

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

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

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

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

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

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

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

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

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

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

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

Seth Babson.

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

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

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

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

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

Timber and Tools

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

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

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

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

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

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

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

—*Lumber Trade Journal.*

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



CAL. ELEC. ENG. CO.

SETH BABSON.

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

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

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

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

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

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

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

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

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

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

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

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

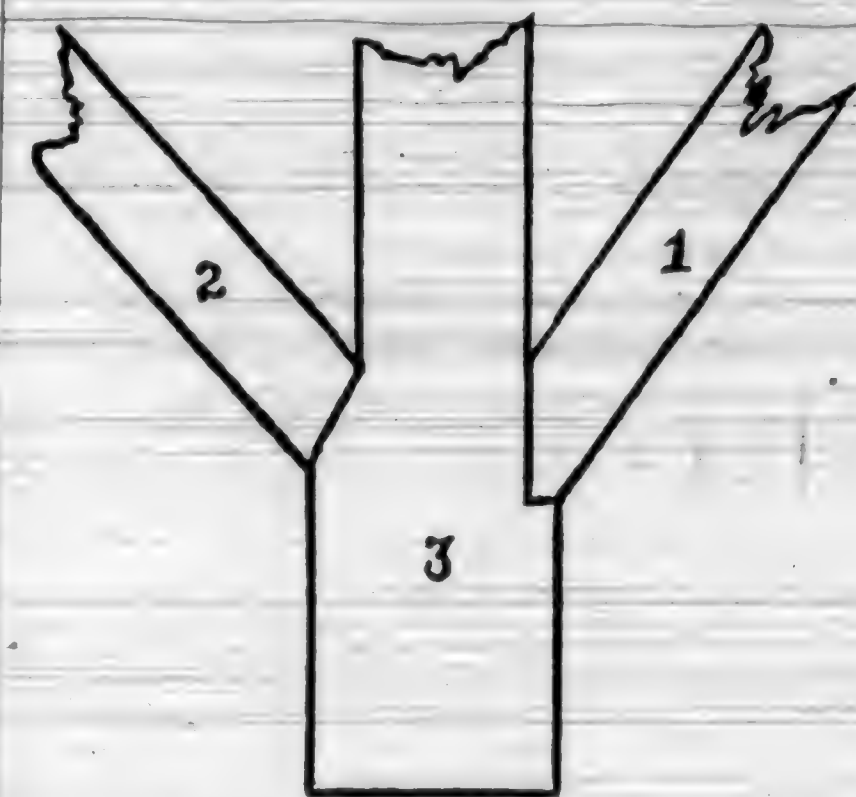


FIG. - No. 1.

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

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

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

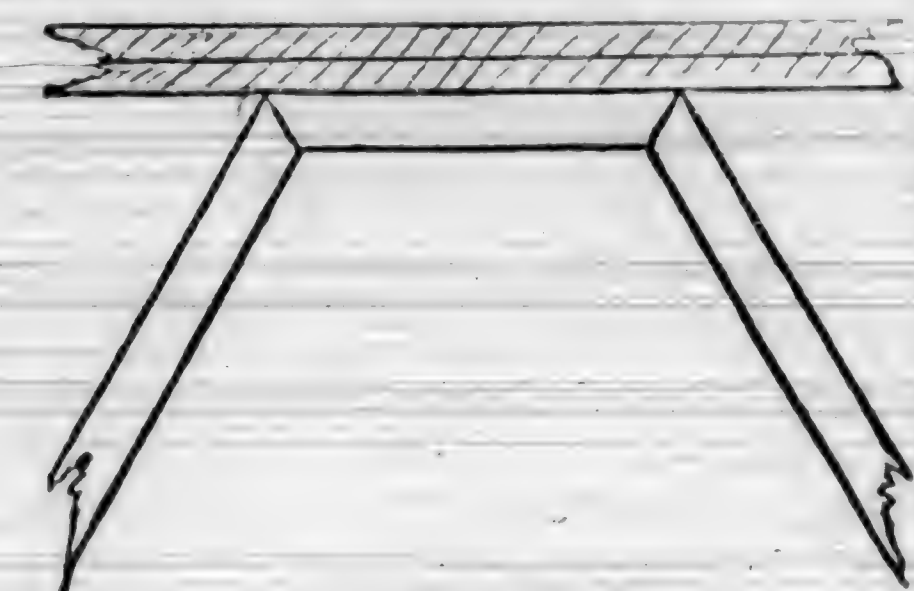


FIG. 2.

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

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

Mantels and Grates.

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

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

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

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

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

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

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

Written expressly for the CALIFORNIA ARCHITECT.

Soil as It Relates to Health.

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

FILTH IN THE SOIL.

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

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

THE SOILS FILTERING CAPACITY.

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

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

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

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

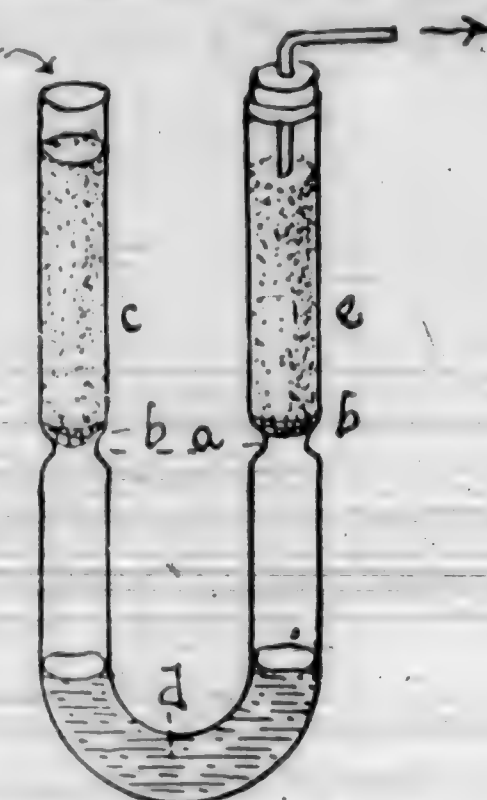


FIG. 2. Air Filter, (a) narrow part of tube, (b) wire saucers, (c, d) sand through which air passes, (e) beef infusion; arrows show direction of air.

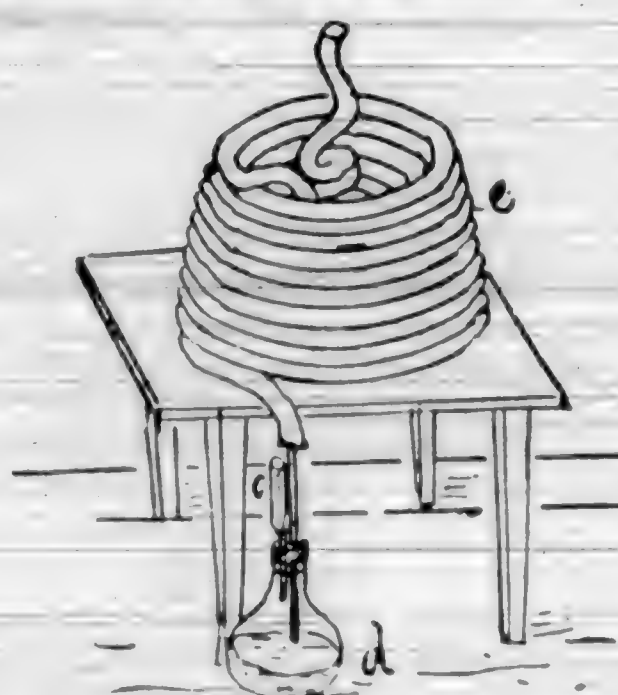


FIG. 3. Water Filter, (c) coil of lead pipe filled with sand, (d) flask with beef infusion, (e) ventilator with asbestos filter.

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

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

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

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

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

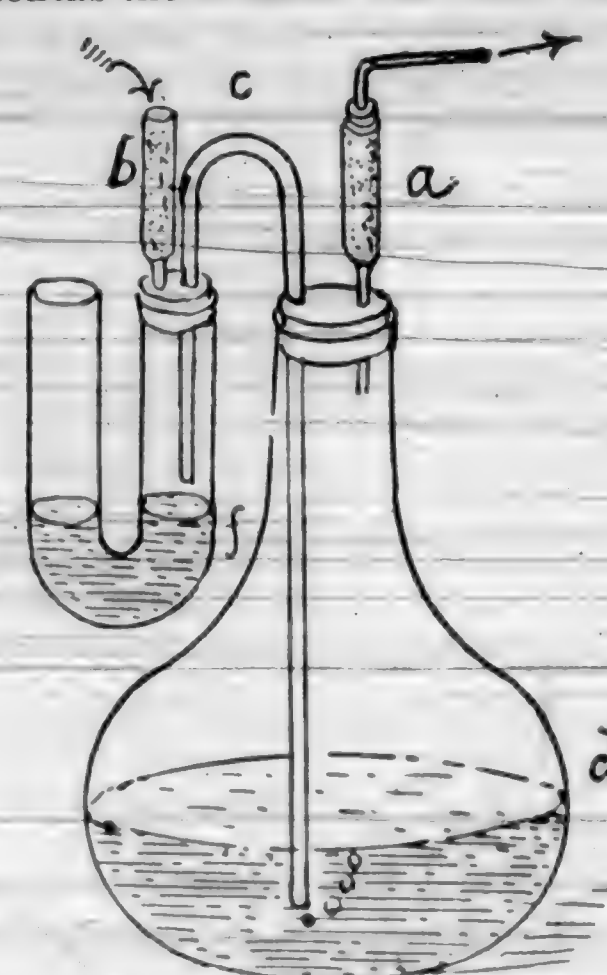


FIG. 4. Air passing over polluted water, (a and b) sterilized filters, (c) tube connecting infected fluid chamber with sterilized infusion, (d) beef infusion, (f) infected fluid; arrows show direction of current.

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

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

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

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

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

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

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

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

Whims in Building.

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

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

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

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

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

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

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

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

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

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

Final aggregate. \$359,594-36
Total for 1883, 84 buildings, value. \$204,519-00

Amount in excess of last year. \$155,075-36

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

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

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

Lining for Chimneys—Browell's Patent.

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

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

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

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

BUILDING INTELLIGENCE.

SAN FRANCISCO.

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

Keep Out the Cold.

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

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BUILDING NEWS
FORMERLY THE CALIFORNIA ARCHITECT AND
AUTHOR BUILDING REVIEW
FORMERLY THE QUARTERLY ARCHITECTURAL
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The California Architect and Building News.

VOLUME VI.
NUMBER 1.

SAN FRANCISCO, JANUARY, 1885.

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

Is the Business Outlook Well Sustained?

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

WHY NOT?

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

CAPITALISTS ARE SEEKING INVESTMENTS

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

CAPITAL WILL NOT LIE IDLE.

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

THE BOUNTIFUL SHOWERS

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

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

Building in the City.

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

The following table will show the number

and value of improvements started since our last issue:—

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

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

Market Reports.

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

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

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

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

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

Our New Heading.

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

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

HAVE NOT PAID UP.

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

ALL WHO HAVE NOT PAID,

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

Our Sixth Volume.

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

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

California Designs.

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

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

Questions Concerning Chimneys.

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

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

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

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

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

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

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

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

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

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

4. The same principles apply to small as to large chimneys.

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

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

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

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

How to Make Wood Present a Fine, Smooth Finish.

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

Back Saws.

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

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

Santa Clara.

E. H. DAVIES.

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

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

Wash Bowls.

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

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

Queen Anne Architecture.

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

Our Illustrations.

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

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

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

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

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

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

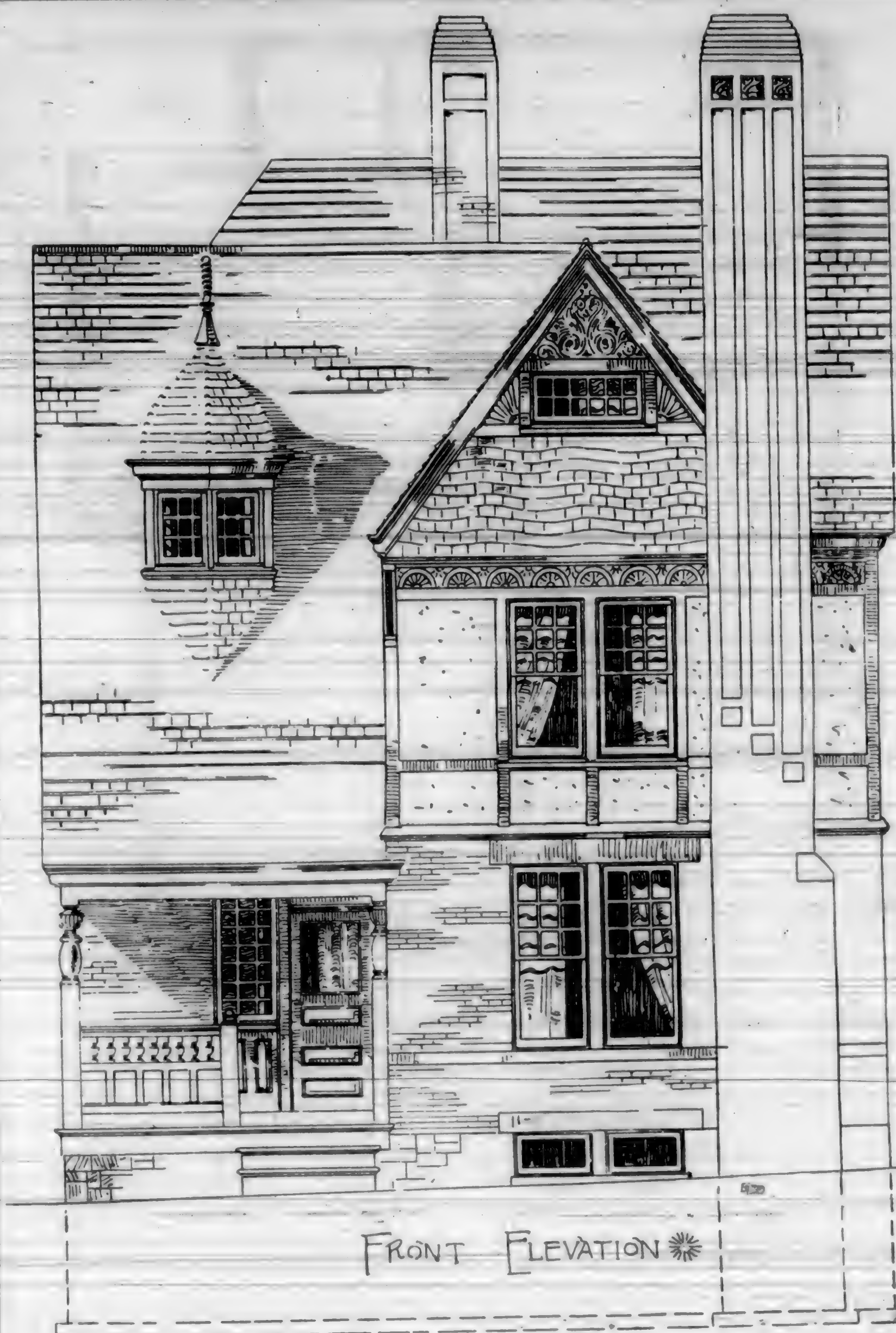
We give in full the estimate of cost and bill of quantities, as furnished to us by the designer. It will be noticed that many of the items are much below the cost of the same in this city.

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

BILL OF QUANTITIES.

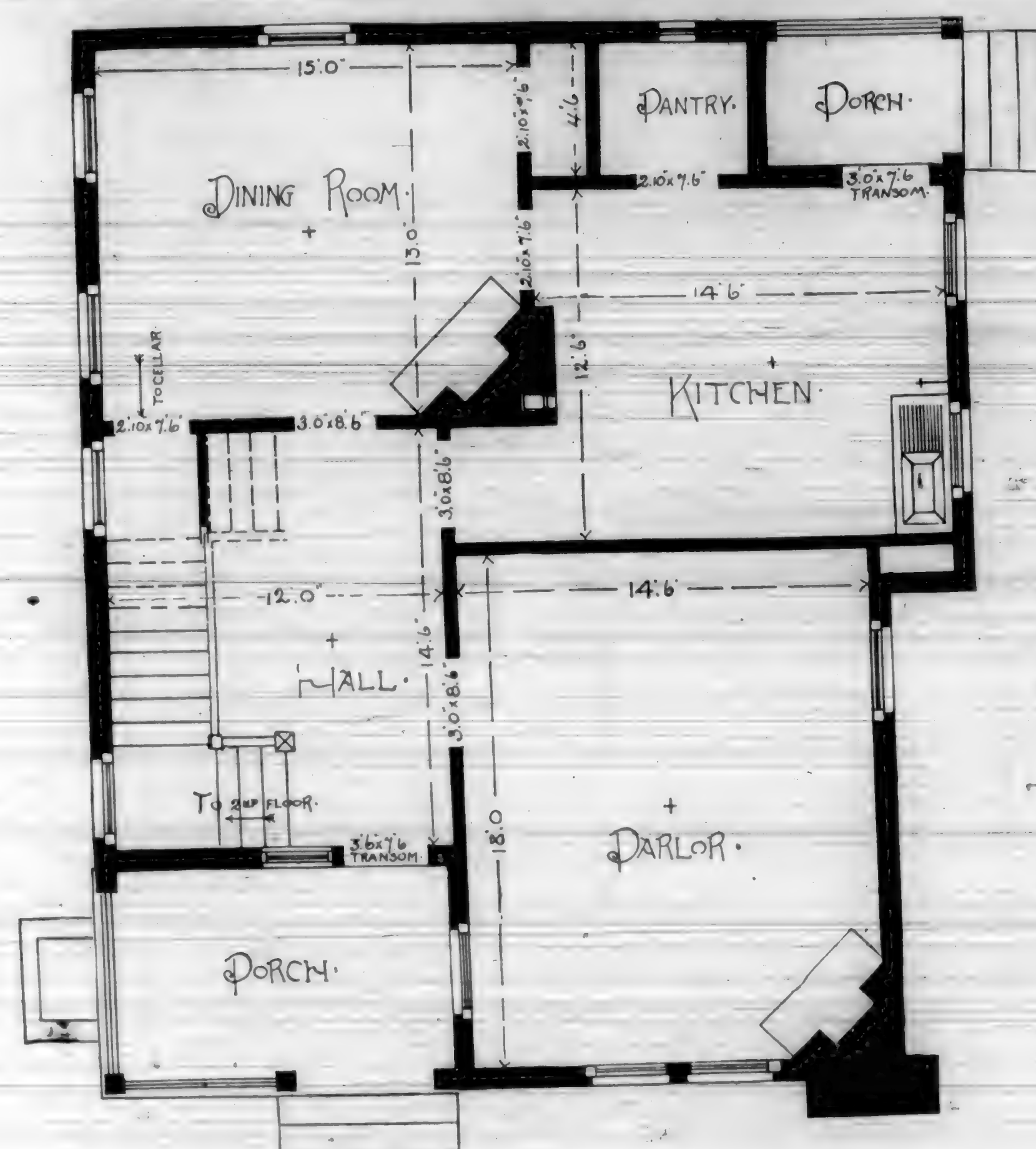
"California Architect" \$5,000 house competition; submitted by "Tease Quare."

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



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

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



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

To Imitate Furniture Wood.

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

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

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

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

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

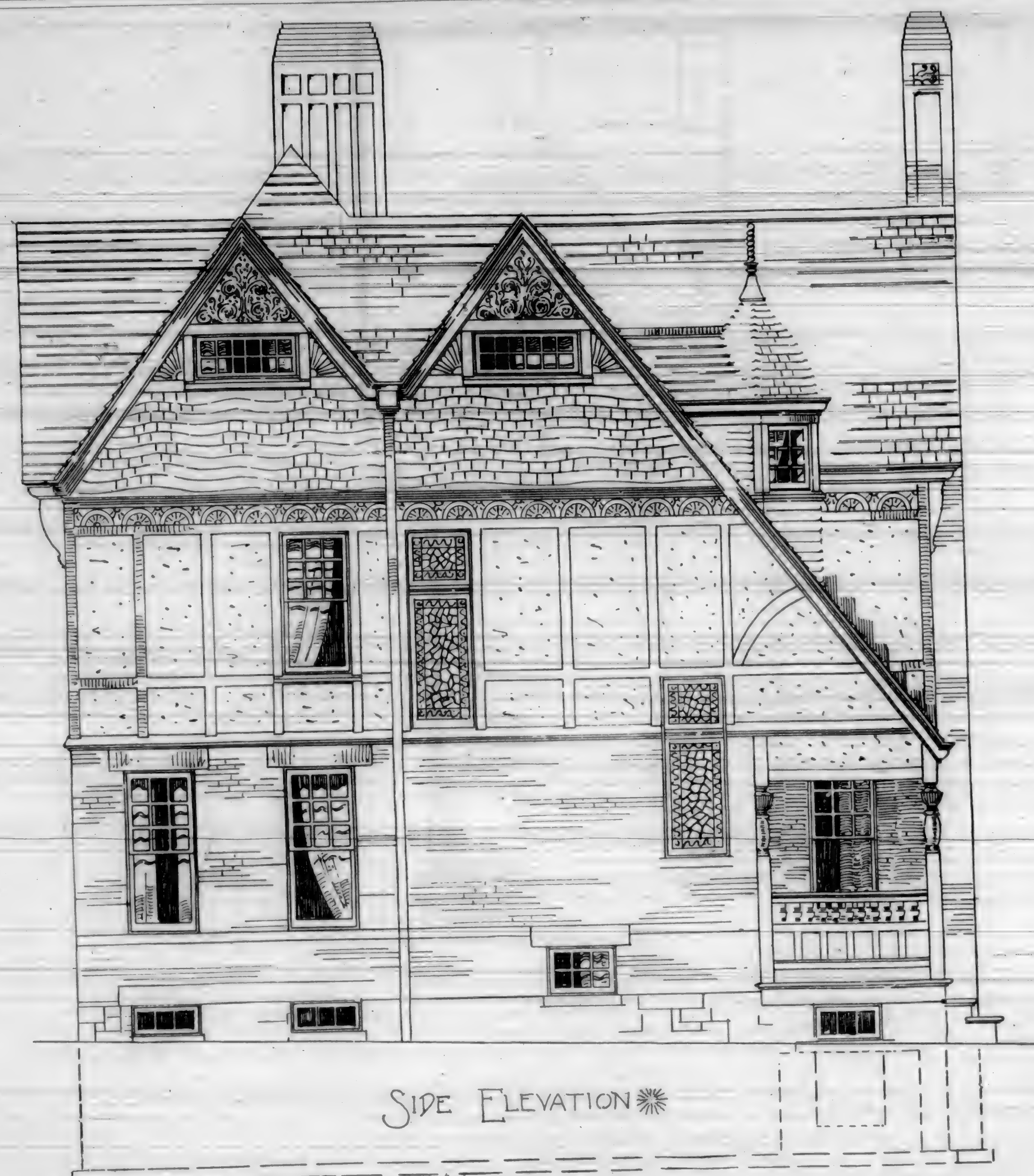
Chimneys.

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

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

New Way to Lay Slate Roofs.

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



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

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

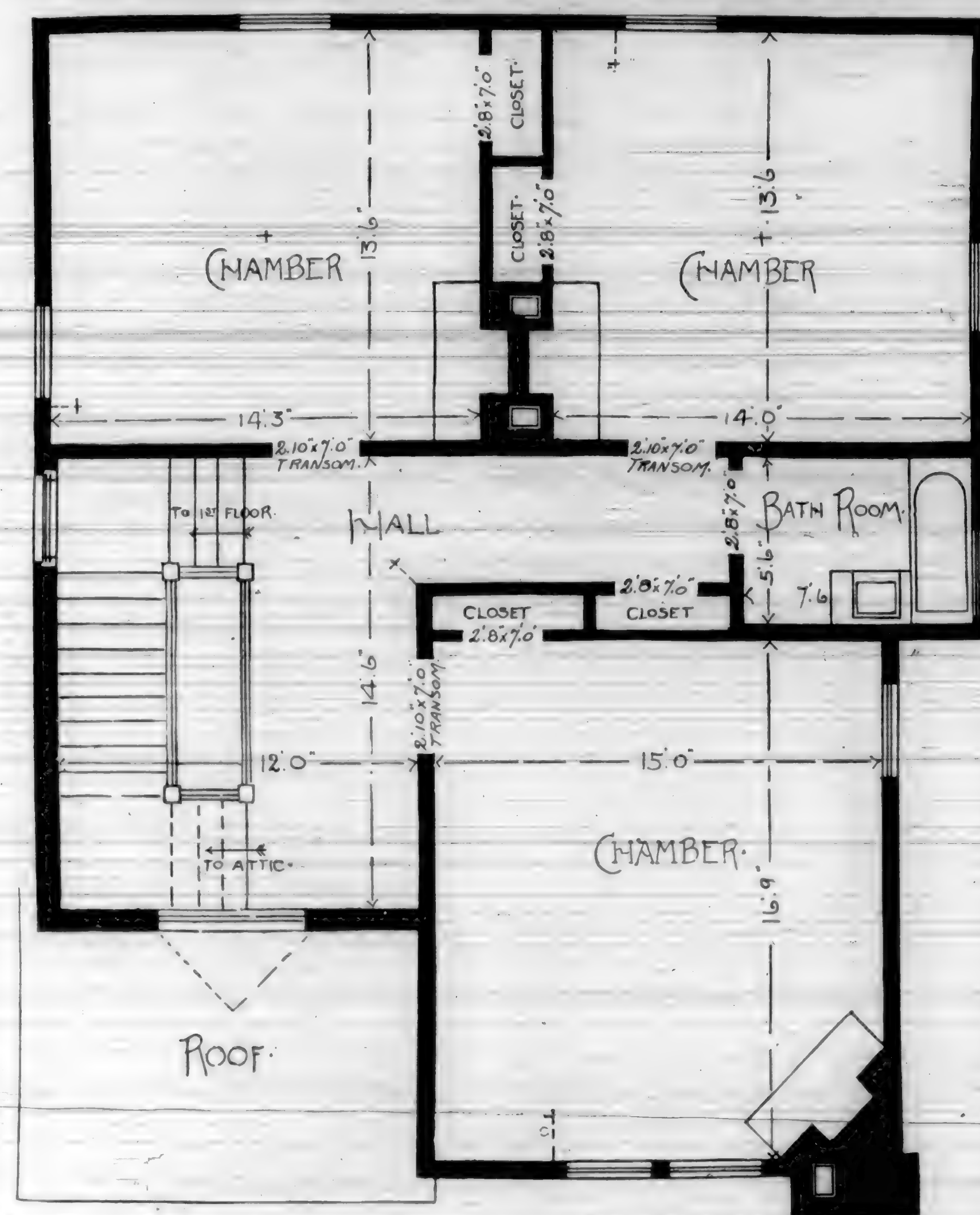
FOR a long time past we have had the pleasure of addressing ourselves particularly to the mechanics in the shops, but inasmuch as we shall not appear before them again this year, we propose to go with you and remain awhile in the sanctity of Home. The year we have traveled through together is nearly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

*This article should have appeared in our December issue.

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

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

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



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

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

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

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

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

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

In conclusion, above all things be happy. Many of you are parents; we wish to say to all such, and others in household authority, cultivate the home feeling in all the members of the family,—the children, the hireling, and the stranger within thy gates. Your family should be a unit, all the members sharing each other's joys, and sympathizing in each other's sorrows. The happiness of life is thus increased in geometrical ratio, and at the same

time the burdens are decreased to the minimum. This home of which we write is in your hands as well as that of the mother. Your children, as well as ours, are the closest of imitators and accurate observers. They know whether father and mother are happiest at home and in the family circle, or with strangers in the glittering den around the corner. If they hear sharp and angry expressions in the intercourse of their parents, they will use the same in their intercourse with each other, and this, too, in spite of all parental precepts and penalties.

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

J. F. ELSOM.

What Is an Abstract of Title?

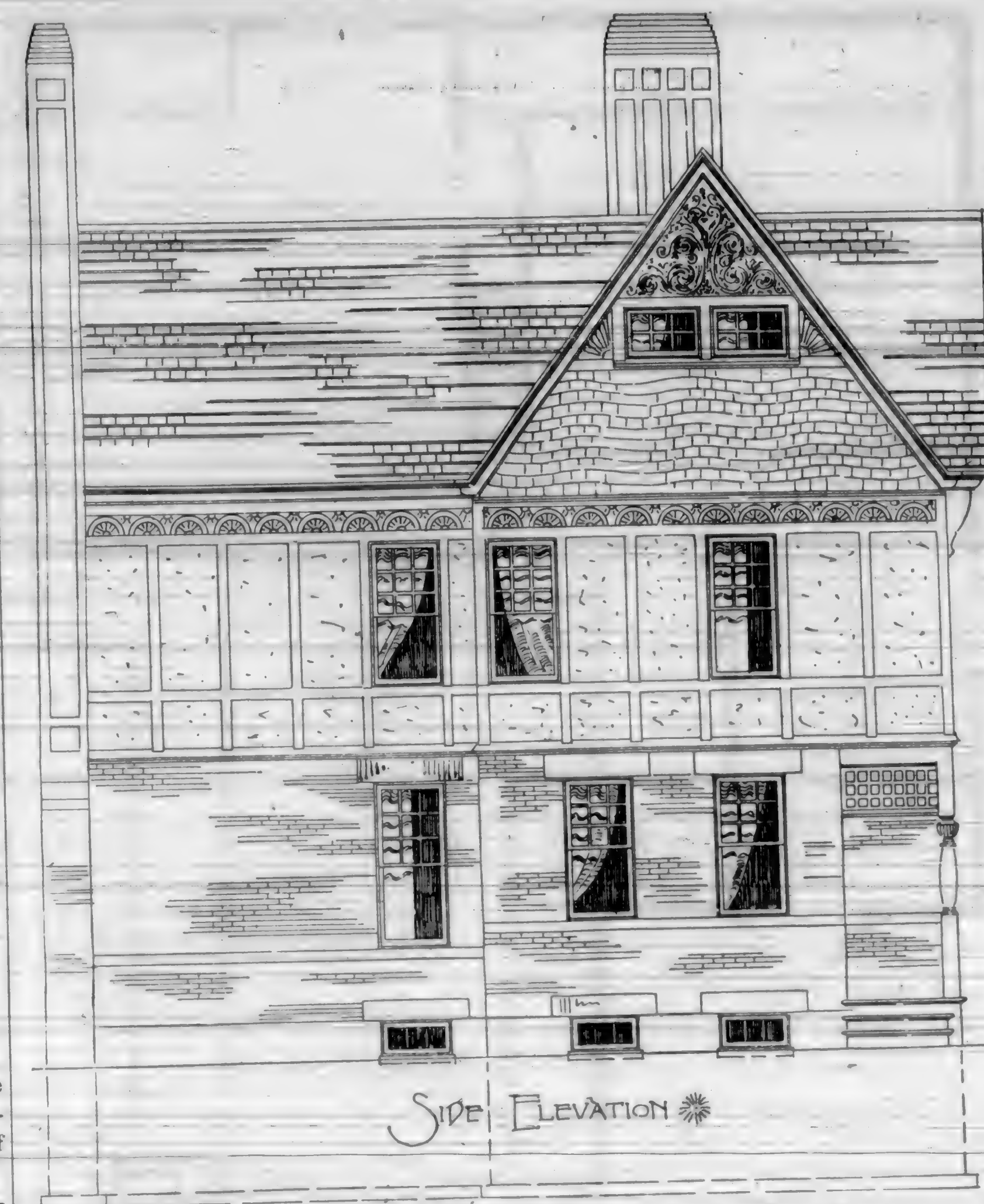
BUT few property owners know, perhaps, what an "abstract" is. A good many are still of the opinion that the possession of an abstract is evidence of the genuineness of title to the property.

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

An abstract is a careful abstract from all the various contracts, bills of sale, powers of attorney, deeds, mortgages, trust deeds, and releases, also all legal and testamentary transactions affecting the property right of the owner. Also are shown all sales for taxes, judgments and order of courts against previous and present owners.

By the aid of a complete abstract the expert must determine the genuineness of a title, and in case of unpaid mortgages or errors and flaws in former sales or court transactions they should be straightened out at once. All this ought to be done before a purchase or loan for the safety of buyer or lender. Where this was neglected at the time the error ought to be remedied as soon as possible, because the older an imperfection or flaw in the title is the more troublesome and expensive is its rectification.

The labor, therefore, of examining abstracts and proving titles is a difficult, tedious, and responsible one, and the greatest care and long



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

experience is necessary to elucidate the various questionable points which may arise in the proving and examination and to pass his opinion upon the same.

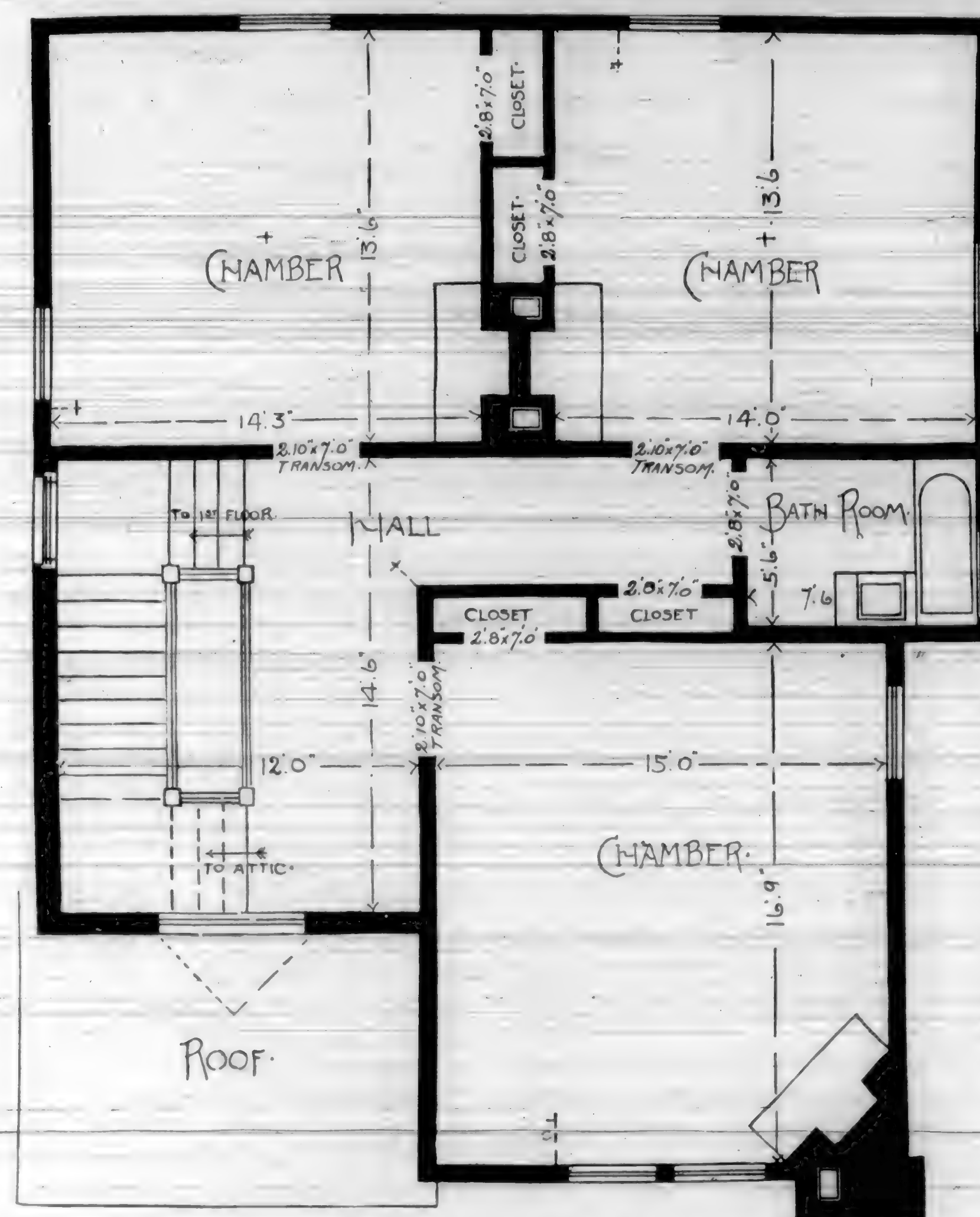
Persons who wish to follow this branch of business and expect to meet with success must, above all, have the entire confidence of those who lend property or lend capital upon the same.

A Perplexing Situation.

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

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

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

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

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

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

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

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

In conclusion, above all things be happy. Many of you are parents; we wish to say to all such, and others in household authority, cultivate the home feeling in all the members of the family,—the children, the hireling, and the stranger within thy gates. Your family should be a unit, all the members sharing each other's joys, and sympathizing in each other's sorrows. The happiness of life is thus increased in geometrical ratio; and at the same

time the burdens are decreased to the minimum. This home of which we write is in your hands as well as that of the mother. Your children, as well as ours, are the closest of imitators and accurate observers. They know whether father and mother are happiest at home and in the family circle, or with strangers in the glittering den around the corner. If they hear sharp and angry expressions in the intercourse of their parents, they will use the same in their intercourse with each other, and this, too, in spite of all parental precepts and penalties.

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

J. F. ELSOM.

What Is an Abstract of Title?

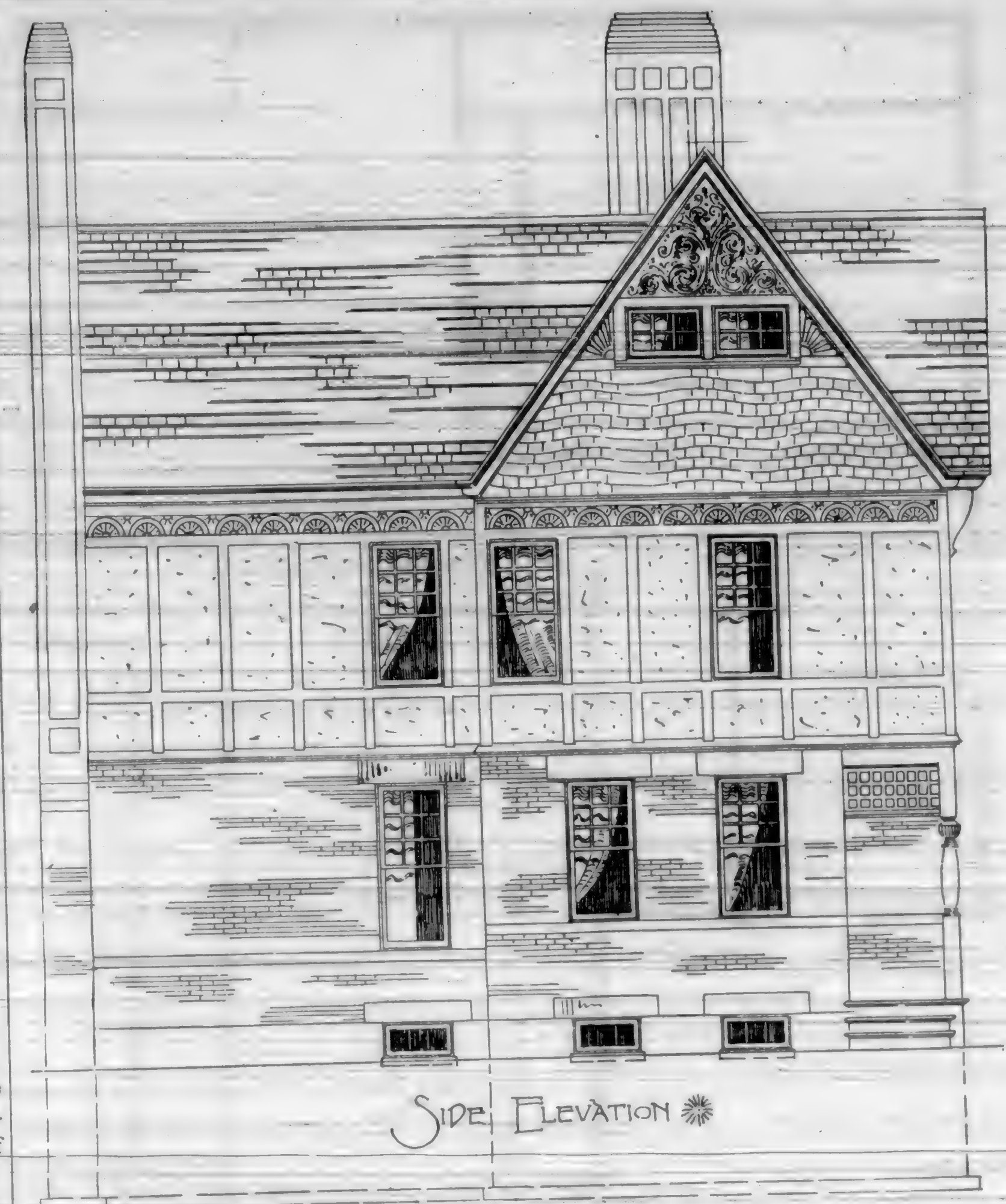
BUT few property owners know, perhaps, what an "abstract" is. A good many are still of the opinion that the possession of an abstract is evidence of the genuineness of title to the property.

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

An abstract is a careful abstract from all the various contracts, bills of sale, powers of attorney, deeds, mortgages, trust deeds, and releases, also all legal and testamentary transactions affecting the property right of the owner. Also are shown all sales for taxes, judgments and order of courts against previous and present owners.

By the aid of a complete abstract the expert must determine the genuineness of a title, and in case of unpaid mortgages or errors and flaws in former sales or court transactions they should be straightened out at once. All this ought to be done before a purchase or loan for the safety of buyer or lender. Where this was neglected at the time the error ought to be remedied as soon as possible, because the older an imperfection or flaw in the title is the more troublesome and expensive is its rectification.

The labor, therefore, of examining abstracts and proving titles is a difficult, tedious, and onerous one, and the greatest care and long



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

experience is necessary to elucidate the various questionable points which may arise in the proving and examination and to pass his opinion upon the same.

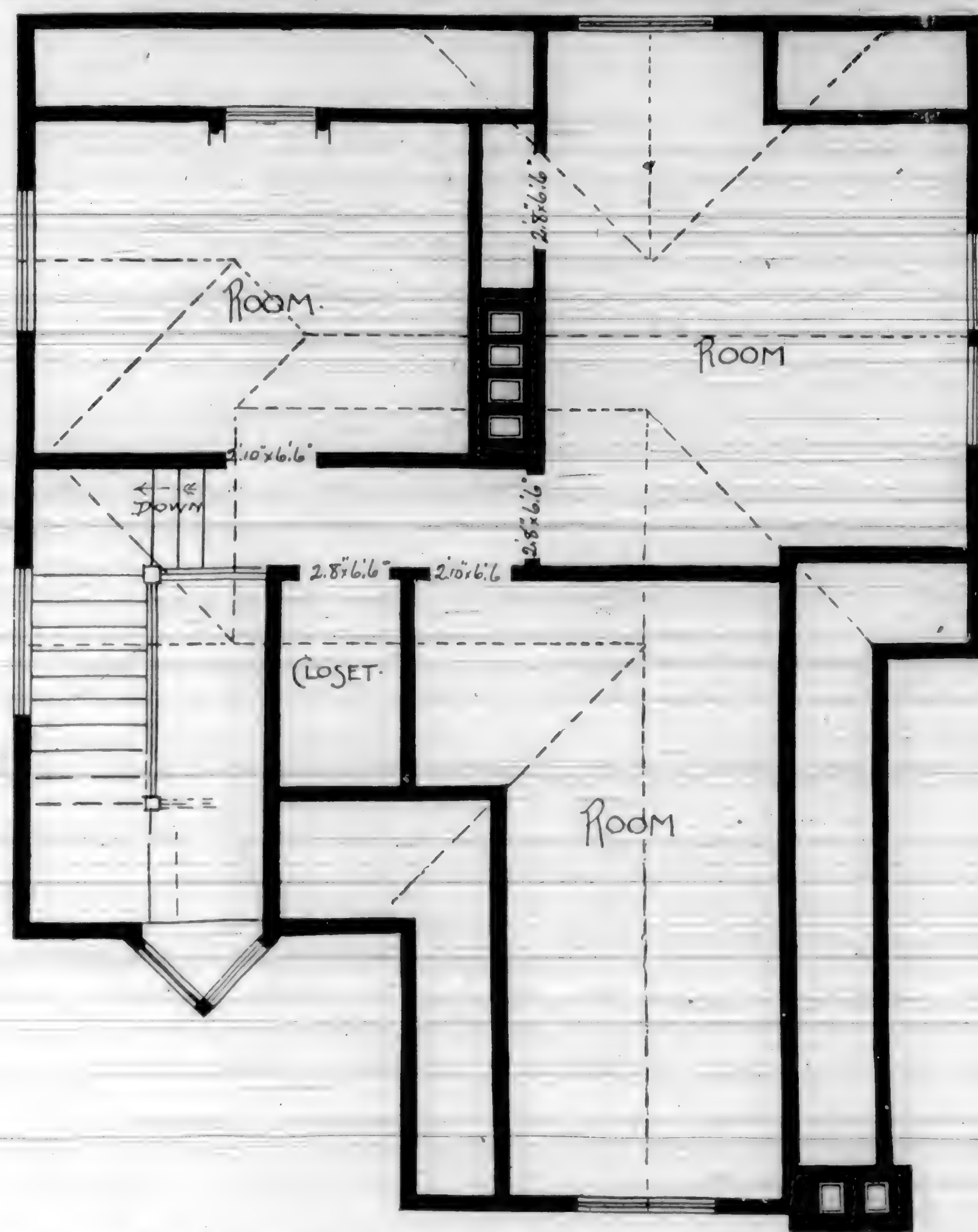
Persons who wish to follow this branch of business and expect to meet with success must, above all, have the entire confidence of those who lend property or lend capital upon the same.

A Perplexing Situation.

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

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

The Planning of Houses.

A HOUSE, to be well planned, should be useful and convenient for carrying out domestic arrangements in the simplest and easiest way. The necessity of the architect making this his first consideration is very obvious. A thing to be of the highest value must be useful, and nothing more so than the houses we live in. A house should be arranged so as to suit or even improve the habits of the people who live in it. It should also be a healthy house, otherwise it sadly fails in that which a habitation ought to be. In the matter of convenience and completeness, it should be self-contained, both in and out. This should be striven for in designing houses of all classes, but especially those of the lower. To have one room entering from another is bad planning, and should be avoided. In cases of sickness or privacy it is very objectionable.

If a house is contrived, to begin with, so that it is deficient in that which provides for ample light, ample ventilation, and good

drainage, it gradually becomes a diseased house, which nothing will cure, and I cannot impress too strongly the need of designing houses which will prevent as far as possible that share in the death rate of our city which unhealthy houses lead to. There can be no doubt that a house that has been subjected to the escape of bad air, the soaking of the basement by leak-drains passing under the building, has the living germs of disease about it, and I cannot state this view too forcibly, as in my opinion there are many such houses in our city, which throw a heavy responsibility on those who had to do with their imperfection in this respect. Drawings of drainage, showing accurate line as well as the course of bends and level, should be as carefully done as any detail of the building.

Besides having the rooms self-contained, the staircase or lobbies should be wide, airy, and well lighted. They are the lungs of the house or building. A narrow, dark, badly ventilated staircase is fruitful of disease, and so is the lobby. At the present moment I see

tenements of houses being erected which are sadly defective in this way; by whom planned I know not, but they or the authorities who permit their erection have much to answer for. It is difficult to understand how the authorities can allow tenements of houses to be erected having narrow, dark staircases, water-closets in the center of the building, lighted from the staircases, and with attempted ventilation by a pipe to the roof, which is more likely to supply air to the heated house than draw the vitiated air from it, besides the danger of allowing the air of one house to pass into another, and so propagate disease if such should exist in the building.

Healthy and unhealthy houses, individually or in groups and districts, are perfectly well known to medical men, and it is matter for consideration whether these should not in some unmistakable way be specially distinguished. The effect of this would probably be to bring those who own such houses to see it to be their interest to make them properly habitable.

In the selection of houses a cheap rent is often a great inducement, even to those who can afford to pay on a higher scale; but if this is done to the neglect of sanitary arrangements, it becomes foolish economy, as much more may have to be paid for doctors' bills than would have to be expended for better accommodation, apart from the suffering from ill health and its consequences.

In the choosing of houses we are not so concerned for those who have the means, and ought to have the knowledge, to enable them to select a healthy residence. The class we are sorry for are those who, from limited means or circumstances, cannot pick and choose, but must take what is offered to them, whether healthy or no; and I would point to the need of all proprietors having their houses certified as to their healthiness. If the legislature provide for the safety of sailors in seaworthy ships, and the protection of miners in dangerous mines, action in the direction I have indicated is not less but even more urgently needed.—J. Gowans, in *Carpenter and Builder*.

Useful and Practical Hints for the Artisan and Mechanic.

WOOD may acquire an oak, walnut or cherry tree color by staining it with ordinary tincture of iodine diluted with spirit until the exact shade is obtained. White shellac must be added to the iodined solution if the stain is to be made permanent, or the wood after the stain is applied may be French polished. The iodine may be laid on with a rag or a brush.

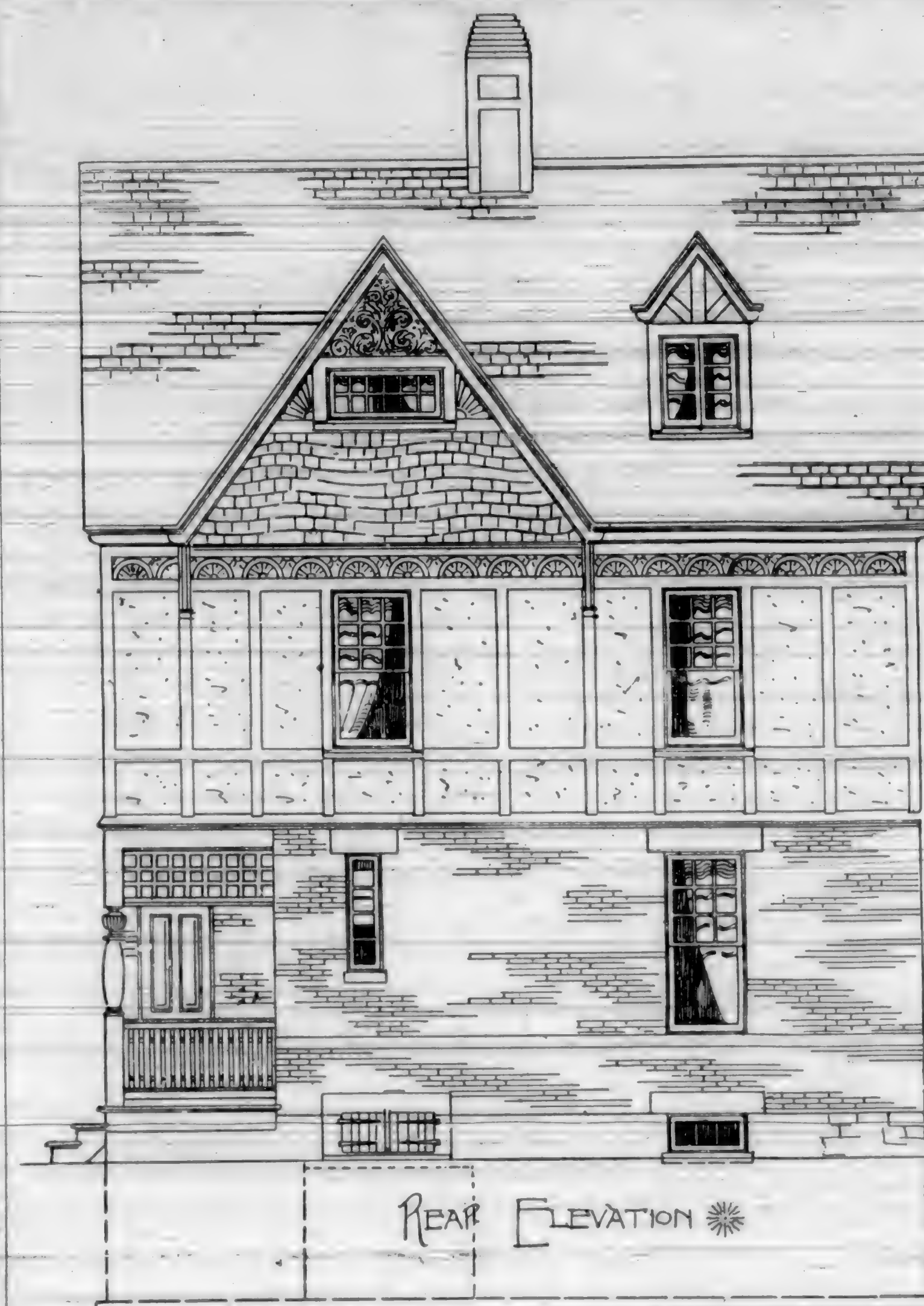
The Largest Room.

THE largest room in the world, under one roof and unbroken by pillars, is at St. Petersburg. It is 620 feet long by 150 in breadth. By daylight it is used for military displays, and a battalion can completely maneuver in it. Twenty thousand wax tapers are required to light it. The roof of this structure is a single arch of iron, and it exhibits remarkable engineering skill in the architect.

Building "Boom" in the United States.

SPECULATION in the United States has considerably diminished during the past twelve months, and the same remark applies to the construction of railroads. The chief feature now of domestic interest is the building "boom," which has spread throughout all the great cities. Yet, with the exception of Baltimore, the movement is not a speculative one. The great bulk of the buildings raised are in connection with the working classes, and many of them have been raised by workmen themselves. It is stated that in Boston, Chicago, Philadelphia, and nearly all the northern cities, there is a marked tendency towards the erection of small houses in the suburbs or outlying districts. In Chicago money is freely lent for building purposes at 5 per cent. In New York, Boston, Philadelphia, Chicago, St. Louis, Cincinnati, and New Orleans \$114,000,000, have been invested in the erection of houses during the past year, representing about 18,000 houses, or an increase in the population of the above cities during the year of 130,000. The New York houses have been large and expensive buildings, flats, etc., as a workingman cannot there enjoy the luxury of a house of his own. But this is exceptional. The amount of building going on in New Orleans has been phenomenally large, much of this being due to the Exposition. There has been improvement generally in the number of dwellings, indicating an increase of population; and also a marked tendency in the direction of handsome dwellings, manifesting a good style in architecture.

La Semaine des Constructeurs gives an account of a competition, which recalls so strongly the history of many similar affairs here that we commend it to the attention of our less experienced readers. It seems that the town of Aubervilliers wanted a school-house, or rather a group of school buildings, after the French fashion, to cost about eighty thousand dollars; and it was decided to obtain several plans, by the process of competition. A letter was therefore sent by the mayor to several architects, inviting each to furnish a design, and informing him that no payment would be made for the competitive plans, but that the author of one adopted would be employed to direct the work, and would receive the usual commission of five per cent. on the cost. Three architects accepted this invitation, and sent designs. Two weeks before the time set for receiving the plans an election was held, and a new mayor was chosen. This official, on being inducted into office, found the plans waiting for him, and, apparently desiring to emulate his predecessor before it was too late, engaged a local architect, named Pochet, to make a design for the building. M. Pochet seems not to have been much better versed in the science than in the etiquette of his profession, and his first attempt was so unsuccessful that he was directed to make another, which, two months after the other plans



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

had been sent in, was placed with them as a competing design. Nothing in the way of municipal building can be carried on by local authority in France without Government sanction, and the mayor having been somewhat urgently addressed by two of the competitors, at last sent a request to the prefect of the Seine to have an expert appointed, who should report upon the merits of the four plans. The prefect appointed M. Trélat, one of the most distinguished among French architects, who, a few weeks later, presented a report, placing at the head of the list one of the designs first sent in, and advising its adoption by the town. Last in order he placed the project of M. Pochet, which he criticized sharply. The result of the judgment seems to have disappointed the mayor, who had certainly afforded M. Pochet every reasonable facility for winning success, and he delayed for two weeks to communicate with

A German paper says that a roof can be made fire proof by covering it with a mixture of lime, salt and wood ashes, adding a little lampblack to give a dark color. This not only guards against fire, it is claimed, but also, in a measure, prevents decay. The materials are certainly inexpensive, and, it seems to us, reasonably efficacious.

New Books.

"ARCHITECTS' AND BUILDERS' POCKET BOOK." By Frank Eugene Kidder. Published by John Wiley & Sons, New York.

The principal aim of the author of this most certainly excellent work, is to give to architects and builders a *reference* book, which shall be to them a compendium of practical facts, rules, and tables, presented in a form as convenient for application as possible. The principal subjects that are treated in its columns relate to the strength and stability of foundations, walls, buttresses, piers, arches, posts, ties, beams, girders, trusses, floors, roofs, etc.; in addition to the above, is contained a great amount of condensed information and statistics and tables relating to carpentry, masonry, drainage, painting, plumbing, plastering, roofing, weights of materials, etc., etc. The whole is illustrated with over 400 original engravings.

A casual examination convinces us that the above is the best book yet presented to the classes it is designed to benefit. It was received too late for an extended notice in this issue.

"ARCHITECTS' AND STAIR BUILDERS' TABLES OF TREADS AND RISERS." By John A. Hamilton, architect. Published by W. T. Comstock.

A handy little work designed to save the time of busy men, and also for a text-book for the younger men, to whom the stairs are always a point needing strict attention to avoid mistakes. Price, 50 cents.

"STAIR-BUILDING MADE EASY." By F. T. Hodgson. Price, \$1.00.

This book contains a full and clear description of the art of building the bodies, carriages, and cases for all kinds of stairs and steps, together with illustrations showing the manner of laying out stairs, forming treads and risers, building cylinders, preparing strings, with instructions for making carriages for common, platform, dog-legged, and winding stairs. Numerous designs are also given for all kinds of newels, balusters, brackets, hand rails; etc., etc.

This work is principally designed for those who find it necessary to commence at the beginning and learn first how to build a stair of the humblest sort, until, by gradual acquirement, they are enabled to erect and complete stairs of a better description. The work is well written in the style peculiar to the author.

"ART AND SCIENCE OF STAIR-BUILDING."
By R. T. Gould. Price, \$1.00.

The object of the author of this work has been to reduce the art and science of stair-building to the shortest and most simple system of lines which will reach the end desired. The book contains thirty-six plates, descriptive of every portion of the work connected with stair-building. The author is well known, having written several other works in regard to the same subject.

"ARCHITECTURAL PERSPECTIVE," for beginners, containing eleven plates of practical examples, considered with reference to a student in an architect's office. By F. A. Wright, architect. Price, \$3.50.

In preparing this work, the author has evidently kept in mind that large class of draughtsmen who are obliged to be self taught. Most of the works on the subject of perspective are either inadequate or too complex, if considered with reference to the actual needs of an architect's office. It is all very well to discuss vanishing points, visual rays, etc., but what the student in an office wants, is the solution of the practical problems of making a perspective of a house. This book is of special assistance to draughtsmen who have but little time to give to perspective, and the start they may gain through its aid may be the means of causing them to study and learn more. The author has succeeded admirably in presenting his subject so that the student need not be confused.

Polishing Wood with Charcoal.

THIS method of polishing wood is described in a Paris journal. All the world now knows of those articles of furniture of a beautiful dead black color, with sharp, clear cut edges, and a smooth surface, the wood of which seems to have the density of ebony. Viewing them side by side with furniture rendered black by paint and varnish, the difference is so sensible that the considerable margin of price separating the two kinds explains itself. The operations are much longer and much more minute in this mode of charcoal polishing, which respects every detail of carving, while paint and varnish would clog up the holes, and widen the ridges. In the first process, they employ only carefully selected woods, of a close and compact grain; they cover them with a coat of camphor dissolved in water, and almost immediately afterward with another coat, composed chiefly of sulphate of iron and nutgall. The two compositions, in blending, penetrate the wood, and give it an indelible tinge, and at the same time render it impervious to the attacks of insects.

When these two coats are sufficiently dry, they rub the surface of the wood at first with a very hard brush of couch grass (chiendent), and then with charcoal of substances as light and friable as possible; because if a single hard grain remain in the charcoal, this alone would scratch the surface, which they wish, on the contrary, to render perfectly smooth. The flat parts are rubbed with natural stick charcoal; the indented portions and crevices, with charcoal powder. Alternately with the charcoal, the workman also rubs his piece of furniture with flannel soaked in linseed oil and the essence of turpentine. These pouncings, repeated several times, cause the charcoal powder and the oil to penetrate into the wood, giving the article of furniture a beautiful color, and also a perfect polish which has none of the flaws of ordinary varnish.

What Constitutes Good Mortar.

MACHINISTS and engineers often have occasion to use mortar, and will value the appended information: Good mortar is a solid silicate of lime, that is, the lime unites with the silica or sand to form a silicate of lime. In ancient days those who had some conception of the way the two things united superintended their mixing; but nowadays anybody is supposed to know how to make mortar, while nobody knows much about it. Dry lime and dry sand laid together or mixed and kept dry for a thousand years would not unite to form silicate of lime any more than acetic acid and carbonate of soda dry in a bottle would effervesce. To make silicate of lime just as good as was made by the Romans, all that is necessary is to proceed intelligently: Procure good caustic, *i. e.*, fresh-burned lime, and if you find it all powder, *i. e.*, air slaked, don't use it; use only clear lumps. Slake this (if possible in a covered vessel), using only enough water to cause the lime to form a powder. To this while hot add clean sand—not dirt and loam called sand, but sand—and with the sand add enough water to form a paste. Then let it lie where it will not become dry by evaporation, if in a cellar so much the better; for as soon as you have mixed the sand and lime as above, they begin to react one on the other, and if not stopped by being deprived of moisture will go on reacting until silicate of lime (as hard as any silicate of lime ever was) is formed.

But if you take this so-called mortar as soon as made, and lay bricks with it, unless the bricks are thoroughly wet, you stop the formation of silicate of lime, and might as well lay your bricks in mud. Lime and sand, after being mixed, might lie two years with advantage, and for certain uses, such as boiler setting, or where the whole structure of brick and mortar ought to be mixed for one year before use, and two would be better; but for house building, if the bricks are so wetted as not to rob the mortar of its moisture as soon as used, mortar that has been mixed a month will form good solid silicate of lime among the bricks it is laid with in ten years. The practice of mixing mortar in the streets and using it at once is as foolish as it is ignorant, and would be no improvement. Silicate of lime is made only by the slow action of caustic lime and sand, one on the other—under the influence of moisture. Dry, they never will unite, and mixing mortar as now mixed and using it at once, so as to dry it out and stop the formation that the mixing induced, is wrong.—*Sel.*

The fact that two adjoining proprietors verbally agreed upon, and for a long space of time mutually acquiesced in, a boundary line between their respective premises, will not prevent them, or their grantees, from subsequently disputing the correctness of the same, unless it further appears that at the time of such agreement the boundary line was doubtful, uncertain, or in dispute.

The Origin of Sewer Gas.

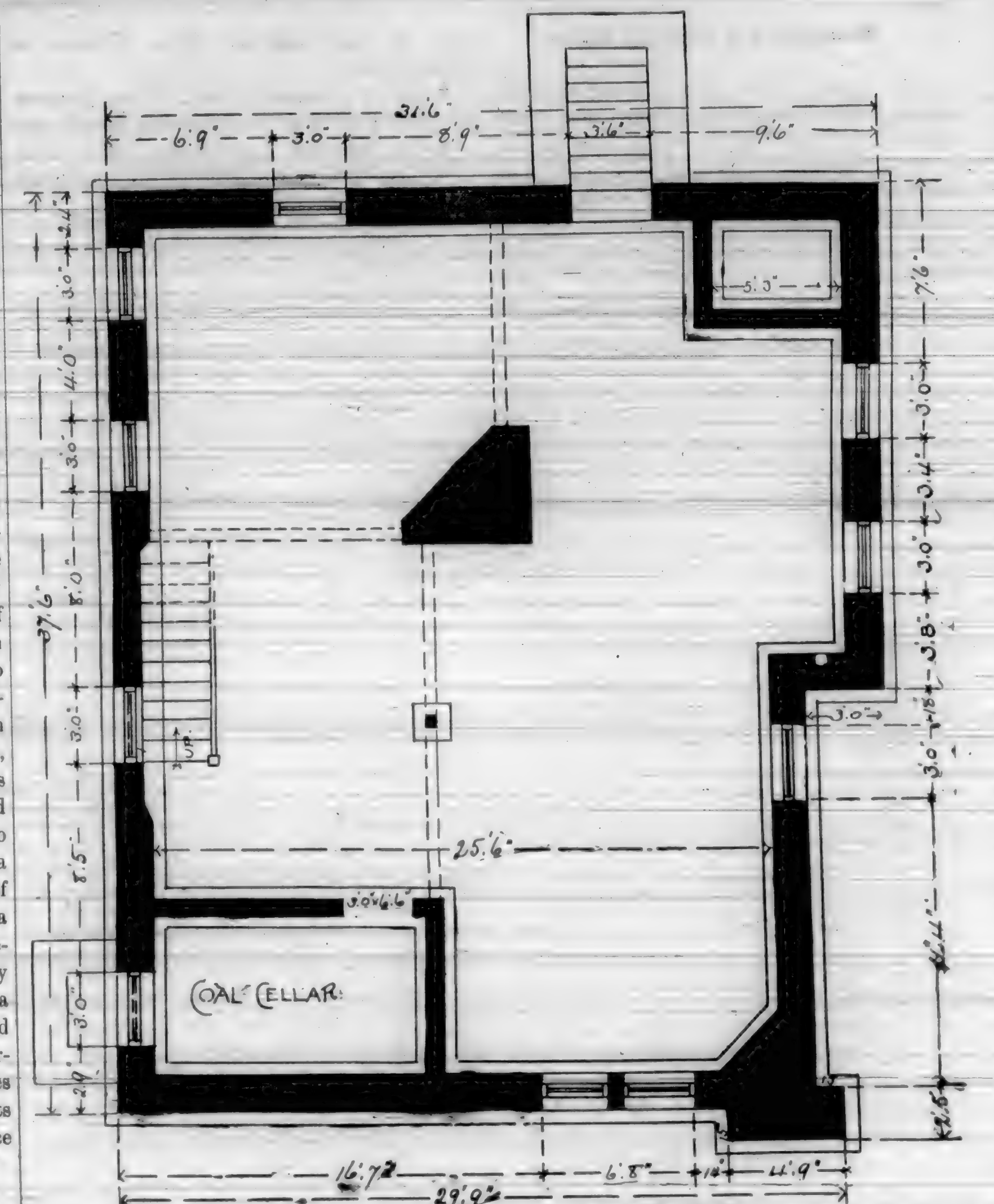
THE idea commonly obtains that sewer gas is a product of the decomposition of excrementitious matter, and that, therefore, the absence of a water-closet within doors disposes of the possibility of its admission to the dwelling. In consequence, the safeguards against its entrance, which are considered essential in the plumbing arrangements of a water-closet, are apt to be omitted in those which pertain to the bath-room or the kitchen sink.

This supposition rests, however, upon a two-fold error. In the first place, sewer gas is generated only in small quantity within house-pipes which are connected with a sewerage system. It is developed in far greater degree in the main sewer and returns along the course of every separate house-pipe which is unguarded by traps, water-seals and due ventilation. House plumbing arrangements, on the other hand, connected with a cess-pool, may become a conduit for the upward passage of sewer-gas of local origin. The introduction of excreta to the cess-pool is not necessary to its development therein. The amount of organic matter removed from the human skin and disposed of by means of the bath-water, is alone sufficient to originate the gaseous products of decomposition. The animal and vegetable substance which finds its way into the waste-water ordinarily deposited in a kitchen sink, is likewise a fruitful source of foul gases, which are competent to infect a dwelling-house unless properly excluded therefrom. It is essential, therefore, that every precaution be taken in the arrangement of a waste-pipe whencesoever it originates and wheresoever it goes. The householder is surrounded upon every side by invisible agencies of disease, and eternal vigilance, as respects these avenues of their approach, is the price of health.—(*Cincinnati Building Review*.)

The Results of Machinery.

NO CARPENTER in a city now thinks of lugging about a 300 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 every-day use. Nowadays fine office and store fixtures, and much other work, come from the mill in such shape that a couple of ordinary clever workmen, with only a shoulder box full of tools between them, will put it up more rapidly than the thoroughly trained carpenters of old times after making the fixtures by hand. The proportionate number of good carpenters is decreasing from this, and the fact is that when a man finds himself good at any particular branch of the business, he follows it in preference to any other, and finds it more profitable to do so.—*The Carpenter.*

Article headed "Mantels and Grates" in our last issue, should have been credited to *Inland Architect and Builder*. A blunder not intentional on our part.



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

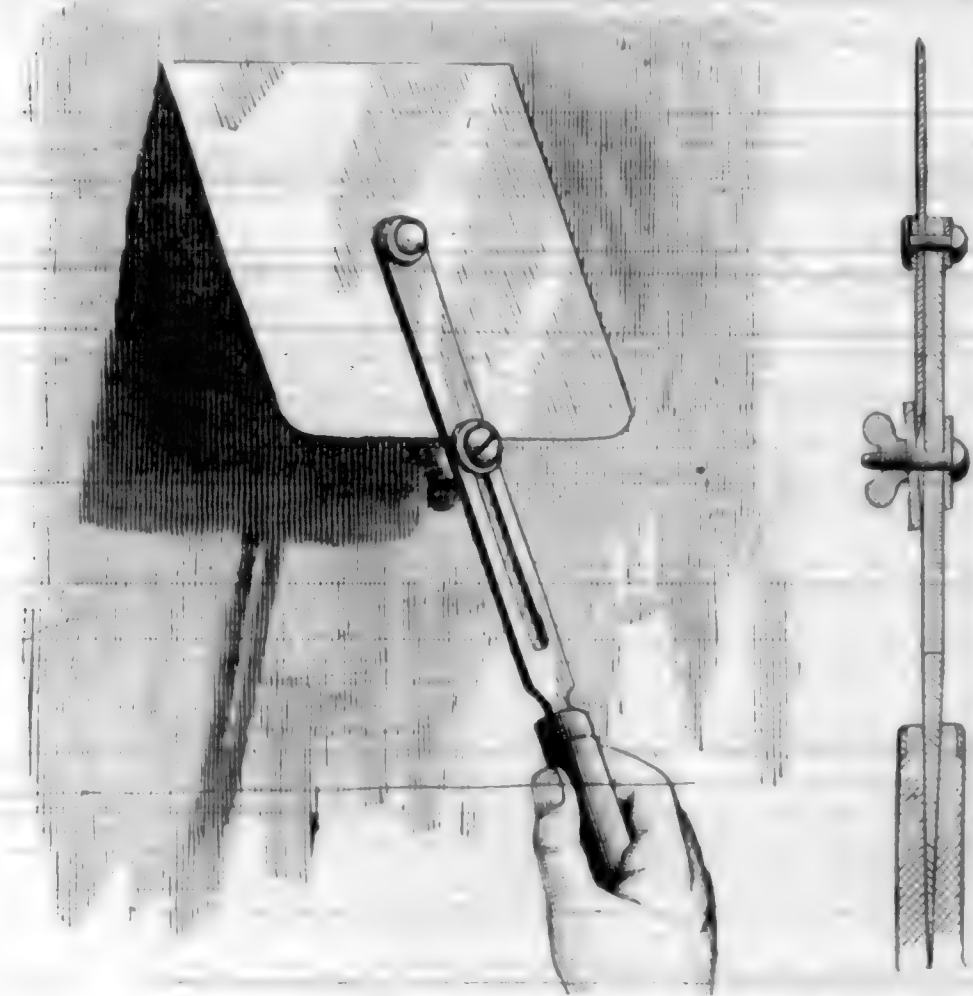
In no field of commerce is the rule of "cheap" prices, "cheap goods" so generally true as in the purchasing of building material; and because of this, property that should remain substantial and unimpaired for many years rapidly depreciates because the owner at the start sought to cheapen his building by giving a low price and expecting to obtain good work and good material. The owner has probably been educated to this by first buying his lot.

He finds that real estate in a certain neighborhood is of a certain supposed value, that value being the price paid in the more recent purchases, and if he succeeds in obtaining his ground for a less figure he has made a good bargain, and his ground is worth just as much as though he had paid a larger sum. He goes to his architect and tries to secure "cheap" professional services. Such can be had, but he has now entered a field where values are unchangeable. It is impossible to get good serv-

ices cheap, but he does not know it, or willfully closes his eyes to the fact, and the result is the business man who would not dream of submitting an important law case to a "cheap" lawyer, or trusting himself in the hands of a "cheap" physician, will consider the less he pays his architect the better off he is. He insists upon "cheap" contracts, and perhaps the contractors, after figuring upon the lowest "living" basis, are requested to re-figure, and the result is a lot of contracts let for less than cost, and a building that is "skimped" in every place it is possible, and in the end the owner receives a building that in a few years will be practically worthless. It seems to us that architects can do much to regulate all this by educating the building public. They should deal with none but reliable contractors, and feel perfectly free to give a contract to the most capable builder, instead of the lowest bidder, where the circumstances warrant it. This is a professional question that should receive the early attention of architects.—*Inland Architect.*

Whitening and Scraping Walls.

THE modern mode of whitening or kalsomining hard finished walls is such that in frequent repetitions of the work, with various inequalities in the mixtures, it soon becomes surcharged. This is one of the causes of scaling, bunching in sponge-like masses, leaving the work uneven and unsatisfactory. Plastering, when thus loaded, should be at once removed by sponging or scraping, leaving it, when so done, clean and ready for a renewal of the whitening process. Many whiteners, instead of removing the superfluous mass, resort to subterfuge, and besmear the walls with vile mixtures to tide over to a more convenient season, or leaving the blotched, overcharged walls for the next, to whom it may concern to rectify. The one apology frequently made for this neglect of the work is inadequate compensation, that the price of work is so reduced



that it don't pay. This latter remark is too true in this case, for it does pay to finish up a job in a workmanlike manner. It is true the prices have declined, but no more so than in other mechanical lines, and yet good work still pays the hard-working whitener. There is great complaint made of the laborious work to scrape and cleanse whitened walls, and the principal reason is that too many of them employ poor tools to do this work, and therefore it is more arduous. To render this part of the work less irksome, a new patented scraper has been introduced which will lessen the labor by its mechanical adaptation to this class of work. I refer to the Patent Reversible Scraper just come into use; by it the workman has in hand a good sharp tool, four sided, having two sharp and two square edges, with one of them rounded on the corners. With this tool he can do more work, and can do that work better with less expenditure of labor. One of the advantages of this reversible scraper is that when one side is dulled it can be turned and another side can be brought forward to push on the work. Good tools are compensating, and those who use them will feel proud that

such an implement has been invented to lighten labor.

When the plastering has been properly scraped or washed, the exposed defects are mended, and then rewhitening them with good materials the plastering will come out bright and clear like new walls. Work done in this style will command a better price, and will ensure the mechanic with many walls for his superior work.

J. E. W. C.

One day a Parisian, whose wits constituted his sole capital, saw an eligible plot of building land at the corner of two streets, and reflected that the man who built a house there would be a lucky fellow. Some twenty yards further away he noticed another eligible plot of building land covered with building materials. On inquiry he discovered that the corner plot belonged to a Breton nobleman, who had had losses on the Bourse, and was living economically in Bretagne to recuperate.

The plot with the building materials on it had belonged to a celebrated doctor who died a couple of years ago, and about whose will an action has been pending for the last eighteen months before the courts of Auvergne. Our swindler, sure of not being disturbed for some time, at once went to a young architect, and got him to make the plans for a fine mansion at the corner. After having approved of the plans, he authorized the architect to make an agreement with a contractor and to use the materials on the other plot, which he said was also his. The work went merrily on, and the sharper brought a few old ladies, to whom he had sold shares in gold and silver mines in improbable regions, to admire it. At the sight of such splendid security they did not hesitate to advance him all the funds he asked for. Everything has an end here below.

One day the Breton nobleman came to Paris and went to look at the land that want of means compelled him to leave unproductive. He was of course delighted at the agreeable surprise that met his gaze, and inquired of the builder who was the unknown benefactor to whom he owed it. The builder referred him to the architect, who referred him to the pseudo-owner, but the latter had not been home for many days. He was, in fact, in Mazas Prison on account of some imprudent act he had committed in the neighborhood of the Bank of France. His affair, as the French say, was clear; nor did he attempt to deny it. Only during his trial he was seized with a fit of irrepressible laughter. On the Judge reprimanding him, and asking him what he saw in the matter to make him laugh, he apologized, and said that he could not help laughing when he thought of the intricate maze of actions-at-law his building freak would cause. The series is indeed a long one, and has already begun. The contractor sues the architect, the architect the Breton noble-

man, who maintains that whatever is on and under his land belongs to him; the Auvergnate heirs also sue the Breton for the materials, and the old ladies sue everybody else, pleading that the land, building, and the materials belong to them as security for the money advanced. Such is the substance of a story told by the Parisian correspondent of the *Manchester Evening News*.

Carrying Coals to Newcastle.

THE following remarks taken from one of our leading mechanical journals, aptly illustrate the folly of sending East for material, a better duplicate of which can be found on this coast.

"The famous Flood mansion, in San Francisco, is being finished, in part, at least, with cut brown-stone. The stone is all cut, dressed and marked in the quarry in Connecticut, and when reaching the structure is placed in position at once as originally calculated, without re-dressing or fitting. A San Francisco paper a short time since mentioned the arrival of a ship, 150 days from New York, with 350 packages of cut brown-stone for this building. This would seem very much like carrying building material around the globe, or at least a distance nearly equal to the circuit. Such a shipment, it is hardly necessary to remark, is somewhat unusual."

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

The Way Out.

EXPERIENCE keeps a dear school, not altogether because her rates of tuition are so high, but because her pupils, meaning average and aggregate humanity, stubbornly refuse to learn and remember disagreeable and uninteresting lessons. She has taught us over and over again, charging a tremendous price for the instruction, that it is dangerous and wicked to entice a great number of people into a large hall or church by the promise of amusement, instruction, entertainment or salvation, and then, when the curtain falls and the lights are turned off, dismissing them suddenly and all at once, leaving them to find their way out as best they may. We have found that, even with no more powerful incentive to haste than the wholesome desire to get into the fresh outer air as soon as the performance is concluded, there is great discomfort attending the exit and not a little danger to those who are feeble of breath or limb; yet we go on building public halls with most sublime disregard of these familiar facts, apparently oblivious of former experience and of the warnings that are constantly occurring. For a short time after the periodical theater panic, or the crematory exercises, there is a popular interest in the subject which goes so far as to cause a few extra cautious people to forego for a season the prospect of an evening's amusement rather than suffer the anxiety attendant upon entering the tempting trap, and a few others to give only half their attention to the entertainment, the other half being on the alert for signals of calamity. In a few weeks, or months at most, even these cautionary symptoms disappear and the crowd pours in without a thought of the facilities for getting out.

We visited recently a model public hall. The exterior of the building bears conspicuous, unmistakable evidence of the rare skill and artistic ability of the designer. It is the embodiment of originality, dignity and grace. There was evidently an ample appropriation for carrying out the architect's conception, and certainly there were no restrictions as to space; there are acres of land to spare. The main hall will hold comfortably six or eight hundred people, possibly a crowd of a thousand. It is in the second story of the building, perhaps sixteen or twenty feet from the ground. The way into it—but that is of no consequence, people go in slowly by twos and threes, singly or in small squads; the way out of it, which is, of course, the same thing, is through a single stairway that winds down inside a small octagon tower in one corner of the building, a stairway barely wide enough for two level-headed and average-sized people to go down abreast; three would choke it. This is one of the most recent and beautiful of public buildings.

In another New England town we recall a huge, pretentious block, the third story of which is occupied by a large hall fitted for lectures, musical and dramatic entertainments. The hall has a gallery, but the main floor is



DESIGN FOR RUSTIC COUNTRY DWELLING.

thirty feet from the ground, that is, up two long flights of stairs, one long and straight, without rest or landing from top to bottom, the other doubled and twisted into three or four short runs. These stairs also occupy a tower at one corner of the building, a tower which, as regards height, would have been a fair beginning for the tower of Babel. There are four double doors five or six feet wide that open from the main hall into short corridors leading to the top of the stairs, one of these corridors being just three feet wide at the point nearest its outlet, and where it receives the stream from the gallery. The other corridor is somewhat wider, but is diversified by a post nearly two feet square standing about twice its diameter from the brink of the main descent. This is the only large hall in the town in which it stands, a town noted for the wealth, intelligence and public spirit of its inhabitants. This is not, however, owned by the public, though built for public use. It is "modern," and is reckoned one of the local "ornaments."

Once more, a city hall that holds three thousand people and is often filled to its utmost capacity; the way into that monstrous hall is up a winding stair, or rather two stairs, for it has two flights that are familiar to the enlightened public, and they wind to that degree that, in coming out, the entire audience must wheel by platoons—very small platoons—six times in descending the first twenty feet or thereabouts. Those who happen to be next the turning post on the way down, usually emerge—if they emerge at all—sadder and thinner than they went in. This evolutionary descent of the three thousand doesn't bring them to the street level. There is an outside flight of stone steps not unlike a section from the rugged slope of one of the great pyramids. It is a toilsome way, either up or down, and the gross labor performed by a full sized audience at each lecture or concert would take a congregation of respectable size—four or five hundred—to the top of Bunker Hill monument. But the American public is patient and long-suffering to the last degree in matters of per-

sonal ease and safety. We do not know that there has ever been a fatal accident in either of these buildings that can be attributed to their tedious and dangerous approaches. Perhaps there never will be. They are not mentioned as conspicuously dangerous examples, but are taken at random and are probably above the average as regards safety and convenience of access and exit. — *The Builder*.

A case has just been reported at Glasgow which shows convincingly enough how disease is spread and how danger may beset us, no matter what precautionary measures we may take. Time was when the careful wife had the family linen washed and got up under her own immediate supervision, and when drying-places abounded within reach. But we have changed all that. The drying-places have in the main disappeared, and the wife of even a very small clerk has become too genteel to have the washing done at home. We now give it all out, at some expense, it is true, but with less trouble to ourselves. And so the laundry has been called into existence, and laundries of every kind have been made profitable by the gentility of the masses, combined with the disappearance of open spaces. But there is no pleasure without pain. Our gentility is purchased at a great risk, for careful and cleanly as we may be, we are under the "genteel" system put on an equality of risk with perhaps hundreds of families who are not over careful and cleanly. This has been illustrated in the Glasgow case referred to. A woman sent infected articles to a laundry, but before much mischief was done the iniquity of the proceeding smote her conscience, and she confessed her wrong-doing. But how many are equally guilty, and how few repentant sinners are found amongst them! The risks we daily run outside our own personal supervision are indeed great—but then we are nothing if not genteel!

There is not so much risk in buying lumber now as there is in selling it to men who will pay for it when they get a good ready.

Modern House Painting.

IN the early history of this country, houses were built with a view to the comfort and convenience of their owners, regardless of the appearance of their exteriors and of the most simple forms of interior arrangement, the prime object, and in most cases the sole object, being shelter; the usual form being box-like in shape, with right angle partitions running across from side to side, and from front to rear, forming rooms of the same general shape as the outside walls; entrance by the front doors, placed one in a long narrow hall, barely wide enough to admit of passage between the long, straight stairway and the wall separating the hall from the parlor. The size, shape and general nature of such an apartment—usually very dimly lighted—permitted of little in the way of decoration, either with pictures, hangings or furniture. Even at the present a large proportion of semi-modern houses are constructed with similar entrances, bare and cheerless, and which, rather than being considered as part of the habitation, are looked upon as mere passage ways to the living apartments. Of late years, however, a great change has been made in the character of home entrances. In modern houses we find a grateful absence of the tunnel-like hallways, and in their stead find ourselves ushered into cosy reception rooms, pleasantly lighted and heated by open fires and arranged in form to admit of ornament and decoration. The stairway, that is the sole occupant of the old style hallway, finds itself tucked away in a convenient place, where, with ornamental woodwork, tasteful trimmings and modified shape, it plays an important part in the adornment of what is no longer a hallway but an apartment. During the last eight or ten years great improvement has been made in the architecture of homes, and what has been given us in the line of improvements by those who make a study of the planning and construction of houses, has led people into studying the work of others in forming plans for their own homes. The effect of good ideas and improved methods of building is particularly noticeable in the numerous alterations and modifications of old houses, by which they are made to conform to modern tastes. People who contemplate building make a business of studying good examples and of educating themselves in matters of convenience and beauty as applied to the building and decoration of homes; thus an interest is awakened, new and unthought of ideas are put into shape, the fixed peculiarities and hobbies, of which all have more or less, are eliminated or toned down and modified by comparisons with the study of others (commonly the refreshing study, if entered into for the purpose of learning), which leads to the outlining of plans that go to the architect in so comprehensive a shape as to require little modification, and the owner finds his study quite to his taste, with the stamp of more or less individuality, as was expected and intended; while the fact that the owners

are, to an extent, the creators of the structure lends an added charm to its beauty and the enjoyment of it. The prevailing style of building is of the Swiss cottage, Queen Anne or Colonial order of architecture, all of which offer a wide range of forms and permit of an endless variety of both exterior and interior decoration. In this order of construction there is an endless field of study for the painter and decorator, for, while any scheme in which harmonies are preserved will look well upon them, there are within the lines of harmonies such a multitude of schemes and combinations that a keen sense of fitness and no little artistic taste is necessary to determine which among the many possible schemes is best adapted to each particular subject. In fact, although good examples of modern artistic painting are numerous, there are few, if any, that are beyond criticism. Mistakes are not of infrequent occurrence, many of which are distinctly attributable to bad judgment in balancing. Take, for instance, an example in our mind of a first story in Venetian red, with a second story in an olive, with dark olive brown trimmings. The writer has seen this combination, and though decidedly bad, it is no worse than numerous others met with upon houses that offer superior advantages for good and effective coloring. In the example referred to, the colors are all good for the purpose, but the scheme, although well divided, is thrown wholly out of balance by the disposition of the colors. The red being lightest is made to support a heavier color, the effect of which is a dwarfed and flat appearance. The same colors transposed, will, with a little assistance, form a pleasing and correct combination if handled as follows:—

The dark olive brown of the trimmings should be made the body of first story, leave the olive on the second story, and use the red for trimmings, with the addition of a little yellow and a small quantity of blue. The use of the dark color for the lower body gives the idea of strength and support. The lighter color above seems to lift and brighten up the structure, while the warm colors of the whole trimming complete the harmonious combination. This combination will answer very well on a plain, ordinary house, but where the house is furnished with a number of bay windows, gables, porches and balconies, and an artistic effect is desired, it will require a special treatment with several more colors and shades of color.

Cottage houses, of which there are a great many being built at present, are of great benefit to the exterior decorator. These houses, being built of greater variety than other styles, allow of more varied styles of painting and a greater number of combinations of color. Many of these houses are built with the upper story projecting over the lower, and with numerous gables, bay windows, balconies, etc. When it is desirable to paint one of these houses with one color only, it is well to make at least four shades of it, the darker shade for the first or ground story, the next

shade lighter for the second story, the next for all gables which are separated from the second story by ornamental bands, balconies or anything making a complete separation; body of all bay windows and all projections from the main building, the lightest shade to be used for trimmings. A very good combination for this style of house, if the second story is built with shingles, is to paint the first story and all of the trimmings a dark olive green, the gables a good citrine color, or what painters generally call yellow olive; for the shingle-work of second story use a red stain for the purpose of giving it the appearance of being covered with tiles; treat the roof in the same manner. Painters have found it quite difficult to make shingles retain the color produced by the stain. This trouble can be avoided to a considerable extent by the use of wax after the stain has become dry and before the shingles begin to turn dark. For a simple combination this is as good as any for this style of house, but where it is desirable to make more display of colors use three colors beside the stain for shingles.

In the original colonial style of houses the first story was built of either brick or stone, the second story and roof of tiles, and all the windows, doors and outside woodwork left the natural color, without paint; but the colonial order of houses of the present are built of other material, and it being desirable to keep them always fresh and new looking, it becomes necessary to use paint. The modernized colonial house is built with first story of either brick or stone, the balance of the house being wood.

In painting the woodwork, paint the body of the second story and roof with a red color in imitation of tiles; paint the balance of the woodwork, such as cornices, doors, windows, balconies and what other woodwork there may be, a light oak color. Where it is desirable to give more variety to the structure, use an olive green color on blinds, doors and around all ornamental work inside of frames, such as carving in gables, panels, etc. The frame should be in oak color.—*Painter.*

We wish no ill to the carpenter trade, but is not the storm-door and weather-strip business carried too far nowadays? In nine cases in ten the people in apartments protected by them are worse instead of the better on account of them. Few houses are properly ventilated. A great number have no provision whatever for ventilation. All the fresh, pure air the inmates get comes in through doors and windows. When windows are "caulked" or protected with weather-strips, and storm-doors shut out air, where is an adequate amount of pure air to keep the inmates in perfect health to find entrance? There are, doubtless, conditions in some houses which make storm-doors desirable for protection to health, but in general the more pure air people get the better. The most of them do not get enough.—*American Artisan.*

About Screws.

THE screw is not, says a writer in the *Sewing Machine News*, of modern origin, although it was not known to the ancient Egyptians. The helix of the Greeks was the first thing known to be made in the form of a spiral, and was by them used in moving large, heavy bodies, and must have been constructed similarly to our jack screws. It was invented by Archimedes, at Syracuse, about 250 years before the Christian era. He also used a similar device for the purpose of raising water. (This last invention has been used by the Egyptians since the Christian era.) History gives us no account of how Archimedes formed his spirals.

Another inventor and philosopher, who lived in the fourth century, tells how he made screws.

He used a template in the form of a right angle triangle made from thin brass, which he wound around a cylinder, the edge of which he used as a guide to form the threads, after which the brass was removed. Of course this could not be done on very fine screws.

Besson, a Frenchman, in 1569, invented a lathe for cutting screws by the aid of a guide screw; and Hindly, an Englishman, improved it for use in watch making in 1740.

Ramsden, in 1776, invented a machine called a dividing engine, with which he made screws of a good quality.

Mandlay paid great attention to the manufacture of screws and invented several machines for the purpose—but finally settled down to the stationary knife, or cutter, and revolving rod. The rod revolved as in our modern lathes, and the cutting tool was fastened to a sliding plate, which was moved by a guide screw. This screw was made to revolve by belts and pulleys similar to some old lathes now in use. By changing the pulleys a different speed was given to the guide screw and the screw was cut finer or coarser as might be required.

From this sprung the gears now in use. Mandlay at first made the guide screws of different sizes and changed them instead of the pulleys, but this did not prove a success, as screws could be cut only the same thread as the guide screw used.

To Mandlay more than any one else is Holtzapffel indebted for points in his lathe, which was in its day the best in use, and is still very much used. Holtzapffel wrote a treatise on the lathe in three volumes, which is still an authority. His lathe is used not only for the purpose of cutting screws, but for all kinds of fancy turning. There is or was, not long since, one of them in this city.

The finest screw thread used in watches is 250 to the inch. These are made by automatic machines, and without the aid of a magnifying glass no thread can be seen at all. It takes over a hundred thousand of these to weigh a pound.

We cannot recount the thousands of different uses to which screws are put, but it may be of interest to know that the watch which

you carry in your pocket, if it has a compensating balance, has 44 screws, 22 of which are in the balance wheel; and if you have one of the best watches these 22 screws are made of gold.

In the modern screw machine, different sizes of dyes are used. Knight, in his *Mechanical Dictionary*, describes them as being stocked in a circular head and such a one is selected, and presented to the plank as may be of the size desired. It has also a rest with a transversely sliding tool post whereby the screw may be cut off or dressed.

Automatic screw machines are now in use in all large factories. A company in Hartford, Conn., holds the principal patents on this kind of machinery.

There are various kinds of stocks and dies used for cutting screws, but as they are only used for special purposes or on a small scale, they require no particular mention. Their origin is unknown.

A Thief Killed By Electricity.

ON a recent feast day at Cotopaxi, Mexico, the leader of a band of thieves in that section concocted a scheme for a large haul of plunder by extinguishing the electric light in the cathedral. He used a small wire, which in his ignorance he threw over the exposed wires of the electric light, and the current passing through his body killed him instantly. His confederates were appalled at the sudden death of their leader and fled, escaping capture.

Tenants May Vacate Unsanitary Houses.

A CASE has recently been decided in New York, justifying the right of a tenant to vacate a house and refuse to pay rent on the ground of unsanitary conditions. The case was: "In a suit for rent claimed to be due from a tenant of a suite of rooms in an apartment house, it appeared that the tenant's wife and servants were taken sick by inhaling a malarial or poisonous gas in the apartments occupied by them; that this unhealthy condition of the apartments was owing to a defective condition of the general plumbing work of the house, of which the landlord was notified by orders from the Board of Health, requiring him to have changes made in the plumbing work, and which unhealthy condition could have been removed if he had complied with these orders; that the defendant waited for two weeks, and finding that nothing was done on the part of the landlord, left under the apprehension that he was imperiling the health of himself and family by remaining." The case was appealed to a higher court and confirmed. It is to be hoped the practice will become general.

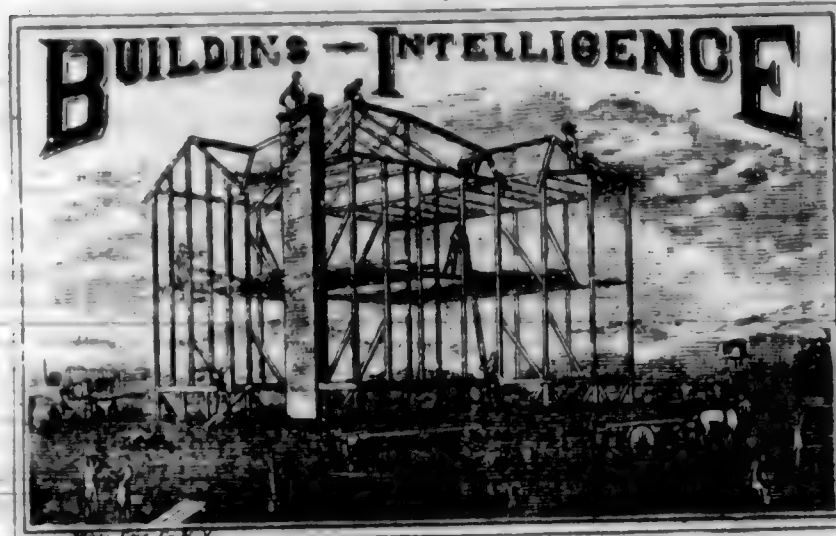
Whenever one person does work or service for another with his consent, and there is no agreement as to compensation, the law implies a contract to pay what the same is reasonably worth; but when the circumstances of the case clearly repel the idea that the work or services were done with the expectation of payment being either made or received, no such contract will be implied.

French Walnut.

THE finest and most costly of the veneer woods is French walnut—a wood that does not come from France, but from Persia and Asia Minor. The tree is crooked and dwarfed, and is solely valuable for the burls that can be obtained from it. These are large, tough excrescences growing upon the trunk. In these the grain is twisted into the most singular and complicated figures. The intricacy of these figures, combined with their symmetry, is one of the elements that determine the values of the burl. Color and soundness are other elements of value, which vary very widely. Burls worth from \$500 to \$1,000 are not rare, and at the Paris Exposition for 1878, one burl weighing 2,200 pounds was sold for \$5,000, or upwards of \$2.00 a pound.

Windows are no longer placed in regular rows, with a mathematical precision, to which convenience and beauty must be sacrificed. The need or fancy of the builder of a new house is a sufficient excuse now for a window, and greater variety in size and shape than ever is shown in the house recently built. Square, rectangular, circular, and quarter-circle windows may be run on one house front; fashion having, happily, joined hands with convenience and fitness in this matter. Stained glass, in every variety of color and combination, is coming into general use. First-floor windows are usually large, but are so divided by sashes that the glaring effect of a great unbroken sheet of plate glass is avoided. Circular and arched tops are in high favor, the curved upper sashes being filled with colored glass. A favorite window of this description has a large, clear central sash with a transom and narrow side sashes, which are filled with jeweled mosaic glass. Beside the usual curtain, the lower half of the narrow side division has often a full sash curtain of Madras lace or silk gauze. The stained-glass work offers opportunities for admirable color effects. Floral and geometrical forms are better than any attempt at picture work, and mosaic effects are far more satisfactory than painting. Turquoise blue is very successfully used in contrast and combination with stronger colorings, and a window with side sashes filled with olive glass, shading from the deeper tones at the bottom up to a pale greenish amber, is very satisfactory. Where economy is necessary, a border of small panes of clear colored glass around the large middle sash is inexpensive and good in effect if the colors are well chosen and arranged.—*The Builder and Wood-Worker.*

At \$15 per thousand mill run, 1,000,000 feet of lumber is worth \$15,000; at \$12 it takes 1,250,000 feet to bring that sum. Is it better for the manufacturers to so conduct their business that they will get the higher price, and leave the 250,000 feet in the tree, or crowd the markets and get the minimum price? Every manufacturer ought to quickly answer such a question.—*Northwestern Lumberman.*



SAN FRANCISCO.

Third, bet. Perry and Harrison. Two-story frame. O. A. Rowe. A. Wolfe & Son. Day's work. \$7,500.

Russ, cor. Howard. Two-story frame. O. L. Erenberg. A. Wolfe & Son. C. Moore Bros. \$7,000.

Second, nr. Folsom. Two-story brick and alterations. O. Mr. Weiland. A. Junfeldt. Day's work. \$300,000.

Russ, nr. Folsom. Two-story frame. O. L. S. Cohen. A. W. C. Hoagland. C. F. W. Kern. \$4,700.

Twenty-first, nr. Valencia. Two-story frame. O. —. Kaufman. A. Townsend & Wyneken. C. J. Tibbals. \$4,500.

McAllister, nr. Buchanan. Two-story frame. O. J. A. Keene. A. S. and J. C. Newsom. C. J. Kay. \$6,000.

Ellis, nr. Polk. Additions. O. Mr. Stienfelds. A. S. and J. C. Newsom. C. J. O'Brien. \$2,500.

Sutter, near Leavenworth. Two-story frame. A. A. Pissis. C. Mr. Wagner. \$4,500.

Union, nr. Powell. Two-story frame. O. Mrs. Van Hoven. A. H. Gelfuss. C. T. Klatt. \$8,000.

Shotwell, bet. Fourteenth and Fifteenth. Two-story frame. O. O. McElroy. C. P. E. Dunshie. \$2,300.

Minnesota, near Solano. One-story frame. O. John Murphy. C. O. E. Dunshie. \$1,200.

Tennessee, bet. Solano and Butte. Two-story frame. O. L. McMahon. C. O. E. Dunshie. \$3,000.

Clay, nr. Battery. Two-story brick. O. Allyn & White. A. H. C. May. C. Doherty, carpenter; Stevens, mason. \$14,000.

Bryant, SW cor. Sixth. Alterations. O. D. Mahoney. A. John J. Clark. C. J. K. Delmas. \$18,000.

California, bet. Octavia and Laguna. Two-story frame. O. Mr. Miner. A. Eisen & Pierce. C. John McCann. \$8,500.

Berry, cor. Bush. Repairs. O. Title (estate). C. John McCann. \$5,000.

Hartford, bet. Noe and Castro. Two-story frame. O. J. A. McCormack. A. John J. Clark. \$1,700.

Lynn, bet. Golden Gate Avenue and Turk. Two-story frame. O. Mrs. Thomas. A. John J. Clark. C. Mr. Trusler. \$2,000.

Howard, nr. Ninth. Two-story frame. O. Geo. A. Ware. A. John J. Clark. C. Chisholm. \$6,000.

Hayes, bet. Octavia and Gough. Two-story frame. O. J. E. McGrath. A. R. Warren. C. R. Parker. B. M. J. McGuire. \$4,100.

Greenwich, nr. Fillmore. One two-story and two one-story frames. O. Mr. Haller. Day's work. \$3,500.

Fifteenth Avenue, nr. N. Two-story frame. O. W. Wahlenmeier. A. H. Gelfuss. C. Mr. Bohnenberg. \$3,500.

Vallejo, nr. Octavia. Two-story frame. O. J. E. Damon. C. W. P. Clark. \$2,500.

Fourteenth, bet. Valencia and Guerrero. One-story frame. O. James Keating. A. M. J. Welsh. C. P. McElroy. \$2,000.

Eddy, nr. Laguna. Two-story frame. O. Mr. Meyer. A. G. E. Voelkel. C. A. Thom Wohrden. \$5,100.

Sacramento, bet. Scott and Devisadero. Alterations. O. Mrs. Devlin. C. A. Thom Wohrden. \$3,000.

Pacific, nr. Steiner. One-story frame. O. Mrs. Charles. C. Mr. Ellis. \$3,000.

Alterations: O. Union Square Baptist Church. C. J. T. Grant. \$3,700.

Golden Gate Avenue, nr. Laguna. Two-story frame. O. Mr. Marks. A. J. Gosling. C. F. Crowley. \$7,500.

Guerrero, bet. Eighteenth and Nineteenth. Two-story frame. O. and B. P. J. Mehl. \$3,200.

Broadway, cor. Franklin. Two-story frame. O. Mrs. Mexin. C. Mr. Flood. \$7,000.

Fillmore, cor. Greenwich. Two-story frame. O. Mr. Dietrich. C. Mr. Greenno. \$2,000.

Fell, cor. Webster. Two-story frame. O. and B. J. Powning. Day's work. \$15,000.

Steiner, nr. Page. Two-story frame. O. Mr. Giffin. C. Bassett & Cristy. \$6,000.

Haight, near Devisadero. Four two-story frames. O. and B. J. Hinkle. \$15,000.

O'Farrell, cor. Devisadero. One-story frame. O. Thos. Cosgrove. C. F. Froettiger. \$300.

Baker, nr. Sutter. One-story frame. O. Mr. Maher. C. Mr. Burke. \$1,600.

Sutter, nr. Baker. Alterations. O. C. Hamilton. C. Wiley & Porter. \$1,800.

California, cor. Lyon. One-story frame. O. C. Mau. C. Mr. Burns. \$2,000.

Sutter, cor. Scott. Two-story frame. O. and B. J. C. Weir. \$5,000.

Powell Avenue, near Thirtieth. One-story frame. O. and B. Wm. Burns. Day's work. \$1,500.

Duncan, nr. Church. Two-story frame. O. A. Brandt. C. L. D. Fichette. \$1,650.

Church, nr. Valley. One-story frame. O. and B. R. Berfeld. \$2,000.

Dolores, nr. Valley. Two-story frame. O. and B. R. Berfeld. \$3,000.

Twenty-third, near Dolores. Two-story frame. O. E. M. Howe. C. W. Kerns. \$7,000.

Twenty-fifth, cor. Valencia. One-story frame. O. L. Riely. A. M. J. Welsh. C. J. M. Commerford. \$1,200.

Twenty-eighth, near Guerrero. Two-story frame. O. and B. J. M. Commerford. \$2,600.

Hayes, nr. Octavia. Two-story frame. O. J. E. McGrath. A. Mr. Warren. C. Mr. Parker. \$4,000.

MISCELLANEOUS.

Sacramento—Improvements and raising of two-story and basement frame, residence N. E. corner Ninth and I Streets. O. Frank X. Ebner; A. N. D. Goodell; C. P. A. Miller. \$2,000. Two one-story and basement frames on I Street, between Sixteenth and Seventeenth Streets. O. Mrs. Mary La France; A. N. D. Goodell; C. Julien Daigneau; \$3,000. Alterations to residence on I Street, between Fourteenth and Fifteenth Streets. O. Chas. Robin; A. N. D. Goodell; C. Carlo & Croly; \$1,000. Improvements, etc. Second and J Streets. O. Dr. Harkness; A. N. D. Goodell; day's work; \$1,500. Two-story and basement brick building on I Street, between Sixth and Seventh Streets. O. James T. Day; A. N. D. Goodell; C. Carlo & Croly; \$3,000. Fitting up a saloon on J Street, between Sixth and Seventh Streets. A. N. D. Goodell; C. Julien Daigneau; \$1,200.

San Jose—San Bernardo Street, between First and Second. Two-story brick. O. E. Ausieris; A. Theo. Lenzen; C. G. E. McQuell, carpenter; C. Kenny & Leddy, masons; \$9,000. Third corner of Reed. Two-story frame. O. M. P. O'Connor; A. Theo. Lenzen; C. P. R. Wells; \$8,000.

Woodland—First Street. One-story frame. O. and B. C. C. Keedy; \$1,040. Fourth Street. Two frame buildings. O. Frank Knox; C. Wm. Gammel. \$1,500. Court Street. One-story frame. O. Otto Hermlen; C. James Amshury; \$1,150. College Avenue. Frame addition and improvements. O. P. Hogboom; day's work; \$1,000. Cross Street, cor. Fourth. Improvements. O. and B. A. J. Gilbert; \$1,200.

Cacheville—Two brick buildings, improved. O. Jas. Santo; day's work; \$2,000. One-story frame. O. Mrs. Bennerly; day's work; \$1,400.

Madison—One-story frame. O. John Oliver; C. C. Reardon; \$1,200. One-story frame. O. and B. George Tandy; \$1,000. Two-story frame. O. George Scott; C. O. S. Payne; \$1,800.

Tehama City—One-story frame. O. Bishop Manogue; A. B. J. Clinch; C. A. J. Bryan; \$2,300.

Pinole—One-story frame. O. Rev. Father Cummings; A. B. J. Clinch; C. Thos. Donnell; \$2,000.

San Lorenzo—Additions. O. Rohde & Co.; A. A. J. Riely; A. S. and J. C. Newsom; C. R. Lord; \$500.

Ukiah—One-story frame. O. Mr. Marks; A. W. G. Cope-land; day's work; \$4,000.

East Oakland—Additions. O. C. H. King; A. S. and J. C. Newsom; day's work; \$6,000. Peralta Heights. Two one-story frames. O. Mr. Merrill; A. S. and J. C. Newsom; day's work; \$5,500. Two-story frame. O. J. J. Riely; A. S. and J. C. Newsom; C. R. Lord; \$500.

Oakland—Alice, cor. Fourteenth. Two-story frame. O. Mr. Griffin; A. S. and J. C. Newsom; C. Mr. Fisher; \$6,000. Alice, nr. Fourteenth. One-story frame. O. Mr. Fisher; A. S. and J. C. Newsom; day's work; \$3,000. Near Mills' Seminary. One-story frame. O. Mr. Greenwood; A. S. and J. C. Newsom; C. J. Dourey; \$1,200. One-story and basement frame. A. N. D. Goodell; C. John White; \$3,500.

Niles Station—One-story frame. O. Geo. Carter; A. John J. Clark; day's work.

Subscriptions for 1885, now due. Send money to this office, either in one-cent stamps or by Postal Order.

BRICKS!

THE HYDRAULIC PRESS BRICK CO.

ST LOUIS, MO.

Make a Specialty of Ornamental & Plain Red Front Pressed Brick.

Manufacturing Annually over

TEN MILLIONS.

They guarantee that the quality, finish and Color, are unsurpassed, if not unequalled by any other bricks made in the United States.

BLUM, EPPSTEIN & MARSH.

MANUFACTURERS OF

Inlaid Wood Flooring

WOODEN MANTELS,

Hard Wood Interiors.

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

FACTORY 209-227 FELL ST.,

SAN FRANCISCO, - - CAL.

The California Architect and Building News.

VOLUME VI.
NUMBER 2.

SAN FRANCISCO, FEBRUARY, 1885.

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

BUSINESS PROSPERITY.

Large List of Building Improvements.

A CAREFUL study of the items in our Building Intelligence will prove the two following facts:

That there were more brick buildings started during the month than for any similar period of last year.

That more than double the number of frame buildings, at more than double the cost, were erected, or are in process of erection, than for a similar period last year.

This is an extraordinary statement to make, when we take into consideration the large number of buildings reported last year. We find, during the month from the 10th of January to the 10th of February, there were started, in new improvements,

121 Buildings of the Value of \$660,397.

Another important fact can also be noticed. A goodly portion of the number of buildings reported are erected by people who intend to

LIVE IN THE SAME.

And are not for purposes of renting. This fact seems peculiar when we take into consideration the cry of hard times, with which we have been greeted for more than a year past, and proves that many people have done far better, financially, than they have been given credit for.

IN THE COUNTRY.

We also notice a gradual increase in the number of improvements that are contemplated in the country. A more hopeful feeling seems to pervade amongst our country and suburban residents, and we may look for a much larger demand for the various articles needed for building purposes.

Mechanics' Institute School of Drawing.

THE Directors of the Mechanics' Institute have decided to establish a free school, where those who so desire may take lessons in drawing, both architectural and mechanical. A full account of the same will appear in our next, as the action of the Directors was taken too late for more than a passing notice in this issue.

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

Coterminous Excavations.

THE construction placed by the Supreme Court of this State, in the case of *Aston vs. Nolan*, upon the law relation to the "rights of coterminous owners," leaves the question in such shape, with an "if" added, that hardships have been experienced by very many who have undertaken building improvements since the rendition of the decision, owing to the unwillingness of caviling parties to submit cheerfully to any law or ruling of courts, which does not in very plain terms remove all doubt and question as to meaning, application, and finality.

This vexatious question has occupied a prominence before the courts, and among owners of property for many years, and large amounts of money have unnecessarily been expended and wasted in legal contests, and moneys paid to avoid litigations, because the sections of the code upon which the question hinges are so constructed that it may be swung more ways than one, and whether this way or that, the appearance of consistent reversal seems to remain.

The latest ruling of the present court of last resort reverses the interpretation of the code as enunciated by the same tribunal, in the case of *Hood vs. Zile*, which imposed upon those excavating for building purposes, responsibilities which do not exist under the present ruling; and if the decision was free from doubtful meanings, the case would be clear enough for all practical purposes. But the wording—"Each coterminous owner shall be entitled to the lateral support his land receives from the land of the other," is an undefined something that evolves an uncertainty, as far as the land is concerned. The decision in reference to sustaining and underpinning buildings in such case, is fairly clear and well defined, except for the mean little "if" which the learned judge preparing the opinion saw fit to drag into the case, in the following language: "It may be added, IF the building has stood for a period of five years (in this State), before the excavation, the person who erected it has acquired a species of easement in his neighbor's land—a right to the support of his building as well as soil. No such question as this last is presented in the case now before us." This interpolation of an outside matter, which did not belong to the case before the court, has worked a hardship, unjustly, because while not of the case, yet made part thereof, furnishing a new groundwork for contests and law suits, and the basis of refusal to those not willing to assume expenses and responsibilities which should in all justice rest upon them.

However much in harmony with ancient law, and legal logic and theories, the absurdity and unjustness of the "five year" proposition is so manifest that it is not to be wondered at that people generally express surprise that such a doctrine should find recognition at the hands of an intelligent tribunal in the year 1884; particularly in the case named, as its recognition in a certain sense nullifies the force and contradicts the decision in its main issue; and farther, the "five year" doctrine is discriminating and unfair, in this, that it protects the owners of old, dilapidated, and rickety structures from the costs and expenses which the same rule of law imposes upon parties who happen to own structures not more than five years old, thus affording protection to a certain class of buildings, hundreds of which in San Francisco are a disgrace to the neighborhoods where located, while better, more valuable, better tax-paying property is excluded from an equal right to protection. The injustice in such cases is often aggravated by the fact that the cost and expense to the progressive man making new improvements, of holding up and underpinning some of the more than five year old structures, amounts to more than the whole concern would bring, exclusive of the land, if offered at private or public sale.

San Francisco Chapter American Institute of Architects.

THE regular monthly meeting of the Chapter was held in the rooms of the Art Association on Friday evening, February 6th. Vice-President Albert Pissis occupied the Chair. The committee appointed to prepare articles of indenture for students, requested further time, as it was their intention to be very accurate in the form of indenture presented for approval.

The committee appointed to consider the feasibility of establishing technical schools made the following report: They had a lengthy interview with Mr. Cornwall, the President of the Mechanics' Institute, and that gentleman stated that the institute had already taken the matter under consideration. It was one of the principal aims of the Society to cultivate our young in the mechanical arts and sciences. Room for the purpose could be had in the pavilion, and, no doubt, if the Chapter thought best to establish classes under its own supervision, the institute would provide space and light free of charge. Mr. Cornwall promised to meet a delegation from the Chapter at any time, and after hearing any propositions that may be advanced, to lay the same before the Board of Directors for consideration.

The opinion was also expressed that some of our wealthy citizens would gladly donate money for the maintenance of technical schools.

Emil John was unanimously elected an associate member. The following letter is self-explanatory, and, after being read, was ordered spread in full upon the minutes.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

(INCORPORATED IN THE SEVENTH YEAR OF WILLIAM IV.)

9 CONDUIT STREET, HANOVER

SQUARE, LONDON, W.

January 13, 1885.

My Dear Sir: I am much obliged to you for your letter of the tenth ultimo, and also for the copy you inclosed of a letter addressed by you and two other gentlemen to the Secretary, San Francisco Chapter of the American Institute of Architects, both having reference to the American Exhibition, to be held in London in 1886. For the moment, I am unable to do more than state that British Architects are certain to give a very hearty welcome to any colleagues from the United States, and that the President of this Institute is one of the Council of welcome formed for the purpose of formally receiving Americans who may visit this country during the period that the exhibition remains open. When the time comes, it will be possible to go into the details of the matter, and then probably architects on both sides of the Atlantic will be able to communicate with each other with more definite aims than can be done at present.

I am, dear sir, yours very truly,

WILLIAM H. WHITE.

Augustus Laver, Esq., Stock Exchange,
San Francisco, U. S. A.

The following resolution was adopted:—

Resolved, That the Vice-President and Secretary be empowered to forward to the Union League Club of New York, a resolution expressing the approval of the San Francisco Chapter, American Institute of Architects, in regard to the repeal of duties on works of art.

Mr. Gash gave notice that at the next meeting of the Chapter he would read a paper on the Geometrical Square and its application to architecture.

Our Yearly Reminder to Subscribers.

It has always been our custom, after the December issue of each year, to prepare a complete list of all subscribers who are in arrears, and forward to them, by mail, a statement of account. The same course is pursued after our January number has been printed, and to every subscriber is sent a bill for \$2.00, the amount for subscription to this Journal for one year.

We are pleased to state that in all but a few of the answers received, the subscription has been renewed. Some, however, have demanded to know by what right we send this Journal after the time has expired for which it was ordered.

We do not claim it as a right to keep on sending this Journal after expiration of time for which it was ordered. We simply follow the custom of other Journals of the class to which this belongs.

One of the employees of the Post-office Department, in referring to the subject under consideration, remarked that the Government itself recognized the right of a subscriber to notify an editor to discontinue sending his publication; for the purpose of such notification, and in order that publishers may receive the same, printed Government forms were prepared, by which it was made imperative for all postmasters to notify publishers if their journals or papers were not taken from the office, and stating reasons, if known, for their non-delivery.

A subscriber receiving any paper after the expiration of the time for which it was ordered, has simply to say to the postmaster, "I do not want that any longer." The editor then will receive one of the forms, with the proper blank filled out as—"refused"—the name would be scratched off the editor's list, and account balanced.

Should, however, any party after subscribing to a journal, receive the same longer than the time for which he subscribed, he is held responsible for the same as long as he takes it out of the post-office. We endeavor to send to every name on our books a true statement of account on or about the 20th of each January. We are but human, and it may be that, in the thousands of accounts sent, a few errors may occur. Should this happen, or should a subscriber receive this Journal after his subscription has expired, we will only be too happy in correcting the mistake, or with a thank you for the help you have extended, and a wish that you will soon renew, will cross your name from our books.

Our yearly reminders are not intended as a *dun*; they are simply statements of accounts, and we trust that all of our subscribers will recognize our right to send such statements, and promptly forward us the amount due.

Amending Defects in Our Sanitary Law.

SENATOR WHITNEY, of Alameda County, has introduced a Bill in the Legislature, the object of which is to remedy certain defects that are found to exist in the law as passed by the last Legislature, granting to Boards of Health power to regulate the plumbing and drainage of buildings. The law as originally passed has been in force during the past eighteen months, and has given satisfactory results to owners, architects, and tenants.

It seems, however, that the law as it now stands is only applicable to this City, and the object of Senator Whitney's Bill is to have the same apply to all cities in California, so that the inhabitants of Sacramento, Stockton, Oakland, Los Angeles, etc., may derive the good benefits of a carefully prepared sanitary law, as well as the citizens of San Francisco.

We sincerely hope the Bill will pass in the shape offered by the senator. When it is taken into consideration that the parties who drafted the original Bill were not lawyers, or even persons versed in the simple rudiments of law, but simply plumbers, the necessity

for its amendment is not so much a cause of surprise, as the fact that it has stood the fire of criticism so well for eighteen months, and even in the amendment but few words are changed, the principal of which is to substitute the word *county* for *city*, thus making the application of the law general in its results.

In other and older communities, the work of preparing sanitary laws is not left to the artisans in that line, but is taken in hand by physicians, professional men and philanthropists, who, by reason of their circumstances, can devote more time to matters so closely connected with the health of the community.

Our Redwood Exports.

GRADUALLY the attention of wood-workers in every part of the civilized globe, is being drawn to the excellent qualities of California Redwood for various kinds of finishes. We think that Chicago has the honor of being the first on the Eastern city list, in which Redwood was used. The straight grain and the more than ordinary widths of the lumber, led to its adoption in the manufacture of coffins, a use to which it is peculiarly suitable on account of its lasting properties when placed under ground.

In January, 1883, the first cargo of lumber from this port to Europe was shipped on the *Helene*. Her cargo consisted of 232,000 feet, valued at \$7,800. In November of the same year another vessel was cleared with lumber of value of \$8,400. In 1884, seven ships left for Europe loaded with California's choicest lumber.

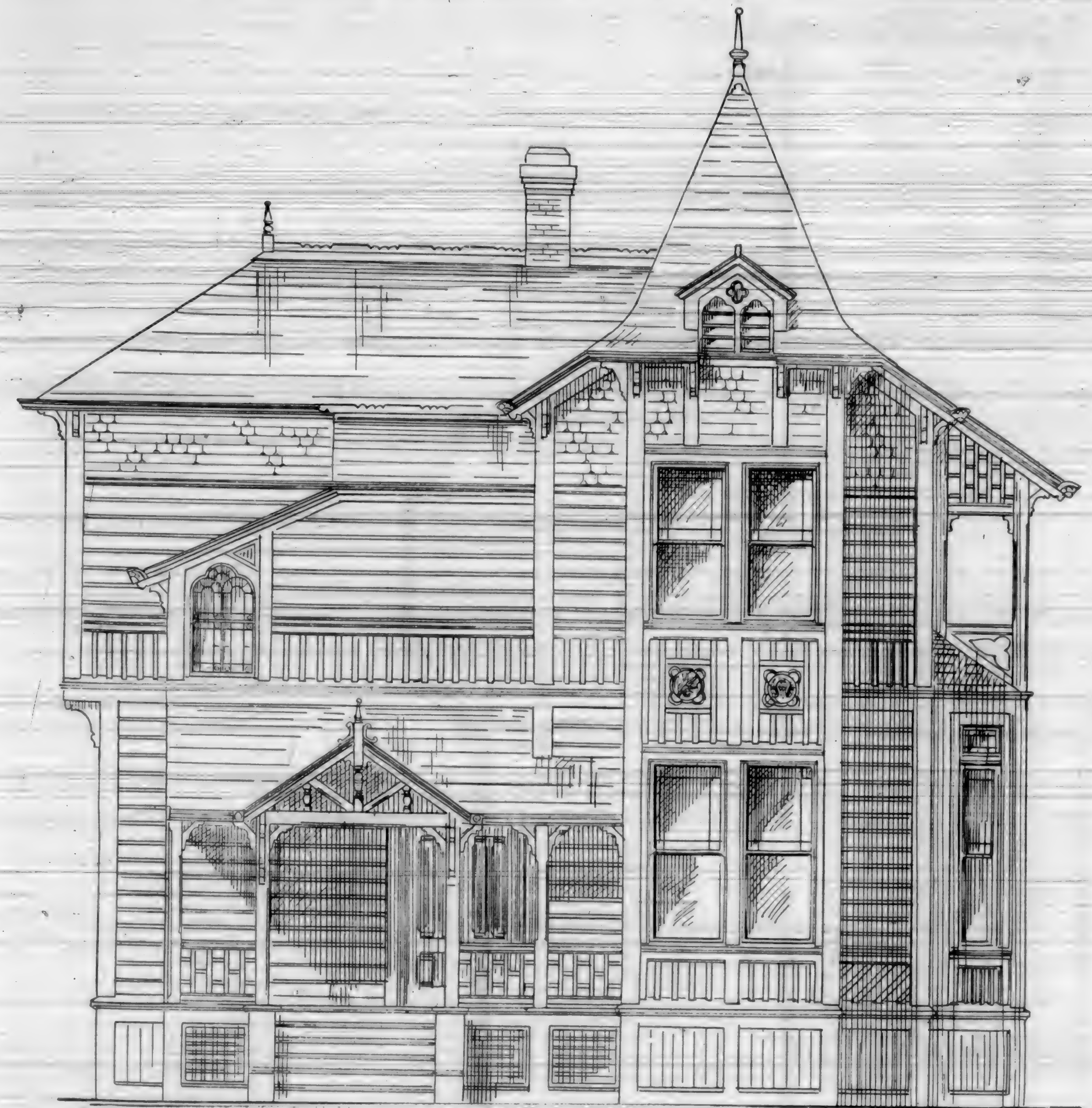
Below will be found a tabulated statement, which will show the growth of this industry:—

Shipped.	M Feet.	Value.	Per M.
January 23, 1883	232	\$ 7,800	\$33 62
November 30, 1883	418	8,400	20 07
January 15, 1884	919	18,400	20 05
February 23, 1884	417	18,099	31 11
May 19, 1884	272	5,400	20 00
June 13, 1884	492	14,400	29 18
July 31, 1884	724	21,100	29 14
September 28, 1884	985	22,700	24 27
October 22, 1884	682	19,900	29 18

The high cost per M for the first ship load sent is due to the fact that extra pains were taken in the selection of a prime quality of redwood. In addition to the lumber, the ship's hold carried 1,000 redwood ties and 140,000 shingles of the same material.

So far this year, on February 2, 1885, but one vessel has been cleared for Europe, the cargo consisting of 712,000 feet; value, \$17,800. We may reasonably expect future shipments to increase in number and value, as the merits of Redwood become more fully known. A list will be kept, which will be given from time to time, in order that cognizance may be kept of this growing source of wealth to this coast.

Lessons in Carpentry by the Aid of the Slide Rule. The design of this work is to furnish a cheap and simple explanation of the SLIDE RULE. The simple combinations of which this instrument is capable actually contain more practical knowledge than can be found in huge volumes. Practical examples are given of the workings of this instrument, by which the mechanical student can readily understand the vast variety of its combinations, and be capable of finding length of rafters, braces, etc., in much less time than by the use of the steel square.
Price, Three Dollars.



FRONT ELEVATION OF \$5,000 COUNTRY DWELLING.—SEE "OUR ILLUSTRATIONS."

Our Illustrations.

The illustrations in this number represent the plans and elevation of a \$5,000 country dwelling. Credit for the same belongs to Max G. Bugbee, one of our rising California draughtsmen.

It was the design of the author to show a plain exterior, and yet have sufficient architectural display to make the house present a pleasing and comfortable appearance. All of the various elevations are shown, so that almost any adult can readily comprehend the looks of the building when completed.

Our engravings illustrating the plans of the different floors are very plain, and will bear careful study.

The estimate of cost has been carefully prepared, and at present price of materials will fall short of the amount quoted.

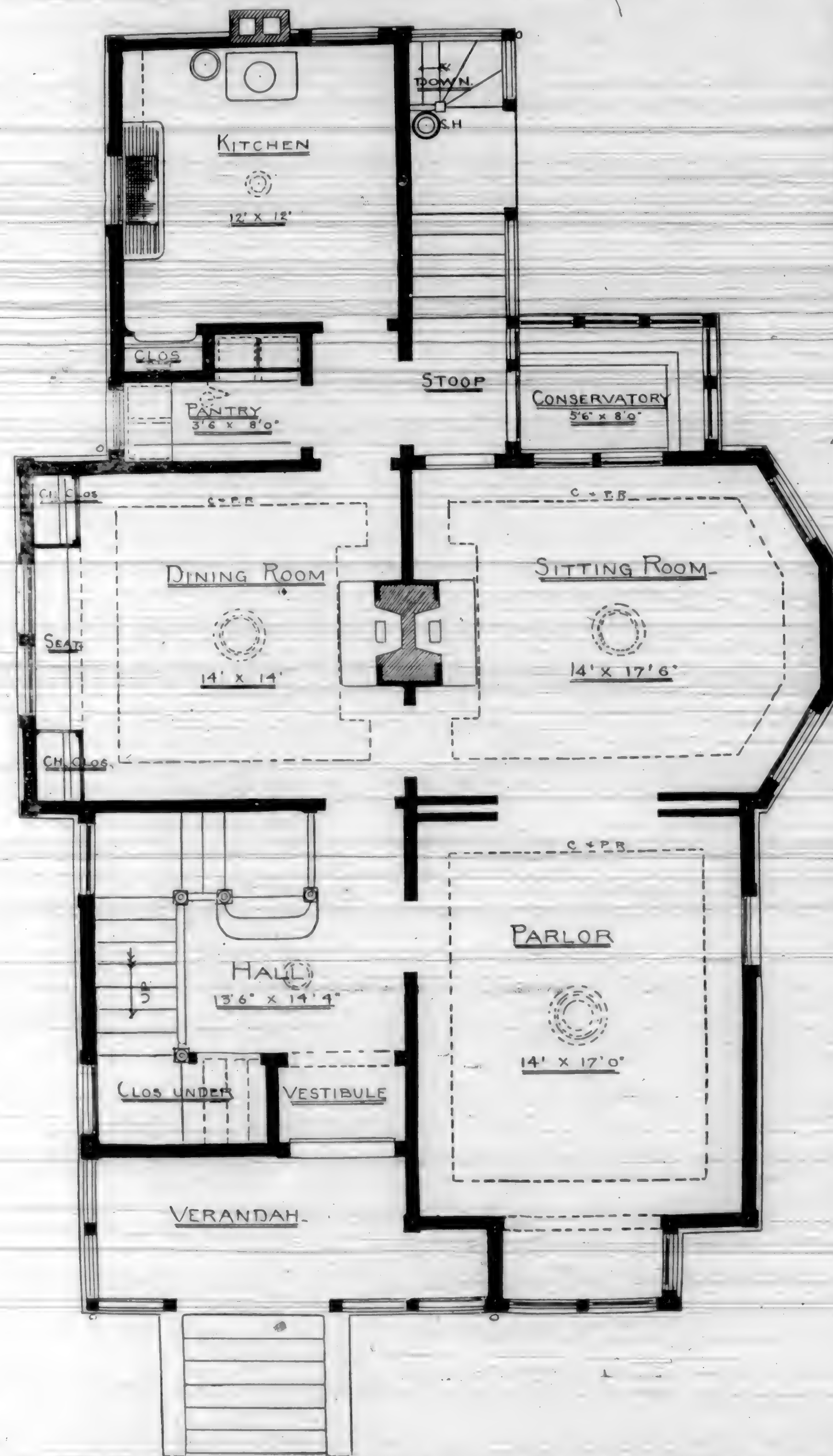
ESTIMATED COST OF DESIGN FOR FRAME DWELLING SUBMITTED BY MAX G. BUGBEE.

Labor.....	\$1,025 00
Plumbing and gas-fitting.....	500 00
Mill work.....	1,500 00
Plasterers' work (2,375 yds.), 220 ft. cornice.....	654 50
Painting and glazing.....	305 00

Hardware, tinning, etc.....	\$162 50
Bricklayers' work and sewer.....	200 00
Stairs, inside and outside.....	165 00
Shingling (24,000 plain, 4,000 cut).....	146 00
Rough lumber (11,625 ft.).....	261 75
Rustic battens, etc. (4,130 ft.).....	165 45
Flooring (2,850 ft.).....	99 75
Total.....	\$5,184 95

Test of Glue.

APPLY your tongue to a piece of glue; if it tastes salty or acid, reject it at once. The same operation will also bring out any bad smell the glue may have.



FIRST FLOOR PLAN OF \$5,000 COUNTRY DWELLING.—SEE "OUR ILLUSTRATIONS."

Make Contracts for Lumber.

We would advise those who intend to build sometime in the near future, but whose means will hardly let them do so at present, to make

a contract with one of the firms who are selling lumber much below the cost of production, for any certain amount of lumber to be delivered on or about a specified time, at the prices now ruling in the lumber market.

We know this has been done by more than one firm. No surer way of making money can be thought of than by securing a lot of lumber at the ridiculously low figures for which it can be had at present. First quality lumber commands \$13.00 per M, and we know of one lot for which only \$12.25 was paid. At this rate, it will pay any one to stack a few thousand feet away, as we can assure you, in a short time a much higher figure will be demanded.

Make a contract for lumber now, for the principal cause of its low price will soon be removed, and you will then regret when it is too late.

BACK SAWS.**How One Little Word Can Change the Whole Meaning of a Sentence.**

In our last issue we presented an interesting article from E. H. Davies, of Santa Clara, entitled, "Back Saws." The type made one sentence read as follows: "And will take seven times as much pressure to get it out *as* straight as before."

The first *as* should be *of*; so the sentence would read, "*get it out of straight as before.*" Only a word of two letters, and yet notice the difference in the meaning of the sentence.

The Gelatine Edition

Of the *American Architecture* is a splendid number. It represents a perspective sketch of the State Capitol, at Hartford, Connecticut, and, as far as the engraving is concerned, it is the best and most artistic illustration of a building that we have as yet seen in print. Every architect and student in the United States should not only deem it a privilege, but a duty, to encourage publishers by subscribing for such journals as the one mentioned.

Low Price of Building Materials.

For some time past lumber has been selling in this city much below the cost of production. Large lots have been sold as low as \$12.25 per M for rough, and \$21 for surfaced. During the past week, however, the price has been advanced to \$14, and it is only a question of little more time for the market to regain figures somewhat near to those of the schedule that existed before the "break."

BRICKS have been held very steady for a long time past, but the combination has been broken, and prices have declined from \$1.50 to \$2.00 per M. Good hard-burnt brick can now be had for \$9.00 per M.

HARDWARE.—The prices of all kinds of hardware have been advanced from 10 to 15 per cent. since the beginning of the year. Even at this advance, the prices are very low. In fact, all kinds of building materials, and labor as well, are at too low a figure for beneficial employment to a large proportion of our wage workers. To those contemplating building, no more favorable opportunity than the present will occur for some time to build cheaply.



SIDE ELEVATION OF \$5,000 COUNTRY DWELLING.—SEE "OUR ILLUSTRATIONS."

Reproduction of Redwood.

A SHORT time ago, the following paragraph appeared in the columns of one of our local journals.

"The redwood tree, as is known, will not reproduce itself, or rather, to speak more correctly, it grows so slowly that its growth is not appreciable. Hence, in time, all the California redwood will be exhausted."

The writer of the above has evidently traveled but very little among the redwoods, and knows but few of the characteristics of the timber which he seeks to disparage. The truth is that there are no known lumber trees that reproduce themselves in so prolific a manner and so quickly as the species under consideration. In our travels, we have repeatedly seen young shoots from three to twelve inches in diameter growing from stumps of trees that have been felled; it is evident, therefore, that time is the only thing necessary for a duplication of the original growth in a devastated forest. These young shoots will sometimes, though rarely, number as many as a dozen from a single large stump.

Again, even when a section has suffered from fire, in a short time, in numerous places, these young shoots will be noticed growing from the parent stump. Knowing the above to be a fact, is it not about time that our Legislature took pains to enact laws for the preservation of the young trees, and not allow, as

is too often the case, the young timber to be cut for posts, etc., merely because it saves some indolent people a little labor in obtaining "just the size they want" for their purpose?

The Iron Workers' Strike.

SINCE the publication of our January number, a material issue between the proprietors and workmen of the boiler making and iron working establishments in this city has culminated in a general strike, the workmen refusing to accept or compromise the exaction of the proprietors for a reduction of fifteen per cent. in the rates of wages.

The reduction is based upon and claimed as a necessity to the activities of trade, to offset the pressure of Eastern competition, where wages, coal, and the raw materials are much cheaper than in San Francisco, and sufficient to overcome the extra cost of freightage and charges.

This is met by the workmen upon general as well as specific principles, not to accept a break in present rates of pay, as doing so would fix a precedent to other lines of manufactures to demand like reductions, and so effect a general break down in the rates of wages all along the line.

That Eastern competition has always existed, and is no greater now than heretofore, and furnishes no new or sufficient argument in favor of the reduction.

That the living expenses of workmen in San Francisco are greater than in most of the Eastern cities, and require better compensation to produce equal results and comforts with and to those who work for less pay in places where house rent and the necessities of life are less costly than in San Francisco.

That the competition complained of is stimulated by the lack of larger plants and greater working and manufacturing facilities in the several establishments.

Several attempts at compromise have been made, but at present writing the outlook presents a determined resistance on the part of the workmen, without any certain indication as to final results. Competition is said to be the life of trade, but when carried to the extent of depressing the laboring classes, and drawing from the facilities of life comforts, it becomes a hardship, and it is but natural that the pinched should squeal and refuse to submit. Cutting wages as a means of whitening competition down to a profitless edge, is certainly not a pleasant edging to men who have families to support, and facts favor the assertion that competition, too severely forced, benefits those who purchase at *less than fair prices* at a sacrifice to those who produce. And if producers see fit to cut each other, they should spare those who perform the labor of producing.

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(Written especially for this Journal.)

REDWOOD TIMBER. Its "Staying" Properties.

AS WE look at the decomposing particles of material in the building, there is behind all these effects a cause by and through which the timber responds to the decomposing influences of the atmosphere with which it is brought in contact, while other and contingent portions, often of the same timber, but generally different sticks cut from the same tree, seem to be impervious to these influences.

Years ago, architects (the reason for which they had no explanation) would strive to reconcile the seeming paradox by placing the timbers in certain relative positions in the building as compared to the tree before being cut. We often wondered at the reason for this, and though these men constantly exposed themselves to ridicule and sarcasm, nevertheless, if let alone, they invariably succeeded in overcoming the gravest of objections relative to the use of certain woods notorious in that country as quick to decay, *in spots*. If we examine carefully, by means of the microscope, a vertical section of redwood, for instance, we shall find on the micron the form represented in Fig. 1.



FIG. 1.

The parallel lines running lengthwise represent the grains as seen with the naked eye, the small spots the resinous matter peculiar to the family of plants of which this timber is a member, while the irregular lines running in every direction, and when a general longitudinal direction never crossing the grains of a perfect tree, thoroughly ramifying and permeating every particle of the cellular matter, seems to be the transit ducts for conveying this resinous fluid all through the interstices of California redwood. This, so far as could be demonstrated by means of a dry sample of wood, seems to obey the general law of crystallization, and gradually settles into these cavities, as the sap winds its way

upward. As another proof that this condition of things is common, as we approach what may be termed the upward portion of the tree, these crystals gradually become smaller, and when the topmost branches are reached they cease to assume this form, seemingly present only in solution or sap, notwithstanding the fact the twigs and leaves contain them but in a different form, showing that the solution, as it may be called with the utmost propriety, slowly deposits this sediment in the interstices on its way upward, and, when the utmost limit has been reached, becoming a vapor, leaving, *not depositing*, the remaining portions of this resinous matter, hence the diverging form of crystal as it appears magnified.

A very interesting and important phenomenon is manifest in the protuberances and excrescences often seen in these celebrated trees of California, but owing to the lack of sufficient samples we will not discuss these at this time, holding for the subject-matter of another letter. It will be seen as the right-hand side of the cut is approached, though the grains appear but slightly thicker, the lines and spots become less marked; it follows, then, that as the tree grows older, and the rings larger, they do not absorb this matter in the same proportion. To the contrary, so far as we were able to judge from chemical analysis, the ring seven years from the heart contained as much of this resinous matter as a ring twenty or more years nearer the bark, where the tree was at least three times larger. This elicits a botanical consideration of plant growth, not of vital interest to the majority of our readers. Suffice it to say that the conclusions deducible from what has already been proven, each year the flow of the fluid containing this matter ceases, the entire energy being directed to the formation as well as maintenance of the ring being formed each succeeding year.

It would follow, therefore, that, so far as the life or staying properties of redwood are concerned, the nearer we approach the bark the less value the timber in this respect, for, while on the one hand the cells are greater in number and more closely huddled together, the outer edge contains fewer cells, farther apart, larger, and not so evenly distributed. Again, nearer the pith or heart, as stated before, these cells are filled with one of the best and efficient elements to repel moisture known; while further out they are merely coated, not filled; hence the moisture is invited to enter, and being subjected to the vagaries of a changeable climate, together with the acid-impregnated atmosphere of cities, it is soon absorbed or set free, and the timber rots. To this end

"We'll deem it not folly
Nor esteem them weak"

Who persist in placing the inner side of timbers to the greatest influences that tend to decompose.

By examining Fig. 2, taken from a thin vertical section of the same kind of timber, it

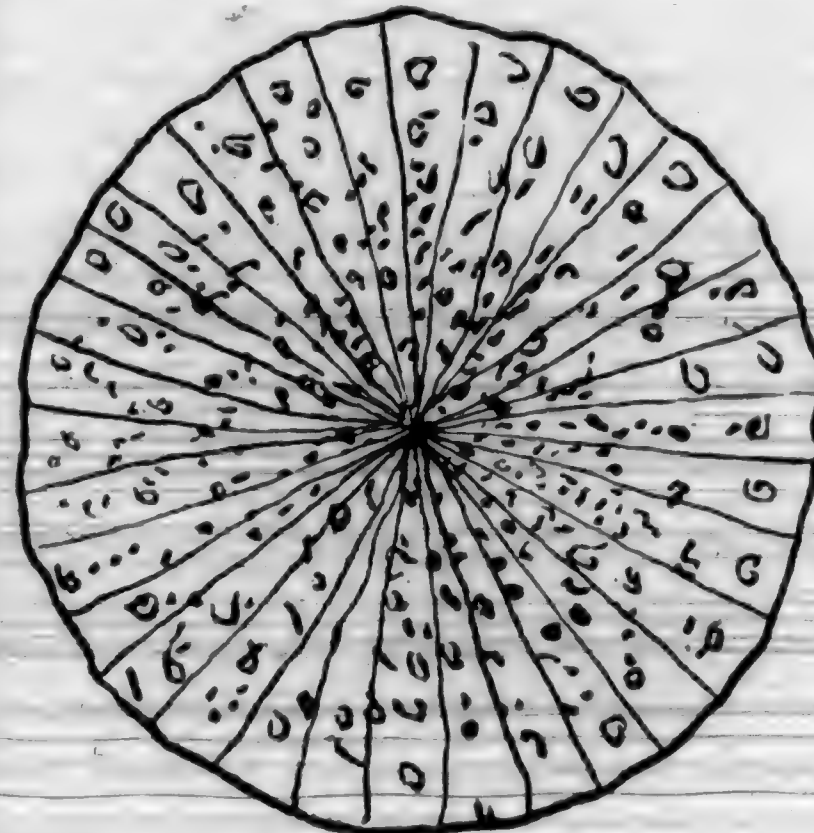


FIG. 2.

will be seen that the cells decrease in number and increase in size as we approach the outer edge. This sample was but a single ring, and, by means of an ordinary compound instrument, it is very easy to determine the inner from the outer side of a stick, merely by the size and number of these resin cells.

Supplementary to what has already been said, the question of strain or tension of this interesting wood should be discussed from the physical features as illustrated with the microscope. Chemistry can do nothing to show this, while physical appliances and mechanism are too apt to consider these considerations as beneath the dignity and unworthy the consideration of that mighty science.

If it was desired to bend or otherwise distort any substance by means of mechanical forces, we would naturally place the molecular portion at the radius; for instance, if a bar of iron was firmly attached to one of lead, bending toward the latter would displace fewer molecules than the former, but the reverse way would furnish the greater resistance. Theoretically, then, California redwood will bend easier toward the bark, but would respond with less force than toward the heart; hence, if strength is the primary motive, the timbers should always be placed in such position that the inside will meet the resistance. If we wish spring, quick reaction, and flexibility, the reverse side should be exposed. Now let those who have practically demonstrated this theory, for such it is, say whether this is a pertinent conclusion or not. In any event, so far as the staying or lasting properties of this timber are concerned, we are positive that these conclusions are conclusive, but it should constantly be borne in mind that, in some instances, we might say many, all these properties we have tried to illustrate are brought into requisition, it being difficult to tell which are of the most importance in this event. By careful mathematical calculations, it will be found that in very many instances when we bring into requisition one of them, the other one next in importance will only be contingent, and in some instances the strength and property required of a piece of timber, presenting the varied characteristics



SIDE ELEVATION OF \$5,000. COUNTRY DWELLING.—SEE "OUR ILLUSTRATIONS."

of the material in question, may be so figured that instead of detracting from one by bringing into requisition the other, each may be augmented by allowing the other its due consideration and importance, as regards what is required of it in the architectural mathematics.

"First Class."

THERE is no term of words used in connection with house construction more hackneyed, profligated, or meaningless, than "first class;" no two words design to express a fact, which are more frequently misapplied, or where they so seldom express real intent, purpose, or quality.

"First class," when properly, honestly, and intelligently applied, comprehend and express more than can be expressed by any other two words in the English language, in the same connections, and are therefore pre-eminent as expressing goodness, merit, excellence, and superiority; but the mechanical, commercial, mercantile, and other prevailing business libertinisms of the day, debase and abuse the term, and apply it when and wherever its use will best serve purposes of deception; hence it is utilized by the frauds

of the world under every guise, and is made the watch-word and cry of those whose success can be accomplished only through and by deceptions. It is safe to assume and fix as a fact, that those who are ever prating their personal or business "first-class"isms, require watching, particularly in building connections.

There is no need of men who produce first-class work commending that which commends itself. "First-class" workmanship and materials carry in themselves conclusive evidence as to character and quality. It is the second to tenth rate demagogue, who understand nothing of the honest, practical meaning of the term, who are the more free in its misuse and misapplication, for purposes and with intent to deceive; and it is unfortunate that owners and purchasers so generally permit themselves to be beguiled by this designing class of individuals, who feed and fatten by the practice of studied deceptions, asserting merit and reputation where none exist.

Our Slide-Chimney Thimble Device Patented.

SOME fifteen years ago, the Senior Editor of this Journal perfected a slide thimble device for chimneys, which was and is more perfectly

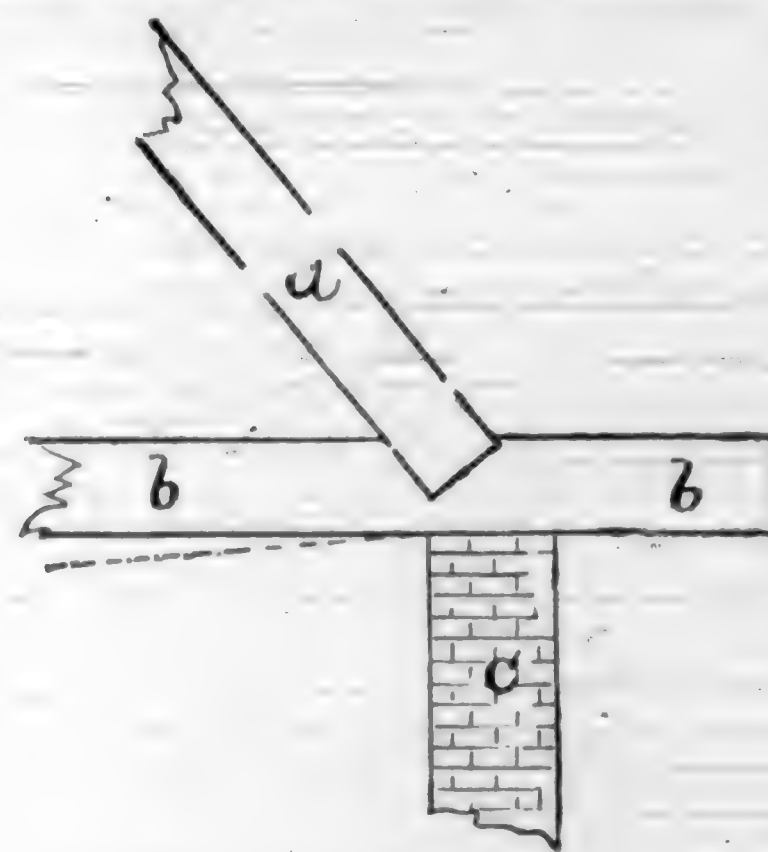
fire-proof than any other, and which saves and prevents all cracking of the plastering around the "stove pipe holes." We have used them in our practice ever since, with entire satisfaction, and with benefit to clients. Far less meritorious devices have been patented, and this deserved the protection of Uncle Sam's patent laws, but we did not apply; and as we did not avail ourselves of that advantage, we notice in a last year's number of the *American Inventor*, that one E. S. Sweetser, of Wakefield, Massachusetts, has done so in our stead. The principle of the two devices are exactly the same, and the shape and form alike, varying only as between the round and square ends of the slides and slide plates. And every word that is said in the journal mentioned recommendatory of the device, has been expressed by us scores of times in reference to our own, and is true. If the patented thimble is an original invention with Mr. Sweetser, there is in it a most remarkable coincident of thought and conception between the Massachusetts man and the Editor of this Journal.

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(Written especially for this Journal.)

Strength of Timber.

It is a fact well known to all architects that the more kinds of material we put into a structure the more we multiply differences of expansion and contraction, and in some cases that have had our attention called to, the structure has been found sadly out of line, and its general appearance deteriorated by the difference in contractility of materials and even kinds of one material of which composed. Suppose, for instance, we construct a building eleven stories high, the walls of brick, wooden girders and partitions; we place joists across, these are green; we have eleven floors laid upon this green timber. The studding for each story is placed on a firm foundation in the basement, directly over the top of which the partition timbers of the adjacent story are put, followed by another and another until the roof or rafters are reached, when the timbers or studding for the last story are the principal, and often the only support. If we allow the usual per cent. for shrinkage by seasoning, is it unreasonable to suppose that, with this, eleven feet in width of joists will so shrink that the roof will, by its own gravity, fall nearly on foot? Then is it not equally pertinent to conclude that the base of the rafters rising on opposite walls alone will tend to crowd out until the apex finds stability on these studs of the center and thereby rendered unsightly and possibly unsafe? In explanation of this theory let us suppose the following cut: c to represent the brick wall; b,



the cross-beam, and a, the rafter. The timber b, is supposed to run entirely across the structure, and a, meeting its companion at the apex, stands as it were while together; separated, each will fall. To guard against settling and the like, supports, by means of cross sections or collar beams, are brought into requisition, while these in turn are supported by the studding in the interior of the building. Now at the angle this rafter is placed in, if b should shrink the merest fraction of an inch, the joint ceases to be perfect, and the shoulder bears none of the weight of the superstructure, the same being all transferred to the base of the rafter; and while the cross-section is made of timber supposed to be of the

same degree of dryness, the entire weight is thrown on the wall a certain distance from the center.

We will now go to the story below, where we find this timber, b, resting on the partition studding; this, being seasoned the same, it shrinks; b, having the pressure from above, follows the shrinking, and rapidly assumes the shape and position indicated by the dotted line. It will be seen by this that the wall receives the pressure in an oblique manner, and is subjected to a force that will eventually crowd it out of line, as a result in a few years at farthest. We have a building the walls of which are none of them square, not a door or window will open and shut, the plastering and all other interior decorations will rapidly deteriorate in beauty, while in accordance with the force of gravity, all will soon be a mass of semi-ruins. As we have proven, we hope to the satisfaction of our readers, timber invariably shrinks toward the center; hence if mill-owners and operators in filling orders for large stuff would see that their timbers were gotten out so as to lie on edge when in position, and architects see that they were placed in position as ordered, the shrinkage would only tend to make the joints stronger and the floors more solid. These are little things of themselves, but in the aggregate assume great importance, and more especially to those who pay the little bills or suffer the inconvenience of occupying buildings all askew.

The Arch.

The earliest trace in antiquarian researches has assisted us in detecting the first bridge, and to show that it was a tree which had fallen from one bank to the other of some mountain torrent. The method of communication thus supplied by accident, men would soon learn to obtain for themselves by the rude resources of art, and ere long the opposite banks of rivers would become connected by means of timbers or flag-stones supported upon piers.

The application of this notion of a bridge seems to have constituted the whole art of bridge making up to a comparatively recent period. It is, however, altogether inadequate to the passage of deep or rapid currents, and fatal to navigation. We accordingly find the Egyptians, although they swarmed along the banks of the Nile, never built for themselves a permanent bridge across that river.

The Tigris and the Euphrates, on whose banks dwelt that enterprising nation of remote antiquity, the Chaldeans, was bridgeless. And even in the age of Pericles there was no stone bridge over the river Cephissus at Athens.

Necessity is said to be the mother of invention, but there are certain matters which she has been exceedingly slow in coming to. The birth of the discoverer of the arch is a memorable example. Of Europeans, the first who appear to have made the discovery were the Etruscans; the earliest existing specimens of the arch in Europe are to be found among the ruins of the Etruscan tower of Volterra.

To the Chinese the secret of the arch appears to have been known from time immemorial. In fact it is difficult to fix upon any useful contrivance which is not at present in some degree known to that singular people. They certainly used the arch long before the idea was conceived in Europe. It covers the gateway in their great wall; they availed themselves of it in the construction of monuments to their illustrious dead, and in the formation of their bridges; and we are told that there were stone bridges in China three or four miles long, and arches 600 feet in span.

From the Etruscans the secret of the arch passed to the Romans, and it was soon employed in the construction of bridges over the Tiber. Of these, several remain; they are, however, but awkward specimens of the art of bridge building. Their narrow arches were supported upon high, unsightly piers, which formed a serious obstruction to the current. The Romans have, nevertheless, left us, in other parts of their dominions, bridges of extraordinary strength and beauty. Of these, that of Alcantara is perhaps the most remarkable; its roadway is about 150 feet above the level of the stream which it crosses, and its arches are 100 feet in span. It was built by Trajan, in whose reign was also erected a bridge over the Danube, of which many incredible things are told by Dion Cassius, of which no hint is to be seen but now and then the foundation of a pier. He built it that he might conquer the Dacians; his successor destroyed it, that he might restrain their incursions into the empire.

In those troublesome times which succeeded the fall of the Roman Empire no bridges were built. Rivers were for the most part passed by fords or ferries; these frequently became subjects of contention between neighboring barons, or were taken possession of by outlaws, and travelers in availing themselves of an insecure method of transfer were subject to the certainty of being heavily taxed, and the chance of being plundered.

It was about the commencement of the twelfth century that one Benezet, a cowherd, appeared in the Cathedral of Avignon and announced to the multitude a special mission from Heaven for the erection of a bridge over the Rhone at that city. By efforts little less than miraculous this singular enthusiast contrived in the course of a few years to erect a bridge, which, whether considered in reference to its enormous dimensions, or to the local difficulties to be overcome in its construction, claims to be ranked amongst the most remarkable monuments that have been erected by the skill and ingenuity of man. Unfortunately a flood of the Rhone carried it away. The labors of Benezet did not, however, altogether disappear with this bridge; he obtained a place among the saints of the Roman Calendar, and became the founder of a religious order called the Brethren of the Bridge, by whom some of the finest bridges in Europe were erected. Of these that of St. Esprit, on the Rhine, is nearly a mile in length; and that called La Vieille



REAR ELEVATION OF \$5,000 COUNTRY DWELLING.—SEE "OUR ILLUSTRATIONS."

Bronze, over the Allier, is a single semicircular arch of 180 feet in span, and until the erection of the Chester bridge, which is 200 feet in span, was the largest arch in Europe. Of the same date was the old London bridge, the work of Peter of Colechurch, which would, however, greatly suffer by comparison with the labors of the Brethren of the Bridge.

From this period up to the present, the art of bridge building has continually progressed, and most of the European rivers are now spanned by arches with which the labors of former ages will bear no comparison, either as respects the boldness and grandeur of design or the perfection of their detail.

Plaster, How to Make and How to Use It. It contains accurate descriptions of all tools and materials used in plastering; description and action of every variety of lime and cement; instructions for making all kinds of mortar, and doing all kinds of plain and ornamental plastering; many important recipes given. Price, \$1.00.

Damp Houses.

The common bricks produced by most of the dry-clay machines absorb much more water than do those made by machines which thoroughly temper the clay. There is too much ignorance displayed in regard to the material produced by this line of inventions, and which enters so largely into the construction of buildings, and this lack of knowledge is often shown by those who ought to know better. In the desire to get up a showy house, "something that will take, you know," mistakes are too often made, which are usually paid for by the loss of health and sometimes by the sacrifice of the lives of those who inhabit them. Is it difficult to call to mind houses that people call "unlucky places," in which an unusual number of persons die? These "unlucky places" are for the most part nothing more or less than damp houses, result-

ing usually from the employment of porous bricks in the construction of the walls.—Charles T. Davis, in *American Architect*.

When you are filing a saw and the file gets gummed up don't try to work with it so, or throw it one side and get a new one. If you have no card to clean the file, take a piece of pine wood—three-fourths inch square by three or four inches long. Rest one end of the file upon the bench; with the little stick strike the file nearly edgewise with a square corner of the stick, following the slant of the teeth. This will clean a file nicely and without causing half the wear that a card would. A little practice would enable you to clean a file in half the time it would take you to hunt up a card-cleaner.

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Getting up Stairs.

"If there is anything I like to see in a house," said Mrs. Domibus, "it is a handsome pair of stairs. We don't expect ours to be gorgeous or magnificent, but I want everybody who comes into the house to throw up both hands in admiration and exclaim, 'how lovely!' when they see the stairs. You see they are the first piece of furniture to be seen, and if they are all right it is no matter how plain the rest of the house is."

"You wish the stairs to be in the front hall, then, do you?"

"Why, of course! what else is the front hall for? Where else could they be? and what would the chambers be good for without a front pair of stairs?"

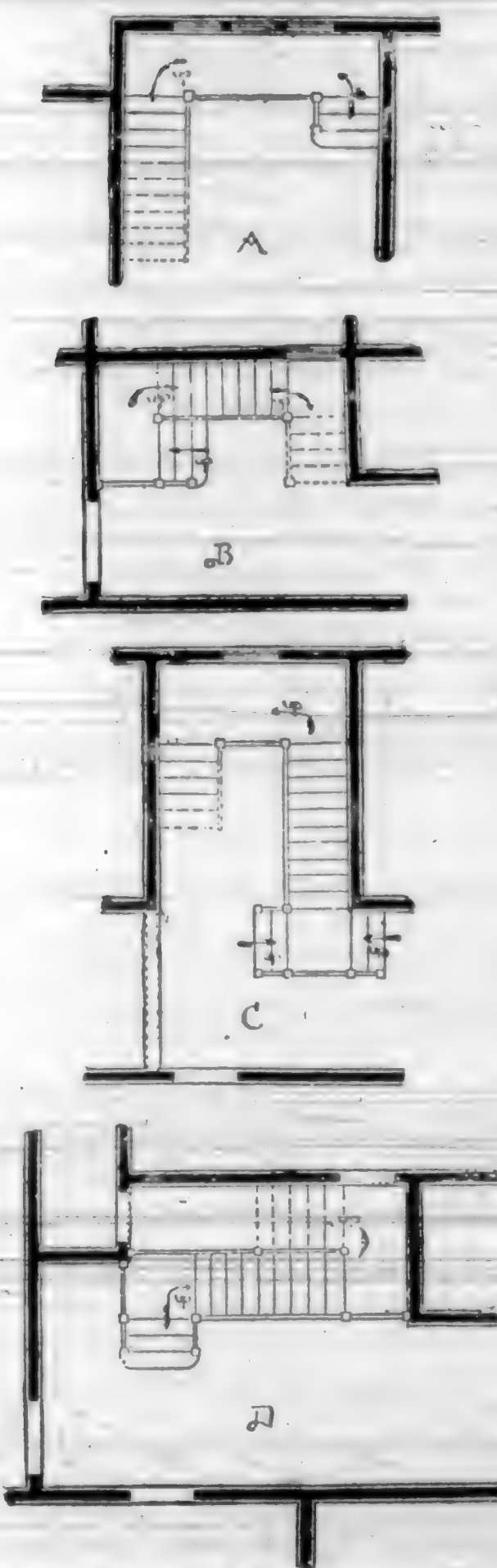
"Do you like a straight run?"

"I don't know what a 'straight' run is, but if you mean stairs without any turns or landings, I don't. How many kinds of crooked runs are there?"

"Hundreds of them."

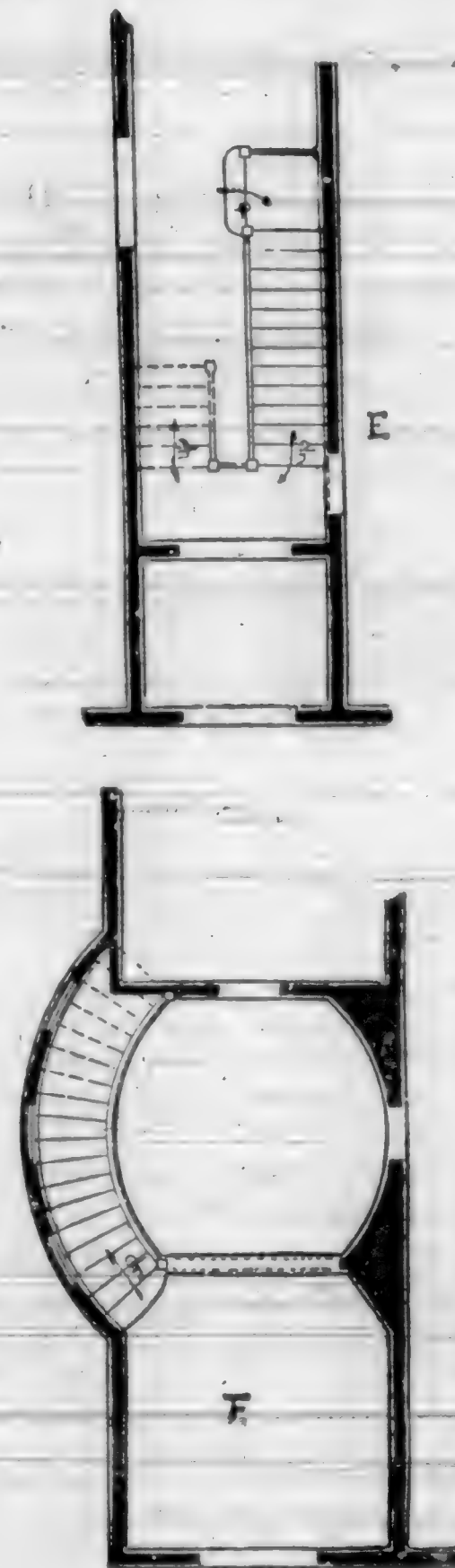
"Will you show me a few?"

"Certainly. 'A' is a staircase that could



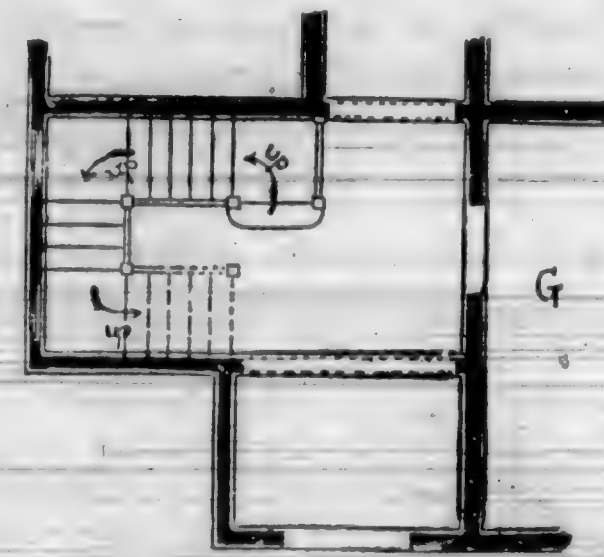
only be used with good effect in a large central hall or reception room. You go up three or four steps to a long, level platform, reaching

quite across one side of the apartment, at the other end of which platform, you turn to the left again and complete the ascent. There are windows on this long landing, and it will serve various useful and ornamental purposes. In 'B' the stairs occupy a sort of recess or alcove at one side of the common entrance hall or passage way. You have a few steps to the first full landing, then several more to the half landing near the top, from which another short run carries you to the second floor. 'C' looks two ways for Sunday at the start. From whichever way you approach the stairs you can reach the first landing without turning a corner. The second landing is high enough for a door underneath it, and, if it happens to stand next an outside wall, for a window above it. 'D' is still more aggressive as regards room. The foot of the stairs is thrust forward into the wide hall and after turning once to the right on your way to the broad second landing, which is also high enough for a door underneath and a window overhead, you right about face sharply to the left for the



rest of the upward march. 'E' is the conventional, long, narrow hall with staircase clinging to one side of it. This is a variation from the familiar individuals of the class, inasmuch as it starts with a square landing at the bottom, runs up towards the front door instead of from it, and turns on itself by means of a landing near the top that spans the hall and

makes an apparent division between the vestibule or the front end of hall and the interior portion. 'F' you might call a straight



crooked run, and by virtue of its many doublings it makes a comfortable sort of staircase in a limited space."

"Well, now, which of these will look the best?"

"That will depend mainly upon how they are treated by the architect who designs the details."

"And which will be most suitable for our house?"

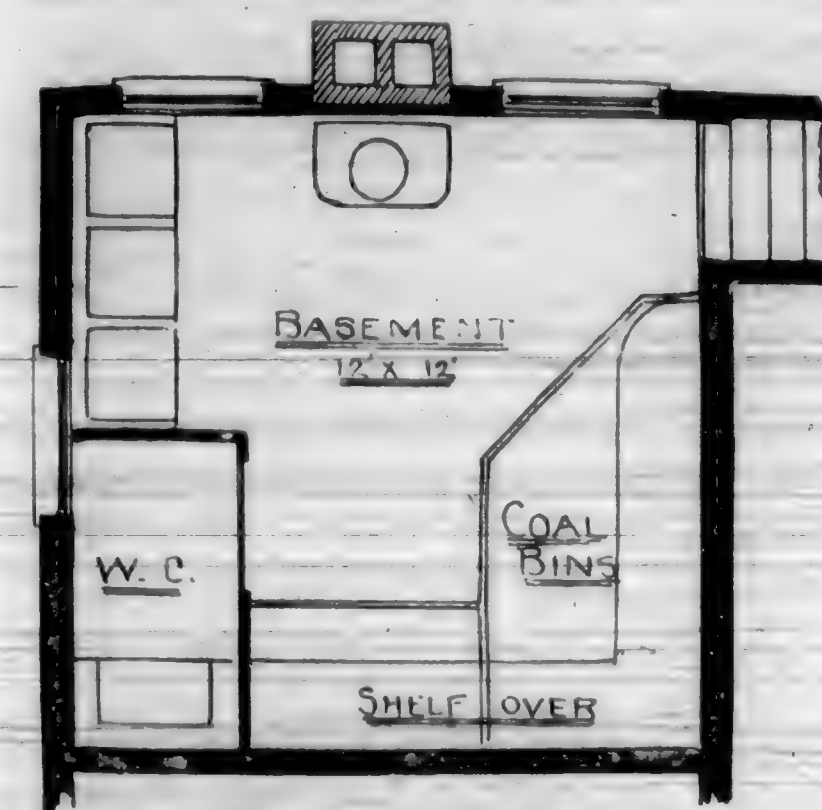
"That will depend entirely upon the plan, for, please remember, the stairs must be made for the house, not the house for the stairs."—*Builder.*

Wood Carving.

THE hand carving of wood for house finish and interior decoration is becoming a distinct and permanent branch of industry. Much of this work has been done by amateurs as a pastime, but it has lately developed, to a considerable extent, into a "trade," industrially speaking. For fine furniture the carving of wood has for a long time had a place, but there appears to be a prospect that to the joiner's shop and work will be added those of the carver as a means of finishing interiors. Foreign workmen, at present, comprise the larger part of the workers in this industry, but the attention of our native workers has been directed to it, with the result of bringing it into general notice.

The idea that artistic hand work should be confined only to rare and costly material is hardly consistent with the demands of taste.

In the woods there is scarcely one that will not be beautified by hand carving. So common a wood as white pine is susceptible of producing very fine effects even when the wood is left in its natural condition. When first worked, it is a creamy white well calculated to show the shadows of relief; and exposure to the air soon deepens its tint. A thin varnish of shellac will tone its whiteness without producing a shiny surface. White wood is also a wood well adapted to carving, and the yellow birch is even finer. To these light colored woods may be added the three varieties of maple and also beech. The darker woods admit of bolder work—greater relief—and when united with the lighter colored woods make a fine combination. Carved white wood as a cornice for a room, the figures only slightly



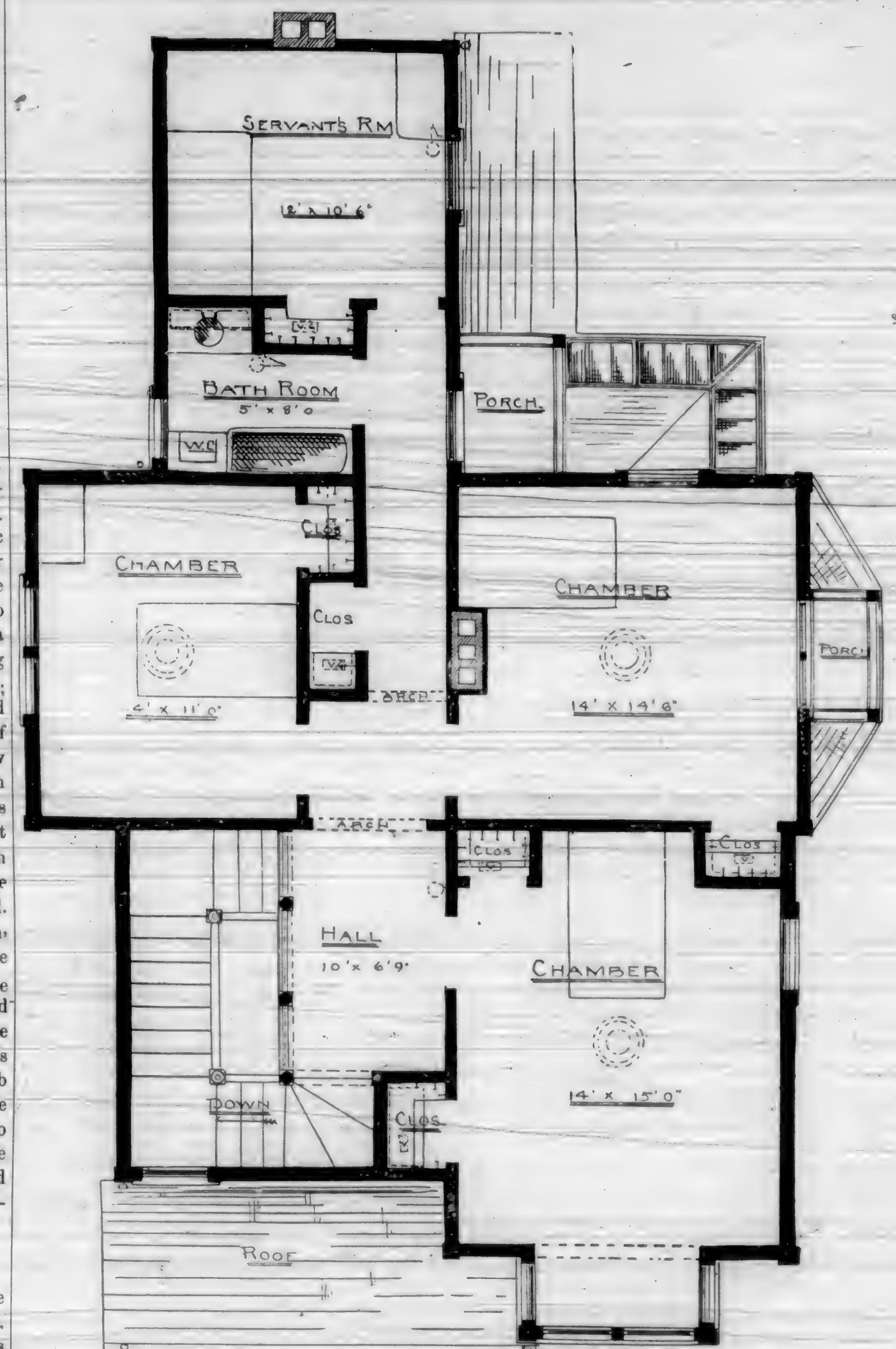
BASEMENT PLAN.

cut in, with cherry for the projecting moulding, produces an elegant effect in a parlor. The only finish is a thin varnish of shellac dissolved in alcohol, no touch of sandpaper being allowed to subdue the sharp cuts of the carving tool. There is scarcely any limit to the possibilities of wood under the hands of a skillful carver; straight lines and sweeping curves are not alone among its capabilities; it may be fretted, diapered, dented, and stippled, and cut into fine cross-hatching, if the workman has good tools and knows how to use them. As this is written, there lies on the desk a piece of butternut wood six inches long and about one inch diameter, that is cut into a triple spiral, of about three turns, each spiral being round and about the size of a rye straw. This shows the capabilities of wood.

Wood carving is a pleasant occupation, combining the attraction of taste with the pleasure of work. In many instances the carver is his own designer; it is better so, and the business is incompletely learned where the carver cannot originate, or at least design, his own work. The designs for an elaborate job are usually two, a plan and a profile. The profile is drawn in differently colored lines to indicate the relative depth or projection of the parts. The business offers an attractive field for workers who are artistically inclined.—*Scientific American.*

Where Grindstones Come From.

THE grindstone makers of Nova Scotia live principally on the shore of the Bay of Fundy, and when the tide has receded and the reefs are left bare, they go down on the reefs with their tools, and blast out the rocks in as large pieces as may be. They then cut large holes in opposite corners of stones, smallest at the top, and put in "Louis bolts" with chains attached. These chains are set up on bars so that as soon as the tide rises enough to cover the rocks, a large boat called a "joggin' boat" is floated over the rock, and the two chains brought up on each side of the boat are fastened to a stout pole which lies across the boat and projects over the sides a foot or two. The tide rapidly rising straightens the chains and lifts the rock from its bed, and the boat with



SECOND FLOOR PLAN OF \$5,000 COUNTRY DWELLING.—SEE "OUR ILLUSTRATIONS."

its heavy burden—sometimes ten tons—is floated toward the shore, and when the tide attains its full height and the boat is as near the shore as is practicable, the stone is cut away by a few vigorous strokes of the axe on the middle of the pole, and the liberated boat jumps nearly out of the water. As soon as the tide recedes far enough to lay the rock bare, the men go to work with their tools and work them off into the shape we see them here in our large factories, and the smaller pieces

are roughly "scabbled" off into the semblance of a small grindstone and then taken to the building, where they are turned in lathes by steam power and assume the finished appearance of the grindstones we see any day about us.—*Sel.*

Modern Architectural Designs and Details.
The plan of this work is very comprehensive in its character. Numerous designs are given illustrating the Eastlake, Elizabethan, and Queen Anne styles of architecture. Complete plans of each, together with full and comprehensive details, are produced in a manner that will gratify the tastes of any architect or property owner. Price, \$10.00.