's" idea is that, for the advantage of builders, apprentices should work for years to acquire the necessary skill, accumulate several hundred dollars' worth of tools and then hunt for work a considerable part of the time without finding it. Many of the things they learned during their apprenticeship, within

five years, would be entirely useless, from the fact that improved machinery would do better and cheaper work than they could. Builders and carpenters know this, and the carpenters who have apprentices, too often have to put them to making ironing boards and shining boxes during dull seasons. What is more necessary than more apprentices, is that men claiming to be skilled workmen spend less time in talking of how twenty years ago they worked for three months getting out the sash for Col. Jones' house in Bungtown, "all made by hand, sir," and apply their leisure to learning to use advantageously tools and appliances unknown when Col. Jones' house was put up in Bungtown. H. G. C.

DON'T DELAY REPAIRS.—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 combination, 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 15 times, the buzz 10 and the jig saw 16 times, making 41 times in all. It took about a minute to put on, and another one to throw off a belt, thus taking in all 82 minutes in one day. There were eight of us who had to do the same thing, so it took 656 minutes or about 11 hours to handle those belts—more than one man's time every day. Running this way for 9 weeks would amount at the rate of 40 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 nor 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.—*Cabinetmaker.*

California Redwood; Will it "Shrink," "Warp," and "Crack"?

REDWOOD being a lumber product special to this State, it is gratifying to read favorable notices in Eastern and foreign journals as to its good qualities, when such notices are fairly, if not strictly within the range of exact facts; but when they go beyond this, and state more than is warranted by the actualities of the case, they become misleading and creative of wrong notions and conclusions, and in the long run work an injury not compensated by any temporary good effect produced by overstatements calculated to stimulate a demand on the part of manufacturers in distant places for a wood of the very superior and exceptional character ascribed to the redwoods of the Pacific Coast.

We refer to this matter, owing to the fact that the following statement has been freely circulated in the journals of this country and of Europe, to wit: . . . "The fact that redwood neither WARPS, SHRINKS, nor CRACKS, should lead the attention of furniture manufacturers to practically examine into its merits, and if found satisfactory, the distinct branch of business referred to would receive a valuable addition from the forests of California."

The foregoing is only qualifiedly correct. If redwood in real fact possesses all the qualities accredited to it by our contemporaries, it would certainly be entitled to most favorable consideration; for, as yet, there has never been a wood found entirely free from the defect of shrinkage, nor can that quality be claimed for the redwood of California, in an absolute degree.

As the result of thirty-three years' practical, personal experience in the use of redwood in connection with house and other constructions, and close observation and practical experiment in furniture and many other things calculated to develop the specialties of redwood, we give the following, which may be relied upon as correct for all practical purposes.

It should be first stated that like all other woods, the product of all trees of the same species is not of equal grain and quality, the great bulk of redwood being from good to excellent, with occasional trees yielding brash, hard, springy boards and cuts. Consequently much of that used for general purposes, in the way of scantling, posts, fence boards, for the erection of wood bulk heads, etc., is devoid of all the credits expressed in the extract under notice.

As to "shrinkage," there is a quality of redwood, which, when properly seasoned—water seasoning being decidedly advantageous—and thoroughly dried after such seasoning, will equal, if not excel any other lumber known, in the matter of non-shrinkage, while the redwood lumber generally used in house construction will shrink, both in width and length. It is a very common thing to see the butt joints in rustic and wall boarding on frame buildings, the sheathing on inside walls, ceilings, etc., shrink open before the completion of

the structure, in boards of twelve, fourteen and sixteen feet lengths, all the way from small open joints up to one quarter, and in some cases half an inch. So that all unqualified statements made that redwood lumber will not shrink are erroneous. But at the same time we wish it understood that picked redwood lumber, properly treated, has no superiors in a shrinkage point of view.

Will it "crack"? That depends upon the quality, the condition of the lumber, and the position in which it is placed. It being a rather soft, light material, it is far more liable to fracture lengthwise than the generally known lumber used for building purposes in this and other States. But its liability to "crack" is not such as to lessen its value as a building material, both for outside and inside finishes.

As to its "warping," with the exception of a specially hard, brash kind, pieces of which are to be found in almost all promiscuous lots, it is specially free from this defect; and when nailed in place, as on fences, etc., it "stays where it is put."

As a "finishing" lumber, its use has been and is almost universal in California, both for inside and outside work, as it is the cheapest in cost, and more easily worked than any other, and answers all the usual purpose for architraves, wainscoting, and trims and finish generally, and for door panels; but owing to its greater brittleness, seldom used for the stiles and rails of doors. In the better class of buildings, "hard" and more expensive woods are sometimes used, but seldom to the entire exclusion of redwood.

As a "furniture" material, it has its special qualities. Root and snarly redwood veneers, and some of the wavy, curly pieces will bear comparison for beauty with most of the highest cost hard woods. Much of the very handsome and costly furniture manufactured in this State, have some of the parts of selected California redwood. There is perhaps no wood on earth that will hold glue better. In the manufacture of veneered and other glued joint work, it is recognized as incomparable for its tenacity for holding. It is susceptible of any degree of high polish, and owing to its porous character receives and holds paints well. But while it is good for numerous tender uses, it is a poor material for floors and other purposes, where subjected to friction or hard wear and tear.

A NEW process for drying lumber is just now attracting attention. It is said to be the most effectual and economical method ever practised. No kiln is necessary, although where a shop has one it can be utilized to advantage. The process has the great advantage of keeping the surface of the lumber moist during the drying; this holds the pores open, obviates all tendency to cracking and leaves the albumen free to perform its natural functions. In ordinary kiln drying the albumen is injured or destroyed, and the surface dries first, thus sealing the juice inside,

to escape eventually through cracks caused by the uneven expansion of the wood. The statements in circulation as to the remarkable cheapness, simplicity and thoroughness of this new method seem to merit the attention of every builder and wood worker, for it is described as being equally well adapted to large and small shops. Some readers may perhaps be surprised to learn that the process consists in surrounding the wood to be dried with common salt; but those who are acquainted with the peculiar power for extracting moisture which salt possesses will not be at all astonished at this novel and ingenious utilization of this power.

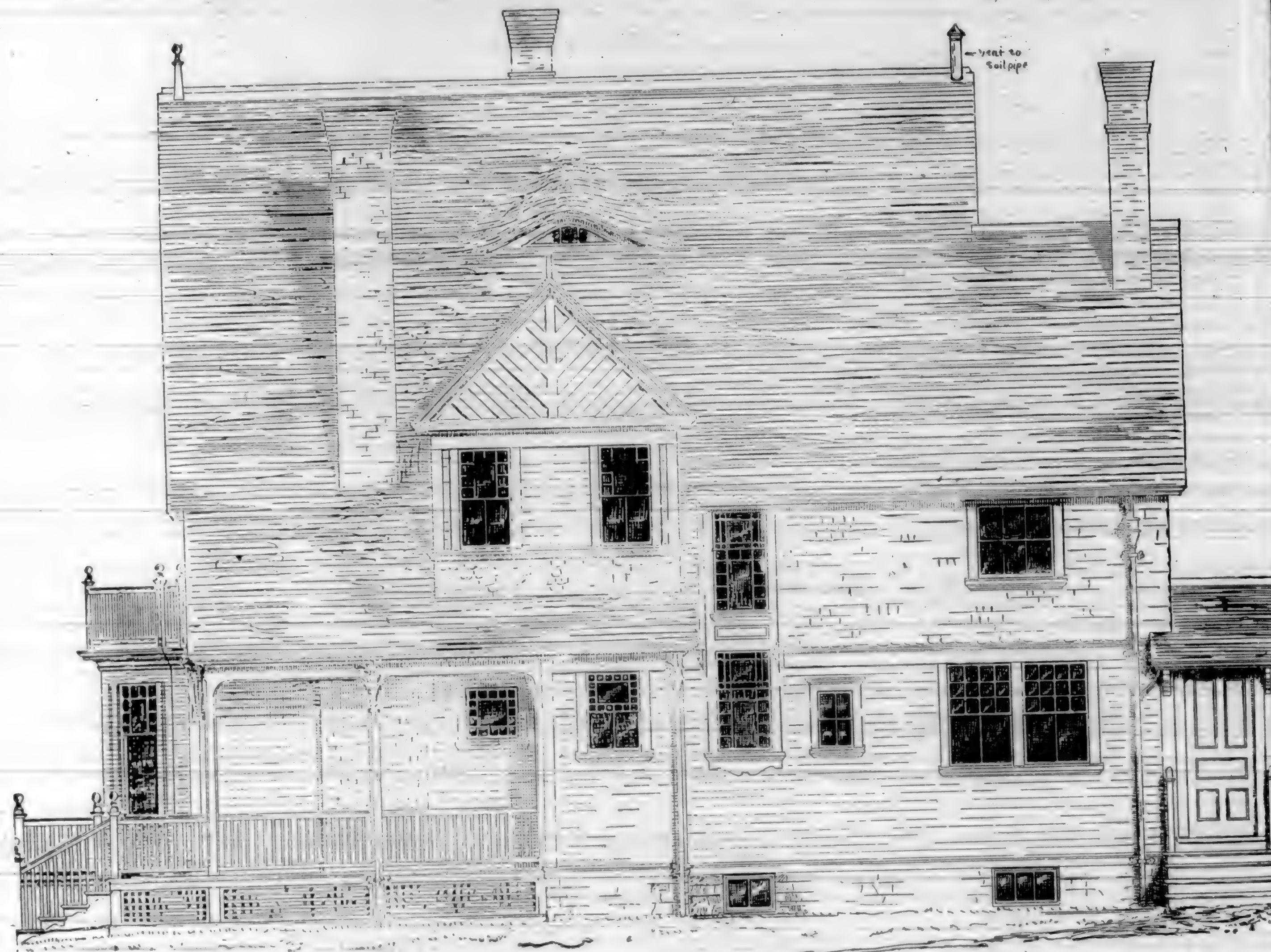
Hand and Machine-made Putty.

How the two kinds are made, and the difference between them, is related by an old painter to the ubiquitous reporter of an American contemporary as follows:—

The best is made of raw linseed oil and whiting, the latter being simply chalk, ground in a mill like flour. It comes out with a fine flint grit in it. Before making putty of it, a few old-fashioned men who believe in making the best of everything, wash the grit out. The fine flour is then dried. If it is not dried perfectly, it takes up more oil than is desirable or profitable. From 500 to 600 pounds—about 15 per cent. by weight of raw oil to 85 per cent. of whiting—are put in a chaser and thoroughly mixed. The chaser is an annular trough, ten feet in diameter. From a vertical shaft in the center two arms extend, on the ends of which are heavy iron wheels that rest in the trough. When the shaft revolves, the wheels chase each other around the trough. When mixed, it is packed in bladders for convenience in handling. The adulteration of putty is effected by mixing marble dust with whiting. It costs about a quarter of a cent a pound, and whiting costs twice that. Paraffine oils, at from 10d. to 1s. a gallon, are used instead of linseed oil at 1s. 6d. The marble dust makes the putty gritty, and the cheap oil makes it sticky. Cheap putty is decidedly cheap. Putty in bulk, wholesale, is worth 8s. 6d. a hundred pounds. The other window glass cements run from 4s. 6d. to 4s. 9d. They are dear at that. They take longer to put on and longer to dry. Putty is neither imported nor exported. A lot was brought over a long time ago, but that was when oil was very high. The whiting comes from England.

A superior article of putty is made, however, by the further addition of white lead in oil, Japan varnish, and a small quantity of turpentine, which makes a hard cement that does not shrink, and when dry can be rubbed down with pumice stone or dusted with sand paper, so smoothly will it cut. Even in the common sorts of putty it is well to use some white lead if a hard putty is desired.

Every mechanic, property owner, material man, etc., should subscribe for the *California Architect and Building News*. Terms, \$2.50 per annum.



SIDE ELEVATION OF \$5,000 COUNTRY DWELLING.—FIRST PREMIUM DESIGN.

Our Competitive Designs.

NUMBER ONE.

THE accompanying design and plans on this and other pages of this issue, are those to which was awarded the first premium by this Journal, in the late competition for plans of a country dwelling to cost about \$5,000. The author is Junius H. Morse, of Boston.

The style of architecture presented is essentially different from that generally adopted on this coast. We leave it to our readers to form and express their opinions in regard to the adaptability of the elevations shown, to meet the requirements of different localities.

The plans show very careful study on the part of the author, and credit is due him for the thorough and artistic arrangement of the rooms and the detailing of so many conveniences. In the latter item, the plans excel any which have come under our notice.

It will be noticed that an alternate plan is shown on page 142. By comparing it with

plan on page 143 it will be seen that though presenting the same general arrangement, it is of more practical utility, inasmuch as *direct* communication is established between the dining and sitting-rooms, thus obviating the necessity of entering the dining-room by the way of the main hall.

The plans are so plain, that we do not deem an extended notice necessary. The following specifications by the author will sufficiently explain his ideas:—

BOSTON, April 12, 1884.

A memorandum of the kind of materials to be used, and quality of work to be performed in building and completing a country house after plans furnished by "As you like it."

EXCAVATION.

Excavate the cellar four feet deep under whole of the house, the dirt removed to be used in grading around the house. Stack the loam in a separate pile. Excavate for all drains and cesspool.

FOUNDATION.

Cellar wall eight feet (8) high to be built of sound, large, field or ledge stone, well bonded and laid in one-half ($\frac{1}{2}$) cement mortar. Face wall on the inside and outside above grade, the joints to be neatly struck on the outside. Furnish footing stones for all piers and chimneys, and build a dry drain around the outside of wall.

BRICKWORK.

Build chimneys of good, hard, burned brick selected for exposed parts, all to be laid in one-half cement mortar; tops to be colored with Venetian red. Flues 8x12in. Use Philadelphia face brick for fire-places; glazed tile hearths in first story, unglazed tile hearths in second story.

FRAME.

Regular braced frame of clear sound seasoned spruce, sills 6x7in.; studs, 2x4in.; posts, 4x6in.; girt, 4x6in.; plate, 4x4in.; girders, 6x8in.; first and second story floor joists, 2x10in.; third story floor joists, 2x9in.; all set,



FRONT ELEVATION OF \$5,000 COUNTRY DWELLING.—FIRST PREMIUM DESIGN.

Section

16in. on centres; rafters 2x8in.; set 20in. on centres.

BOARDING.

Use sound seasoned hemlock boards for roof, walls, and under floors. Pine tarred sheathing paper to be put under all shingles, clapboards, and between all floors.

OUTSIDE FINISH.

Outside finish to be first quality seasoned pine. Roof and wall shingles best cedar, sawed fancy cut where shown. Clapboards clear sound spruce, laid four inches to weather. Pine gutters. Zinc conductors with fancy heads. Use lead and zinc flashings around chimneys and exposed places.

GLASS.

Windows glazed with first quality double

thick German glass, single thick for all small lights, bevelled French plate for front door. The upper sash of staircase window to be leaded, stained glass.

WINDOW FRAMES AND SASH.

Pine sash stained, 1 $\frac{1}{4}$ in. thick; 2in. pine sills hard pine pulley stiles, galvanized iron pulleys, iron weights hung with hemp cord. Blinds first quality half roll.

TOP FLOORS.

Hard pine for kitchen, pantry, china closet, and piazza floors. Halls, vestibule, and dining-room, oak borders with spruce centers. Bath-room, cherry. The parlor, sitting-room, chambers, and closets, spruce; all floors to be hand planed after being laid, and no board to be over four inches wide.

MANTELS.

\$125 allowed for four mantels and six shelves.

INSIDE FINISH.

The first story bases 8in. high moulded, architraves reeded 4 $\frac{1}{2}$ in. with back band, turned corner blocks, plinth. Second story 7in., base 4in., moulded architrave with plinth. Second story 7in. base, 4in. moulded architrave with plinth and turned corner blocks. Third story and kitchen 6in. chamfered base, plain 4in. architraves with corner blocks. The parlor, sitting-room, and two principal chambers in pine, one coat shellac, two coats lead and oil selected colors. The hall and dining-room in oak. All other rooms in white wood two coats shellac rubbed down in oil. Hall dado 3ft. 6in. high, dining-room dado 3ft. 6in. high, raised panels with flush mouldings.

DOORS.

Outside doors pine 2in. thick. First story five panels 1½ in. thick, whitewood veneered to match the finish of rooms they stand in. Second and third story 1½ in., five panels; all to be hung on lifting butts.

PLASTER.

Best two coat work on spruce laths, cork floated in hall and vestibule to be painted. A small plaster cornice in parlor, two centres.

PAPERING.

Allow \$150 for wall papers and papering.

PAINTING.

Roof shingles two coats lead and oil Indian red, creosote stain for second story shingles warm sepia. First story clapboards three coats of lead and oil, Pompeian red. Trimmings dark bronze olive green, three coats. The painter to glaze all the windows, finish all hard wood, and do all the interior painting.

FURNACE.

The sum of \$150 is allowed for a furnace.

HARDWARE.

The contractor to furnish all locks, knobs, butts, screws, nails, hinges, sash fasts, pulls, snaps, hooks and catches; furnish the iron brace for front chimney.

BELLS AND TUBES.

Bell from front door to kitchen, one on side door; foot bell from dining room to kitchen. A speaking tube from second story hall to kitchen.

STAIRS.

Front stairs pine risers and treads, oak rail 6in., newel post 4½ in., angle posts 1½ in., balusters fancy turned. Attic and back stairs pine.

PLUMBING.

One bath-tub, seat, and bowl in bath-room, one sink, boiler, and two set tubs in kitchen, a water-closet in cellar; a first-class job in all respects, done according to the Boston building laws.

MISCELLANEOUS.

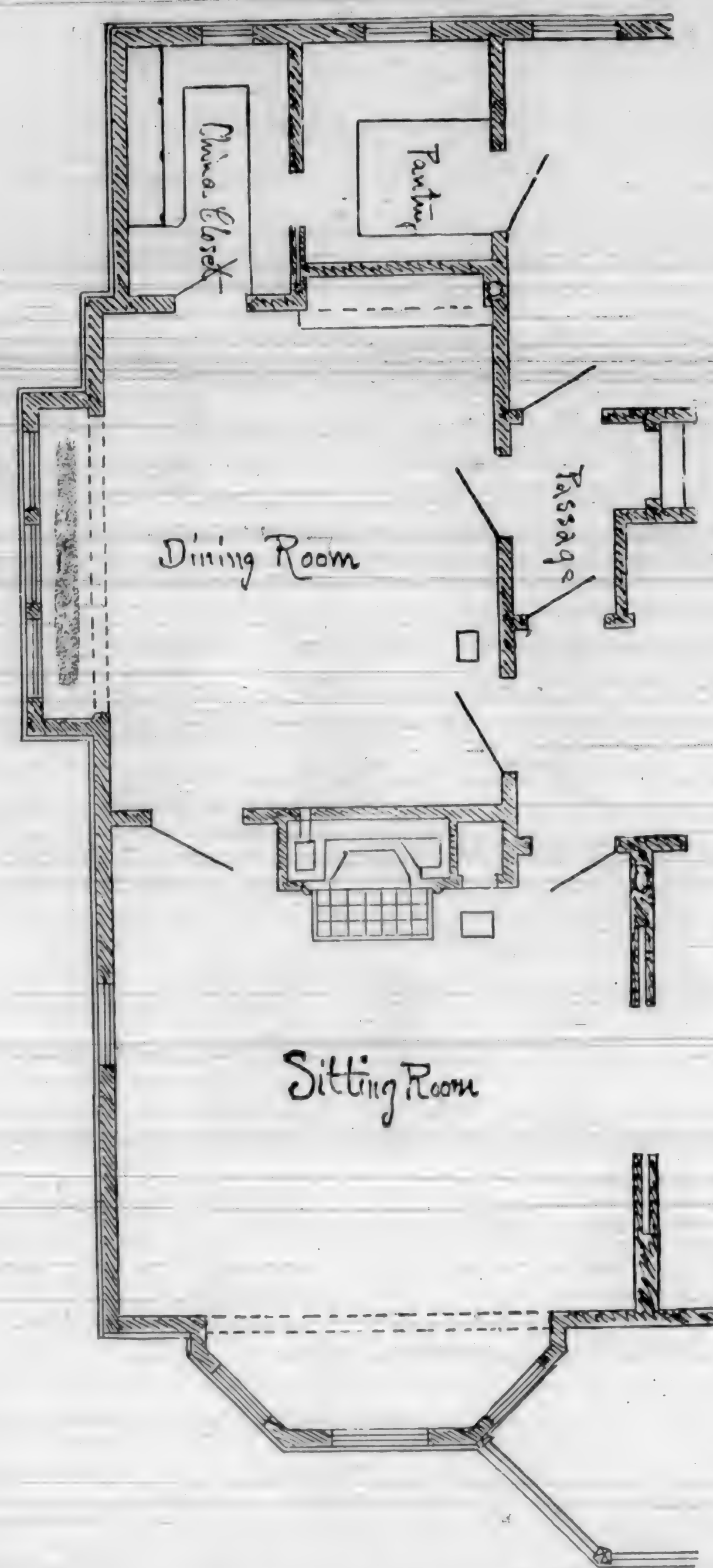
Build coal bins, pipe for gas, put shelves, drawers, and hook strips where directed by owner.

GENERAL CLAUSE.

The work is to be done in a thorough and workmanlike manner, and all breakages and marring of work to be made good by the contractor.

In the accompanying estimate it must be borne in mind, that prices given are those at present ruling in the city of Boston, and are not, by any means, to be taken as those for which the same work could be done on this coast. A decidedly much higher estimate must be allowed for the plan as presented, should any one see fit to adopt the same and erect on this coast a building in conformity to the plans.

It was our intention to prepare a California estimate, so our Eastern subscribers could compare the cost of work and material on the two extreme ends of our country. We found the task rather difficult, without completely changing the looks of the front. The principal difficulty lies in the fact, that here, in houses of the cost given, the stories are seldom, if ever, less in height than 12 feet for first story, and 11 for second; these proportions would be exceeded in houses in which rooms are as large as those shown. By reference to the front elevation, it will be seen that the height of stories is but 8 and 9 feet. It is obvious that



ALTERNATIVE DESIGN SHOWING DIRECT COMMUNICATION BETWEEN SITTING ROOM AND DINING ROOM.

ESTIMATE OF QUANTITIES AND PRICES RULING AT BOSTON, MASS.

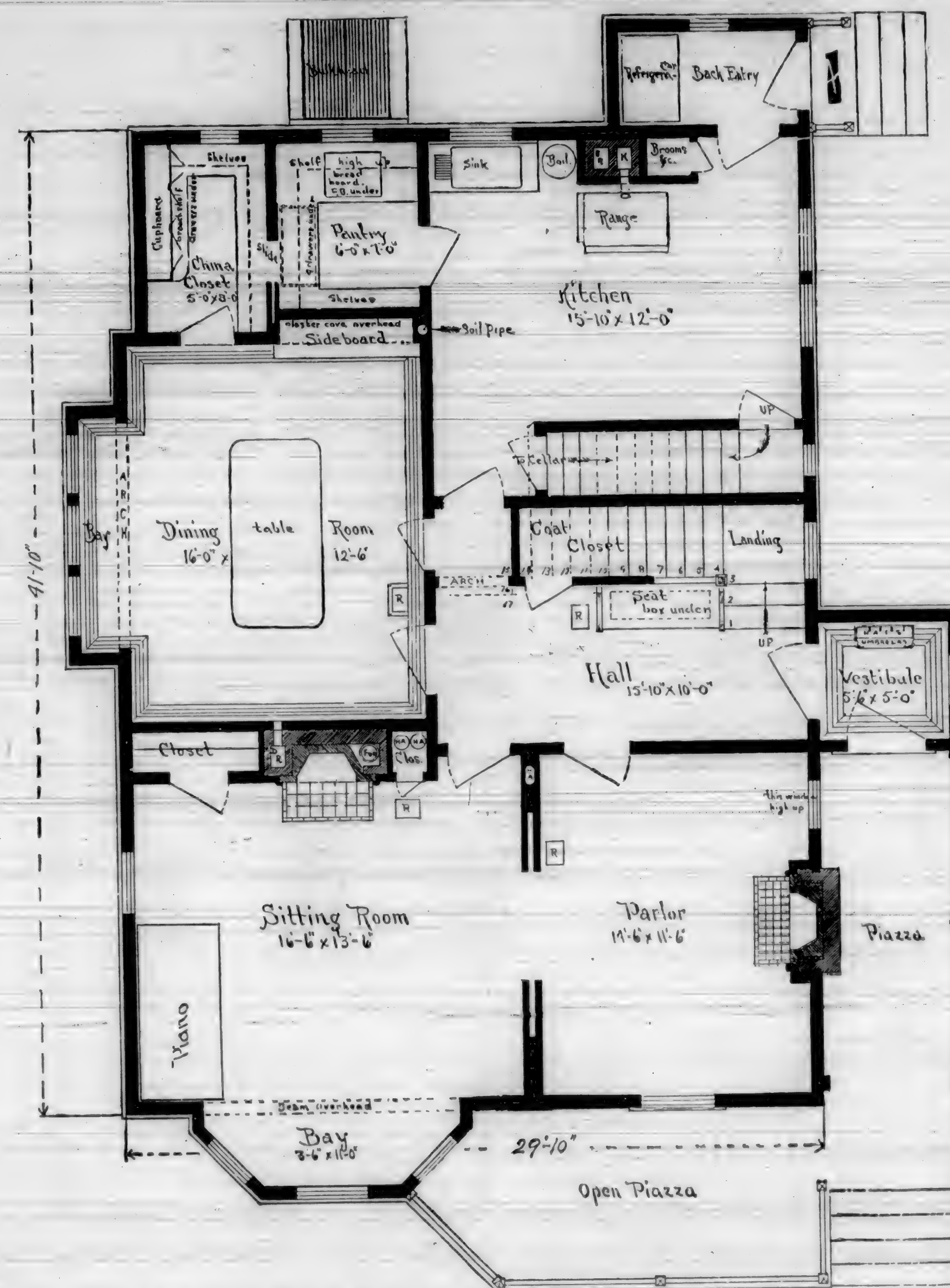
MASON WORK.

250 cu. yds. of excavation @ 25 cents.....	\$ 62 50
*84 perch of stone wall @ \$4.25.....	357 00
13½ M. brick laid including mortar @ \$16.....	216 00
4 fire-places and hearths @ \$25.00.....	100 00
1200 sq. yds. of plastering, laths included @ 25 cents.....	300 00
140 sq. yds. of concrete @ 50 cents.....	70 00
Total.....	\$1,105 50

Perch 16½x14x1-24 cu. ft.

an increase of those measurements to those used here, would materially effect the appearance of the outside, as windows, doors, etc., would all have to be larger than shown.

It will be noticed that the price of rough lumber in estimate, is much lower than that ruling here, while that of finish lumber is higher. Brick work, plastering, plumbing, painting, and mantels, are all considerably lower than the amount for which said work could be done in this city. A careful study of the estimate will enable one to contrast the difference.



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

CARPENTER WORK.

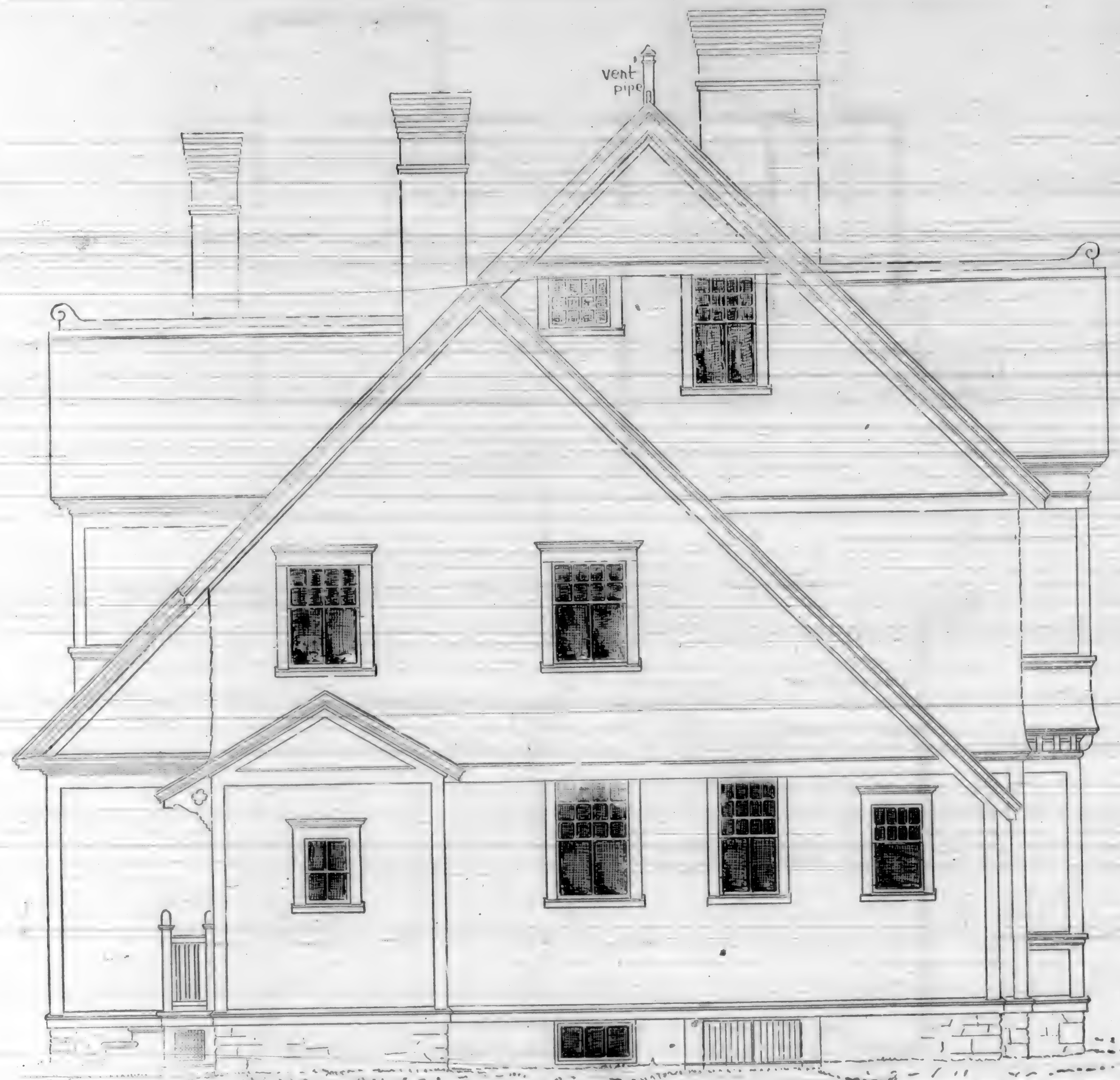
12,000 ft. of spruce framing timber @ \$16 per M.....	\$192 00
3,000 ft. of furring and partition stock @ \$16 per M.....	48 00
9,500 ft. of hemlock roof and floor boards @ \$12 00.....	114 00
30,000 ft. of sawed cedar shingles, wall and roof, @ 4.50.....	135 00
1,200 ft. of spruce clapboards @ \$30 per M.....	36 00
Sheathing paper.....	50 00
2,500 ft. of pine outside finish @ \$60 per M.....	150 00
50 ft of wood gutter @ 12 cents.....	6 00
3,180 ft. of spruce floor boards @ \$25 per M.....	79 50
700 ft. of hard pine rift sawed @ \$50 per M.....	35 00
500 ft. of pine inside finish @ \$60 per M.....	30 00
1,500 ft. of whitewood inside finish @ \$60 per M.....	90 00
100 ft. of panelled dado @ \$1 per running ft.....	100 00
70 ft of zinc conductor @ 15 cents.....	10 50
Windows complete.....	300 00
Doors and frames complete.....	290 00
Hardware and nails.....	250 00
Stairs, rail-posts and balusters complete.....	225 00
Plumbing complete (an actual estimate).....	325 00

Painting complete.....	300 00
Mantels and shelves.....	125 00
Papering.....	150 00
Furnace set ready for use, pipes, etc.....	150 00
Carpenters' labor.....	825 00

Total.....	4,019 60
Mason work.....	\$1,105 50

Total.....	\$5,125 10
Architects' commission not included.	

Respectfully submitted,
"As You Like It."

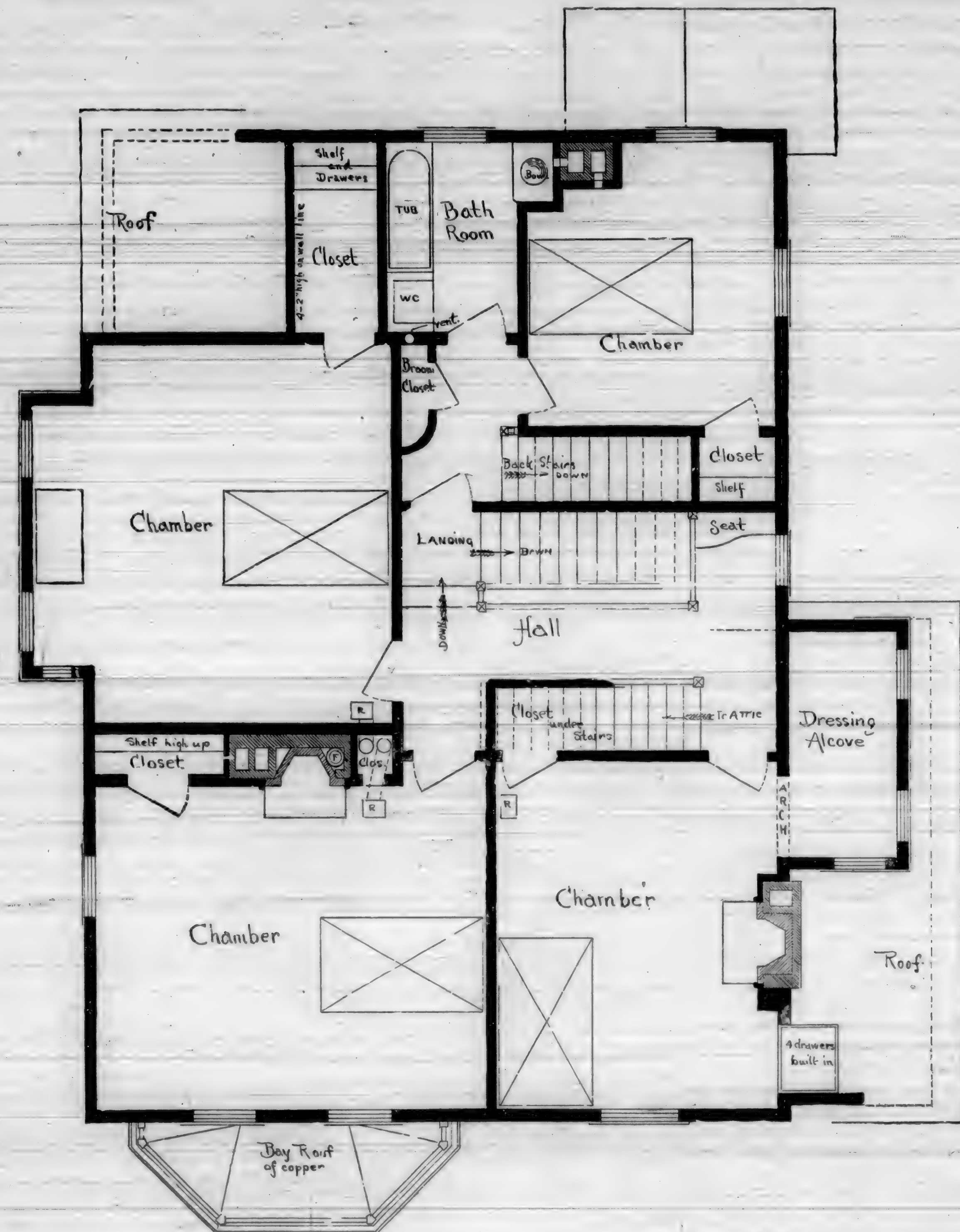


REAR ELEVATION OF \$5,000 COUNTRY DWELLING.—FIRST PREMIUM DESIGN.

Mechanics should remember that it is for their interest to forward items of general interest to the publishers of this Journal as, by so doing, they reap much benefit from an interchange of ideas. If engravings are necessary to explain your ideas, send a rough sketch of the same and we will put them in a presentable form.

AN ORIGINAL RAT TRAP.—This trap consists of a sheet iron pipe with a sort of rim on both ends and a strong two-bushel sack tied firmly around one end. Every hole is stopped in the corn-crib but one, which opens into a feed box on the other side of the partition. Then the pipe is placed in the feed-box and fitted, the open end firmly over the hole, allowing the sack to hang over the edge of the box into the manger. The trap prepared, the door of the crib is left open and the rats permitted to have their own way for an hour or so. Then the door is shut and a noise made to frighten the rats. Having but one means of escape they rush into the pipe and down into the sack, where they are easily caught.

Owing to the great increase in our circulation, causing great demand for advertising space, we have to announce an increase in the rates established January 1, 1884. We are continually receiving letters from parties, in regard to advantages secured by an advertisement in this Journal. Our rates are now \$50.00 PER PAGE FOR SINGLE INSERTION. Proportional rates accordingly for smaller spaces.



SECOND STORY PLAN OF \$5,000 COUNTRY DWELLING.—FIRST PREMIUM DESIGN.

A New Work. How to Build, Furnish and Decorate. Price \$5.00.
Send to This Office.

Our Sewerage System and the Cholera.

AS USUAL in all cases of alarm or anticipated approach of contagious disease or possible epidemic, the sewerage of San Francisco looms up as a formidable agency of evil, in view of the cholera scare at present so general in many parts of the world; so much so that from the health department comes the warning that something should at once be done by the city government to cleanse and purify those underground conduits, which at all times contain and emit the germs of disease. And in view of the terrible character of the special agency of death, which has recently appeared in parts of the Old World, and is reported to have crossed the Atlantic, and shown itself in the metropolis of the United States, it is but natural that not only the head of our health department, but every citizen of this commonwealth should scrutinize closely as to the more probable channels of approach and danger to San Francisco.

And as it always has been, so it is now—the sewerage of the city is about the first in mind, because it is well understood to be about the worst in the world, all things considered; for there never was a city located anywhere on the earth's surface where the natural contour of the surface of the land was more favorable to perfect drainage, than the original limits of the city inside of the filled-in districts. And had good and wise judgment, and skillful experience, and intelligent civil engineering been practiced in establishing the grades of the streets, and consequently the grades of the sewers, they would to-day be a source of pride, as perfect for all the purposes for which they are intended, rather than as they now are, a source of dread and alarm, causing uneasiness and fear among the people,—a something that should by all means be specially guarded against at times like the present, when the feeling of perfect safety from all local causes of infection should be universal in the community. For it is a conceded fact that fright and fear has much to do with the spread of epidemics.

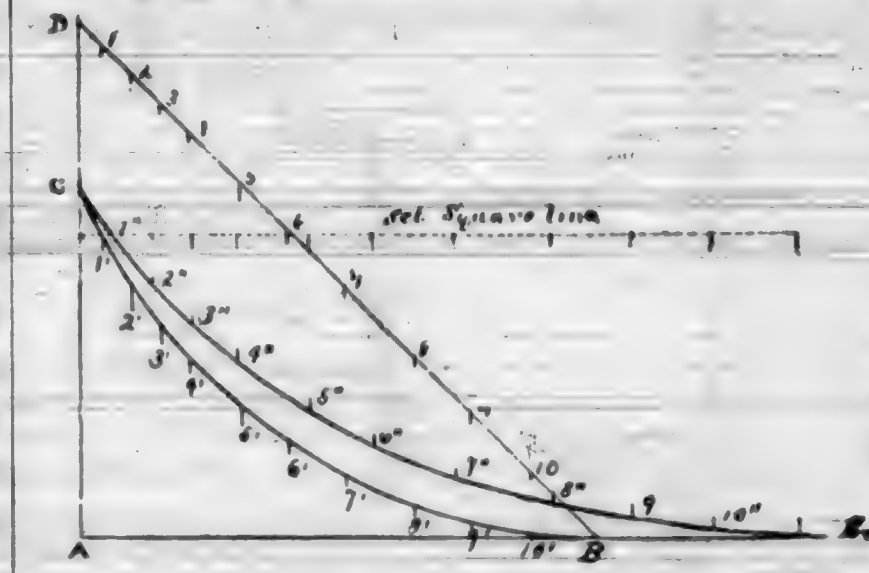
But the frequent reference to the sewerage of the city by the health officials has become rather monotonous, inasmuch as it fails to produce the proper action corrective of the evil. The naming and pointing out, or the strong denunciation of a bad thing, however often or forcibly repeated, amounts to nothing, unless productive of proper action; and so long as the magnitude of the sewer pest in San Francisco is overlooked, and those whose duty it is to correct and perfect the same, take no proper interest or action in the matter, health officials may sound the alarm until doom's day, while the cholera or any other malignant disease may enter the gates of the city and carry off their victims with impunity.

A floor-area of ten square feet to each occupant of a sleeping apartment is necessary to an adequate supply of air for eight or nine hours of slumber.

SAN JOSE, May 30, 1884.

To the Editor of the CALIFORNIA ARCHITECT—

Mr. M. J. Marion has given to your readers the true theoretical way of finding a curved hip or diagonal rafter; allow me to present a way I have thumbed out for myself, it often coming in my practice to have to lay off a hip.



Let A B be the seat line of the rafter and C B the elevation of the same. Draw D B at the same angle to A B that the seat line of your hip rafter will bear to the seat line of your square rafter, cutting the perpendicular A C produced in D. Now tick off ordinates 1" 2" 3", etc. parallel to A D, cutting D B and C B in 1' 2' 3' 3', etc. Now take a set square or straight edge with a square end and lay the long edge on the line D B with the square corner at D, mark off the ticks 1, 2, 3, etc. on the edge of set square (as per square enclosed), clamp down a straight edge on A D and slide your marked square on it as shown; with the edge of the set square passing through 1" mark off the position of the tick 1' on the set square at 1". Continue this at 2", 3" to F. Spring a batten through the spots 1" 2", etc., so obtained, and draw your hip rafter. This though seemingly complicated, once understood will enable one to draw such a rafter in one third the time, and what is also important one third the space occupied by Mr. Marion's method. ONLY A CARPENTER.

Personal.

TO THE host of kind friends who have so cordially and heartily—by word and pen—extended to us wishes of joy, good health and long life, we return our sincere thanks, pledging that, should like happy conditions at any time in the future, surround any of them, our hand, voice and pen will be utilized to return honestly expressed salutations and greetings, with the wish that those who follow our example may be alike successful with ourselves in selecting an antidote for the loneliness of single un-blessedness.

In regard to the durability of the different woods, the most odoriferous kinds are generally esteemed the most durable; also the woods of a close and compact texture are generally more durable than those that are open and porous; but there are exceptions, as the wood of the evergreen oak is more compact than that of the common oak, but not nearly so durable.

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 causes 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.

Modern High Explosives.

IN presenting this work to the public, the author has endeavored to acquaint the engineer, the contractor, and the chemist, with the composition of the substances they are now so largely using, with their peculiar characteristics and their adaptation for certain results; or in a word to familiarize them with the high explosives. Extra business engagements have prevented us giving time for a thorough examination of the contents of this work, but from a cursory view it is written in a style at once attractive to those for whom it is intended. Our library is always open to those who desire to examine the latest works, and we will take pleasure in showing the above to those who call.

THE day is past when people are contented with mere box-like houses, and every one tries to make his home as attractive to the view as possible. A small amount of ornamentation, properly applied, will not add to the cost of a building, while it greatly relieves the monotony of appearance by breaking the surface into light and shadow, and will always speak more in favor of the fine taste and feeling of the owner than an overloaded ornamentation. Keep this in mind: simple, well-proportioned forms do more to beautify than a confused mass of adornments poorly distributed.—*The Builder and Wood-Worker.*

Subscribe for the California Architect and Building News.

Prosper Huerne.

MR. PROSPER HUERNE, whose likeness is here given, was born at Pontgouin, near Chartres, France, November 26, 1820, and obtained an education as civil engineer in the Government school of *Arts et Metiers* at Chalons.

He early commenced his professional career by constructing a section of the Orleans Railroad, together with the necessary depots, and later, after having been admitted as *Ingenieur Conducteur* in the *Corps des Ponts et Chaussées*, he erected, as assistant chief engineer, the great bridge over the River Loire, for the Central Railroad. At the time of the great inundation of the Loire in 1846, he distinguished himself for his bravery by saving the lives of a great many persons, at the imminent risk of his own. For this service the French Government awarded him a medal of honor.

Believing that this country offered a more promising field for advancement than his native country, he decided to start for California, and landed at San Francisco the 17th of June, 1850.

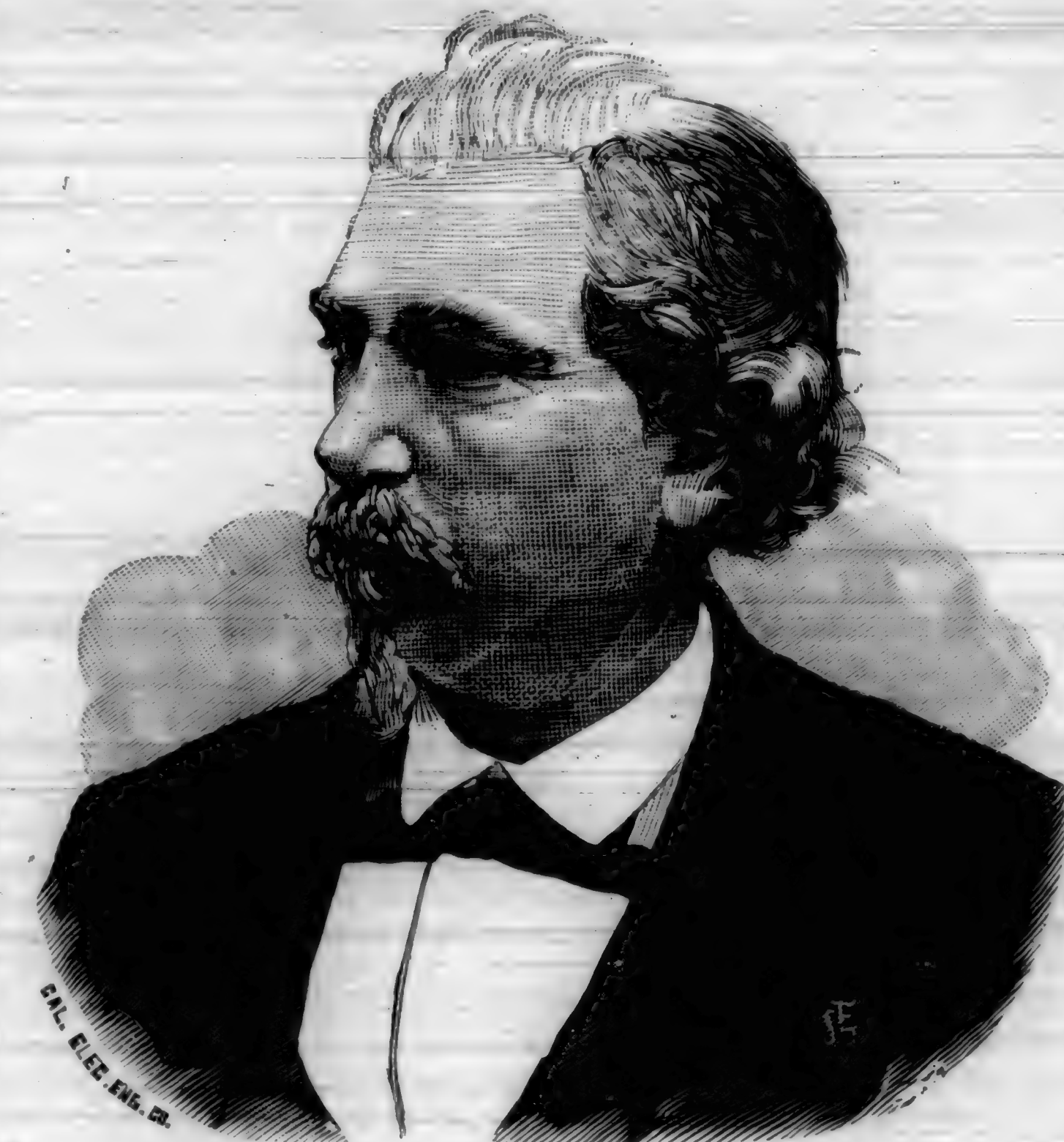
His career here has been a busy and useful one. He designed and constructed the North Point Docks in 1854, and three years later built the French Hospital on Bryant Street. The Market Street Railroad, the first railroad in the city (running to the Mission Dolores), was equipped and run under his directions, he being the chief engineer and assistant superintendent. In 1866 he presented, in competition, a project for the San Francisco Harbor Sea Wall, and of the thirty-three designs submitted, his was ranked second.

The first sugar refinery erected by Claus Spreckels on Eighth Street, the new church at the Mission Dolores, destined to replace the adobe structure built by the early missionaries, and numberless business edifices and private residences in this city, and churches and colleges all over the coast, attest that his ability as an architect is not inferior to his skill as an engineer.

In the latter capacity he has long been of service to the French Government, keeping her informed, through her consuls here, on many details of our local progress and improvement. Under this head he has described in detail the organization of our admirable fire department, by special request written lengthy reports on the harbors of San Francisco and San Diego, and on frequent occasions brought

to the notice of foreign engineers the system of cable railroads, as perfected here, furnishing plans and illustrations of this and of other interesting achievements for publication in the various French scientific periodicals.

He has (in connection with Slaven Bros.), devoted his energies to sharing in the execution of the great enterprise of his celebrated countryman, Ferdinand de Lesseps. As architect, he erected the large storehouses and many of the buildings necessary for the accommodation of the great number of engineers and employés now laboring on the Isthmus of Panama. As engineer, he is now occupied in connection with a powerful New York company in carrying out a contract with the *Compagnie Universelle du Canal Interocéan-*



PROSPER HUERNE.

ique, to dredge the Atlantic side of the above canal.

He is a member of the San Francisco Chapter of the American Institute of Architects, the California Academy of Sciences, the Exempt Fire Company, the Territorial Pioneers, and other prominent societies. One other item in connection with Mr. Huerne's career is of especial interest, viz., he is the living pioneer architect of San Francisco.

Ignorance in the Use of Stoves.

STOVES are among the commonest and most useful things in the world, and yet a family will use an ordinary cooking range during its natural life-time and never know its flue con-

struction. Stove manufacturers and dealers will bear us out in saying the greatest difficulty they have to contend with in the introduction of stoves is the ignorance of the people who use them. This is illustrated by a recent incident in the experience of a Pittsburg house—which was told us a few days since. One of their standard ranges was placed in the house of a physician, and the complaint came that it was impossible to bake with it or heat water by the water-back. A representative of the house went to investigate the matter and says he didn't do a thing to the range but build a fire in it. When he started the fire in it, and baked potatoes in twenty minutes, the doctor's people became convinced that the range would bake if given a chance. It took

longer to heat a thirty-gallon tank of water but it was accomplished in a reasonable time. There was nothing the matter with the range, nor even with the chimney.

The trouble was that the people had been trying to force the range to consume coal instead of to do its duty in baking. The stove man remarked to the physician that when he gave his patients physic he did not give them too much. The range would work all right if treated in the same way. Give it coal in even homeopathic doses and it would accomplish the result desired. People are coming slowly to learn that a stove can be made to do efficient service with a small amount of fuel. This is especially true in the use of hard coal. Stove dealers can benefit their trade and do a favor to customers by becoming thoroughly familiar with the working of the stoves they sell, and explaining their construction and instructing their patrons how to use them properly. By so doing stoves and ranges will be made to

give better satisfaction, and there will be less complaints.—*Tinner and House Furnisher.*

Cottages—Another New Work.

THIS new work contains twenty-four plates of medium and low cost houses, by different architects, together with descriptive letter-press, giving practical suggestions for cottage building, to which is added a chapter on the water supply, sewerage, drainage and other sanitary questions relating to country houses. The work is the best one that has, as yet, been presented before the public for the price quoted. Price, post-paid to any part of the country, \$1.00. Send orders to this office.

Characteristics of Japanese Art.

A. CURTIS BOND.

THE principles of art necessarily lead to characteristic differences of development among nations. In a nation like Japan, so long excluded from the world, we find art working within certain formal and antique bounds, and this notwithstanding the marvelous variety given to productions and the facility of execution of the artists, who in realizing any given standard appear to trust little to chance, and achieving success with marvelous precision, apparently unburdened in thought with the details that go to make up the result.

Traditional and hereditary causes have manifestly endowed them with a love of art, which is put to good account in a thousand forms. Though we can never become their copyists, and occupying as we do higher ground in many leading spheres of art, there is much that is suggestive in the method and style of their work as to modes of artistic treatment which may be incorporated both in art designs and execution.

Decorative art in Japan owes much to the circumstance, that those engaged in it have been close students of nature. Ever on the alert for new and strange features, they proceed at once to give effect to these impressions, the hand closely following the head. The Japanese carver in wood has but to get the right conception, and he will work it out without a pattern, not failing, if it be a figure, to give to it individual expression, however crude it may otherwise be.

Take a Japanese two-leaved folding screen. Powerful contrasting effects will be sought not in each separate tableau but between one and the other. This contrast is most effective in animal and human forms, and this in the attitudes they assume; indications of dominant but different instincts and feelings.

The glory of the lion may be said to be its strength, but who but a Japanese artist would have conceived the idea of combining the indication of such strength on the exterior of a bronze vase, with fear and impotent rage. The lion with front paws on a fallen tree trunk sees a winged dragon circled by dark thunder clouds in the air and appears to be exerting all his power to draw back from the fearful object on which his eyes are riveted, and yet to fail in the effort, as though enchaind by some superior influence.

Quite in accordance with this spirit of contrast is the adorning the rounded edge of an elevated bronze dish with flying birds whose bodies protrude straight from the rim at given distances, their gills alone being attached to the plate.

An artistic surprise has, mentally considered, all the effect of a strong contrast, and the Japanese artist abounds with surprises; thus isolated human eyes will be seen peering out from different artistic objects, just where they would not be looked for, a practice for

which, as also for the abounding circles in Japanese work, a symbolic purpose has been vainly sought; the fact being that the brightness of the eyes makes capital contrasts and assures some fun. The truth is that the vagaries of Japanese art require less to be analyzed than enjoyed, more especially with a design unique in itself.

The practical character of the Japanese mind leads to a combination of the *utile* with the artistic. Witness in bronze vases the employment of elephants' heads as decorations whilst their curled trunks serve as handles.

The Japanese lacquered wall-paper in colors or blended with gilding and silvering, shows in the deadened but attractive deep toned hues, and in the silvered rendering of floral subjects, or involved and flowing styles, a serious appreciation of mural artistic requirements and deep study to meet it. The designs are rich without tawdriness, and command admiration, both for the hues—many of which are wholly Eastern, the dyes apparently being vegetable dyes—and the admirable harmonious balancing of parts. If flowers are introduced, they are large and widely dispersed and no apparent continuity in the pattern is rudely broken in by furniture. An English lecturer has satirized their wall-paper as designed for the purpose of setting off their own figures, but no higher praise could well be accorded. These papers, which are beginning to be freely imported, abound with suggestions of treatment, especially in the relation of hues. Much of the decoration wears the appearance of being worked in leather, the dark brown surface being worked in small reticulated forms in intermediate spaces, contributing also its own shade to the colored design, which its hue thus aids in carrying out and strengthening.

In ornamenting objects the Japanese artist aims to avoid an exact repetition or counterpart of lines, or if he finds them, does all he can by means of decoration to destroy the direct effect of an exact division or repetition of any portion. He shuns an equality of parts or rather the appearance of equality of parts. Justice with him is not even handed, weighing with the steel yard instead of scales.

Division or repetition of parts, considered among western nations as the acme of ornamental as of architectural art, is recognized mainly by them in bronze constructions bearing as its center some deity or hero. The Japanese dislike diametrical division, preferring, for instance, to divide an oblong surface.

Diaper patterns have not sufficient variety for them, and are too regular to cover surfaces.

Their delight in ornamenting surfaces is to follow the precedent of nature which never repeats herself in spangling the skies with stars or the earth with daisies. Right angles, as a rule, are the horror of the Japanese artists. A square, which by the way, he cannot find in nature, offends his eye. He will carry up supports to the very edge of a box, round it off at the corner rather than endure it. To avoid it a tray will be shriveled up

at its edges like an autumn leaf, or its raised sides will assume a scro'l-like form.

It has been pointedly observed "that abhorring geometrical regularity of design, instead of planting his big bird in the center of a plate, like a tavern sign, the Japanese flings him down haphazard, straggling from the rim into the middle, but always with a pleasing and novel effect," qualities of conspicuous value in decoration.

The Japanese never produce a picture of the pictorial order that will stand any other test than the picturesque; relative position of objects is left to do the work of linear perspective; their use of light and shade is somewhat akin to that of *chiaro-oscuro*. Most of their carvings of the human face are typical, a droll sort of leer pervading all with Egyptian uniformity.

In the production of bronze works of art, both in design and workmanship, the Japanese show a marvelous excellence, epitomizing every form of grace suitable to it. Though much of the bronze work is grotesque there is a unity in the designs that may be studied with advantage.

One pleasing feature of Japanese art, which might be copied for dado and cabinet panels, is painting on dark colored wood, the veins of which are brought out in relief, like clouds in different strata, other portions being cut away with the exception of such parts as form a portion of the design. The bold treatment of the background gives force to the painting which is thrown forward, whilst the hue of the wood virtually serves as a surrounding shade.

The selection of teak, as the favorite wood for Japanese furniture work, is due to its extreme hardness as well as its rich ebony hue, the former quality allowing of minute and enduring carving, as in delicate piercing of apertures, or delineation of objects. It favors also the Japanese tendency to minimize material to the utmost, and affords a good contrast to metallic handles, light inlaid woods, or mother-of-pearl, not to mention silver.

Their sculptured, carved and modeled work shows a veritable passion for relief. Even their painted lacquer boxes are raised, and salient peculiarities of nature are faithfully depicted in every case, if only in the miniature carving of the interior of an egg shell, containing figures that must have been sculptured through the open chinks. We must give credit to the success of Japanese art on native subjects, particularly where there is action in social or animal life. In

real works of art, the lower portion of the creation are finely rendered, particularly birds in flight. Like early artists of other nations, the Japanese make their point of sight very high, all figures being as if looked down upon. Japanese artists excel in the inexhaustible variety and deliciously eccentric beauty of their designs. Adroit and intelligent, they are forever originating new designs in form and color. It is an error to suppose that in their figures on porcelains, bronzes, textiles, wood, and paper they are always intent on

representing grotesque traits. On the contrary, their paintings, castings, and carvings are replete with a serious spirit, with charming figures, costumes elegant and splendid, interiors rich and in good taste, whilst in their painted and embroidered stuffs and in their inlaid furniture, flowers, and other ornaments, are rendered without profusion, and with a marvelous regard to tasteful display; they never make the absurd pretension of deceiving the eye, but subordinate the ornament to the article, color where introduced assisting form by giving prominence to such parts as it is desirable to accent, and subordination to others which it is desirable to subdue.

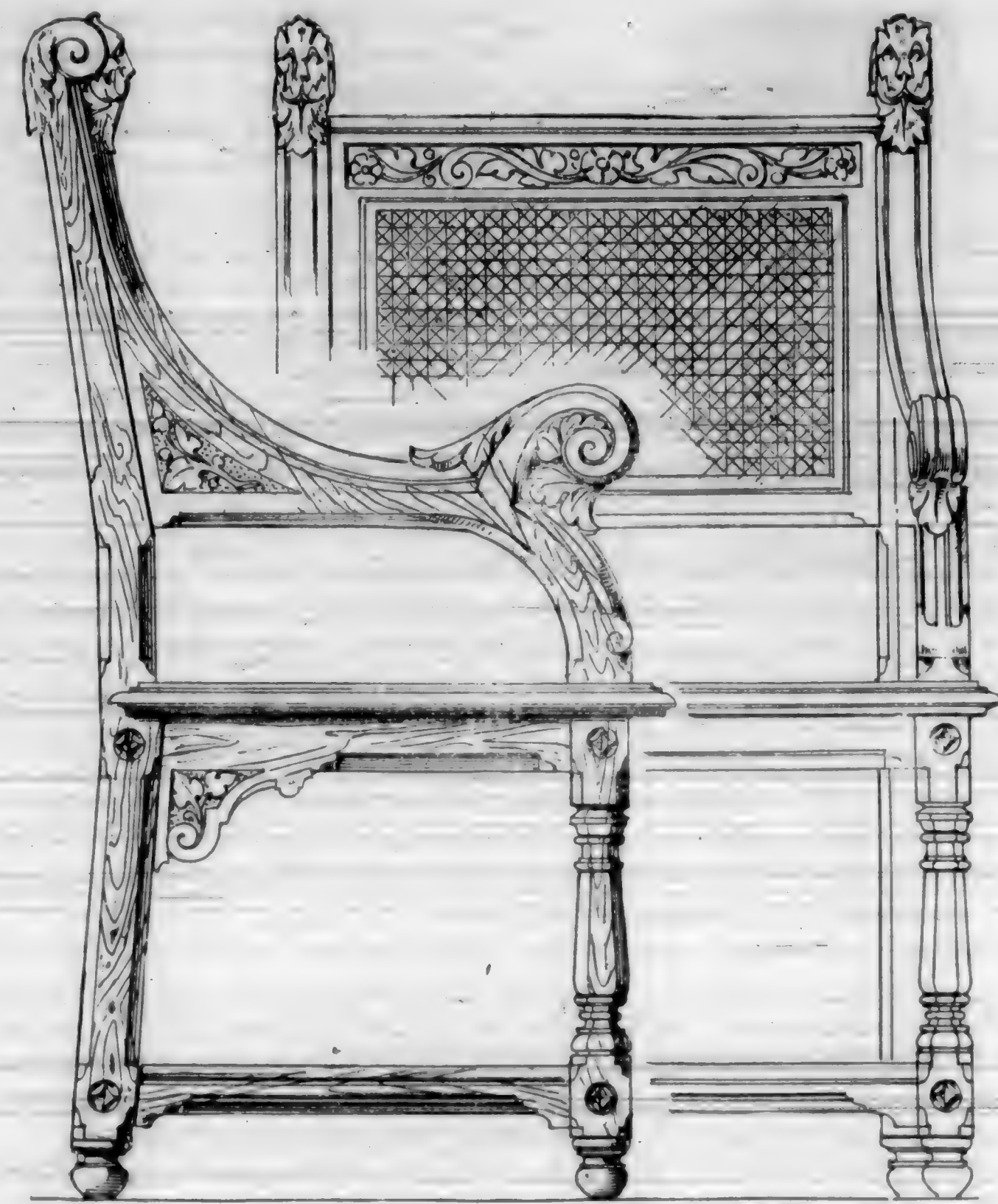
In the present rehabilitation of ancient styles, treated freely with reference to artistic development from former conventional bounds, Japanese art may be regarded as exercising a wholesome suggestive influence—less in the way of actual novelty than in special modes of treatment.

THERE are several reasons upon which to base the strong hope for the future of the American mechanic. The multiplication, with the consequent cheapening, of technical journals, is one. Thousands of carpenters, and cabinet workers who a few years ago were content to do little if any reading, are now subscribers to one or more publications devoted to their line of work. That the exchange of ideas thus brought about has greatly broadened the horizon of their work, goes without saying. The workman who reads must necessarily become a better workman for it. Again, the increasing disposition of practical men to write out their observations is a hopeful sign. The mechanic who trains himself to observe, note, and submit to writing his experience cannot help becoming more exact and intelligent in his work. Other important factors at work are the formation of mutual benefit societies among workmen, the establishment of reading rooms and libraries, the inauguration of lyceums and the increasing value with which the mechanic regards his right to vote—all pointing unmistakably to his rapid elevation to wider influence, greater usefulness, and an independence never before enjoyed by the class to which the intelligent mechanic belongs.—*The Builder and Wood-Worker*.

Furniture Woods.

ONE of the most flourishing, profitable and important branches of American industry is the manufacture of furniture. Not only do our factories supply the needs of 53,000,000 people, but scarcely a ship sails from our ports without carrying among her cargo specimens of this class of manufacture.

The American made furniture is preferred in many foreign countries for several reasons. The taste of the American artisan is refined and elegant, and the work he turns out is light and symmetrical, as well as strong and durable.



While the English, French and German manufacturers still cling to their antiquated fashions and old methods, the Americans are constantly inventing new styles or improving on the old, and are thus in this branch of industry, as well as in many others also, far ahead of their transatlantic rivals.

Notwithstanding the excessive, and in many cases prohibitive, import duties that obtain in the majority of Latin-American countries, furniture of American manufacture is gradually becoming more and more fashionable. In Colombia, for instance, where the protective system is carried to exaggeration, cane bottom chairs, invoiced at \$12.00 per dozen, pay \$72.00 per dozen import duty. But while this high tariff has entirely prohibited the introduction of European-made furniture, each Atlas and Lombard steamer that sails from the ports of the Atlantic seaboard carries no inconsiderable quantity of this American line of goods, particularly parlor and bedroom sets, to South America.

But while this branch of American industry is so flourishing and so profitable, a feeling of uneasiness has begun to develop itself among our manufacturers. The domestic supply of hard wood is being gradually exhausted, and the price of raw material is becoming costly in proportion. The problem that agitates the manufacturing circles is "From whence shall we draw our future supply of furniture wood?"

Their attention is daily becoming more intently fixed upon the tropical forests of Spanish America, and some of them have already

taken steps to acquire possession of the timber lands that are most accessible to our ports.

The principal of the tropical furniture woods are cedar, rosewood and mahogany, for they are the best known and the commonest in use. But here again, another obstacle presents itself to the manufacturer. These woods have been utilized for furniture making for the past 250 years and the most accessible forests in tropical America have become almost denuded of marketable trees.

Such is emphatically the case with the timber lands of Santo Domingo, Jamaica, and the other West Indian Islands, and with those of Colombia, Venezuela, Mexico, and British Honduras also, while only Guatemala, Spanish Honduras, and Nicaragua possess supplies which, under the present circumstances, may be considered as fairly accessible.

Yet Mexico, Colombia, Venezuela, and British Honduras possess vast tracts of land covered with valuable furniture-wood forests, but which are at a long distance from the coast and from the river banks. The question that has already been agitated, how can these forests be rendered accessible? is answered by the demand of these localities for railroads. This subject has attracted the serious attention of European and American capitalists, who have already begun the construction, in several localities, of narrow-gauge railroads from the forest lands to the coast.

Thus the flourishing condition of the furniture traffic and the scarcity of the raw material has given birth to a railroad movement in the tropics that will eventually lead to the development of the vast agricultural, mineral and forest resources of Latin-America.—*Sci.*

Paper Hanging.

THE art of putting on or "hanging" paper, says an exchange, is very simple and is easily learned; but to make tasteful choice of paper for various situations is not so easy; hence the following remarks, which may be of service to the workman or others on whom the selection of paper may devolve:—

Walls to a room should be regarded only in the light of a framework to what the room contains, and should be decorated so as to bring into prominence, and not eclipse, the other parts of the chamber. Nothing destroys the effect of a room so much as a handsome but staring wall paper, or a wall so profusely ornamented as to strike upon the eye to the exclusion of the rest of the decorations, thus bringing forward what should be the background into the most conspicuous place. A modern drawing-room is always difficult to decorate artistically, because of the taste of its builders for heavy cornices, prominent mantel-pieces and rooms too lofty for their size; and as all these mis-named "embellishments" are too costly to remove by tenants, the only plan to pursue is to destroy their effect by exercising both taste and ingenuity. First with regard to the ceiling, the ornamental plaster boss in its center should be removed and the ceiling tinted a color that harmonizes with the wall paper, as no harmonies can be hoped for when what produces them is surmounted with the glaring white of an ordinary ceiling. The tint used must be one that softens into the wall paper, not one that contrasts; thus, if the tone of the room is that of a soft gray-blue, the ceiling should be a clear flesh-pink; or should a grayish-green picked out with black be the chosen color, then it should be colored a subdued lemon.

Some people cover their ceilings with whole colored paper, and border it with a stenciled pattern representing the thin garlands so familiar upon Queen Anne decorations, but this is a more troublesome plan than the simple coloring, which answers all the purpose. The walls, if they are lofty, require a high dado. These high dados give a look of comfort and "home" that is absent from the modern, high-pitched room papered with one uniform pattern. The dado is divided three to four feet from the ceiling, and the coloring of the lower portion must always be heavier than that used on the upper, or a top-heavy look will be given to the room. When many pictures are to be hung up, the lower part of the dado should be of a whole color—either a whole colored paper or a painted wall—as pictures are only shown off upon such a background. Where a whole tint is used for the lower part of the dado, the upper portion should be decorated with a frieze paper of a good, bold pattern, but of subdued coloring and of tint that harmonizes with the lower. Thus, the color used about the frieze should be the same as that on the lower part, but of a lighter shade, intermixed with some other colors that form a harmonious link between the two shades. Contrasts must be

carefully avoided, but pale pinks, blues and ambers can be blended together above a subdued gray-blue ground. The two portions of the dado should be joined together with a light wooden (black or brown) railing, or with a line of paint. The dado decoration can be altered by placing the pattern paper upon the lower part and leaving the upper part plain colored, with or without a stenciled pattern upon it. This will suit a room where not many pictures are required, or that is already rather dark. Some part of the wall should always be in plain color, as the eye requires rest, and no pattern, however subdued in hue, can give the relief to the mind that a bit of plain coloring affords, and this scarcity of ornament in one part of the room is amply repaid by the effect it gives to such parts as are bright and require to be bright. The true theory of effect is to use but one or two bright colors in a room, and to surround them by soft and subdued tints that throw up and do not destroy their brilliancy; a number of bright colors placed together destroy each other, and leave no impression upon the mind but glare and vulgarity. Having settled upon your paper and ceiling, have the woodwork and cornice of the room painted either a shade lighter or darker than the walls, and shroud up the mantel-piece with curtains, etc., of satin sheeting embroidered with crewels, and instead of the usual looking-glass over the fireplace, have a mirror surrounded with brackets holding china, or have a black, wooden mantel-piece made with squares of looking-glass set in. The background of your room being thus completed in a manner really to be a background, your furniture will look twice as well as if it were stared out of countenance by the walls; and one need hardly add that all your friends will delight in a room that throws up and brings out their dresses and faces, instead of killing them by its glaring tints.

Iron Shutters.

CORNICE manufacturers and others are frequently called upon to build iron shutters, and almost every shop has its own peculiar patterns or its own method of construction applicable to articles of this kind. The use of iron shutters is very general, especially in large cities and upon manufacturing establishments. They are to a certain extent not only tolerated, but strongly recommended, by the insurance companies, and yet there are objections to them which are so weighty that a careful consideration of the subject would seem to warrant a substitution of some other material or the abolishment of shutters altogether. One of the daily papers, in discussing this question a short time since, asserted that experience has proven iron shutters to be among the worst obstacles that firemen have to contend with in striving to enter burning buildings. The time taken to batter them open is for the advantage of the flames, and when the firemen get enough of the shutters open to permit water to be thrown into the

building, they find that a fire that was of little account when first discovered has acquired almost resistless energy. From this it argues that it is practically certain that a fire originating in a building whose windows are sealed with iron shutters will destroy the building. It asserts that the idea that iron shutters keep fire out is also a fallacy, and then proceeds to state that flames on the outside of a building will frequently heat iron shutters red-hot. It also asserts that shutters cannot be made so tight that small sparks may not pass them, and instances the fact that merchandise of the value of \$2,000,000 was destroyed in Brooklyn some time since, by a fire started by sparks from a fire-engine that was at work in front of the building, the sparks having passed through crevices at the hinges of the shutter.

While the naked statements presented by the journal above quoted are perhaps incontrovertible, it still remains that there is much in favor of the iron shutter, and many reasons may be given for believing a building to be better protected with iron shutters than without any shutters at all. Some of the objections raised apply particularly to shutters made of a single thickness of iron, which are likely to warp whenever subjected to a considerable degree of heat. It is hardly necessary for us to argue in this connection against shutters constructed in this manner, or in favor of those made of two thicknesses of iron, preferably corrugated, with an air chamber between them. Our readers will know that a shutter embodying this principle, properly made, is not likely to give trouble on account of warping. The fact that shutters are locked from the inside in such a way as to make it difficult for firemen to enter the building in order to fight the flames is certainly wrong, and the intelligent care of property should suggest some plan by which the shutters could be opened from the outside in case of necessity. The fact that sparks are sometimes drawn into buildings through crevices in the shutters, it seems to us, argues more than would at first be supposed. The true province of the shutters is to protect the building from fire, yet their presence induces carelessness upon the part of employers and others in caring for the building in other respects. Sparks would hardly be drawn through the crevices of iron shutters if the windows inside the shutters were properly closed. It would seem that if proper precautions were taken to keep windows shut, thus closing the building as carefully as though no shutters were in use, and relying upon the latter simply as a fire protection, it would overcome this class of objections to which the paper above mentioned alludes.

MORE than three-fourths of the cedar used in cedar pencils is shipped from Florida.

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To Keep Down House Insects.

Or course scrupulous cleanliness will dispose of most of them. Keep the yard free from decaying vegetables, refuse from the kitchen and the drain of the sink, and sweeten the out-buildings with lime, and flies will mostly emigrate to promising quarters. The few stragglers which remain can be nearly excluded by frames covered with millinet placed in the windows when open. These will also keep out the vexatious mosquito. Myriads of these latter insects are often bred in swamp spots adjoining the dwelling. Proper drainage will route them at head quarters. The rain-water cistern is also prolific in mosquitoes: place a few lively minnows or other brook fish there, and they will fatten on the larvæ of the tormenting insect—thus the biter will be bitten.

The flea delights in the dust and litter of the wood-house and the wagon-shed. Remove all this, sprinkle fresh lime in its place, add whitewash to the beams and boards, and the fleas will soon vanish. Take up all the carpets, beat them thoroughly with a slender rod, and scatter pepper around the sides of the room where the edges of the carpet are to be laid. Then, once a fortnight, whip the outside breadths upon the floor with a light switch and the remaining moths will be beaten out.

The chinch, or bed-bug, can be routed by first washing all parts of the bedstead with cold water, and then, with a brush, applying corrosive sublimate dissolved in spirits, of an amalgam of lard and quicksilver rubbed together. Or ask your druggist for six cents worth of unguentum; mix it with lamp oil, and apply it with a brush to all joints and crevices, when the bugs will sleep, and allow you to do the same.

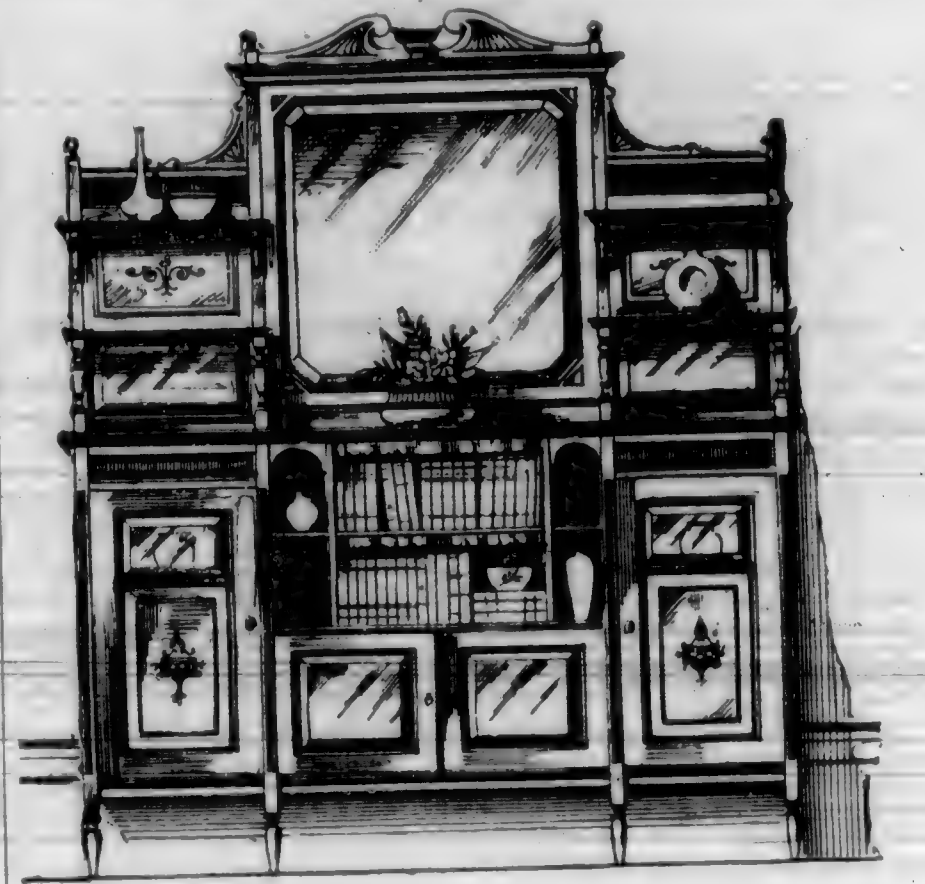
Carpet Beating.

WE have no wish to decry this periodic purification, but merely to point out rules for its better conduct and efficiency. The usual process in households which cannot afford to have it carried out by special agency is first to take up the carpets and sweep the walls and ceilings, and then to wash the floors. While the latter are drying, work must be found for the idle hands, and they cannot be better employed than in beating the carpets in the court-yard or back garden, a work attended with a horrid din and clouds of dust. It will not be unavailing, we know, to complain of the noise—no appeal in this direction will gain a moment's sympathy; but we hope more attention will be paid to the other nuisance. When we reflect on the nature of the dust thus raised, we are surprised that sane persons allow to be thus stirred up under their noses all the noxious accumulations of dining-room, bed-room, and stair carpets, to say nothing of door mats, etc., into a fine dust, and which, thus dispersed, finds its way again into our houses in a form most readily accessible to our respiratory organs. Indeed, it is

fortunate if the dust thus roused is only noxious and not effective, since the desquamated cuticle of scarlet fever, the scabs of small-pox, the dried sputa of consumptive or whooping-cough patients, living parasites, and hairs from mangy cats and dogs may thus invade our rooms. Carpet-beating, we are aware, is forbidden in public thoroughfares; but it should, in any form, be prohibited within a reasonable distance of dwelling-houses; and for those who cannot afford to pay the small sum required to have their carpets and mats properly cleaned, the authorities should set aside some open space, to which, on stated days and at certain hours, persons might bring their carpets and have them beaten, without causing annoyance or danger to themselves or neighbors.—*Lancet*.

Why Chimneys Smoke.

AS A matter of fact they never do,—it is the wood that smokes. We make this statement not by way of facetiousness, but to bring the discussion to a strictly scientific basis. Since the new birth of the open wood fire, the old question of how to coax the smoke to go straight up the chimney flue, at all times and under all circumstances, has come again to the front; and the old controversy as to the relative magnitude of two stupendous but familiar domestic evils is liable to be revived. It is not our purpose to give here and now all the infallible rules by which one of these—and doubtless the minor—can be cured, or better still, prevented, but simply to refer to one of the common reasons why smoke from a fire on the hearth falls out into the room occasionally, if not constantly, instead of going up to the skies where it belongs. Having stated that chimneys never smoke, it may be well to observe that they never "draw," either. Whatever goes up chimney—from Thomas Hood's chimney sweep to the steam from the kettle nose—is poked up from behind. Of course this amounts to the same thing practically as being drawn up, but it is well to remember that the same pushing force will just as readily lift air, shavings, ashes, steam or anything else that comes in its way as smoke. The point, therefore, is to so arrange the throat of the chimney that the smoke shall be caught first, and, like proud Korah's troop, be swallowed up before it has a chance to spill over into the room and before something else can be crowded into its place. Left to its own devices it would fall out of the fire-place and run over the floor like water. As the air in the room happens to be usually cooler and, therefore, heavier than that in the fire-place, it forces the latter upwards and the smoke with it. Now the tendency of the smoke, as soon as it is lifted against the back wall of the fire-place, is to fall forward, and this tendency is favored by the curving back against which it ascends. There is no objection to this curve which seems to keep the smoke within bounds, and it doubtless radiates more heat than if it stood erect, but the one point which should be insisted upon,



is that the face of this curve along which the smoke rises should strike, if it were continued (which it is not, being cut off by the broad throat of the flue), several inches above the lintel at the top of the fire-place opening. The smoke is then fairly caught in the ascending current of warm air and carried up and away.

A smoking fire-place may often be cured without any change of flue or chimney by simply bringing down the top either with a row of bricks or tiles, or by a piece of metal fitted in between the jambs. And this cure is effected not because the fire-place was originally too large or too shallow to "draw," but because the proper provision had not been made for entrapping the smoke and turning it into the rising stream of warm air.—*The Builder*.

THERE are many sound truths that deserve careful consideration which are every day overlooked by those who should treat them otherwise. Here is one clipped from the columns of a contemporary, which advertisers should take to heart: The success of trade papers so far has proved conclusively that the leading and most enterprising establishments have been convinced of their value as an advertising medium. The day is not far distant when all manufacturers, of whatever class, will recognize the fact that the journal published directly in their interest is one for them to advertise in. The principal reason for this is that a journal of this kind has only one class of readers, and they are the very ones the advertiser wants to reach. In a trade paper, then, he only pays for just what he receives. How many advertisers think of this? A trade paper with only 2,000 circulation is a much cheaper and better advertising medium for the manufacturer than a newspaper with ten times the circulation, at the same price per inch. We never look for a manufacturer's advertisement in a daily or a weekly newspaper, but if we want anything in any particular line of goods we look in the paper representing that line for the advertisements of the leading manufacturers. This is sound common sense in a nutshell.

Wells.

THE old way of digging a well and stoning it up so as to leave it about three feet in diameter, is, an Eastern contemporary remarks, a very good one if the water is to be drawn up with buckets; but if only with a pump, it is a very poor way; for if, as is the usual custom, the well be covered at the top, it leaves a very large space for dead air, which often becomes so bad that it affects the quality of the water, and also makes it unsafe to enter the well. When a well thus stoned has only a pump in it, the covering should be under water, or very near it; but if it is known that only a pump is to be used, the expense of stoning may be saved, and the water kept in a much better condition. This is done by digging the well in a dry time, and when dug as low as possible, a cement pipe, some two feet in diameter and two or three feet long, is sunk at the bottom, and worked down as low as possible by digging out the inside. The pipe should be covered with a flat stone, through the middle of which a two-inch hole has been drilled; directly over this hole stand up drain pipe, then begin to fill in the hole. When filled as high as the top of the first piece of drain pipe, put on another, being careful to have it straight with the other and the line perpendicular; continue filling and adding drain pipe until it is as high as the surrounding ground; or if the pump is not to stand directly over the well, then when it is filled within four feet of the surface put in the pump pipe and lead it off in trench to where the pump is to stand. When it is found that the pipe is all right, finish filling the well, leaving some durable mark that the position of the well may be known. A well of this kind is reliable and permanent, requiring no repair, the water is cool and free from impurities that open wells are subject to; no insects or animals can find their way into it, and the cost is not more than one-half that of a well that is stoned. If dug, as it should be, when the springs are low, a constant supply of water that is as pure as the underground springs, is secure. As the well is always full, there is no chance for bad air to injure the water, and, in fact, but little danger of pollution from surrounding cesspools compared to that of open wells.

VALUE OF TRIFLES.—A London builder was offered bricks one-eighth of an inch below the regular thickness. "What matters an eighth of an inch in a brick?" said the merchant. "It matters three thousand more bricks for my job," was the reply. In an establishment employing fifty hands a loss of one minute each time of ringing the bell means fifteen hours in a week; this shows the value of trifles.—*Luxton's Builder's Price Book.*

THE object of setting saws is to lessen friction. The reason of greater power being requisite for cross cutting than for ripping is that the former is not parallel to the grain. In filing, the edges are, of course, beveled opposite ways. The sharp beveled edge will be outward on the side to which the tooth is bent.

Restoring the Fire-Place Chimney.

ONE of the most common laments concerning the houses built fifteen or twenty years ago and more, says the *Builder*, is caused by the want of that feature which is now felt to be so indispensable: a place for an open fire. Hundreds of old-fashioned chimneys whose foundations filled all the central portion of the cellar, leaving hardly more than a quadrangular tunnel under the house, were torn down and the space they occupied was converted into halls, passages, stairways or closets, a single slender shaft doing duty as a smoke flue for a half dozen or more air tight stoves.

Repentance speedily followed this destruction of the cherished abiding place of the household gods, but how to bring forth works meet for repentance, that is, to restore the chimney and the fire-place, has always been a troublesome problem. It need not be. Like many other apparently serious difficulties, the obstacles in the way of constructing new chimneys and open fire-places in any house old or new are apt to be more apparent than real. A chimney is a self-supporting member of the family, starting from the ground and running straight up through the roof; it asks no favor or privileges except a few square feet of room on each floor less than a common table requires, hardly more than an ordinary chair. Instead of diminishing the security of the building, if properly made, it will make it more substantial. There is no law requiring a chimney or a fire-place to be squarely in the center of a house, directly between two windows, or precisely in the middle of one side of a room. The fire-place may be cornerwise or one-sided, within the house or outside of the main walls, provided it rests on *terra firma* and rises well above the roof.

HEALTHY, spacious workshops always pay, and it is pleasing to note that manufacturers are beginning to recognize this fact and act upon it. The old-fogy notion that anything is good enough for the hewers of wood and the beaters of iron, that comfort and convenience are antagonistic, is being fast relegated to the shades. Manufacturers are learning that a good building rightly planned both adds to convenience and economizes space and time, and that the best work is obtained when the arrangements for the comfort and health of the workmen are most perfect. The rents paid for manufacturing premises, as a rule, are high enough to entitle the manufacturer to better accommodations, and the securing of such is a matter of justice and substantial benefit to employees. Honest artistic work is possible only when conditions are favorable; filthy, dimly lighted and badly ventilated shops or factories are not usually considered very favorable conditions.—*The Builder and Wood-Worker.*

PAPER is now used in Germany instead of wood in the manufacture of lead pencils.

Defective Castings.

It is stated in the English papers that an examination of the broken girders of the fallen railway bridge at Denmark Hill showed that one of them was "honey-combed with air bubbles;" and it is assumed that, as this girder gave way, the extra weight thus thrown upon the others caused the accident. It is almost unnecessary to say, a correspondent in *Iron* says, that the so-called "air bubbles" are really hydrogen cells, and that the only explanation that has been (and probably ever will be) afforded of the source of this hydrogen is that, if not exclusively, it is mainly derived from the moisture of the atmospheric blast, which becomes decomposed on coming in contact with molten iron or steel, its hydrogen being thereupon absorbed by the metal. This occurs not only in the steel converter, but also in the blast furnace and in the remelting cupola. As a consequence, both steel and iron castings are unreliable, and a constant source of danger wherever their soundness is essential to safety; and they are accordingly unfitted for a number of important purposes for which forged metal, at a far higher cost, is considered necessary.

I do not propose, adds Mr. Fryer, to refer to any of the various methods and expedients which have been devised, and which are sometimes employed to cure the evil. It will, however, seem remarkable that no attempt has yet been made to get rid of the defect itself by eliminating the moisture from the blast, and thus removing the cause. One practical trial in that direction would go further to solve the whole question than all the theories that have been advanced, and all the laboratory experiments that have been tried since Dr. Muller's famous discovery of the real nature of the so-called "air bubbles" or "blowholes."

Sneezing and Shivering.

NATURE's provision against the consequence of a "chill," and for the prevention of a "cold" are sneezing and shivering. A violent fit of sneezing often saves a chilled body the consequences of the nerve depression or "shock" to which it has been subjected, and this shock may in its first impression be very limited in its area; for example, the small extent covered by a draught of cold air rushing thorough the crevice of a door or window. The nerve centres are aroused from their "collapse" by the commotion or explosive influence of the sneeze. If sneezing fails nature will try a shiver, which acts mechanically in this way. If this fails, the effects are likely to be very serious and bad consequences may ensue. The cold is slight when sneezing suffices to recover the nervous system quickly from its depression; and grave when even strong shivering fails to do so. In case of chill, with threatened cold, sneezing may be produced by a pinch of snuff of any kind. This is how some of the vaunted "cures" of snuff are brought about. Brisk exercise may also ward off the attack.—*Lancet.*

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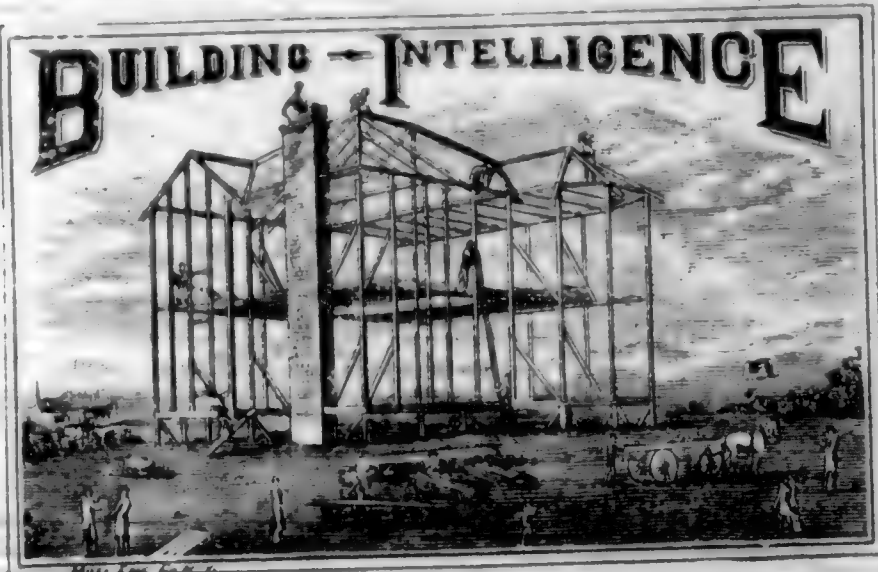
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The building on Clay near Polk, reported in our last issue A. Curlett & Haskell, should have been A. Curlett & Cuthbertson; C. Leonard & Haskell. The building on Nineteenth near Mission, reported A. T. J. Welsh, should have been A. M. J. Welsh.

SAN FRANCISCO.

Market, cor. Jones. Five-story and basement brick. O. Murphy, Grant & Co. A. Kuntzer & Baum. C. Mahoney Bros., carpenters. R. Mitchell, mason. Estimated cost, \$300,000.

Twenty-second, near Valencia. Two-story frame. O. M. Walsh. A. M. J. Welsh. Day's work. \$6,700.

Eddy, nr. Mason. Alterations. O. J. Luchsinger. A. H. Geiffuss. C. Conrad & Miller. \$2,000.

Harrison, near Twenty-fourth. Additions. O. P. Slevin. A. M. J. Welsh. C. J. Walker. \$2,000.

Twenty-third, nr. Valencia. One-story frame. O. McCarthy. A. M. J. Welsh. C. E. Dunshie. \$2,300.

Sheridan, nr. Tenth. Two-story frame. O. M. Smith. A. M. J. Welsh. C. P. Laherty. \$1,200.

Capp, cor. Twenty-sixth. One-story and basement frame. O. H. Godin. Day's work. \$2,500.

Mission, nr. Twenty-sixth. Additions. O. T. Argenti. A. W. Mosser. C. L. L. Foss. \$2,600.

Shotwell, cor. Twenty-first. Two-story frame. O. A. A. Hobe. B. W. F. Muller. \$5,000.

Mission, nr. Twentieth. Additions. One-story frame. O. Gray & Baldwin. Day's work. \$2,500.

Francisco, cor. Leavenworth. One-story and basement frame. O. W. P. Harold. A. W. H. Wharf. C. Leonard & Haskell. \$8,000.

Stockton, cor. Union. Two-story frame. O. V. Menesini. A. F. Carlo. C. A. Pietro. \$14,500.

Stockton, nr. Lombard. Alterations. O. C. W. Alvey. C. G. Knuff. \$2,600.

Chestnut, nr. Mason. Additions. O. B. Goetz. A. H. Geiffuss. C. J. C. Claussen. \$6,500.

Larkin, nr. Greenwich. One-story and basement frame. O. R. C. Mattison. C. J. W. Dawson. \$1,600.

Lombard, nr. Larkin. One-story frame. O. H. Bailey. Day's work. \$1,000.

Vallejo, cor. Jones. Two-story frame. O. J. Walsh. C. A. N. Nelson. \$2,400.

Vallejo, nr. Larkin. Two-story frame. O. J. H. Bremer. A. Schmidt & Havens. C. Winter. \$2,100.

Greenwich, cor. Fillmore. Two-story frame. O. Mr. Dahl. C. J. Geary. \$2,500.

Bush, nr. Polk. Two-story frame. O. P. G. Taylor. Day's work. \$10,000.

Day, cor. Church. One-story chapel. O. Advent congregation. A. A. Klam. \$1,500.

Sanchez, nr. Twenty-fifth. One-story frame. O. G. Edwards. C. N. W. Stecker & Son. \$1,000.

Fair Oaks, nr. Twenty-third. Two-story frame. O. Mrs. J. Duff. A. H. Geiffuss. C. T. Maxwell. \$4,500.

Guerrero, nr. Nineteenth. One-story and basement frame. O. W. Paulsen. C. G. Resommiller. \$2,000.

Church, nr. Nineteenth. One-story frame. O. H. Hewell. C. R. Bergfeld. \$3,800.

Dorland, nr. Guerrero. Two-story frame. O. G. F. Gordon. C. D. R. Spangler. \$3,000.

Hardy, nr. Seventeenth. One-story and basement frame. O. and B. T. Darcy. \$1,300.

Hardy, nr. Sixteenth. One-story frame. O. and B. T. Darcy. \$1,000.

Sacramento, nr. Polk. Two-story frame. A. Curlett & Cuthbertson. C. Leonard & Haskell. \$6,000.

Grove, nr. Broderick. Two-story frame. O. A. Young. A. W. P. Moore. C. Leonard & Haskell. \$7,000.

Mission, nr. Eighteenth. Two-story frame. O. J. Flatmann. A. H. Geiffuss. C. H. Mayn. \$8,000.

Howard, cor. Fifteenth. Additions. O. H. Hedger. A. W. P. Moore. C. D. F. McGraw. \$1,400.

Mission, nr. Thirteenth. One-story and basement frame. O. L. Hilmer. C. L. D. Fichette. \$3,500.

Twelfth, nr. Howard. Two-story frame and stable. O. A. Zihl. Day's work. \$3,800.

Howard, nr. Twelfth. Two-story frame. O. F. Ratto. A. W. Mosser. Day's work. \$7,500.

Market, nr. Eighth. Alterations. O. H. M. Bruns. Day's work. \$5,000.

Bartlett, nr. Twenty-second. One-story and basement frame. O. Mrs. Johnson. C. Geiffuss. C. G. H. Lang. \$2,500.

California Avenue, near Powell Avenue. Two-story frame. O. J. Dolan. C. L. D. Fichette. \$1,300.

Powell Avenue, nr. Mission. Two-story frame. O. M. Barry. A. W. P. Moore. C. L. D. Fichette. \$2,200.

Jackson, cor. Broadway. One-story frame. O. W. T. Baggett. C. N. M. Conias. \$2,800.

Sacramento, nr. Broderick. One-story frame. O. W. Wilson. Day's work. \$1,000.

Broderick, near Sacramento. Two-story frame. O. C. Beale. A. W. P. Moore. C. A. B. Greene. \$5,000.

Devisadero, near Pine. Two-story frame. O. G. O. Carlisle. C. N. G. Goodwick. \$5,500.

Mason, nr. Elbert. Three-story frame. O. W. J. Sterns. A. F. Hilert. C. A. M. Nelson. \$8,000.

Pine, cor. Baker. Alterations. O. and B. J. McKay. \$4,000.

Bush, cor. Steiner. Two-story frame. O. M. F. Angel. C. B. E. Henriksen. C. U. Lienard. \$5,500.

McAlister, cor. Webster. Two-story frame. O. J. E. Alex. A. G. H. Miller. C. Patterson & Smith. \$12,000.

Mason, nr. Clay. Alterations. O. F. Eckenroth. A. G. H. Miller. C. Nelson. \$1,800.

Devisadero, cor. Hayes. Two-story frame and stable. O. J. Cooney. A. Townsend & Wyne. C. Post. \$6,500.

San Jose Avenue, cor. Twenty-fifth. Two-story frame. O. R. Grey. A. C. Day. C. H. S. Grey. \$7,500.

First, cor. Bryant. Grotto Chapel, St. Mary's Hospital. O. Sisters of Mercy. A. J. J. Clark. \$4,000.

Mission, nr. Twenty-sixth. Two-story frame. O. P. Connell. A. J. J. Clark. C. T. J. O'Brien. \$4,000.

Haight, nr. Buchanan. Two-story and basement frame. O. G. Waterson. A. J. Marquis. C. Gray & Stover. \$6,000.

Sutter, cor. Buchanan. Two-story frame. O. C. Jones. A. J. H. Littlefield. C. Hatfield & McRae. \$7,500.

Geary, cor. Stockton. One-story brick. O. Blaine Inveicibles. A. G. H. Miller. C. W. E. Stevens. \$8,000.

Mission, nr. New Montgomery. Three-story and basement brick. O. F. Hufschmidt. A. H. Geiffuss. C. B. Dryer, carpenter. J. McCarthy, mason. \$20,000.

Fillmore, cor. Fulton. Two-story frame. O. J. Rapp. A. H. Geiffuss. C. W. Plums. \$9,500.

Grove, nr. Franklin. Three-story frame. O. B. Bucholz. A. H. Geiffuss. C. F. Klatt. \$7,000.

Eddy, nr. Broderick. One-story frame. O. A. Grundel. A. A. C. Lutgens. C. W. Prohl. \$1,500.

Sixth, cor. Harrison. Three-story and basement frame. O. J. H. Holjes. A. A. C. Lutgens. Day's work. \$12,000.

Bush, cor. Jones. Three-story frame. O. S. G. Murphy. A. S. and J. C. Newsom. C. P. Traxler. \$12,000.

Baker, cor. Sutter. One-story frame. O. C. Miles. A. J. T. Kidd. Day's work. \$9,000.

Union, nr. Jones. Two-story frame. O. F. Kats. A. B. E. Henriksen. C. W. Simon. \$4,000.

Larkin, nr. Eddy. Two-story frame. O. M. F. Angel. C. B. E. Henriksen. C. U. Lienard. \$5,500.

Haight, cor. Steiner. Two-story frame. O. T. McMorry. A. T. J. Welsh. C. W. Fletcher. \$12,000.

Castro, near Nineteenth. Two-story frame and stable. O. M. Blos. A. B. E. Henriksen. Day's work. \$3,000.

Geary, nr. Gough. Two-story and basement frame. O. F. Hofeling. A. Schmidt & Havens. C. W. Plums. \$9,000.

Hyde, nr. Sutter. Two-story frame. O. F. Flatow. A. Schmidt & Havens. C. F. Klatt. \$7,500.

Beale, nr. Howard. Three-story and basement brick. O. J. Weichart. A. Schmidt & Havens. C. F. T. French. \$8,500.

Bush, nr. Octavia. Two-story and basement frame. O. M. Clayburg. A. Schmidt & Havens. C. C. Quinn. \$12,000.

Oak, cor. Gough. Two-story frame. O. J. Williams. A. H. D. Mitchell. C. J. Geary. \$5,000.

Golden Gate Avenue, nr. Pierce. Two-story frame. O. W. Hume. A. H. D. Mitchell. Day's work. \$10,000.

San Jose - Market cor. San Fernando. Additions. O. R. Church; A. B. J. Clinch; C. J. Glenson; \$10,000.

Walnut Creek - One-story chapel. O. R. C. Church; A. B. J. Clinch; C. T. O'Donnell; \$2,000.

Santa Clara - Additions to college. A. B. J. Clinch; C. T. Starr; \$1,900.

Oakland - Eighteenth, cor. Linden. Two-story frame. O. H. Hopkins; A. C. Day; C. Ingerson & Gore; \$5,500.

Napa City - Two-story and basement frame. O. Mrs. Yant; A. Curtis & Bennett; C. Grey & Stover; \$10,000.

Vacaville - One-story frame. O. Mr. Chinn; A. Curtis & Bennett; C. Moore Bros.; \$5,000.

Woodland - Corner of First and Court. Improvements. Woodland Steam Flour-mill. O. B. F. Harnish; Millwright, B. F. Harnish; \$12,000. East Ave. Two-story frame. O. I. Fisher; C. A. Stamp; \$1,150. Two-story frame. O. Samuel Lawson; C. Pool & Sears; \$2,850. North. One-story frame. O. A. Armstrong; C. W. H. Winnie; \$1,500. Corner Main and College Ave. Alterations. O. F. Lindsay; C. Glen & White; \$1,150. Corner Main and Second. Alterations. O. J. H. Ringat; C. Gilbert & Sam; \$1,225. Lincoln Ave. Alterations. O. Prof. A. M. Elston; C. Jos. Caldwell; \$1,625. Elm. Two-story brick. O. T. P. Magee; B. Irwin & Leeland; day's work; \$2,000.

Davisville - Two-story frame. O. Hoxt Bros.; C. W. H. Winnie; \$2,600.

Martinez - Two-story frame. O. S. G. Mead; A. W. H. Wharf; C. Bilger Bros.; \$4,000.

Berkeley - Shattuck Ave. Two-story frame. O. J. L. Barker; A. W. G. Copeland; C. day's work; \$3,200.

San Rafael - Two-story frame. O. J. Bayrie; A. C. Geddes; C. Ingerson & Gore; \$7,500.

Livermore - One-story frame. O. A. Wegener; A. A. C. Lutgens; day's work; \$5,000.

Alameda - Alameda Ave. One-story frame. A. S. and J. C. Newsom; C. J. Clark; \$6,000.

Eureka - Fourth. Two-story frame. O. D. H. Boyd; A. S. and J. C. Newsom; C. J. Simpson; \$2,500. Third. Five two-story frame. O. S. Acheson; A. S. and J. C. Newsom; C. Butterfield Bros.; \$5,500. Ninth, cor. F. Additions. O. S. Young; A. S. and J. C. Newsom; C. J. Simpson; \$2,300. E. One-story frame. O. W. Pratt; A. S. and J. C. Newsom; C. J. Simpson; \$3,500. Pratt Tract. One-story frame. O. J. St. Clair; A. S. and J. C. Newsom; \$1,600.

Stockton Cemetery Mausoleum - O. L. M. Hickman; A. W. P. Moore; C. W. Matthews.

MARKET REPORTS.

LUMBER - Pine	
Common Rough, up to 40 feet, per M feet	\$22 50
" 41 to 50 "	23 50
" 51 to 60 "	24 50
" 61 to 70 "	25 50
" 71 to 80 "	26 50
Refuse Rough	18 50
Common Rough, sized with planer & additional on above rates, per M feet	35 50
No. 1 Flooring, 6 inches and over, and 1 1/4 x 4 and 1 1/4 x 6	40 00
Flooring and Stepping	28 50
Rough Clear for Flooring, 1 1/2 less than above rates	28 50
Second Quality Flooring and Stepping	28 50
Ship Plank, Rough	32 50
" Planked 1 side	35 50
" 2 sides	38 50
Deck Plank, Rough	37 50
" Dressed	37 50
Laths	3 15
Wool Slat	12 00
Shakes	12 00
Redwood Posts	17 50
Redwood.	
Rough Merchantable	per M feet \$22 50
Refuse	18 50
Surface No. 1	40 00
" 1 x 6	37 50
" No. 2	37 50
Rustic, No. 1, 1 x 8	40 00
" No. 1, 1 x 10	35 00
" Under 10 feet	40 00
T. & G. 1 1/4 x 4 and 1 1/4 x 6	37 50
" 6 in. 12 ft. and over	32 50
" " 7 to 11 feet	30 00
" " under 7 feet	30 00
" No. 2	40 00
T. & G., Beaded, 12 feet and over	32 50
" " 7 to 11 feet	30 00
" " under 7 feet	32 50
Half-inch Surface	30 00
Pickets, fancy	20 00
" Rough, Pointed	17 50
" Square	27 50
Siding, 1/2 inch	per M 2 15
Shingles	12 00
Battens, 1/2 inch, lineal feet	15 00

The California Architect and Building News.

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Review of Building Operations.

THIRD QUARTER.

DURING the past quarter there has been a general complaint amongst real estate dealers of a stagnation in business. While the records will prove this statement, the same state of affairs, very happily, does not exist in the building trades. The past quarter has been a very active one, and the number and value of buildings exceed those of any previous record for the same length of time.

The report for the month, published on the last page of reading matter in this issue, is well worth study. Leaving out the Pioneers' Building, we find there have been commenced over 100 improvements, of the value of about half a million dollars an average of \$5,000 each.

Another feature of special mention should be noticed. A larger percentage of buildings in the course of construction are under the SUPERVISION OF PROFESSIONAL ARCHITECTS, Than in any list we have published for some time. From this we deduce that owners have become tired of the "shoddy" work they get from adopting carpenters' plans, which are tendered them free of charge, if the one presenting the plan has the honor of erecting the building. The custom of giving plans for nothing is one that should be frowned down by every intelligent owner of real estate, as they are sure to suffer in the end from badly designed and imperfectly constructed buildings.

For the sake of comparison, we present the record for the first nine months of the past three years:—

FIRST NINE MONTHS OF 1882.

582 Buildings, of the value of.....\$2,655,726

SAME TIME IN 1883.

635 Buildings, of the value of.....\$4,579,878

SAME TIME IN 1884.

796 Buildings, of the value of.....\$5,160,334

This summary proves that the city has had an actual and steady growth for the past three years. Although since January, 1882, there have been reported in this Journal 2,382 new buildings and improvements, there are comparatively very few buildings to rent; and most of the latter are the old-fashioned basement houses, in which the dining-room and kitchen are on the lower floor, thus compelling the roomers on the top floor to travel up and down two flights of stairs at meal-time and as occasion requires. Since the introduction of elevators, the mass of the people have grown tired of running up and down stairs, and this is one of the principal reasons why "flats" rent so readily, as all the conveniences are found on one floor.

NOW IS THE TIME TO BUILD.

During the past month there has been a total collapse of the lumber market. Prices have fallen from fifteen to twenty-five per cent. Eighteen dollars per M. is the ruling price, and in large lots a discount is obtainable from that figure. The principal cause for the break is the absence of a foreign demand. In the February issue of this journal, we gave a full history of the "Lumber Bone Yard." We showed that the lumber combination was in a large measure supported by the foreign demand. If a cargo from the mills arrived in the city for which there was but little demand, it was sent to the "Bone Yard" to be reshipped to foreign ports at any obtainable price, as occasion demanded. When orders for foreign ports were brisk, all was well, but when these ceased, it became too heavy a burden for the combination to carry.

Over fourteen million feet of lumber are now piled up in the "Yard." This must be got rid of before the time comes next year for another lumber squeeze on the dear public. Many of the mills have shut down, and others are working on three-quarter time.

Hardware is also very cheap, nails selling as low as \$2.80 per keg. Other things are in proportion. From a careful study of the field, we would advise those who can, to lay in a stock of lumber and nails. It is the design of the manufacturers to curtail stock on hand as much as possible, and as they are diminished by future demands, prices will correspondingly stiffen, and in a few months will resume the old standard.

San Francisco Chapter American Institute of Architects.

THE regular monthly meeting was held on September 5th at the usual place. It being also the annual meeting, a fair representation of the architects of the city were present.

Propositions for membership as Fellows were received from H. Geiffuss and R. H. Daley. Secretary's report was received, and after a short debate was ordered spread in full upon the minutes.

[An article will be found in another column upon the Secretary's report. It was objected to on the ground that it contained the Treasurer's report, as well as the Secretary's. The Chapter by a UNANIMOUS vote, adopted the report as read.—Ed.]

The committee appointed to consider the feasibility of amendments to the Fire Ordinances of San Francisco, reported as follows:—

SAN FRANCISCO, Sept. 5, 1884.

TO THE OFFICERS AND MEMBERS OF THE SAN FRANCISCO CHAPTER OF ARCHITECTS—*Brother Fellows and Members:* Your committee appointed at the August Session of the Chapter to consider and prepare revisionary recommendations and amendments to the Fire Ordinances of the city and county of San Francisco, beg leave to report progress only as we find the task somewhat complicated and difficult, owing to the distribution of the subject matter in interest through various sections of the Book of Ordinances as printed, which can only be intelligently reached and analyzed by careful review and application.

It is not proposed to touch any of the ordinances relating otherwise than to building and other mechanical constructions usually within the scope of architectural limits. Your committee has taken the necessary measures to procure copies of the Fire Ordinances of Eastern cities, and will report the result of their deliberations to the Chapter as soon as possible for us to obtain the desired information, and perfect such report in the fullness demanded by the importance of the subject matter under consideration. Respectfully submitted

JAMES E. WOLFE,
B. E. HENRIKSEN,
THOS. J. WELSH, } Committee.
WM. CURLETT,
JOHN M. CURTIS,

Further time was granted to the committee. Election of officers for the ensuing term being in order, the following gentlemen were chosen to serve:—

PRESIDENT, Augustus Laver.
VICE-PRESIDENT, Albert Pissis.
SECRETARY, B. E. Henriksen.
TREASURER, J. M. Curtis.
TRUSTEES: J. E. Wolfe, W. Curlett, H. G. Matthews, G. H. Sanders, T. J. Welsh.

A vote of thanks was tendered the retiring officer.

The teachers of the various classes reported that the students had made creditable progress. G. H. Sanders gave notice that he would be prepared at the next meeting with a paper to read.

The Architects' Meeting and the Daily Papers' Reports.

It frequently occurs that the proceedings of the Chapter of Architects are not reported correctly in the daily papers. The *Chronicle*, in noticing the proceedings of the annual session, held the 5th instant, saw fit to head its item with the insinuating slur, "Inharmonious Architects," which was not and is not true. The proceedings were entirely harmonious throughout, provided free and gentlemanly discussion upon matters of importance is to be considered not a violation of the rules of harmony. The objection made by the retiring Treasurer to the Secretary's annual report was simply and wholly upon the grounds that the Secretary had received and disbursed the receipts from dues and other sources, for room rent, stationery, printing, seal, and other cur-

rent expenses, as had been the custom between all preceding Treasurers and the Secretary, since the first formation of the Pacific Coast Association of architects about four years ago, without the formality of paying the moneys received to the Treasurer and drawing warrants, as provided by the by-laws. This led to a discussion, which was more or less joined in by the members present, and was concluded by the unanimous acceptance of the Secretary's report, and its being ordered spread in full upon the minutes.

Mr. Macy, the retiring Treasurer, actuated by the best of motives, and with the simple desire to have the affairs of the Chapter conducted technically as well as executively correct, raised the objection upon the grounds that it contained a full report of all moneys received and disbursed, vouchers for expenditures, and balance on hand—he claiming that all this should have passed through his hands.

The *Examiner* stated, in its report, that the Committee on Fire Ordinances made no report—fact, said Committee made their report, occupying a full page of legal cap, signed by all the members of the Committee, which will be found in full on page 156 of this issue.

How to Lay Drain Pipe.

PIPE laying of a peculiar sort is supposed to be in order about Convention time, but the methods in use for laying drain pipe must be at all times a subject of interest to the plumber. The *Lowell Times* in a recent communication from a Mr. Stables, presents that gentleman's methods in the following manner: "As a rule this kind of work (laying drain pipe) is intrusted to the very poorest of mechanics, if indeed they are mechanics at all, and that, too, without the supervision of a person in the least familiar with the requirements of the business. The drain is sometimes put in before the cellar is built, and very often before the sills are put on, whereas it should be one of the last things on the job, and should be put in in connection with the plumbing, not by the plumber necessarily, but at the same time that his work is being done. My reasons for delaying this are that all open inlets are liable to get filled up with dust and chips that are always strewn about a new building, which in future may become the innocent means of trouble, and that changes are liable to be made which will necessitate a different arrangement of the drain, and also that it is impossible to test a drain under pressure till the plumbing is securely connected. Speaking of testing drains, in my opinion every drain should be tested under a pressure of at least five feet head of water. The method which I employ to accomplish this is to dig the trench twenty inches or two feet wide, so that the pipe layer can have room enough to properly do his work. I then start the drain at a regular grade with an inclination adapted to the lay of the land, and at a convenient point near the outlet I put a brass slide-gate by which the drain can be closed perfectly tight in the same way that the water is shut off in our water mains. I

then lay the pipe with Portland cement, using care to clean all joints and the inside, and to carefully fill the socket around the full circle, rubbing it down hard with a small trowel when it begins to set. I follow on in this way throughout the whole system, taking in conductors, soil-pipes, fresh air inlet and whatever other connections are called for, and when completed, leaving the entire trench open, I allow it to stand for two or three days for the cementing to get hard. I then close the gate and fill the entire system up to the lowest inlet, and if I find any leaks, I open the gate, let the water out, and re-cement the leaky joints. I then close the gate, repeat the first operation, and if tight, I open the gate and fill the trench, and call the job finished. In cases where people do not wish to go to the expense of a gate, I have taken a T-branch and bedded a piece of double thick glass, cut to fit in the socket, into the socket of the main pipe, in putty, and then laid the system in the same manner as described. I then fill the drain with water, and when satisfied it is tight, I reach into the T and break the glass with a hammer, and clean out the pieces after the water has gone; but this can never be used a second time for flushing the drain. Leaving out all sanitary considerations, this test will pay the property owner through the more mechanical advantage gained. It will retain the liquids which are required to float away the solids. If the liquids leak out at every joint the solids will accumulate, and finally stop the drain. Leaky drains will sometimes become stopped, but the stoppage will not be discovered for months, as the liquids are escaping out of the half cemented joints and fouling the earth and foundation walls until the stench becomes so unendurable that people ask to have their drains looked over, ignorant of the fact that they are entirely stopped and that not one drop of the sewerage is reaching its intended outlet."

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.



FRONT ELEVATION OF \$5,000 COUNTRY DWELLING.—SECOND PREMIUM DESIGN.

Our Competition Designs.—Second Premium Plans.

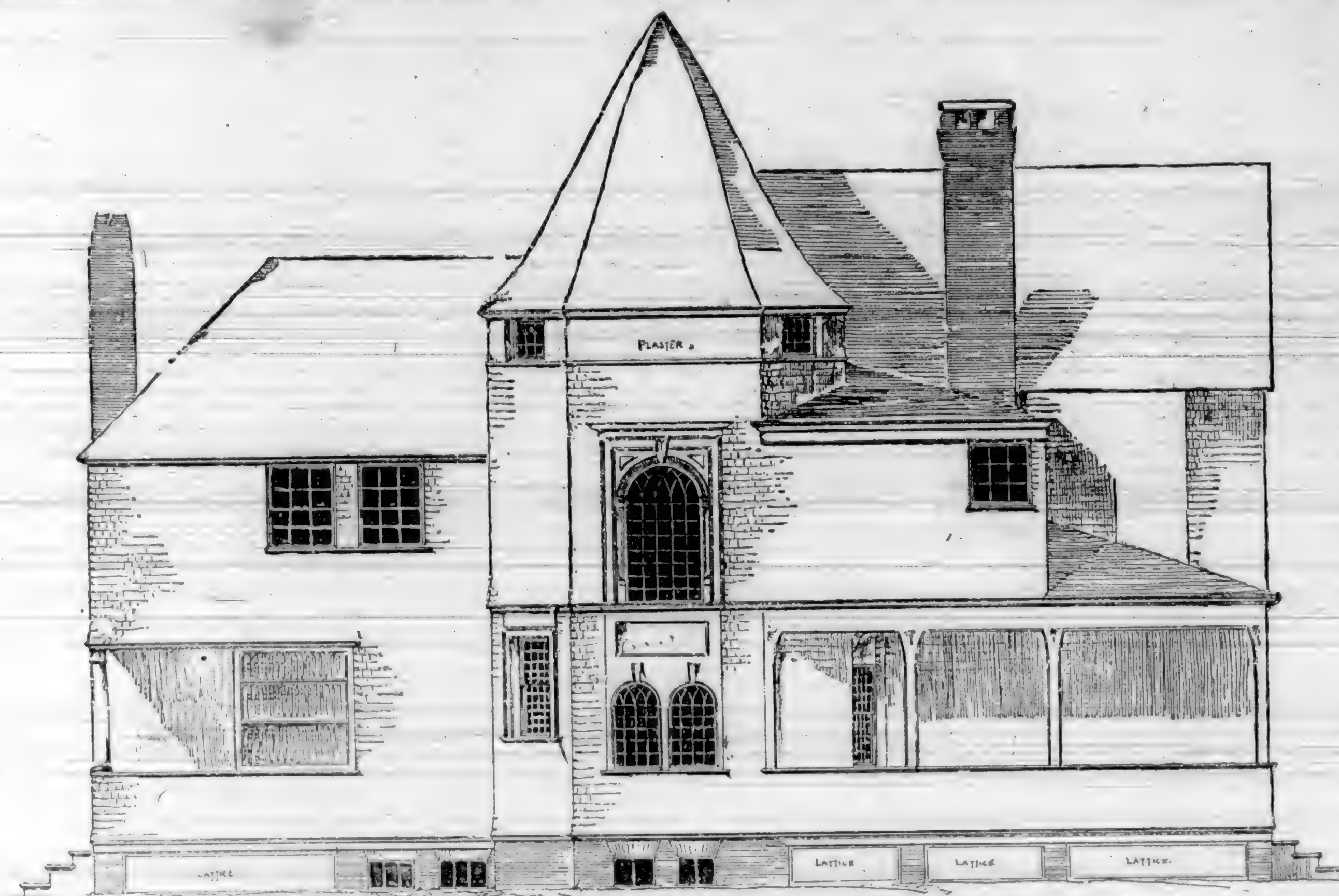
In this issue we present the various elevations and plans of the gentlemen receiving the second premium in the late competition held under the management of the editors of this Journal. Under the *nom de plume* of "Garrick," Mr. John C. Wolf, of 57 Broadway, New York, is the party to whom the credit is due for presenting plans in so creditable a manner as to win the second premium.

The same fault is noticeable in this set as in those receiving the first premium, viz. stories too low to suit California ideas. The rooms shown are all of good size for the purposes intended for each, and in this section nothing less than twelve and eleven feet in height, respectively for the two main floors,

would be considered by either owner or architect. Our "glorious climate" may have something to do with the apparent necessity of high ceilings; custom also being a prominent factor in this respect; the fact remains, however, that, on this coast, people will have high ceilings. The first floor plan is very well arranged, the greatest fault being the lack of sufficient closet room. In this, as well as every plan received in the competition, long narrow halls are done away with; in their place, we find a large, comfortable hall-way, well lighted, and with ample means for heating. The arrangement of the water-closet is, at least, a novel one in regard to position. It will be found preferable to have a door direct from the kitchen to the back porch, avoiding the necessity of the cook having to pass through the pantry.

On the second floor, the position and convenience of bath-room will attract attention. Keeping the water-closet separate from, and yet in immediate proximity to the bath-room, is a very commendable arrangement. The interior lobby or central hall, is, at least, a novel feature, its advisability would, in a measure, have to be determined by those erecting the house. More fire-places are shown than are necessary for this part of the country. The back stairs are a little crowded, but there is plenty of room for enlargement. Ample bed room is afforded in the attic for servants and the older children. Closet room is also abundantly provided. The basement contains sufficient room for all the purposes for which that portion of the house is intended.

The house is certainly picturesque in its outside appearance. We have not seen any-



SIDE ELEVATION OF \$5,000 COUNTRY DWELLING.—SECOND PREMIUM DESIGN.

thing resembling it in this State. The elevations of the front, sides and rear being given, will enable any one to clearly understand how the house will look when finished.

ESTIMATED COST.

Below in full will be found the cost of the various parts of the work, as computed by the architect. It is greatly under the cost of the same design, if erected on this coast. The amount quoted for plumbing is greatly underestimated. Here we would not be satisfied unless each of the principal chambers contained a wash bowl. Multiply the figures given for plumbing by six, and the amount would be the average cost here of plumbing for a house of the size shown.

A great disparity occurs also in painting, the figure given would at least have to be multiplied by TEN, to obtain an estimate for which the work could be considered in this city. The price of lead and oil is very near the same as in the East, and we fail to comprehend wherein such a difference can occur. We give the estimate as prepared for publication and each one can study the differences in prices as they find time so to do.

California Architect—\$5,000 House Competition—Submitted by "Garrick."

Estimate of Quantities and Prices of Materials in, or Vicinity of, New York City.

The following prices are given, including the labor of putting in place, also, in their respective requisitions; the price includes the necessary mortar, nails, glueing, wedging, etc.—

MASONRY.		Rafters, 2"x6"x12'-0", 22 sticks @ 35c.	
Excavations, 290 cu. yds. @ 28c. per cu. yd.	\$ 81 20	a piece.	7 70
Stone work, Foundations, 202 cu. ft. @ 12c. per cu. ft.	24 24	Furring strips, 1 1/2"x3"x12'-0", 120 sticks @ 12c. a piece.	14 40
Flagging, 61 sq. ft. @ 70c. per sq. ft.	42 00	Sheathing on roofs, 2,320 sq. ft. @ 5c. per sq. ft.	116 00
Window sills, 11 @ 80c. a piece.	8 80	Sheathing on sides, 2,996 sq. ft. @ 5c. per sq. ft.	149 80
Pier plates, 13 @ 50c. a piece.	6 50	Shingles on roof (5" to weather), 2,210 @ \$8.00 per thousand	17 68
Chimney caps, 2 @ \$4.00 a piece.	8 00	Shingles on sides (4 1/2" to weather), 2,990 @ \$8.00 per thousand	18 32
Brick work, for walls and piers, 4,870 @ \$18.00 per thousand	88 66	Moulded and turned (exterior work). Water table, 163 ft. @ 25c. per ft.	40 75
Brick work for chimneys, 1,060 @ \$18.00 per thousand	19 08	Belt course, 28 ft. @ 30c. per ft.	8 40
Brick work for fire-place facings (pressed brick), 6 @ \$19.00 a piece	114 00	Cornice, 251 ft. @ 38c. per ft.	95 38
Tiling for fire-places, 4 @ \$22.00	88 00	Window sills and baluster rails, 140 ft. @ 22c. per ft.	30 80
Plastering (includes lathing). Outside (rough sand-finish), 14 sq. yds. @ 32c.	4 48	Architraves on first story, 6 @ \$5.00 a piece.	30 00
Inside (hard finish), ceilings and under side of stairs, 360 sq. yds. @ 35c.	126 00	Piazza approach steps, 2 @ together.	9 00
Inside (hard finish), sides, 1,062 sq. yds. @ 35c.	371 70	" posts, square and cantilivers @ \$8.00 a piece.	40 00
Masons.	\$982 66	Piazza post, round with cap and base.	10 00
CARPENTRY.		Piazza screen, 60 spindles @ 20c. a piece; one frame @ \$5.00	17 00
Scantling, sills and girders, 6"x8", 241 ft. @ 40c. per thousand ft.	96 40	Piazza sheathing of ceiling and sides, 620 sq. ft. @ 20c. per sq. ft.	124 40
Plates and enteries, 4"x6", 454 ft. @ 40c. per thousand ft.	181 60	30 windows, box frames, blinds, sash and architraves @ \$12.00 a piece	360 00
Studs, 3"x4"x12'-0", 620 sticks @ 24c. a piece.	148 80	16 windows for attic and cellar @ \$3.00, swing on pivots	48 00
Sleepers, 6" diam., hewn on one side, 190 ft. @ 3 1/2c. per ft.	6 65	1 window, elliptical	6 00
Floor beams, 2"x10"x16'-0", 72 sticks @ 40c. a piece.	28 80	1 " staircase	33 00
Rafters, 2"x8"x16'-0", 164 sticks @ 40c. a piece.	65 60	Carpentry	\$1,716 08

JOINERY.

Doors, 3 outside doors with glass panels and trim @ \$8.00 a piece.	24 00
Doors, 1 outside split door.	25 00
Doors, 27 4-panel doors @ \$10.00 a piece (including trim and hardware)	270 00
Floors, 1,280 sq. ft., 9" wide @ 6c. per sq. ft.	76 80
Floors, 1,564 sq. ft., 3 1/2" wide @ 10c. per sq. ft.	156 40
Baseboard, 432 feet, 8" high @ 25c. per ft.	113 00
Wainscot, 120 sq. ft., for bath-room and water-closets @ 25c. per sq. ft.	30 00
Jobbing, fittings for water-closets, laundry tubs, kitchen sink, coal bins, cold air box, etc.	30 00
Staircase, servants, 23 risers @ 20c., 21 treads @ 28c., 7 newels @ 4c., 42 balusters @ 20c., 14 feet of rail @ 17c., total	24 20
Staircase, main, 32 risers @ 30c., 21 treads @ 40c., 4 rounded treads @ \$1.00, 16 newels @ \$1.75, 153 balusters @ 60c., 5 landings @ \$3.00, 51 feet of rail @ 40c., total	177 20
Allow for bed-room mantels, 5 @ \$15.00 a piece.	75 00
Allow for parlor finish with mantel.	100 00
" dining-room finish with mantel and side-board	150 00
Allow for first story hall finish with mantel and vestibule	100 00
Allow for second story hall finish with mantel	75 00
Allow for fitting shelves and doors to medicine closet	8 00
Allow for fitting shelves and hooks in other closets	12 00
Allow for shelves and glass doors in cupboard in butler's pantry	10 00
Interior finish, total	\$1,456 60

TINNING.

Flashings, 630 sq. ft., all painted and laid @ 10c. per sq. ft.	63 00
Gutter, 140 feet of 5" gutter @ 4c. ft.	5 60
" hooks, 30 ornamental @ 20c. a piece.	6 00
Leaders, 90 ft. of 4" leader pipe @ 5c. per ft.	4 50
Leader straps, 12 ornamental @ 40c.	4 80
Tinning, total	\$83 90

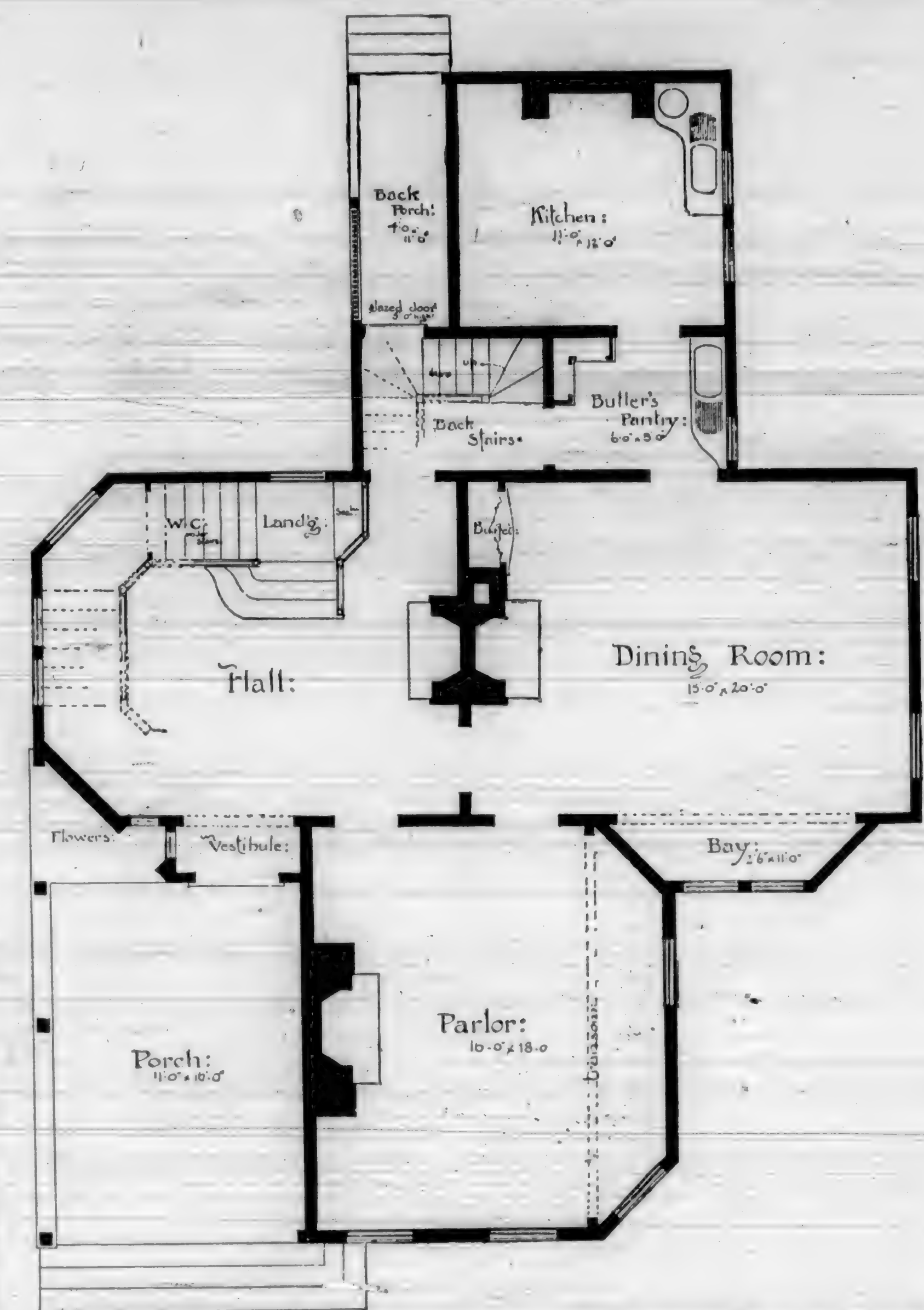
Heating furnace (including register faces and pipes)	220 00
Range in kitchen with hot water back and connections	50 00
Heating, total	\$270 00

PLUMBING.

Bath tub, 1 copper bath tub with plug and connections	10 00
Water-closets, 3, traps and safes @ \$22.00	66 00
Wash bowls, 1, cocks, plug and marble top and back	7 00
Laundry tubs, 3, linings and connections, with cocks and plugs	3 00
Sinks, 2, kitchen and pantry, with strainers and cocks	8 00
Boiler, 1, galvanized iron, with gal. stand and connections	18 00
Soldering and leading	10 00
Plumbing, total	\$122 00

PAINTING.

One cask of stain for shingles, 10 gallons @ \$1.50 gal.	15 00
1,020 sq. ft. of 3-coat painting (exte-	



FIRST STORY PLAN OF \$5,000 COUNTRY DWELLING.—SECOND PREMIUM DESIGN.

rior) @ 3c. sq. ft.	30 60
Interior painting included in above allowances.	
Painting, total	\$45 60
TOTALS.	
Masonry	982 66
Carpentry	1,716 08
Joinery	1,456 60
Tinning	83 90
Heating	270 00
Plumbing	122 00
Painting	45 60
Grand total	\$4,676 84
Mechanics	4,676 84
Architect's fee, 8 per cent.	374 08
Entire cost of building	\$5,050 92

Artistic Homes. \$3.50
Modern House Painting. \$5.00.
Steel Square and Its Uses. \$1.00.

THE WAY IT HAS ALWAYS BEEN.—The constant clash between capital and labor is thus epitomized in the *American Miller*: "To get much for little is the real quintessence of happiness. Much for little has been the cry of Jew and Gentile for thousands of years, and to get much for little, men sacrifice their fortunes, their lives, and their sacred honor. On the one side, to get much money for little work, and on the other side, to get much work for little money, makes most of the troubles between employer and employed. It has been so in the past, and will be so in the future, until the end of time, all legislation to the contrary notwithstanding."

Complete Details. \$2.00.
Universal Assistant. \$2.50.
Cutting Tools. 2.00.