

Band Saws.

WE have recently received from M. Dugoujon Aine, of Paris, a very useful article, giving "Directions for the proper way of using and sharpening band saws." We print it below, for the benefit of our readers, together with the illustrations, which will enable the reader better to understand the directions:—

Considering the many difficulties that have arisen in the use of band saws, "arising for the most part from an imperfect knowledge of how to treat them, we think it not out of place to give a few instructions on this point, the observance of which we judge indispensable to obtain satisfactory results in working. The first thing required of band saws is that they should not break. Band saws, as a rule, do not break because they are too hard, or of inferior quality, or too strong or too weak; but they break because the tooth is an unsuitable one. It is important to make use of such teeth only as from their form will best adapt themselves to the action of rolling and unrolling from one pulley to the other. It is found that it is only every other tooth that breaks, and especially when they are like those shown in Fig. 1.



FIG. 1.

This is accounted for by the fact that the teeth, when set, produce upon the pulleys the same effect as a chain does when running edgewise on a pulley; that is, instead of adapting itself to the pulley and forming a regular curve, it forms a number of short, straight lines as shown in Fig. 2. Each one of

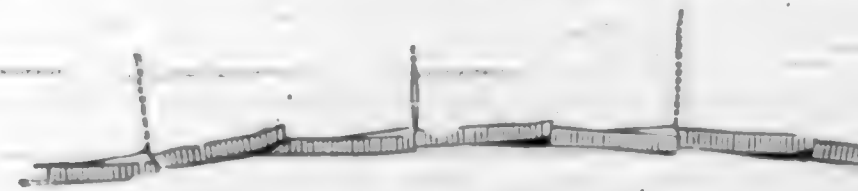


FIG. 2.

these straight lengths out of the regular curve is sufficient to cause a break.

We have said that all sharp angles prevent the proper running of the saw round the pulley, and that the only teeth that are not likely to break are those with the bottom or angle well rounded. It is a very easy matter to make teeth suitable for all kinds of wood and yet fulfil these conditions, as, for instance, the tooth shown in Fig. 3. This tooth, when

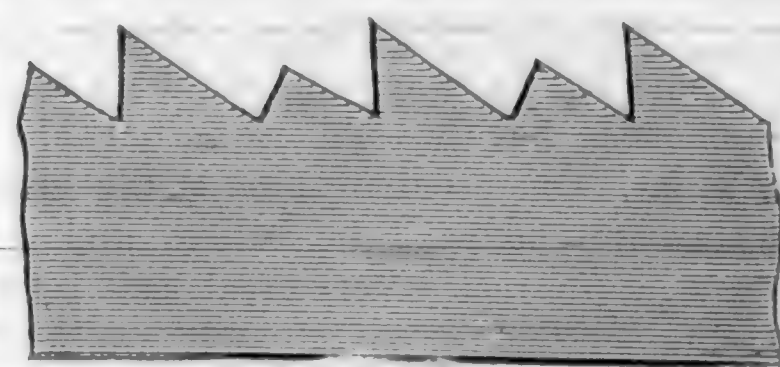


FIG. 3.

properly sharpened, no matter what the size of tooth or space between them, will fulfil the

required conditions, whereas 90 out of 100 sawyers will sharpen as in Fig. 4. In this

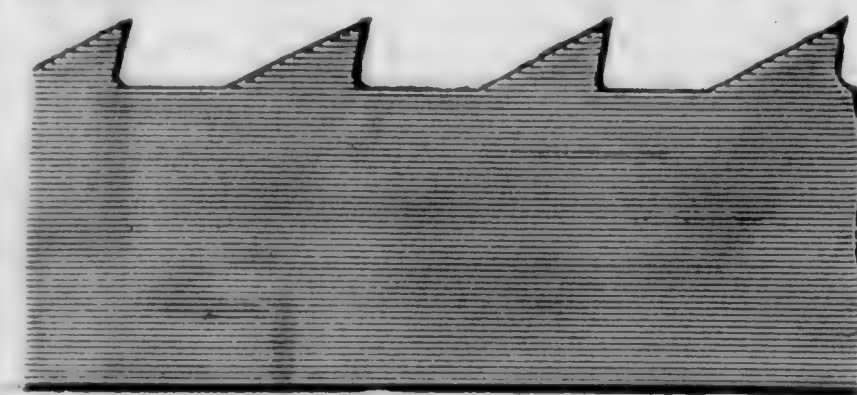


FIG. 4.

case, by the routine of the workmen, the sharp angles are reintroduced, as also the consequent liability to break. But on the contrary, by keeping up the form of tooth shown in Fig. 3, the saw, when heated, will easily stretch without breaking, as the edges present no sharp angles; besides which, the saw adapts itself more easily to the pulley on account of the wide space between the teeth, and so, again, is rendered less liable to break.

As an example to show how easily anything having a sharp angular cut in it will break, you have only to take an ordinary square made of iron, brass, or steel, and pull it in opposite directions by its two extremities, and you will always find it break at the angle, as in figure 5. The same effect is produced on a band saw; it runs downwards, and the wood being held firm, offers a resistance in the opposite direction; thus the tooth is pulled in the same manner as the square, and, like it, will break at the angle.

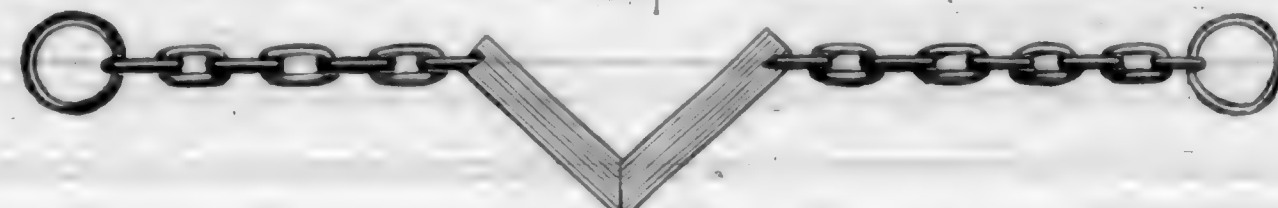


FIG. 5.

In order to keep up the shape of the teeth to Fig. 3, the best way is to grind the bottom of the wide spaces with an emery wheel, equalizing them with a smooth file, and to sharpen the points with a file. Or a diamond-shaped file may be used, as in figure 6. By either of these two methods the use of band saws may be rendered much less difficult and troublesome. Numbers of persons use

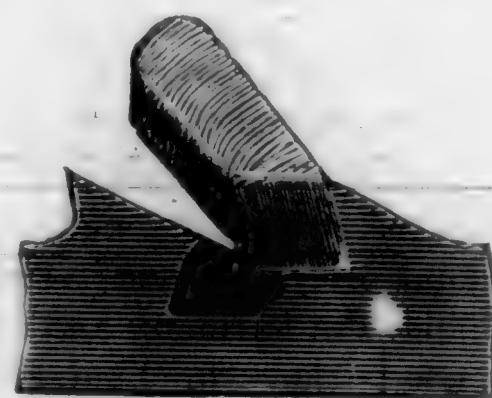


FIG. 6.

1. The diameter of the pulleys should be as large as possible, being however in proportion to the work to be done. 2. The two pulleys and the two guides should be kept perfectly parallel one with the other. 3. The two axes of the pulleys, on the contrary, should be a little wider apart at the front of the machine than at the back, as shown in Fig. 7. 4. In

order to run well and easy the back of the saw should always be close up to the flange of

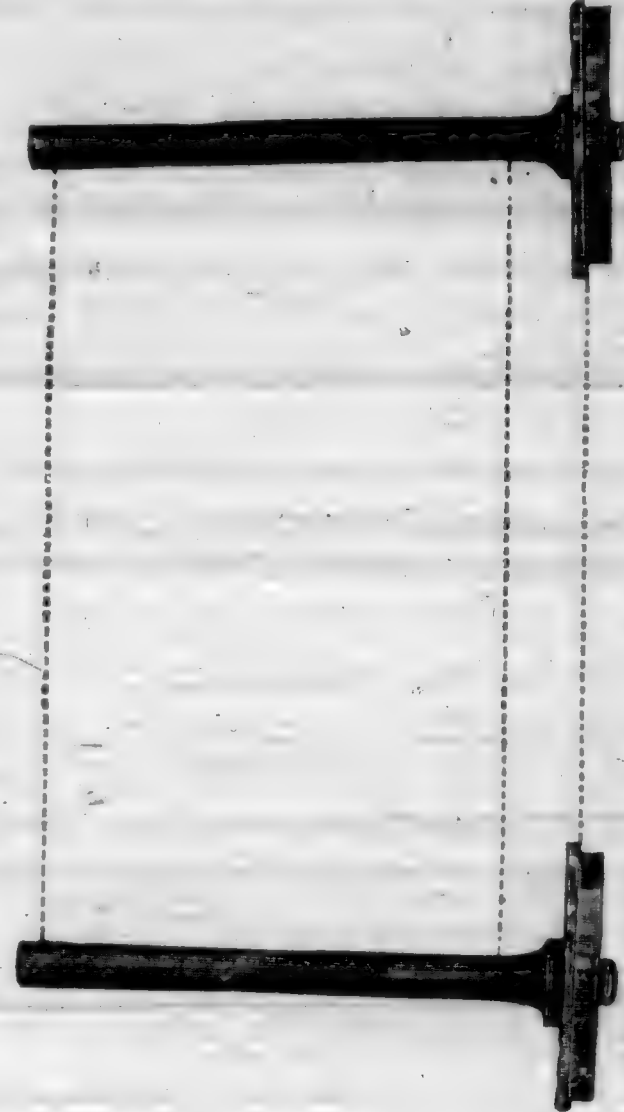


FIG. 7.

the pulley. On this account, and in order to pass smoothly through the guide, it is very important that the saw should be well dressed at the back, but not straight, for a well-made saw is slightly hollow on the back (see Fig. 8).

It is easy to understand that, on account of

the position of the pulleys as shown above, the saws should have a corresponding curve. Saws made in the manner indicated, and maintained in the same state, make the work very much easier; the saw wants less stretching and gives a better result, and consequently requires less power for a greater amount of work. By

FIG. 8.

taking care always to use saws sharpened by good workmen and to keep them well sharpened, it will be found that, instead of increasing expense, a great saving may be made, caused by the consequent avoidance of breaks and by the better work and greater amount produced.

One of the most important points in a band saw is a good joint. The following is the best way of making it. First file slightly the two ends to be joined, in order to take off any grease or other foreign matter that may be upon them, but without making them any thinner. Then lay one end over the other as in Fig. 9 and 10, and keep them in their places with two bits of iron wire. Then tie on very fine brass wire, which sprinkle over with borax, after it is bound. Then melt the brass by means of a special forge for the purpose, or with brazing tongs, or with gas

New Publications Received.

"HINTS ON HOUSEHOLD TASTES." By Chas. L. Eastlake.

A new edition of a popular work by an author that is known in nearly every civilized portion of our globe. We quote from the author's preface the following:—

"Fifty years ago an architect would have considered it beneath his dignity to give attention to the details of cabinet work, upholstery, and decorative painting. But I believe there are many now, especially among the younger members of the profession, who would readily accept such commissions if they were adequately remunerative, and that they might become so is evident from the fact that the furniture of a new house frequently costs as much, if not more, than the house itself. And when clients lead the way we may be sure that manufacturers will seek assistance from the same source. Price, \$3.00, post paid.

"ALBUM OF MANTELS, IN WOOD, STONE, SLATE, AND BRICK."

This new work contains sixty large plates, containing designs for mantels of every description in wood, stone, slate and brick. The author is C. C. Buck, architect. We will mail a copy of this work to any address upon receipt of \$5.00.

"DRAINAGE AND SEWERAGE OF DWELLINGS." By Wm. Paul Gerhard.

In this work the author shows the difference between the way plumbing work is done now and that of years ago. All the improved systems of sewerage are clearly illustrated and explained. The advantages and defects of different traps for wash-basins, sewers, water-closets, etc., are treated in an intelligent manner. The book should be in the hands of every one who desires a thorough knowledge of the sanitation of dwellings. Price, \$2.50.

"THE AIR WE BREATHE AND VENTILATION." This book is the second number of the Mott series. The aspirating system of ventilation has been presented to the exclusion of other systems which have been proposed, for the reason that the writer considers the principle on which that system is founded to be correct. Price, \$1.50.

"HISTORY OF ARCHITECTURE IN ALL COUNTRIES FROM THE EARLIEST TIMES TO THE PRESENT DAY." By Jas. Fergusson.

This work is one that should be in the possession of every architect. Especially should students and draughtsmen secure a copy. Being a reprint of the London edition the price has been materially reduced. Two large volumes, containing over 1,200 pages, beautifully illustrated. Price, complete, \$15.00.

"BUILDING SUPERINTENDENCE." This new work is of invaluable assistance to the architect and builder. It is written by a gentleman long connected with the architectural profession, and is eminently practical in its character. We will send a copy to any address upon receipt of \$4.00.

"BUCK'S DESIGNS IN ARCHITECTURE."

This new work contains over seventy pages of designs for country dwellings, together with plans and estimates of cost—the latter according to New York prices. Allowing for the difference in price of material, a fair estimate may be made for which the design selected could be built on this coast. Price, 50 cents.

"PECK BROS. ILLUSTRATED CATALOGUE AND PRICE LIST."

This is the finest catalogue we have yet received in the way of presenting a complete list of all the articles used by the plumber and gasfitter. It also contains all the new designs in brass goods, and a very complete representation in the line of copper, iron, and earthen ware, water-closets, traps, etc., etc. It contains about 600 pages, beautifully and artistically illustrated, with the price of each article in all the different sizes. It is issued by Peck Bros. and Co., of New York, R. W. Snow being the general agent on this coast.

Our Exchanges.

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

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

CALIFORNIA ARCHITECT AND BUILDING NEWS. Terms, \$2.00 per annum. With *American Architect* (\$6.00), \$7.00 per annum. With *Builder and Wood Worker* (\$1.00), \$2.50 per annum. With *American Artisan* (\$1.00), \$2.50 per annum. With *Brick, Tile, and Metal Review* (\$1.00), \$2.50 per annum. With *Building* (\$1.00), \$2.50 per annum. With Special Edition of *Building* (\$5.00), \$5.75 per annum. With *Scientific American* (\$3.20), \$4.50 per annum. With *Decorator and Furnisher* (\$4.00), \$5.00 per annum. With *American Machinist* (\$2.50), \$4.00 per annum. With *Cincinnati Building Review* (\$1.00), \$2.50 per annum.

THEOPHRASTUS, a Greek writer who flourished in the fourth century before the Christian era, in a work entitled the "Book on Stones," describes an earthly substance which would kindle and burn, and which was used by smiths. There can be no doubt that he refers to coal, and that this is the earliest passage in which that substance is expressed or mentioned.

A man's labor, well applied, is always amply sufficient to provide him during his life with all things needful to him, and not only with those, but with many pleasant objects of luxury, and yet, further, to procure him large intervals of healthy rest and serviceable leisure.

Steel Sinks.

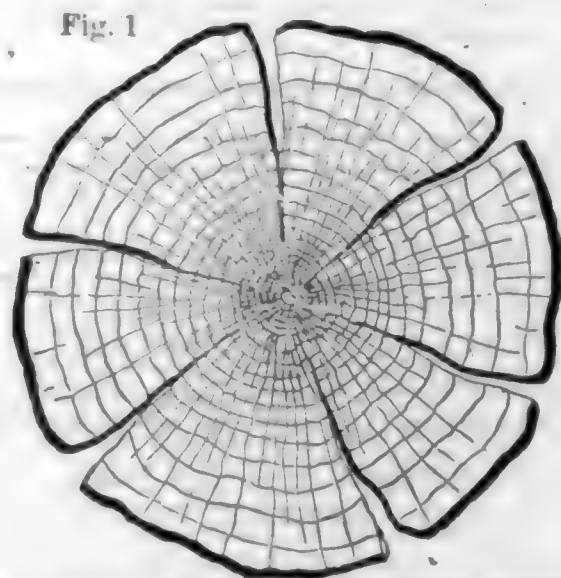
EXAMINE the advertisement on page 8 of this issue in regard to these valuable adjuncts to the conveniences of the kitchen.

How Lumber Shrinks.

A STORY is told by the "Arkansaw Traveler," about the manner in which lumber was "hauled" across the mountains down in his country. "Why!" said he, "they saw it green, leave it in the sun, and off it starts. I have seen a board turn three summersaults in less than a minute, and get to the other side of the mountain before sunset." "What," asked a by-stander, "would be the result if it was attacked in its wild career by a shower of rain, would it come back?" Here was a poser, but the traveler was equal to the occasion and replied: "No, it would turn on the other side and continue its course."

The subject of the contraction of lumber is an interesting one to wood-workers, and the doors and shutters in many of our mushroom cities are said to come off the hinges in retaliation of the persistent disobedience of the natural law of shrinkage. An examination of the end of an oak or beech tree will show the arrangement of its structure. It consists of a mass of longitudinal fibrous tubes, arranged in irregular circles, that are bound together by means of radial strings or shoots, which have been variously named; they are the "silver grains" of the carpenter, or the "medullary rays" of the botanist, and are in reality the same as end wood, and have to be considered as such, just as much as the longitudinal woody fiber, in order to understand its action. From this it will be seen that the lateral contraction or collapsing of the longitudinal, porous, or tubular part of the structure cannot take place without first crushing the medullary rays, hence the effect of the shrinking finds relief by splitting in another direction, namely in radial lines from the center, parallel with the medullary rays, thereby enabling the tree to maintain its full diameter, as shown in Fig. 1.

Fig. 1

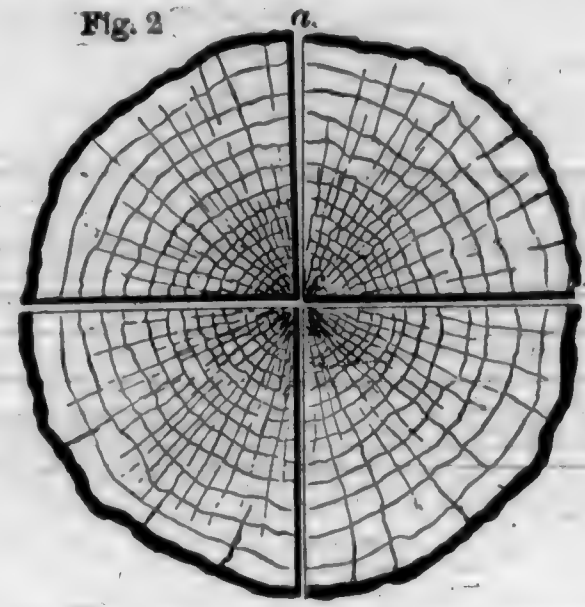


If the entire tubular fiber composing the tree were to contract bodily, then the medullary rays would of necessity have to be crushed in the radial direction to enable it to take place, and the timber would thus be as much injured in proportion as would be the case in crushing the wood in the longitudinal direction. If such an oak or beech tree is cut into four quarters, by passing the saw twice through

* We are indebted to the editor of the *Lumber World*, published in Buffalo, New York, for this article, as well as the cuts illustrating the same. It is with pleasure that we acknowledge the professional courtesy extended. Trade Journals in every portion of the country, are increasing in influence, and the one from which we produce the above should be found in every Mechanic's possession. The knowledge gained will far over-balance the small amount of money required for a year's subscription.

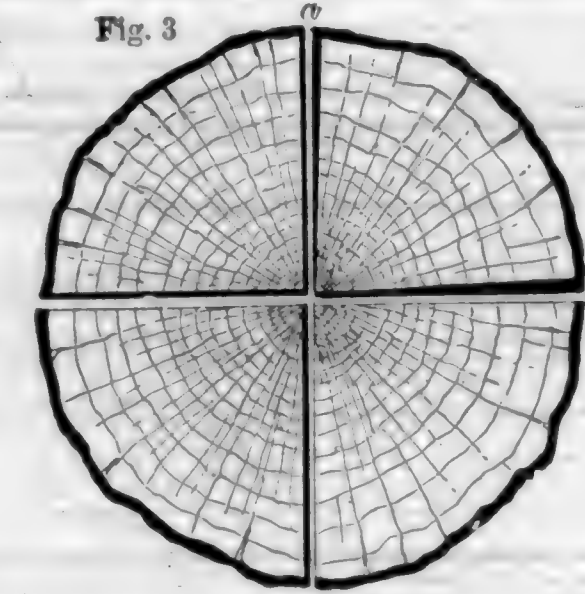
the center at right angles, before the contracting and splitting have commenced, the lines a , c , and e , in Fig. 2 would be of the same

Fig. 2



length, and at right angles to each other, or, in the technical language of the workshop, they would be square, but, after being stored in a dry place, say for a year, it would then be seen that a great change had taken place both in the form and in some of the dimensions; the lines a , c , e would be the same length as before, but it would have contracted from a to b very considerably, and the two lines c and e would not be at right angles to

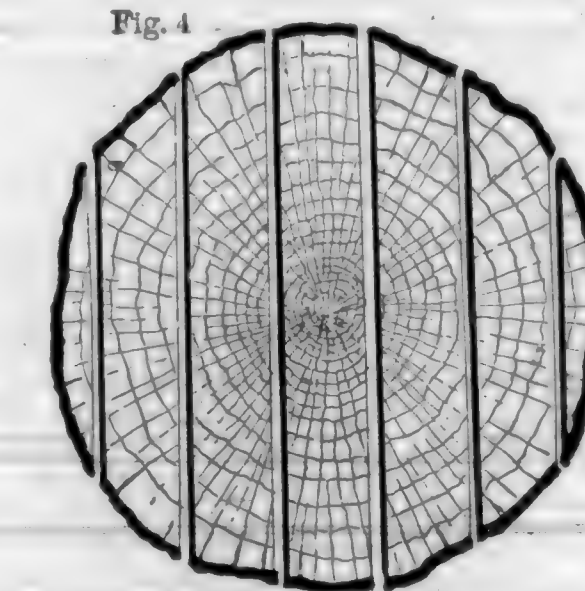
Fig. 3



each other by the portion here shown in Fig. 3. The medullary rays are thus brought closer by the collapsing of the vertical fiber.

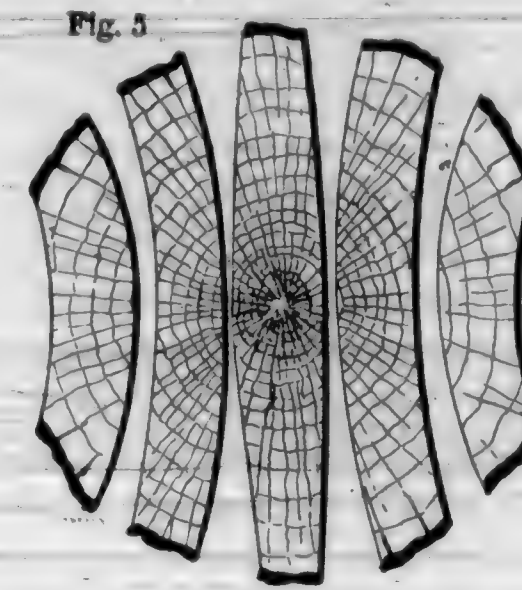
But supposing that six parallel saw cuts are passed through the tree so as to form it into seven planks, as shown in Fig. 4, let us see

Fig. 4



what would be the behavior of the several planks. Take the center plank first. After due seasoning and contracting, it would then be found that the middle of the board would still retain the original thickness, from the resistance of the medullary rays, while it would be gradually reduced in thickness toward the edges for want of support, and the entire breadth of the plank would be the same as it was at first, for the foregoing reasons, and as shown in Fig. 5. Then taking the planks at

Fig. 5



each side of the center, by the same law their change and behavior would be quite different; they would still retain their original thickness at the center, but would be a little reduced on each edge throughout, but the side next to the heart of the tree would be pulled round or partly cylindrical, while the outside would be the reverse, or hollow, and the plank would be considerably narrower throughout its entire length, more especially on the face of the hollow side, all due to the want of support. Selecting the next two planks, they would be found to have lost none of their thickness at the center, and very little of their breadth at the edges, but very much of their thickness at the edges, and would be curved round on the heart side, and made hollow on the outside.

Supposing some of these planks to be cut up into squares when in the green state, the shape that these squares would assume, after a period of seasoning, would entirely depend on the part of the tree to which they belonged; the greatest alteration would be parallel with the medullary rays. Thus if the square was near the outside the effect would be as shown in Fig. 6, namely, to contract in the direction

Fig. 6

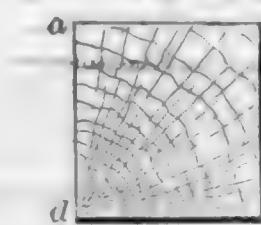
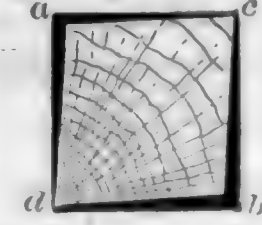
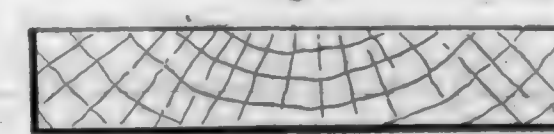


Fig. 7



from a to b , and after a year or two it would be thus, as seen in Fig. 7, the distance between c and a being nearly the same as they were before; but the other two are brought by the amount of their contraction closer together. By understanding this natural law, it is comparatively easy to know the future behavior of a board or plank by carefully examining the end of the wood, in order to ascertain the part of the log from which it has been cut, as the angle of the ring growths and the medullary rays will show as in Fig. 8.

Fig. 8



A plank that has it will evidently show to have been cut from the outside, and for many years it will gradually shrink all to the breadth. While the next plank, shown in Fig. 9, clearly points close to the center or heart of

Fig. 9



the tree, where it will not shrink to the breadth, but to the varying thickness with the full dimensions in the middle, but tapering to the edges, and the planks on the right and left will give a mean, but with the center sides curved round, and the outside still more hollow. These remarks apply more especially to the stronger exogenous woods, such as beech, oak, and the stronger firs. The softer woods, such as yellow pine, are governed by the same law, but in virtue of their softness another law comes into force, which to some degree affects their behavior, as the contracting power of the tubular wood has sufficient strength to crush the softer medullary rays to some extent, and hence the primary law is so far modified. But even with the softer woods, such as are commonly used in the construction of houses, if the law is carefully obeyed, the greater part of the shrinking, which we are all too familiar with, would be obviated, as the following anecdote will serve to show: It was resolved to build four houses, all of the best class, but one of the four to be pre-eminently good, as the future residence of the proprietor. The timber was purchased for the entire lot, and the best portions were selected for house No. 1, but by one who did not know the law, and to make certain of success this portion of the wood had an extra twelve months' seasoning after it was cut up. The remainder of the wood was then handed over to a contractor for the other three houses, who had an intelligent young foreman, who knew the structure of wood, as well as how to obey the law, and who, therefore, had the wood for the three houses cut up in accordance therewith. The fourth house was built the following year by another man; but long before ten years had passed, to the great surprise and annoyance of the proprietor, it was found that his extra good house had gone in the usual manner, while the other three houses were without a shrinkage from top to bottom.

A similar want of correct knowledge of the natural figure and properties of the structure of wood, such as the oak, is constantly shown by the imperfect painting to resemble that wood, as exhibited on doors and shutters of many houses. If we cannot afford to have genuine wainscot doors, as in France and other countries, but yet desire to have an imitation, it should surely be worth the trouble to have a block cut from the quarter of an oak tree, and to have each of its six sides planed and polished, in order to make plain their several features. The house painter would then see what nature really is, and thus save us from the ridicule of other nations, when we mix up "silver grains" and all the other natural features on one side of a board or panel. This is a subject that should interest all wood-workers and builders, and a great deal of attention should be given to the structure of the various woods. It is almost as nec-

essary for a wood-worker to understand the anatomy of his tree, so to speak, as a surgeon to understand human anatomy before he commences to operate. The importance of the subject is therefore obvious.—*The Lumber World*.

PATENTS AND INVENTIONS.
List of U. S. Patents for Pacific Coast Inventors.

From the official list of U. S. Patents in DEWEY & CO'S SCIENTIFIC PRESS PATENT AGENCY, 252 Market St., S. F.

FOR WEEK ENDING FEBRUARY 5, 1884.

292,987.—SELF SHIPPING BELT PULLEY—H. P. Christie, S. F.

292,992.—ALARM SIGNAL FOR HOT JOURNALS—Cornelius & Turner, Turner, Oregon.

292,900.—VEHICLE GEAR—W. A. Dawson, Stony Point, Cal.

292,910.—CAR COUPLING—J. M. Harper, Colfax, W. T.

292,932.—STEP LADDER—E. Markwick, Pinkney, Cal.

293,069.—HYPOTHEUSE CALCULATOR—Daniel Paten, Calistoga, Cal.

293,087.—HORSE POWER—A. Robinson, Benicia, Cal.

293,093.—SCAFF RETAINER—J. Sandilands, S. F.

293,104.—SPADING MACHINE—D. F. Spangler, Santa Ana, Cal.

293,130.—SAW—Geo. W. Wills, Portland, Oregon.

293,208.—GRASS COLLECTOR FOR LAWN MOWERS—J. H. Wyma, Oakland, Cal.

FOR WEEK ENDING FEBRUARY 19, 1884.

293,931.—TABLE FOR MANUFACTURE OF CANDY—C. A. Alisky, Portland, Oregon.

293,841.—FRUIT PITTING MACHINE—Chas. Allison, S. F.

293,932.—DREDGER—H. B. Angell, S. F.

293,627.—FIRE ESCAPE—S. D. Butler, Marshfield, Oregon.

293,853.—PORTABLE RAILWAY—John Dolbeer, S. F.

293,955.—WOOD PRESERVING COMPOUND—H. C. Dorr, S. F.

293,899.—CAR COUPLING—John Martin, Knights Ferry, Cal.

293,667.—SURVEYORS' TRANSIT—Thomas L. Nixon, New Tacoma, W. T.

293,984.—ADJUSTABLE WRENCH—A. B. Smith, S. F.

293,832.—REFRIGERATING CAR AND APPARATUS FOR SHIPPING MEAT—H. S. Widman, S. F.

3,291.—LABEL—Wells & Church, S. F.

NOTE.—Copies of U. S. and Foreign Patents furnished by DEWEY & CO., in the shortest time possible (by telegraph or otherwise) at the lowest rates. All patent business for Pacific Coast Inventors transacted with perfect security and in the shortest possible time.

Brick Fronts.

THE overwhelming desire for a "neat job" has done mischief in brick work. A pressed brick wall is a monotonous thing when brick is used alone. It shows only mechanical precision and exactness, and these qualities become very tiresome when they are exhibited for their own sake and not as means to an end. A slight unevenness in texture and in color helps the look of a wall, and it is the aim of the maker of pressed brick and of the builder to avoid the slightest unevenness. The best-looking brick walls, except in the perverted eyes of bricklayers, are those in which the unevenness appears, that is to say, those which are built, not of pressed bricks, but of common bricks, chosen for color.—*New York Record*.

Bound Volumes of this Journal, \$2.50.

The "California Architect" is now in the Sixth Year of Publication.

Competition Designs!
ONE HUNDRED AND FIFTY DOLLARS
Cash Premiums!FOURTH PRIZE,
Box of Drawing Instruments.

In order to promote a general desire to excel among Architects and Draughtsmen in the preparation of drawings for this Journal we have concluded to offer the following premiums for the best 4 designs of a Country Dwelling, the successful plans to be published in the CALIFORNIA ARCHITECT AND BUILDING NEWS.

1st, a Cash Prize of \$60.00

2d, " " 50.00

3d, " " 40.00

4th, Box of Drawing Instruments.

Notice to Competitors.

All plans to be in the office of the CALIFORNIA ARCHITECT ON OR BEFORE the 1st of May, 1884.

All plans not accepted will be subject to the order of the owner, and will be returned upon receipt of the necessary postage.

We claim the right to reproduce in this journal all drawings of which honorable mention is made, and yet not entitled to a prize.

A *non de plume* to be used on all drawings; a letter to accompany the latter, addressed with the name used, containing also the real name and address of the contestant. This is done solely that the person's name and residence will not be known until the committee have made the awards.

A scale of $\frac{1}{4}$ inch to the foot to be used.

Detailed estimate of cost to accompany the drawings. QUANTITY and PRICE of each material used to be given, so that allowance can be made for difference of price between the various sections of the East and this Coast.

Drawings are to show front, rear, and side elevations, with plans of the different floors.

The value of the house when finished to be ABOUT FIVE THOUSAND DOLLARS.

This competition is open to Architects in every portion of the United States.

Drawings to be made on card or bristol-board; to be line shaded; no color but JET BLACK to be used.

All competitors will receive one year's subscription to this journal FREE, that they may see the various plans adopted.

The merits of the various designs will be decided by a committee appointed by the San Francisco Chapter of Architects.

All inquiries in regard to the above will be answered by addressing a letter to the office of this journal, 240 Montgomery St., San Francisco. WOLFE & SON, Editors and Publishers.

Harold D. Mitchell.

This gentleman may be justly termed a California educated architect; for, although the principles of the art were first studied in England, it was in this city that he applied them to the practical workings of the profession.

Mr. Mitchell was born in the town of Manchester, England, on the seventh day of April 1854. He early developed a taste for art, and, after passing through a collegiate course, he entered the ROYAL INSTITUTE OF ART in his native city. In this school his ideas and conceptions were moulded in a form in keeping with the high standard adopted by the Faculty.

His aspirations leading him to secure a more extended knowledge of architecture, as practised in different parts of this world, in 1870 he embarked for San Francisco. Shortly after his arrival in this city, he secured an engagement in the offices of Messrs. Wright & Sanders, and for eight years remained with that firm.

Having a strong desire to build up a business on his own account, in 1878 he severed his connection with the firm in which he had so long been engaged, and commenced business on his own account. His personal popularity, aided by a well-earned skill as a designer, enabled him at once to start a lucrative practice, and his success was commensurate with his ability.

Mr. Mitchell has designed many prominent buildings, among which are St. Luke's Church, Court House at Merced, the warehouse of Falkner, Bell & Co., the large buildings used by the Central Gaslight Co., etc.

Mr. Mitchell's business has greatly increased since the beginning of the year, and he has been compelled to seek larger quarters. His offices are now in the Safe Deposit Building, and are fitted up in artistic style. He is a member of the San Francisco Chapter of Architects.

Window Ventilation.

NO TIME could be better than the present for beginning the practice of house ventilation by the window, which is still, in the majority of houses, the readiest and the safest means of obtaining a regular and constant supply of fresh air. The practice, begun in warm weather, may be carried on with proper care through autumn and winter. The con-

stantly accumulating impurities derived from breath, from perspiration, from excreta of other kinds collected in sleeping-rooms, from the use of gas or lamplight, and too often, even now, from suction of sewerage gas from waste pipes by the heat of house fires, etc., render it as necessary for health as for comfort that these should have free egress, and that they should be substituted by the pure outer air. Fresh air from without may very easily be had without draught, and without risk of cold even to delicate persons if a few simple rules be observed. The cold air of winter, of course, enters with greater force and in greater proportional volume than the more equal summer air into a warm room.



HAROLD D. MITCHELL.

The aperture of ingress must be correspondingly diminished. Air from a window is preferable to that from an open inner door, no matter how roomy the house, from its more reliable purity. If the window be the inlet, the fire, fire-place, or it may be the door of a room in summer acting as an outlet, it may be opened from the top, the extent being regulated according to the outer temperature. There is then a direct inward current at the upper part, which follows the roof of the room, thus mingling with any heated waste products which require to be removed, and an interrupted current at the middle, the previous line of junction of the upper and lower sashes; both are broken and diffused by the blinds or curtains. Venetians for this pur-

pose should be turned upward. A window should never be made to ventilate by opening it from below, unless the open lower space be filled up in some way and ventilation be carried on at the middle where the sashes join—otherwise draughts are unavoidable. The ventilating pane is a hardly less simple and equally efficient and safe method with either of the others. Window ventilation is especially useful in bedrooms, and its efficiency or otherwise cannot fail to affect the vital powers of the occupant, who, in his slumbers, must trust to other energies than his own for the removal of those impurities and morbid germs which his every breath multiplies around him.

Removing Spots From Gilt Frames.

GILT frames are liable to become spotted and look bad, while it is, as a rule, difficult to remove the spots. Rubbing does not answer, for the stain sticks tighter than the gilding itself, and washing is liable to loosen the gilt if put on with gum or dextrine.

The *Papier Zeitung* recommends the following method of renovating gilt frames: It consists in applying with a camel's-hair pencil a gum solution, to which has been added gold bronze having the color of the frame. Before mixing with the gum water the bronze must be washed with water until it runs off perfectly clear. If one application does not suffice, it may be repeated until the spot entirely disappears, but of course one coat must be dry before the next is applied.

Spots treated in this way look very well at first, but it will not last, for it is not able to resist the moisture

in the air, unless it is specially prepared. For this purpose an ordinary bristle brush is rubbed with a piece of yellow wax until it is somewhat sticky, then it is passed very lightly over the spot several times as when dusting it. This gives it a very thin coat of wax that hardens in two or three days; in the meantime it must be protected against dust.

THE largest saw-mill at Port Blakely, W. T., was put to a test of its capacity one day a week or two ago. The whole cut of the day was 283,000 feet, the largest previous day's work being 224,000 feet.

A. A. Cook.

AS STATED in previous issues, it is not our intention to present a likeness of merely those who belong to the Chapter. We propose to give the history of all those on the Pacific Coast that are recognized as members of the architectural profession. Many have written to us, expressing their good-will to our Chapter, and regretting that distance prevented them from attending Chapter meetings. To all such we would say, You can help, no matter how great the distance, by your pecuniary assistance, as well as forwarding papers to be read, submitting sketches, etc., and the Chapter will gladly welcome those to membership whose character is of a high standing, and whose architectural ability is recognized by his fellow-brethren.

A. A. Cook, the subject of this sketch, is a resident of the city of Sacramento. He was born in Chenango County, New York, on the 20th day of April, 1832. In May of the same year, his parents moved to Albany, in which place he received his first lessons in the practical workings of the carpenters trade. In 1848 he was apprenticed to the carpenters and joiners trade.

It may be interesting to our young mechanics of to-day to know the value of apprentices' wages forty years ago. The first year Mr. Cook received \$50.00, the second year \$75.00, and the third year \$100. In those days, however, a three-years' apprenticeship, if the student was faithful, enabled him, at the expiration of the time, to readily assume the duties of an "old hand."

We find the result, in the present case, of the value gained by the appropriation of every minute of time during youthful days. In winter months, a prominent architect gave Mr. Cook instruction in practical geometry and architectural drawing, and, also, thorough his influence, enabled Mr. Cook to gain access to libraries containing works on architecture and carpentry. In those days books treating on those subjects were very rare. The works thus obtained were faithfully studied, and their principles fixed in his mind.

He also showed an aptitude for the art and science of hand railing, and such was his proficiency that, while still under twenty years of age, we find him giving instructions to a class of young mechanics.

In 1851 Mr. Cook moved to Kalamazoo, Mich. For nine years he was one of the prominent builders of that place; every spare

moment was given to the study of the profession which he had selected for his future business. After visiting several places, we find him located in Council Bluffs. In this town he began strictly the architectural profession, and several prominent buildings were designed by him, including the largest hotel, at that time, west of Chicago.

His health failing about this time, and, hearing of the great salubrity of the climate in California, he started for this coast, and arrived in Sacramento in 1869. The benefits derived from the change soon proved that the journey was a wise one, and, in a short time, Mr. Cook was fully restored to a robust state of health.



A. A. COOK.

Although residing in Sacramento, Mr. Cook's practice extends over a great portion of the northern part of the State. Nevada also can show many buildings erected under his superintendence.

Mr. Cook possesses one of the finest and most complete architectural libraries to be found in any private office on this coast. He is always ready and willing to give instruction to the younger members of the profession, and students can always be found in his office, learning the principles of the science of architecture.

EXPERIMENTS have shown that a person speaking in the open air can be heard about equally well at a distance of 100 feet in front, 75 feet on each side, and 30 feet behind.

The Lumber Trade—Order Your Lumber.

DEALERS report "trade entirely satisfactory." But verbal statements in this connection are not necessary. The inaudible voice of hundreds of buildings in progress of erection, and the excavations being made in all parts of the city, proclaim the fact that materials are in demand in large quantities, and that those who manufacture and sell those suitable for building purposes, must be enjoying a corresponding degree of business activity. We say yet to those contemplating the erection of buildings requiring more than ordinary sizes and lengths of timbers, to pass in their orders as soon as practically possible, as

extra dimensioned timbers cannot, as a rule, be found in our lumber yards in stock; consequently, as all such extra lumber will have to be cut to order, time may be saved by ordering early, as delays frequently occur in the transportation from mill to wharf—the winds and weather being very material factors in that connection. We have sometimes had orders filled within three weeks, under most fortuitous conditions, and in other cases, and, as a rule, from four to ten weeks. If a wharf at the mill should break down, as sometimes they do, and mix up ordered and stock lots of lumber, or if the vessel happens to meet a "stress of weather," or is beached, or runs on a reef, or bar, etc., more or less time is lost, and sometimes considerably more. Hence it is wise to order early, and order all that will be wanted, for if "everything is left to the last moment," it places matters in such a shape as to make them unpleasant; for when an order is sent from this city by a lumber dealer, he can do no more than

say: "Hurry up," "expedite," etc., while the doing part is in other hands, and often the man at this end is helpless to remedy delays, at which excited and perhaps angered owners, architects, and contractors complain, and sometimes say naughty words.

Beautiful Finishes.

HARDWOOD finishes are the most lasting and beautiful that can be applied to a building. In California, the great expense attending their use debars many people from placing the same in their homes. Redwood, when properly prepared, and covered with Wheeler's Patent Wood Filler, cannot be told from the genuine hardwoods, except by an expert. This preparation should be used by every one who desires a lasting and beautiful finish.

Brooks As Sewers.

WHEN a natural watercourse traverses a town, and its banks become built upon, the easiest way of getting rid of filth and house wastes is to throw them into the stream. Every man's instinctive impulse is to get rid of what annoys him, and not to mind how his neighbor will be affected. After a while, when the watercourse becomes sufficiently nasty, the people come to a realizing sense of what they have brought upon themselves, and then they try to devise a remedy. In this they begin usually at the wrong end. They look on the stream as creating the nuisance, and don't consider that it is their abuse of the stream that is the source of the trouble. So they go to work and cover the stream up, and call it a sewer. What is the result? Simply that the stench of the foul matter in the old channel is bottled up somewhat, to be vented through every manhole, every inlet, and every house drain, and probably do more real injury than when the rotting filth was exposed to the air and the sun, and diffused its aroma through the whole atmosphere.

The channel of a small natural stream through a town or village should never be converted into a sewer for house wastes. This will strike a good many people as an odd doctrine. The functions of a natural stream and of a sewer are so diverse that one cannot be made to do duty for the other.

A natural watercourse serves for the drainage of the land all along its course. Its banks cannot be made water-tight without obstructing the natural progress of the water in the soil and backing it up and retaining it where it ought not to be retained. A sewer, on the other hand, is intended to carry off foul matters which must be gotten rid of as quickly as possible, and the channel for conveying them must be absolutely impervious, so that nothing can soak through it to the soil. As the level of the water in the soil rises and falls with the season and the amount of rain, an open-jointed or pervious channel would sometimes admit water from the soil and sometimes permit fluids flowing in the channel above the level of the ground water to flow out, and thus pollute the soil and the air in the soil.

Again, a natural stream draining a considerable territory is subject to great variations in its volume. A channel to carry its extreme discharge in floods must be many times larger than can ever be necessary for the carriage of the greatest amount of sewerage that can be brought to it. A large channel is not suited to the rapid removal of a small flow of filthy fluids, and, moreover, costs a great deal more than a sewer of the proper size. Even if the large channel for a fluctuating stream is built through a village, the sewerage from the houses should not be turned into it, unless the minimum volume of the natural flow in the driest seasons is large enough to keep the channel thoroughly scoured. There are a good many small towns which have for years gotten along

without sewers, and have arched over natural watercourses, running through them, but are now impelled by the "sanitary revival" to construct sewers for removing household wastes. The first impulse is to utilize the covered streams to save the expense of constructing a few hundred feet of sewer. They should be very careful how they proceed. It is better to spend a little more money and be safe than to economize in the first cost and spend ten times the saving in doctors' fees and undertakers' bills.—*Sanitary Engineer.*

Educating Plumbers.

TRULY this is an age of progress, and in more ways than one. Take, for example, the question of education. Not very many years ago even good, skilled artisans could not make out a time-sheet and give a correct return of work done and materials used, but had to dictate to a clerk or other responsible person. This did not matter where men were working in communities, as in those cases there was always some one in charge to keep a proper record; but where they were working singly, it may seem far-fetched to say, but it really amounted to one man doing the work, and another had to keep an account of what was done; yet these men, perhaps, were first-class mechanics as far as workmanship goes. But the present generation have advanced considerably in this matter, thanks to the interest taken and the schools established, and now there are very few men who have not a fair knowledge of the three R's—that is, reading, 'riting, and 'rithmetic. Now, with this knowledge, the average working-man has grown to be more intelligent, it is true, but it is an open question if he is a better tradesman; and, as a proof of this, do we not continually refer to what was done ages ago as works of art, and also of construction, and hold up for admiration the work of our forefathers? But for all that the working-man is still the working-man; it is still the muscle that is required to do that which machinery fails to accomplish, so that in reality he is a piece of machinery. He has brains, it is true, but they only work in certain grooves in which they have always traveled. Ask a plumber why he warms the piece of lead that he may be working upon; he will answer, "To soften it, to be sure, and make it easier to work;" but ask him why heat softens the lead, and how many could answer? Again, ask him why he greases the prepared ends of a pipe before making a joint, and he will answer, "To make the solder stick;" there are exceptions, of course, but from the average tradesman no better answer would be given.

This age has always been referred to as one of progress, and one of the innovations of the age is "technical education." About this there is a diversity of opinion; some look upon it as an actual necessity, while others think it of no use or advantage. In using the term "technical education," it is meant in this case in the popular sense, in which a practi-

cal trade and all its cognate science subjects are taught together.

Germany, France, and Switzerland have for some years past taught various sciences in the same schools and concurrent with the ordinary education of youth, but it must be remembered that those countries depend mostly upon the productions of their industrial classes, so that "the more highly they are educated, the better for the country." But England, having such enormous natural resources, has not made the same progress in technical education as the countries mentioned, but the want of it has been felt, and efforts are now being made to make this movement more popular.—*James Mullens, in Sanitary Engineer.*

Care of Patterns.

ONE of the largest expenses of the producers of cast metal articles from toys to machinery is that of patterns. These must be made of the finest stock and by the most skilled workmen. All patterns are made originally of wood, which in the case of light articles are exchanged for duplicates in metal at once; just as the wood block for engraving is exchanged for the stereotype or the electrotype. But large patterns, as for beds for lathes, planers, and other heavy machines, and many other articles, must necessarily be of wood in permanence. How to keep these patterns in good condition when not in constant use has been a puzzle to many, but moisture proof as well as fire proof buildings have filled that demand. A greater annoyance and anxiety is caused by the difficulty of classification and arrangement, so that any particular pattern may be found at once. Where the patterns are limited to a certain stock of reproduced machines, it is easy enough to arrange the patterns in suits each part of a completed machine to be kept in one compartment. But where the demands on a foundry are of a miscellaneous character, it is impossible to keep a referable list with ordinary classification.

A shrewd manufacturer has overcome this difficulty by adopting the alphabetical order of the dictionary, a name being given to each pattern and piece when made, and entered upon a kept dictionary in the office, another, a duplicate, being kept in the pattern house. Illustrations might be given to show how the thing works, but this is not necessary. It is sufficient to say that under a single letter, G, there are no less than 200 entries, but all so distinct and discriminated that no difficulty is found in locating them in their alphabetical departments, or in charging them to each handler, as pattern room, foundry, or designing (draughting) room. By the addition of numerals to the alphabetical plan it is easily seen that any number of convenient subdivisions may be made.—*Scientific American.*

Science of Carpentry Made Easy, Price, \$5.00.

Detail Cottage and Constructive Architecture, Price \$10.00.

MASONS' and BUILDERS' EXCHANGE OF SAN FRANCISCO, Room 11, 314 Montgomery St.

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

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O'CONNELL & LEWIS.	72

Brick Wall Disfigurement.

THE extensive use of red bricks which has been made of late years for houses and public building has caused a good deal of attention to be directed to a curious disfigurement to which such structures are liable, in the form of a kind of white mould which is apt to creep over their surfaces. The best of buildings are quite as subject to this detraction from their appearance as the worst, the new Technical College at South Kensington, for instance, being just now covered in places with this objectionable kind of eruption, which is not very generally understood, and for which no remedy has yet been found, we believe, except time. An American paper publishes one or two scientific opinions on the matter, one being that of Dr. Leidy, president of the Academy of Natural Sciences. According to this authority, the white efflorescence is simply ordinary Epsom salts, or sulphate of magnesia, and the production of it on brick surfaces must be regarded as evidence of the presence of sulphurous acid in the air, the result of coal-burning. There is magnesia in the mortar with which the walls are built, and there is sulphurous acid in the air, and in the presence of moisture a chemical combination takes place, the result being sulphate of magnesia. This dissolves in the rain and runs down over the bricks, and evaporation leaves the white deposit. Another chemist agrees that this is the way in which the efflorescence is produced, but thinks that it is potash with which the sulphurous acid combines, and that the white is sulphate of potash, while another authority considers it to be sulphate of lime. All agree, however, that it is the sulphurous acid in the air which causes this disfigurement, and this is really the important aspect of the matter. If this is the effect of atmospheric impurity on brick buildings, it seems reasonable to suppose that it must be somewhat serious in its influence on human lungs.—*Building Times.*

Some of Ruskin's Maxims.

WORK is only done well when it is done with a will; and no man has a thoroughly sound will unless he knows he is doing what he should, and is in his place.

It may be proved with much certainty that God intends no man to live in this world without working; but it seems to me no less evident that he intends every man to be happy in his work.

It is no man's business whether he has genius or not; work he must, whatever he is, but quietly and steadily; and the natural and enforced results of such work will be always the things that God meant him to do, and will be his best.

No book is worth anything which is not worth *much*; nor is it serviceable until it has been read, and re-read, and loved, and loved again, and marked, so that you can refer to the passages you want in it, as a soldier can seize the weapon he needs in an armory.

Building Operations in Yolo County.

ALREADY the sound of the saw and hammer is beginning to be heard—and right merrily, too—in many of the interior counties. Messrs. Gilbert & Son, one of the principal contracting firms of Woodland, have kindly forwarded us a complete list of building operations in their neighborhood. No notice is taken of improvements less in value than \$1,000. The number of these would fill the entire pages of this Journal. We intend—from time to time—to give full reports from the principal sections of the State.

Woodland and Vicinity—Main and College Avenue. Additions to three-story brick. O. W. M. Oward; A. W. H. Hamilton; C. W. H. Curson; cost \$4,500. Third Street and Oak Avenue. One-story frame. O. G. Lambert; B. Glenn & White; cost \$1,200. Main Street. One-story frame. O. and B. G. K. Glenn; cost \$2,650. Elm Street. One-story frame. O. H. Shuluck; B. Glenn & White; cost \$1,100. Main Street, Odd Fellow's Hall, alterations and improvements. C. G. W. Myrick; cost \$1,500. Sprague Avenue. One-story frame. O. and B. Mr. Irwin; cost \$2,200. South Fifth. Three-story frame. O. J. T. Wallin; B. Gilbert & Son; cost \$8,500. North Street. One-story frame. O. and B. Mr. Anderson; cost \$1,300. College Avenue. One-story frame. O. John Jacobs; B. Porter & Sponage; \$1,500. College Avenue. One-story frame. O. and B. Broderick Bros; cost \$2,800.

West Woodland—One-story frame. O. M. Antone; B. A. Pool; cost \$1,200. Third Street. One-story frame. O. and B. M. Wilson; cost \$1,000. East Woodland—One-story frame. O. Armstrong & Aige; cost (days work) \$1,100. Second Street. One-story frame. O. Dr. A. Aken; B. J. A. Blake; cost \$1,200. Capay Valley—Two-story frame. O. A. Winters; C. W. H. Winne; cost \$3,500. Capay Valley House and stable. O. and B. E. Thomas; cost \$1,100. Davisville—Two-story frame hotel. O. J. T. Lillard; days work, \$4,000. Clayton Avenue. One-story frame. O. G. Harris; C. Pool & Sears; cost \$1,000.

PRACTICAL CARPENTRY.

PRICE \$1.00.

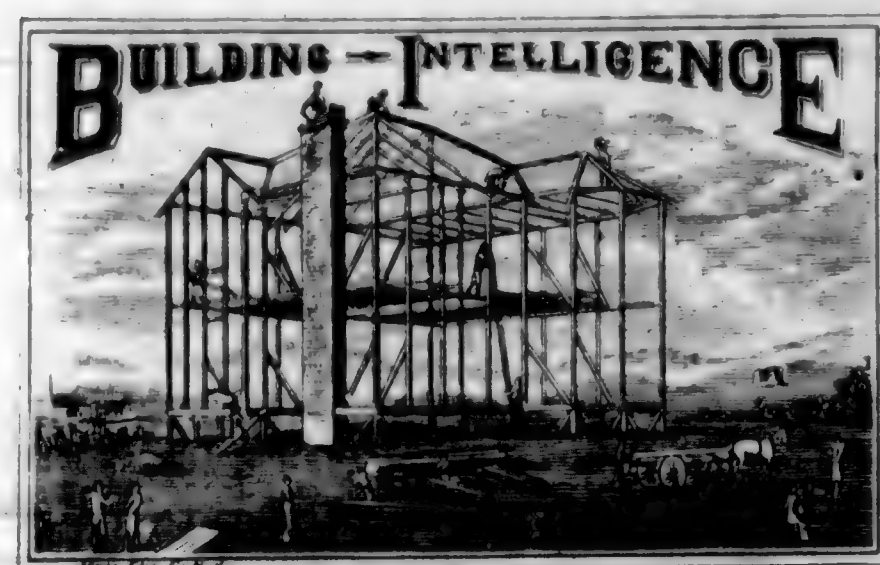
A guide to the correct working and laying out of all kinds of Carpenters' and Joiners' work. Solutions of the various problems in Hip roofs, Gothic work, Centering, Splayed work, Joists, Hinging, Dovetailing, Mitring, Timber Splicing, Hoppers, Skylights, Raking mouldings, etc. This work should be in the hands of every mechanic. One of the features to which this book will undoubtedly owe its success, is the absence of those numerous formulas which serve only to confuse the ideas of so many workmen. Everything is written in a clear, concise, and practical manner, and its utility is brought within the grasp of those workmen who have not had the benefit of a school education. We will send the above work to any address upon receipt of \$1.00.

NEW EXCHANGES.

Wood and Iron. A new journal, devoted to those interests represented by its name. Its typographical appearance is very fine, and it promises in its editorial department to equal many of its competitors that are now old in the field of journalistic enterprise. Published by S. L. Everett. \$2.00 per year.

The Painter. An illustrated monthly devoted to painting and decorating, now in its third year. Typographical excellence, unusually neat and careful. It should be in the hands of every painter. Published at Cleveland, Ohio. \$1.00 per year.

Every architect in the State should insert his professional card in our columns, and thereby prove that he is endeavoring to assist in building up an architectural journal that will take rank with any printed. The charge is small. We want the influence your names will give, and we promise to spare no efforts in making the "California Architect" fully represent the views of a majority of the Profession on this Coast.



SAN FRANCISCO.

California, near Larkin. Two-story frame. O. W. Coe. A. Wolfe & Son. C. Klatt. \$4,500.

Sutter, near Stockton. Additions. O. F. A. O. D. A. Wolfe & Son. C. Hatfield & McIae. \$1,000.

Church, near Twenty-first. Two-story frame. O. and B. C. Kleebauer. \$3,000.

Church, near Twenty-second. One-story frame. O. T. Shields. C. J. P. Shephard. \$2,500.

Twenty-first, near Chattanooga. One-story frame. O. and B. F. Buckley. \$1,500.

Hoff Avenue, near Seventeenth. Six French flats. O. and B. W. Fletcher. \$10,000.

Mission, near Ninth. Two-story and base frame. O. Swedish Evangelical Lutheran Church. A. B. E. Henriksen. Day's work. \$10,000.

Battery, near Pacific. Two-story and basement brick. O. J. Musco. A. W. H. Bayless. C. G. Richardson, R. W. \$25,000.

Twentieth, near Noe. Two-story frame. O. J. Scheerer. Day's work. \$7,000.

Second Avenue, near Sixteenth. Two-story and basement frame. O. Mr. S. Kelly. C. W. F. Muller. \$3,400.

Michigan, cor. Sierra. One-story frame. O. Toomay & Farrell. Day's work. \$1,000.

Sixteenth Avenue, near Railroad Avenue. One-story frame. O. F. Bonerberg. Day's work. \$1,000.

Eleventh Avenue, or P. Four-story frame. O. A. W. Norton & Co. Day's work. \$4,000.

California Avenue, cor. Twenty-ninth. One-story frame. O. J. Cosgrove. C. J. McKesque. \$700.

Guerrero, near Duncan. Two-story frame. O. and B. L. Kotoed. \$3,000.

Mission, near Twentieth. One-story frame. O. El Capitan Skating Co. Day's work. \$1,500.

Clinton Park, nr. Dolores. One-story and basement frame. O. Mrs. A. Crabb. C. F. A. Kern. \$2,500.

Castro, cor. Henry. Two-story frame. O. Mr. White. C. D. Spangler. \$2,000.

Pacific, cor. Webster. Two-story and basement frame. O. C. Roemer. A. A. C. Lutgens. C. Gray & Stover. \$4,700.

Larkin, cor. Pacific. Three two-story frames. O. H. Grimm. A. J. T. Kidd. C. W. Plums. \$1,500.

California, nr. Devisadero. Two-story frame. O. W. H. Birch. A. S. and J. C. Newsom. \$3,500.

Prospect Avenue, near Alterations. Two-story frame. O. W. Walker. A. S. and J. C. Newsom. C. Moore Bros. \$5,000.

Steiner, cor. Sutter. Two-story frame. O. J. McMillan. A. S. and J. C. Newsom. C. J. McKay. \$4,500.

Post, corner Octavia. Two-story and basement. O. J. T. Pohim. A. B. E. Henriksen. \$12,000.

Oak, near Van Ness. Two two-story frames. O. J. Merklebach. A. W. H. Bayless. C. Patterson & Smith. \$8,150.

Turk, near Franklin. Two-story frame. O. J. Wise. A. H. Geilfuss. C. H. Weinoehl. \$5,000.

Buchanan, cor. Eddy. Four flats. O. A. Ludwig. A. H. Geilfuss. C. B. Dryer. \$10,000.

Fillmore, near McAllister. Two flats. O. C. Reimers. A. H. Geilfuss. C. F. Klatt. \$5,000.

Devisadero, near Geary. Four flats. O. C. Ahlborn. A. H. Geilfuss. C. Christman & Neal. \$10,000.

Everett, near Fourth. Improvements. O. F. Hagemann. A. H. Geilfuss. C. Conrad & Miller. \$3,000.

Folsom, near Fifth. Two-story frame and stable. O. J. Buck. A. H. Geilfuss. C. H. Meyn. \$5,000.

O'Farrell, cor. Buchanan. Six two-story frames. O. H. Rothchild. A. Schmidt & Havens. C. I. N. and J. G. Day. \$18,500.

Golden Gate Avenue, near Broderick. Two-story frame. O. R. S. Alexander. A. Schmidt & Havens. C. Chisholm. \$4,500.

Polk, cor. Fulton. Three two-story frames. O. K. Meussdorffer. A. Schmidt & Havens. C. T. C. Ridell. \$18,000.

Mission, near Main. Three-story frame. O. F. C. Peters. A. Schmidt & Havens. C. Mahoney Bros. \$11,000.

Grove, near Van Ness. Two three-story frames. O. F. Siefke. A. Schmidt & Havens. C. R. Smilie. \$11,000.

Eddy, near Franklin. Two-story frame. O. N. Goldtree. A. Schmidt & Havens. C. C. Quinn. \$7,600.

Scott, near Haight. One-story frame. O. H. Kemman. A. John J. Clark. Day's work. \$1,900.

Broadway, near Laguna. Two two-story frames. O. Elizabeth Nelson. A. W. P. Moore. C. W. Langstaff. \$7,500.

Turk, cor. Leavenworth. Two-story and basement. O. W. E. Dean. A. W. P. Moore. C. C. B. Green. \$3,500.

Olive Avenue, cor. Ellis. Alterations. O. T. Donahue. A. N. D. Mitchell. Day's work. \$2,000.

Waller, near Buchanan. Alterations. O. and B. R. McCann. A. H. D. Mitchell. \$3,500.

Montgomery, near Jackson. Alterations. O. H. Pierce. C. A. Flood. \$7,000.

Tenth, near Mission. Three-story frame. O. P. Scanlon. A. T. J. Welsh. C. J. Blake. \$12,000.

Valencia, near Eighteenth. Stores and flats. O. M. Maguire. A. T. J. Welsh. C. Reiman & Cummings. \$8,000.

Golden Gate Avenue, near Franklin. Three-story flats. O. T. Delany. A. T. J. Welsh. C. B. Dryer. \$8,700.

Steiner, cor. Sutter. Additions. O. R. Sbarboro. A. T. J. Welsh. C. R. Doyle. \$3,500.

Sanchez, near Seventeenth. One-story frame. O. B. Flood. A. T. J. Welsh. C. T. Darcy. \$1,800.

Brannan, near Third. Improvements. O. Lusk & Co. \$18,000.

Clinton Park. Two-story frame. O. Spaulding. \$3,200.

East, near Market. Frame building. O. T. D. Riley. \$2,500.

Twenty-first, near Clement. Frame dwelling. O. Patten. \$2,000.

First, near Market. Five-story brick. O. Huntington, Hopkins & Co. A. A. Laver. Mason-Geo. D. Nagle. Carp. P. Crichton. \$100,000.

Market, near Seventh. Improvements. Brick. O. Gladding, McBean & Co. Day's work. \$3,500.

Mission, near Eleventh. Addition. O. Fredericks. \$1,000.

SACRAMENTO.

Second, x I and J. One-story and basement brick. O. Green & Trainor. A. N. D. Goodell. C. Carle & Croly. \$10,000.

Seventh, x H and I. One-story and basement frame. O. N. D. Goodell. A. N. D. Goodell. C. Carle & Croly. \$4,500.

Fifth, x J and K. Additions. O. J. Guth. A. N. D. Goodell. C. M. Madden. \$8,400.

Ninth, x P and Q. Ice house. O. F. C. Knauer. A. N. D. Goodell. C. J. P. McGinnis. \$2,400.

K, Nos. 209 and 219. Additions. O. W. Land. A. A. A. Cook. Day's work. \$1,000.

Nineteenth, cor. L. One-story building. O. Sacramento City. A. A. A. Cook. C. W. H. Sutherland. \$1,750.

K, No. 318. Additions. O. J. W. Wilson. A. A. A. Cook. C. Hook & Son. \$700.

Eighth, x E and F. One-story and basement frame. O. P. Davis. C. D. and D. Falconer. \$2,500.

Fourteenth, cor. H. Two-story and basement frame. O. A. A. Van Voorhies. A. J. Sandler. C. D. and D. Falconer. \$14,190.

MISCELLANEOUS.

San Jose—Third, near Empire. One-story cottage. O. E. S. Montgomery; A. Theo. Lenzen; C. W. B. Mitchell. \$1,400.

Market, cor. Colfax. One-story cottage. O. L. Rothermel; A. Theo. Lenzen; C. Thos. Clark; \$4,000.

San Rafael—Depot for S. F. & N. P. R. R. O. P. Donahue; A. Theo. Lenzen; day's work; \$15,000.

Santa Rosa—One-story brick. O. G. E. Grosse; C. T. J. Ludwig; \$3,500.

Hemacite Knobs.

THE Gordon Hardware Co. have now a large assortment of these knobs on hand. For interior work they are superior in design to any knobs in the market. They are fully guaranteed for strength and durability. Those wishing an illustrated catalogue can secure one by addressing the above firm, or the manufacturers, the Dibblee Manufacturing Co., Trenton, N. J.

PROPOSALS FOR THE CONSTRUCTION OF THE New Odd Fellows' Hall.

SEALED BIDS WILL BE RECEIVED AT THE OFFICE OF THE Odd Fellows' Hall Association of San Francisco, Room No. 1, Odd Fellows' Hall, No. 325 Montgomery street, San Francisco, up to and until 12 o'clock M., of

FEBRUARY TWENTY-SEVENTH, 1884.

For the erection of the New Odd Fellows' Hall, on the lot on the southwest corner of Market and Seventh streets. Bids to be received for the separate trades, as follows:

- No. 1—Brickwork.
- No. 2—Carpenters' and Joiners' Work.
- No. 3—Granite and Freestone Work.
- No. 4—Cast Iron Work.
- No. 5—Wrought Iron Work.
- No. 6—Tin and Platers' Work.
- No. 7—Plumbers' and Gasfitters' Work.
- No. 8—Plasterers' Work.
- No. 9—Painters' and Glaziers' Work.

The plans and Specifications of said building can be seen at the office of Messrs. Wright & Sanders, No. 418 California street, and will there be open to public inspection after the date hereof.

The successful bidder will be required to furnish bonds, satisfactory to the Board of Directors, for the faithful completion of the work in accordance with the plans and specifications. The Board of Directors reserve the right to reject any or all bids.

C. T. PIDWELL, Secretary of the above-named Association.

San Francisco, January 25, 1884.

MARKET REPORTS.

LUMBER— <i>Per M.</i>	
Common Rough, up to 40 feet, per M feet	\$22 50
" 41 to 50 "	23 50
" 51 to 60 "	24 50
" 61 to 70 "	25 50
" 71 to 80 "	26 50
Refuse Rough	18 50
Common Rough, sized with planer \$2 additional on above rates, per M feet	33 50
No. 1 Flooring, 6 inches and over, " 4 " and under, and 1 1/4 x 4 and 1 1/4 x 6	40 00
Flooring and Stepping	28 50
Rough Clear for Flooring, \$1 less than above rates	28 50
Second Quality Flooring and Stepping	28 50
Ship Plank, Rough	32 50
" Planed 2 sides	35 00
Deck Plank, Rough	33 50
" Dressed	37 50
Laths	per M 3 75
Wood Shakes	10 00
Shakes	12 00
Redwood Posts	per piece 17 50
Redwood.	
Rough Merchantable	per M feet \$22 50
" Refuse	18 50
Surface No. 1	40 00
" 1x6	37 50
No. 2	37 50
Rustic, No. 1, 1x10	37 50
" No. 1, 1x10	40 00
" No. 2	35 00
" Under 10 feet	35 00
T. & G., 1 1/4 x 4 and 1 1/4 x 6	40 00
" 6 in. 12 ft. and over	37 50
" 7 to 11 feet	32 50
" " under 7 feet	30 00
" " No. 2	30 00
T. & G., Beaded, 12 feet and over	40 00
" " 7 to 11 feet	32 50
" " under 7 feet	30 00
Half-inch Surface	32 50
Pickets, fancy	30 00
" Rough, Pointed	30 00
" Square	17 50
Siding, 1/2 inch	per M 27 50
Shingles	per M 2 15
Battens, 1/2 inch, lineal feet	1c
NAILS.	
10 d to 60 d	\$3 25
3 d cut ore Extra per keg (over standard)	25
6 d " " " " "	50
4 d and 5 d " " " " "	75
3 d " " " " "	1 50
10 d to 20 d Brad, h'd " " " " "	1 50
8 d " " " " "	1 50
4 d and 5 d " " " " "	1 75

THE brickmakers of this country last year consumed three million cords of wood, the product of fifty thousand acres of average timber land. A large part of this immense expense could have been saved, with a proportionate increase in the profits, by the use of improved methods in firing.

The California Architect and Building News.

VOLUME V.
NUMBER 4.

SAN FRANCISCO, APRIL, 1884.

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

THE California Architect



AND BUILDING NEWS

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San Francisco Architectural Publishing Co.

JAMES E. WOLFE, GEO. H. WOLFE,

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Page following reading matter, \$1.50 per square.

Inside Pages, each insertion, \$1.00 per square.

Full Page, inside, one insertion, \$40.00.

Each subsequent insertion according to agreement.

A square is seven-eighths of an inch in length by width of column.

Advertisements alone inserted that refer to materials used in the construction and furnishing of houses, and to matters and trades belonging to the building interest.

NO OTHERS RECEIVED.

Advertisements inserted for three months or less are payable in advance; payable quarterly when inserted for a longer period.

When money is sent for subscriptions, the receipt of a copy of this journal is an acknowledgment that it has been received. Unless requested we do not send receipts.

OUR COMPETITION PLANS.

This will be the last notice sent to those desiring to compete for the prizes offered by the Proprietors of this Journal.

All designs and plans must be at this office on or before May 1, 1884.

Those received by that date will be presented before the Committee of the S. F. Chapter at the regular monthly meeting on May 2d. Each and every contestant will be notified of the decision of the Committee as soon as possible after the awards are made.

Particular notice is given to those residing out of this State to send their plans so as to reach this office by the time specified.

Building Improvements.

THE GENERAL OUTLOOK IN THE STATE.

THE indications point strongly to extensive building operations in all sections of the State.

One of the surest signs of a most prosperous and busy season is the

ACTIVE DEMAND FOR DRAFTSMEN:

That has lately sprung up from different sections of the country. From the extreme southern portion of our State telegrams have been received by us for first-class draughtsmen. After diligent inquiry, we have failed to find good men who were willing to accept the situations, although from \$80.00 to \$100 per month was offered, and steady work guaranteed.

The effect of the late storms has been the circulation of an immense amount of money through the southern section of the State. It is calculated that over one million of dollars will be expended in repairing damages. This large sum and that received from the assured large crop, will cause very extensive operations in building and mechanical lines.

Los Angeles leads all the counties in the number and value of buildings erected, followed very closely, however, by Alameda County. In the former county, numerous towns are springing into existence, offering superior inducements to young men to migrate into neighborhoods where muscle combined with head work, properly exercised, will lay the foundation of a prosperous future.

Fresno and Tulare have been asleep for a while, but when harvest time comes along no doubt they will regain their former business prosperity.

The counties bordering on the bay are all sharing a large degree of prosperity, and, from present indications, large improvements will be carried out during the year.

Sonoma, Napa, and Marin, thanks to an energetic race of inhabitants, stand very

prominent in the list of go-ahead counties. More work is now being talked of than there are mechanics numerous enough to meet the labor demands.

The counties north of Sacramento are awakening from their sleep, caused by a partial failure of crops last season, and each and every one will be heard from when the time of the saw and the hammer begins.

IN THIS CITY

Never were indications for a grand building season more pronounced than they are at the present time. Up to the 10th of April buildings and improvements of the value of

OVER TWO MILLION DOLLARS

Have been commenced. This is greater than the entire amount for the whole year of 1880.

We sincerely hope that the prospective activities will not be checked by increase in the prices of building materials, or excessive demands by mechanics for high wages. It is far better and wiser that the prices of material and rates of wages should be steady and reasonable, and a fair degree of business continuous, rather than a rush for short periods, followed by dullness and inactivity during a considerable portion of the year.

San Francisco Chapter American Institute of Architects.

THE regular monthly meeting of the Chapter was held on Friday eve, April 4, 1884. President John Wright presided. Committee appointed to procure a Seal for the Chapter, reported that they had attended to their duties, and now had the pleasure of presenting the Seal to the Chapter. A short recess taken to allow the members to inspect the same.

Upon motion it was resolved that the design of the Seal be accepted. This motion was carried, with the understanding that the committee have two weeks further time, in order that improvements could be made by the engraver in portions of the dies.

The committee were also requested to place the Seal in the hands of the committee on incorporating the Chapter, by the time agreed upon, so that at the next regular meeting the incorporation of the Chapter may be a settled fact.

The collector appointed by the Chapter, on motion, was allowed 10 per cent. on all collections.

Committee on preparing articles of indenture for students was granted further time.

The committee upon the applications of members proposed at previous meeting was allowed till next regular meeting to make their report.

Proposition for membership was received from J. J. Clark, and referred to Messrs. Sanders, Wolfe, Jr., and Pissis.

Committee on the different classes report favorable progress by pupils. Adjourned.

Be Sure That Your Figurations Are Correct

THAT which is of first importance to contractors and those estimating the cost and value of material and labor required in the erection of buildings, etc., is correct figuring. Every mistaken figure below true value is a direct loss in the amount represented by the figures in error. Hence the importance of men understanding how to figure, the value of figures, and the most perfect method of using them. Sometimes errors result from absolute or imperfect knowledge of the science of figures and figurations; sometimes from failure to comprehend the extent and magnitude of the thing estimated upon; sometimes a spirit of recklessness and disregard of the involvements, a don't-care-iveness as to the results, a chance-taking, disposition and frame of mind, which, if it happens to settle down upon a safe conclusion, does so from sheer "it happened so;" and some are thoughtless, desiring and aiming to be right, but, from lack of mental energies and fixedness of thought, fail to take in and deliberate upon all the matters of cost, and so fail to be near right.

It seldom happens that where ten more or less competent contractors estimate upon a building or works of any kind, that very great incompetency and lack of mechanical intelligence and right understanding, or something less creditable, are not illustrated, in perhaps five out of ten being inconsistently high; perhaps three, more or less, below a correct amount, and one or two at a sum fairly and reasonably remunerative. It is no strange matter to find from ten to one hundred per cent. difference in ten bids. Sometimes the estimates will run together, except it may be the very low man or two who have failed to add in all the items of cost. But the more general rule is great differences in amounts.

The effect of all this is injurious to contractors, as intelligent owners do not generally take in the situation and recognize results from the contractors' standpoints, but reasonably set it down to questionable intent or want of proper knowledge. We say reasonably, for when ten or five men, recognized, practical contractors, submit estimates running from the low man, say at \$4,500, and the high man, \$7,500, or, as in one case in our office, the low man being less than \$40,000, and the high man, \$60,000, argues decidedly unfavorably to those who make such discrepancies; yet it is not always the case that the low man is loser by his undertaking; sometimes he is, and many hundreds of thousands of dollars have been lost to material, men, and others, from this cause, but we have good, faithful men who have run through years of contracting without failure, and have something to show for their labors, who have worked al-

most continuously upon contracts taken as the lowest bidder.

Every foot or pound of material, and every hour of labor, according to quality and kind, possesses a standard value, furnishing, to those using them, all the requisite elements to correct conclusions; so that when more than reasonable differences occur, the presumption is sustained that there has been a lack of good judgment, or a superabundance of carelessness, or ignorance indulged in.

For, with the defined basis of calculation, such as exists in the market, and purchasable value of materials, and the well-understood cost of labor to quantity of materials required, there is but a small right margin for variations in total costs, when handled by intelligent and competent parties.

Eastern Comments On Our Bone Yard Article.

THE *American Lumberman*, in commenting favorably upon our "Bone Yard" article which appeared in the February number of this journal, remarks: "At this distance it is hard to judge correctly of the condition of the lumber trade in San Francisco; but it does seem that with a tariff of only \$2.00 per 1,000 feet on lumber, the manufacturers on the Canadian side of Puget Sound, ought to be able to sell lumber at a profit, if the scale of prices fixed by the Association are as outrageously high as stated by the ARCHITECT."

True—"distance" does render it difficult for parties who have never visited, nor been able to inform themselves by personal observations as to the lumber market of San Francisco, and the manufacture of lumber at Puget Sound, to rightly understand the peculiarities of the situation. And when inside facts are revealed by publications, as in the matter in question, they appear so different in character from the more usual and better regulated markets of the country, that even those engaged in little business in other cities and places cannot readily comprehend the actual facts as they exist.

As to the suggestion of our cotemporary, in reference to the tariff of "only \$2.00," it is correct, provided there could be any assurance to British Puget Sound manufacturers, that present prices, and the prices ruling for the past two years, could be maintained.

But the fact that American manufacturers hold the key to the lumber market of this coast, and have it in their power to control and regulate the prices under a united and firm combination, it would be consummate folly for any one to risk the uncertainties; for just as soon as a competitive supply of imported lumber should be placed on the market, our wide awake combination men would tumble the prices to ruinous rates—unless they could house the competition—and the imported material would have to be sold at a loss.

This fact is so well understood that men with capital, seeking investment, give the matter no serious consideration, because the

field is too treacherous. We can at any moment control \$1,000,000 for investment in lumber mill operations on the British side of Puget Sound, if there were any reasonably fair show of a steady market for lumber at present prices for even five years.

But the chances are all the other way. It was only in 1877-78, that the very men who now hold control of the market by combination, were in merciless competition among themselves, and the same lumber, Oregon pine, that is now retailing at \$22.50, sold retail then at and for less than \$12.00 per thousand feet; at which price, however, there was but bare salvation from ruin generally, while a few were crippled, and some compelled to surrender under the then too severe pressure. But when prices recovered to \$14.00, \$15.00, \$16.00 a feeling of safety pervaded the lumber market, and manufacturers and dealers felt that they had reached safe ground.

Under this state of facts our contemporary may easily see the difficulties of competition by lumber taxed with a tariff of only \$2.00, for the general building of the coast, being altogether of wood, the amount of lumber required to supply demands is large, and the American manufacturer could comfortably afford to sell at a profit of \$2.00 per thousand until British competitors tired of selling at actual cost of production with \$2.00 tariff added.

Pioneer Hall Competition.

NAMES OF CONTESTANTS.

Below will be found a correct list of the names of the Architect's presenting plans for the proposed Pioneer Building. We withhold comments until after the award shall have been made.

PERCY & HAMILTON,
WRIGHT & SANDERS,
McDOUGAL & SON,
A. LAYER,
HOFFMANN & O'CONNOR,
W. PATTON,
LEUDERS & WILSON,
E. A. HATHERTON,
W. SCHROF,
T. D. NEWSON.

SHARP-CORNERED DRAWING TOOLS.—A sensible correspondent of the *American Machinist* very justly complains that "manufacturers of drawing instruments make them so full of little sharp corners, and interior angles," and suggests that they be made "of round or oval cross sections, with no places where dirt can collect." The trouble is that makers of drawing tools very seldom, if ever, have any practical experience in the use of such instruments, and are unknown to those who have. —*Mining and Scientific Press.*

GILDED FRAMES.—To restore gilding to picture frames, etc., remove all the dust with a soft brush, and wash the gilding in warm water, in which an onion has been boiled; dry quickly with soft rags.

Compiled Items of Interest for Mechanics.

THE weight of a crowd of men closely packed is estimated at 84 lbs. per superficial foot.

Street, Store and Bank Fronts \$4.00

It is thought by many that a girder—say 12x16—will bear more weight if it is ripped through the middle, making two pieces 6x16, and these two be reversed and bolted together again. This is an erroneous conclusion. The only advantage gained is, that, by the process given, an opportunity is presented to examine the center of the timber, which, in large pieces, is often in a state of decay; also, it gives the timber a better opportunity to become seasoned, and thus less liable to rot.

Cottages and Villas \$6.00

TIMBER when wet has only about half the strength of the same timber when perfectly seasoned.

Builder's Guide \$2.00

DOUBLE tenons are often used in Joinery, but should be avoided in Carpentry, as they weaken the timber into which they are framed; both tenons seldom bear equally, so that a greater strain is thrown upon one of them than it is intended to support.

Modern Perspective \$6.00

EVERY mechanic should be able to cut and frame all timbers, rafters, etc., upon trusses on the ground. Many, however, have not studied the rules of Carpentry sufficiently to be able to do so. To such we would say that it will greatly benefit you to secure a copy of "Mechanic's Geometry, or The Science of Framing by the Aid of Card Board Models." This eminently practical work—if properly studied, and the principles put into practical use, will enable a mechanic to frame any portion of a building with ease and exactness. But few copies can now be had of this work, as the edition is exhausted. Sent to any address upon receipt of \$5.00.

Wooden and Brick Buildings \$18.00

EDITORS ARCHITECT: In a bill of lumber, lately received, I find the item—72 pieces 2x6 for *Raglins*. Please inform me of the meaning of the term *Raglins*.

LUMBER DEALER.

Your customer is evidently a new-comer. *Raglins* is a term used in England for ceiling joist.

The Artisan \$5.00

ONE of the most practical works for the mechanic to have in his possession is "The Science of Carpentry Made Easy." A copy will be forwarded to any address upon receipt of \$5.00.

Universal Assistant \$2.50

A SCHOOL-TEACHER asks for a simple method of preventing reverberations in a school-room. Instead of the ordinary smooth plaster finish for the walls and ceilings, have the same rough finished. Curtains may be used for the windows instead of blinds. Large maps hung around the room, aside from being ornamental, are very useful as anti-reverberators.

Church Architecture \$4.00

IN many journals different measurements are given in *meters*. Mechanics can easily compute the same in *feet* by allowing 39 $\frac{3}{4}$ inches to a *meter*.

Plaster, how to make it \$1.00

FIVE pounds of nails are required for 1,000 shingles, when laid 4 inches to the weather.

Buck's Practical Designs 50c

BOUND volumes of this Journal are becoming scarce, and those that desire the same should immediately forward \$2.50, for which a copy will be sent to any address.

Practical Carpentry \$1.00

WOOD screws vary in size from one-sixteenth to three-eighths of an inch in diameter, and in length from one-fourth to three and a half inches, including twenty-three numbers, as follows:—

Length.	Number.	Length.	Number.
$\frac{1}{4}$ "	0 to 2	$1\frac{1}{2}$ "	9 to 18
$\frac{3}{8}$ "	2 " 7	$1\frac{3}{4}$ "	10 " 20
$\frac{1}{2}$ "	2 " 9	2"	11 " 20
$\frac{5}{8}$ "	3 " 10	$2\frac{1}{4}$ "	11 " 20
$\frac{3}{4}$ "	4 " 12	$2\frac{1}{2}$ "	14 " 20
$\frac{7}{8}$ "	6 " 12	$2\frac{3}{4}$ "	16 " 20
1"	7 " 14	3"	15 " 20
$1\frac{1}{4}$ "	8 " 16	$3\frac{1}{2}$ "	18 " 22

Number 11 is about three-sixteenths, and Number 14 about one-fourth of an inch in diameter, and are sizes in very common use.

It requires 123 sheets of tin 10x14 to cover one square, and 59 sheets 14x20 to cover same space.

Cummings' Architectural Details \$6.00

A HANDY thing to have on a farm is a measuring cord with which to measure off acres. To make one, procure sixty-seven feet of strong rope, one inch round, make a loop or fasten a ring or bar at each end, and make these exactly sixty-five feet apart. This is four rods. Then tie a piece of red rag in the center. One acre of ground will be a piece four of the cords (chains) long, and two and one-half wide, equal to sixteen by ten rods, making one hundred and sixty square rods to the acre. The advantage of the ring or loop is that one person can measure alone by driving a stake in the ground to hold the rope while he stretches it out. The rope should be soaked in tar and dried, which will prevent its shrinking when wet.

Steel Square and its Uses \$1.00

Bancroft's Histories.

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

There are to be thirty-nine octavo volumes, with maps and illustrations, fifteen of which are now ready. They will be well printed on good paper, neatly and substantially bound, uniform in style, and will average over 700 pages each. Three or four new volumes per annum will appear until the entire series is completed. Subscribers will not be obliged to take the work unless it corresponds with the description in every particular.

PER VOLUME:
Bound in Extra, English Cloth, neat and attractive style \$4.50
Bound in fine leather, Library Style 5.50
Bound in half calf, half Russia or half Morocco 8.00
Bound in Russia Leather or Tree Calf 10.00

Any information in regard to the above will be given by addressing the office of this Journal.

New York Letter.

BY A. CURTIS BOND.

It is a difficult task to undertake the study of American architecture, difficult, because it leads to no satisfactory result. Here, architectural art, like every other matter that is regarded from a business view, is developed under a strictly speculative influence, and "time" is accepted as one of the appreciative qualities. Human activity is a powerful factor in the appreciation of human works.

Nor does this unfortunate artistic condition appear to be easily remedied, or even susceptible of future correction, for the rapidity of our life, and, consequently, of the execution of our designs, makes it impossible, even for the coldest and most analytic talent from foreign countries, to resist the tendencies of our climate, and avoid cultivating the same disposition himself. This second atmosphere of our country at first stifles the new-comer, and he pities the disposition to "rush things," but as he meets others more, and finds that he is falling behind in the race, he bestirs himself, and, before he becomes conscious of the influence, he is measuring time in his labors, and falls into the true American scheme, of making a *melange* of everything and allowing it to take the place of a creation.

Yet this failing of our architectural art must not be accepted as a general condemnation, for we admit all the very best examples of foreign work with this indiscriminate adaptation and a Greek, Moresque, and Persian form may be found as next door neighbors in our streets and squares. It serves to enliven and diversify the city, and furnishes subjects for visiting foreigners to return to their homes and write about, and against. New York may be accepted as the type of American cities, I presume, yet there is a greater variety of architecture here than elsewhere over the continent. The peculiarity of which I have spoken is shown here in a marked degree.

This disposition, however, to utilize all the old styles, and combine oddities into one building, has had another good effect in giving us very many peculiar and decided original structures, picturesque in the extreme and interesting to study.

One building recently put up has the heads of the architect, the builder, the owner, and a variety of other persons interested, more or less, in its completion, arranged at various points, on the gable, from the tops of the windows, at the end of the waste pipes, from the roof, and in several other places equally inappropriate, and equally conspicuous. Another building imitates the Bastille, and is reduced to the humble purposes of a storage house. A new residence is an excellent reproduction of a baronial castle, on a small scale, with a moat, portcullis, and watch-tower, sentry box, and all. Another still, the house of a prominent physician, is a rambling, low, Queen Anne structure, full of odd and queer corners, a marvelous quantity of stained glass, and a multitude of picturesque chimneys.

One of the growing men of our Eastern

States, one who is so young, and so well known as to warrant the belief that he will make himself more widely felt, as he increases in age and in experience, is Mayor Seth Low, of Brooklyn, just re-elected to another term of office, and at the same time reached his thirtieth birthday.

Mr. Low has a great deal of originality, and has shown it in the house that he has put up, or rather reconstructed from a small and dilapidated cottage. The style of the building is the Queen Anne, of red brick, with terra cotta trimmings, a color and combination that is rather marked, amid the surroundings of substantial brown stone. The stoop is of large, manufactured stone slabs, and on either side grass plots laid out, in goodly sized squares, and unprotected save by a simple sub-base of stone. The pillars and roof of the entrance are of a dark green, carved wood, and the vestibule of variegated marble, and the door of light, polished oak. A bay window on the side (the house is upon a corner), has for ornament an enormous square waste pipe, leading from the roof and which branches off into two at the roof of the bay window, coming down then upon either side to the ground. This pipe is a capital imitation of terra cotta, and is probably the first really successful attempt to make such a thing as this decorative.

An oddity, in every sense of the word, is being put up at Coney Island. Ever since Barnum brought Jumbo to the country, that interesting animal has been counterfeited in every conceivable manner, and the designation for the stupendous of every sort was the word Jumbo. Finally this craze has extended to building, and now they are putting up, at Coney Island, a restaurant, dancing hall, and the usual accompaniments, to be contained in a structure shaped like an elephant, the legs to be spiral stairs, the head a music room, and the body to be divided into the restaurant and the ball room. The height of the animal is to be eighty feet, and the length, one hundred and twenty-five. If this scheme is enlarged upon, and the white elephant which is expected from Europe daily, should be found worthy of a similar monument, and when it extends to other animals in the show, it may entirely change the architectural aspect of our watering-places, and they may put on the appearance of monstrous out-door menageries, gatherings of the creatures that populated the world before the flood.

The illustration that I have chosen this month is that of a country house, of a conglomerate style, somewhat on the principle of those I have criticised. It is neat and attractive in appearance, and designed for an economical and substantial-looking place. The arrangement of the rooms will commend itself, I think, to the architect and to the private party; it shows the kitchen department kept apart from the living rooms and entirely distinct in its situation and exclusiveness.

A Substitute for Wire Screens.

EVERY house-wife and servant fully understands by practical experience, the desirability of a means by which kitchens, dining and other rooms may be ventilated, particularly during the summer months and warm days of the year, without being "tormented" by the presence of flies, mosquitoes, etc. This has usually been accomplished by means of wire screens on frames, or at the heads of the upper sash. A very simple and seemingly practical device, which does away with the metallic wire cloth, may be seen at W. Little's place of business, No. 128 Geary Street.

They can be applied to any window at small cost, and should command the special attention of families residing in districts where the heat of summer becomes oppressive, and to all who desire freedom from the presence of those winged intruders who never fail to swarm the apartments appointed for cooking and eating purposes.

The New Odd Fellows' Hall.

At the southwest corner of Market and 7th Streets, work has been commenced upon the foundations of a structure, the erection of which is destined to have a marked effect upon the values of surrounding property.

It has been a mooted question in regard to the building under consideration, upon the advisability of erecting an edifice of such magnitude, so far from the present location of the Order which it represents. Careful study has been given to the subject, and, wisely we think, the decision has been rendered in favor of the location adopted.

Property in the immediate neighborhood is mostly owned by men capable of making substantial improvements, and now that work has been commenced in earnest, it may be expected that, in the near future, other improvements will be commenced, and that the vicinity of the City Hall will shortly become a prosperous business center.

We hope to see property owners adopt designs in keeping with the character of the new I. O. O. F. building, and that contemplated by Murphy, Grant & Co., a short distance below the above site.

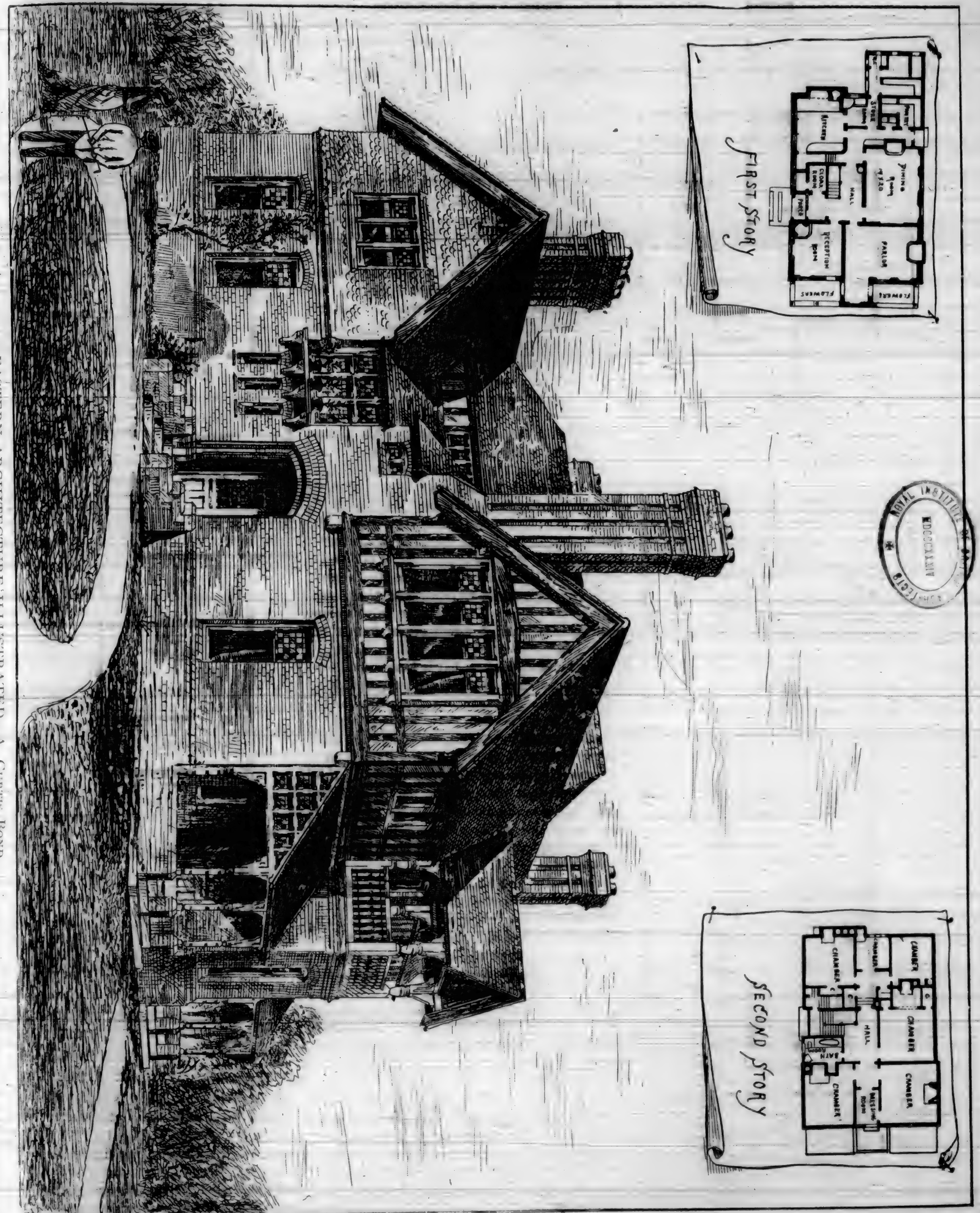
We hope to be able in the future to present full illustrations of the building. The Architects are Messrs. Wright & Sanders. The various contracts were awarded as follows:—

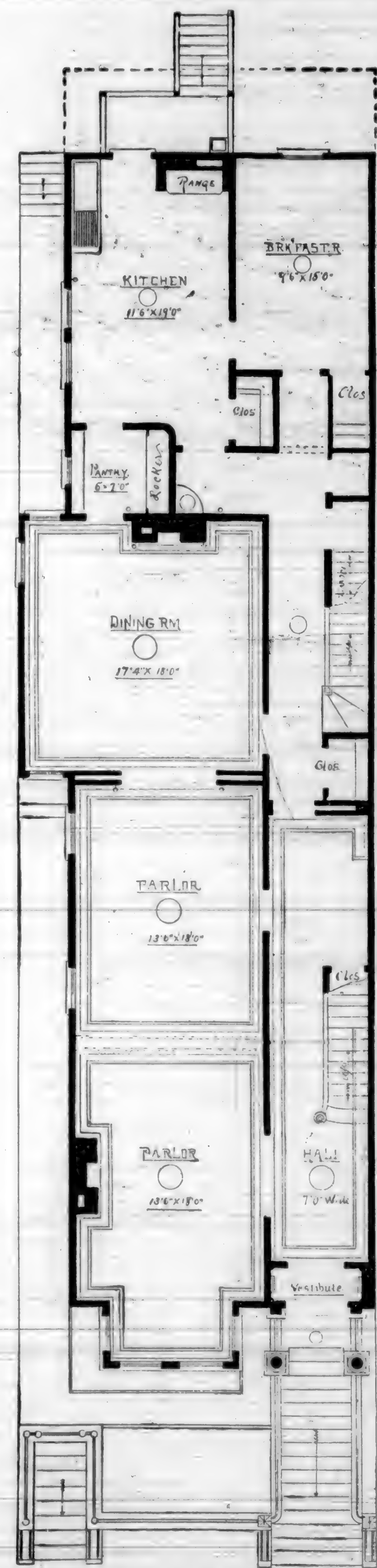
Brick work,	J. G. Liebert,
Carpenter,	Ed. Farrell,
Cast Iron,	R. Llewellyn,
Wrought Iron,	Phoenix Iron Works,
Roofing,	Cronin & Dunbar,
Plumbing,	Geo. Milne,
Plastering,	A. C. Corbett,
Painting,	E. M. Gallagher,
Granite,	Geo. Griffith,
Cement,	Davis & Cowell.

The estimated cost of the structure complete will be in the neighborhood of \$300,000.

Steel Square and Its Uses, \$1.00.

EASTERN ARCHITECTURE ILLUSTRATED—A. CURTIS BOND.





FIRST FLOOR PLAN OF \$10,000 RESIDENCE.

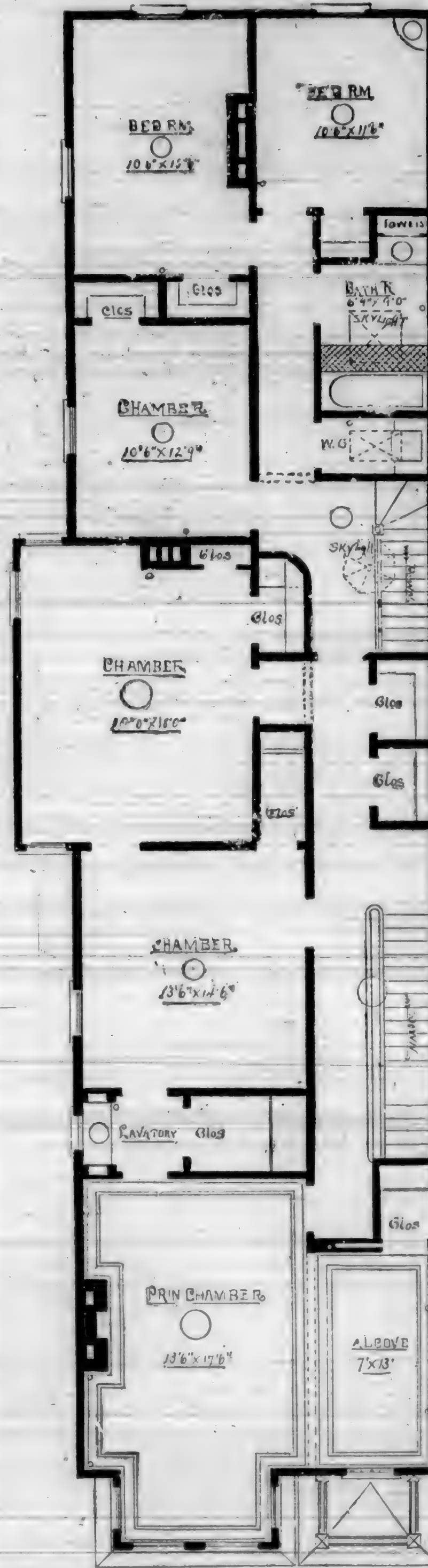
Custom Versus Specifications.

THERE can be nothing more provoking to a competent and upright architect, than, upon visiting buildings and works intrusted to him, to find portions of the work done in direct violation of the requirements of his specifications, and when attention is directed to the error, to be answered, "It is customary to do it so," "It is according to custom," etc. We have often regretted that we did not possess the muscle of a champion slogger, so that we might be able to thump consistency into such men, or throw them out of or clear over the building. It is nothing less than a deliberate insult to an architect to set aside the papers prepared by him, papers which, if the work of a competent man, are the result of careful thought and deliberation, expressing exactly what is wanted in kind and quality, and the mixture of impertinence and disrespect which will embolden parties to such a course is next to unbearable.

Who, we ask, is the leader in architectural fashions in house building? Who is the recognized man who issues this fiat of custom, and bids all to yield to his notions as to how this or that shall be? From whence comes "custom," "customary," "usual way," etc.? We denounce in emphatic terms all such absurdities, either upon the part of contractors, mill men, material men, or others, as far as intelligent architects, who understand and express in their specifications what they want—are concerned. It may serve a purpose among that class of architectural frauds, in San Francisco, who know nothing rightly about building houses; but it is an imposition upon decent men in the profession, to subject them to the necessity of even repudiating things done "according to custom," not in conformity with specifications. We know that there are architectural duds, dunces, and shysters practicing the profession on this coast, and that they may be played with by any shrewd mechanic or contractor; but that fact does not justify attempts in the same direction upon men worthy the name of architects.

Personally, and for a majority of the gentlemen in the profession, we say to all parties performing contracts under our superintendence, we acknowledge no right in any one to change one iota from the requirements of our plans and specifications, and those who chance the substitution of "custom" for the plain language of plans and specifications, do so at the risk of rejection of the substitution, and the strict enforcements of the written requirements of the documents.

DID it ever occur to you how useful your thumb is? If it never has, supposing you tie it up a little while and see how helpless your fingers will be alone. We often say when anybody is particularly clumsy, that his fingers are all thumbs. This is simply slander on the hardest-worked and most useful of our five fingers.



SECOND FLOOR PLAN OF \$10,000 RESIDENCE.

THE influence of Japan is beginning to be felt very considerably in architecture. Some things in Japanese architecture we shall, of course, probably never introduce—the heavy roof, for instance—but for verandas of country houses, for screens and for interior decorations, Japanese art and architecture is rapidly coming into use.

Unintelligent Estimating.

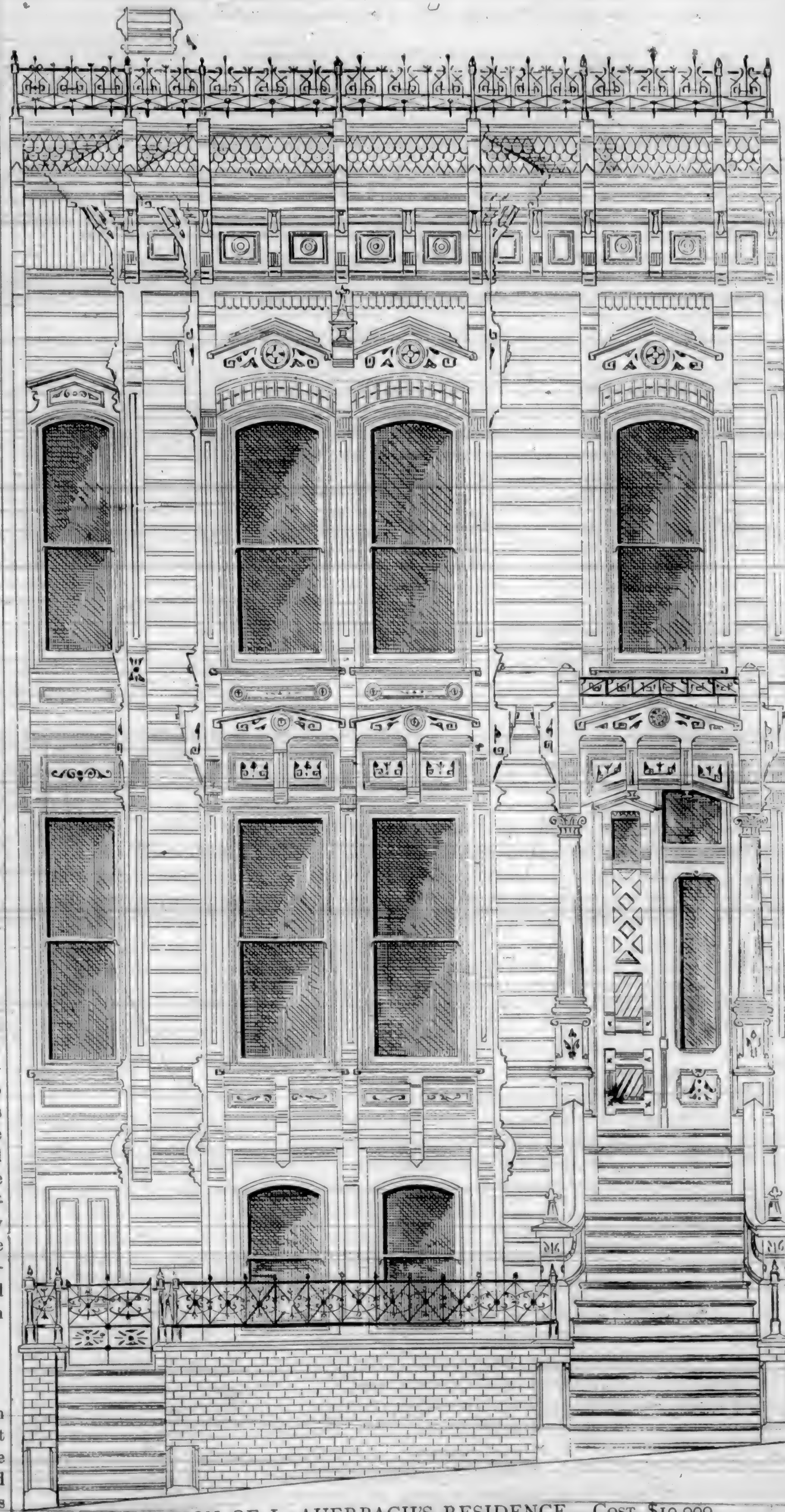
THE many absurd errors made manifest by the unreasonable difference, more generally prevailing in connection with estimates submitted for the erection of buildings, and the execution of mechanical works generally, is greatly to be regretted, for the reason that it lessens the confidence of owners in the competency and qualifications of contractors to intelligently determine the value of buildings or work offered for estimates.

It is not to be expected that each man should arrive at precisely the same conclusion as to costs, for the balances are not equal in all minds, and reasonable differences are legitimate. But when the discrepancies run from ten, twenty, fifty, and sometimes one hundred per cent or more, the fact becomes plain that absolute incompetency, unpardonable carelessness, excessive avarice, or an unintelligent understanding of what is contemplated, has controlled some of the parties figuring; and it is altogether proper for those offering work for estimates, to form adverse opinions as to the qualifications of contractors, when results as indicated are submitted for their consideration.

Nor is it always possible for architects to disabuse the minds of clients, that some of those who have estimated have not contemplated unfair and excessive advantages, and sought to secure more than legitimate gains and profits upon the operation proposed, which, followed to a logical conclusion, suggests, if it does not fully prove, that there are men even among "honest mechanics," who would not scruple to obtain other people's money without fair compensation—all of which tends to injure the reputation of those who manipulate figures in estimating, and devote their lives and energies as "master mechanics." All of these irregularities grow out of a lack of proper education and understanding of things generally, and a demoralized sentiment among contractors, who, as a class, figure and operate as each may deem best, using good and honest intent and correct judgment, or well-studied devices and unscrupulous means to secure—and in the management of work falling into their hands, as the case may be. All of this places at a disadvantage, if it does not make cheats and tricksters of good men, who would prefer fair and upright dealings, but are driven by surrounding circumstances and conditions to accept and practice the methods by which unscrupulous men make money, or be satisfied with the pittance which too generally follow in the path of those who stand upon the higher ground of strict integrity in all their transactions.

Garland's Trap.

PERHAPS the best recommendation that can be given to this Trap is to mention the fact that all the traps throughout the Lick House were removed to give place to the Garland Trap. This action speaks volumes for its merits.



ELEVATION OF L. AUERBACH'S RESIDENCE.—Cost, \$10,000.

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Mr. Henriksen is an earnest worker in San Francisco Chapter of Architects, being one of the Trustees of that society. He attends to "committee work" with commendable zeal. He also is an active member of many of the fraternal associations, in several of which he has held the highest offices.

TO CLEAR OUT COAL SMOKE.—If troubled with the smoke from soft coal so that you cannot lay your clothes on the grass to bleach, you can improve their looks in this way: After rubbing them, pour absolutely boiling water over them, and let them lie in this water all night. Next morning scald and rinse as usual. This does a great deal toward clearing out the yellowish color they would otherwise certainly have.

Deafening Floors.

THE transmission of sound between rooms in two contiguous stories of a building, oftentimes becomes very annoying to those occupying the lower story. As the power of a solid body to transmit sound is in proportion to its density, it is a matter of easy correction, in most cases similar to the above, when undertaken at the time of construction.

The old and primitive method of depositing a quantity of wet mortar on rough boards between the floor beams, etc., has, in many cases, been a cure quite as bad as the disease. The transmission of sound was lessened in a degree, but the dampness of the mortar was absorbed by the contiguous lumber, and, sooner or later,

with mineral wool, placed in loosely—not packed, and the top layer of flooring nailed in position. By this method, a warm, muffled, and partially fireproof floor is secured without the use of any materials to produce dry rot, or become the nesting-place for vermin.

It has taken years of improvement to make headway against the strange notion that improved machinery and mechanical processes work against the workingman. It has been the cry at every new step in advance that it would be the death-blow to some industry formerly carried on by hand. The locomotive was to do away with teaming. The sewing-machine was to be a foul crime against the welfare of the seamstress. The reaper and mower

were to interfere with the rights of the sturdy swathe-cutter of the farms. In short, every such advance has been met by just such objections. Yet there is less poverty, less squalor, less ignorance, and less idleness among the laboring classes in our age, which is the age of invention, and in our land, the land of inventive genius, than in any other age or land the world has ever known.

DEAD-FINISH.—This term, says an exchange, is applied to the finish produced by the reduction of any of the rubbing varnishes with powdered pumice-stone and raw linseed oil, the surface thus produced being left in the semi-lustrous state by omitting the polishing process. It is now more used than any other for body work, shellac varnish being generally employed, because of its adaptation to the requirements of fine cabinet-work, and properties of quick and hard drying. Copal anime, and amber varnishes are also used, but are slower drying. Veneered panels are

usually "flowed" or "polished" when the body work is dead-finished. The number of coats required depends somewhat upon the quality of the filler, but usually three coats, and sometimes less, are amply sufficient.—*Carpentry and Building.*

AS REGARDS brick foundations for machinery, the late Mr. Trautwine, who experimented a good deal with building materials, said that a rather soft brick will crush under a weight of about thirty or forty tons per square foot, whilst a first-rate machine-pressed brick will require from three to four hundred tons per square foot.—*The Builders and Manufacturers' Journal.*



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In 1882 Mr. Henriksen visited many of the Eastern States, introducing his Clutch at the principal cities. Returning to this city, he resumed the practice of his profession in August, 1883.

Mr. Henriksen has participated in many of the architectural competitions that have taken place in this city. In 1873 he received second premium for the hall of the Scandinavian Association; in 1875, first premium for the Red Men's Hall; in 1877, second premium for the Girl's High School.

Mr. Henriksen is an earnest worker in San Francisco Chapter of Architects, being one of the Trustees of that society. He attends to "committee work" with commendable zeal. He also is an active member of many of the fraternal associations, in several of which he has held the highest offices.

TO CLEAR OUT COAL SMOKE.—If troubled with the smoke from soft coal so that you cannot lay your clothes on the grass to bleach, you can improve their looks in this way: After rubbing them, pour absolutely boiling water over them, and let them lie in this water all night. Next morning scald and rinse as usual. This does a great deal toward clearing out the yellowish color they would otherwise certainly have.

Deafening Floors.

THE transmission of sound between rooms in two contiguous stories of a building, oftentimes becomes very annoying to those occupying the lower story. As the power of a solid body to transmit sound is in proportion to its density, it is a matter of easy correction, in most cases similar to the above, when undertaken at the time of construction.

The old and primitive method of depositing a quantity of wet mortar on rough boards between the floor beams, etc., has, in many cases, been a cure quite as bad as the disease. The transmission of sound was lessened in a degree, but the dampness of the mortar was absorbed by the contiguous lumber, and, sooner or later,

with mineral wool, placed in loosely—not packed, and the top layer of flooring nailed in position. By this method, a warm, muffled, and partially fireproof floor is secured without the use of any materials to produce dry rot, or become the nesting-place for vermin.

It has taken years of improvement to make headway against the strange notion that improved machinery and mechanical processes work against the workingman. It has been the cry at every new step in advance that it would be the death-blow to some industry formerly carried on by hand. The locomotive was to do away with teaming. The sewing-machine was to be a foul crime against the welfare of the seamstress. The reaper and mower were to interfere with the rights of the sturdy swathe-cutter of the farms. In short, every such advance has been met by just such objections. Yet there is less poverty, less squalor, less ignorance, and less idleness among the laboring classes in our age, which is the age of invention, and in our land, the land of inventive genius, than in any other age or land the world has ever known.

DEAD-FINISH.—This term, says an exchange, is applied to the finish produced by the reduction of any of the rubbing varnishes with powdered pumice-stone and raw linseed oil, the surface thus produced being left in the semi-lustrous state by omitting the polishing process. It is now more used than any other for body work, shellac varnish being generally employed, because of its adaptation to the requirements of fine cabinet-work, and properties of quick and hard drying. Copal anime, and amber varnishes are also used, but are slower drying. Veneered panels are



B. E. HENRIKSEN.

usually "flowed" or "polished" when the body work is dead-finished. The number of coats required depends somewhat upon the quality of the filler, but usually three coats, and sometimes less, are amply sufficient.—*Carpentry and Building.*

AS REGARDS brick foundations for machinery, the late Mr. Trautwine, who experimented a good deal with building materials, said that a rather soft brick will crush under a weight of about thirty or forty tons per square foot, whilst a first-rate machine-pressed brick will require from three to four hundred tons per square foot.—*The Builders and Manufacturers' Journal.*

Peculiar Wood Working.

THE auger is intended primarily for making holes in wood, yet the only cutting or boring portion is the chisel lip on its lower end; and if the implement could be kept at its work and guided in its course, the gimlet screw at its point and the spiral above its cutting portion might be dispensed with, as the screw merely pulls the cutter into the work and the spiral guides the auger and elevates the chips. So the auger, deprived of these portions, becomes a rotary cutter by which straight or curved recesses of a definite width may be cut. Mortises for tenons are made with such an implement, and it is used also for many other similar purposes.

An adaptation of the circular saw is more peculiar than this. It is the cutting of a wide kerf with a thin saw; thus a saw of one-fourth of an inch thickness, or "set," cuts a score, or slot, of three-quarters of an inch or more. In appearance the saw is anything but mechanical, and at first thought the method is "sloppy" and foolish. But the result of the work is good. The effect is produced by placing a circular saw on an arbor somewhat smaller than the hole through the saw, and canting the saw to an angle by means of convex faced glands or flanges. When rotated the saw's periphery has a "wabbling" motion, so that twice in its revolution the saw cuts out of its true kerf on either side. It will be seen that if the quarter-inch saw is set one-quarter of an inch out of truth on its side, it will cut one-quarter of an inch on each side, making, with the primary thickness of the saw itself, a cutting width of three-quarters of an inch. This apparently crude method produces very satisfactory results. It might be supposed that such eccentricity of movement from side to side would leave very coarse score mark on each side of the cut, but the velocity of the saw's rotation compared with the feed insures perfectly clean work. The advantages of this method are that the power required to cut a wide kerf with a narrow saw by gradations is much less than to cut the full kerf at once with full wide cutters, and that while a saw can be of diameter large enough to cut through a wide or thick piece of lumber, there is a much lower limit to the economical and effective projection of chisel cutters from a head. One of the largest manufactories of agricultural and domestic machinery and implements in the country has used circular saws in this manner for years.

SCISSORS have become the subject of a new patent. We thought this was impossible. Some one has attached a third blade, to be used exclusively for ripping.

MILDEW may be removed by dipping the stained parts into butter-milk, and putting them into the sun.

MOTH-INFESTED articles should be saturated in naphtha or benzine. It injures nothing, and kills the destroyer.

Ventilated Bedclothes.

CONSIDERING that most of us pass one-third of our lives in bed, it is manifestly of considerable importance to see that the conditions under which we exist for eight hours out of every twenty-four are, as far as we can make them, healthy. It must be obvious that it cannot be conducive to health to accumulate the exhalations from our bodies, and adopt such measures as may insure our taking them again into our lungs. That which is thrown off, either in the breath or by perspiration, sensible or insensible, must clearly be excrementitious, and therefore ought to be allowed to pass away. We should not breathe air or vapor which is laden with the debris of the body, though that body be our own. Another point of moment is that we should not allow our strength to be weakened by excessive heat and action of the skin during a third of our time.

It is, therefore, with great pleasure we find that an attempt has been made to ventilate quilts. We do not quite understand the process which has just been patented, but it is said to consist in a system of perforations which are filled in with some substance that allows the vapor to escape. We are informed that the artifice, whatever it be, is entirely successful. Something of the sort is beyond doubt much needed. It is well to lie warm at night, so far as the more important parts of the body are concerned; but it is most undesirable to be too warm, and, above all, "stuffy," while we sleep.—*The Manufacturer and Builder.*

Bricks.

THE best method of developing the art of building in brick has occupied the attention of architects and engineers in Switzerland for some years, and with this view it has been determined to attempt to fix a certain standard size of brick, and a report was presented to the Swiss Society of Architects and Engineers, in which the dimensions recommended were 9.84 inches by 4.72 by 2.36 inches. As, however, these dimensions were not agreed to by all sections of the society, a special federal commission was appointed in December, 1882, to inquire into the subject. A report was presented to the General Assembly of Cantonal delegates at Berne by M. Favod. With regard to the question of price, of course, if the manufacturer sells his bricks by the thousand, without reference to size, the smaller they are the better for him. The contractor, too, is apt to prefer small bricks, because with them he uses more mortar, which costs him less; but, on the other hand, he requires more bricks per cubic yard (the number of bricks of different sizes in a cube meter of work are given), and there is more labor in setting them, so that what he gains in one way he loses in another.

In regard to the quantity of mortar, Dr. Bohme's experiments at Berlin in 1875 proved that no more mortar than was actually neces-

sary to keep the course horizontal and effect the cohesion of the bricks (for which purpose joints of 0.4 inch thick are ample) should be used, as, whether the mortar becomes more or less hard than the bricks, the result is in either case to reduce the strength of the work.

Experiments made with blocks of twenty sound bricks, one set of blocks cemented with various kinds of mortar and cement (the joints 0.4 inch thick), another set consisting of bricks laid dry, and surrounded with cement simply to keep them together, gave, as mean resistances to compression: For the first set, 1,618 lbs. per square inch to cause splitting, 1,934 lbs. for the destruction of the bricks; and for the second set, 2,202 lbs. per square inch to cause splitting, and 2,291 lbs. per square inch for destruction, showing that the dry bricks gave a mean resistance of one-third more than those set with mortar before splitting, and one-fifth more before destruction.

The author, therefore, concludes that to secure the greatest strength, thick bricks, with a minimum of mortar, should be used. The author suggests that the price of bricks per thousand should vary, according to the number required per cubic meter of work, so that the manufacturer may be paid according to the size of the bricks. Finally, he recommends that the standard brick should have the dimensions 9.84 inches by 4.72 inches by 2.36 inches.—*Cincinnati Building Review.*

Hints in Fret Sawing.

A PRACTICAL fret-sawyer gives the following useful hints to amateur workmen: In cutting a pattern of any kind make it a rule to leave the outside until the last, especially where there are any single leaves or flowers at the sides or corners. Never allow the saw to become very hot, or a breakage is pretty sure to be the result. Notice before commencing work whether there are any knots in the wood, and if so mark the spot with a pencil on your pattern, and work very cautiously when you come across it. Stop working directly you see your saw edging away from or into the pattern, and make a fresh start in another place. When you have finished sawing out your bracket or whatever it may be, remove your pattern by moistening it with a little cold water, and while the wood is still damp fasten it on to your table with small nails pushed into the corners of the pattern. When thoroughly dry the bracket must be well sandpapered, firstly with a coarse, then with fine, and thirdly with oiled fine sandpaper. Rub in plaster of Paris with oil, dry twenty-four hours, then polish or varnish.—*Art Amateur.*

WOODEN PAVEMENTS IN BERLIN.—It has been noted as a curious fact by some observant person, that while wooden pavements have proved such miserable failures in almost every American city, they have proved very successful in Berlin. There should be some reason for this, and our engineers should have sufficient curiosity to find out what the reason is.

The Pyramids of Teotihuacan.

BY E. J. MOLERA.

Two years ago I had the opportunity of visiting the famous pyramids of Teotihuacan. I had the good fortune of making the trip with Mr. Ziehl, a German Mexican, member of the Mexican Geographical Society, a fine Mexican philologist, one of the few who had visited the pyramids and knows a great deal about them, having formed part of the Mexican Commission sent to Teotihuacan to explore the monuments there.

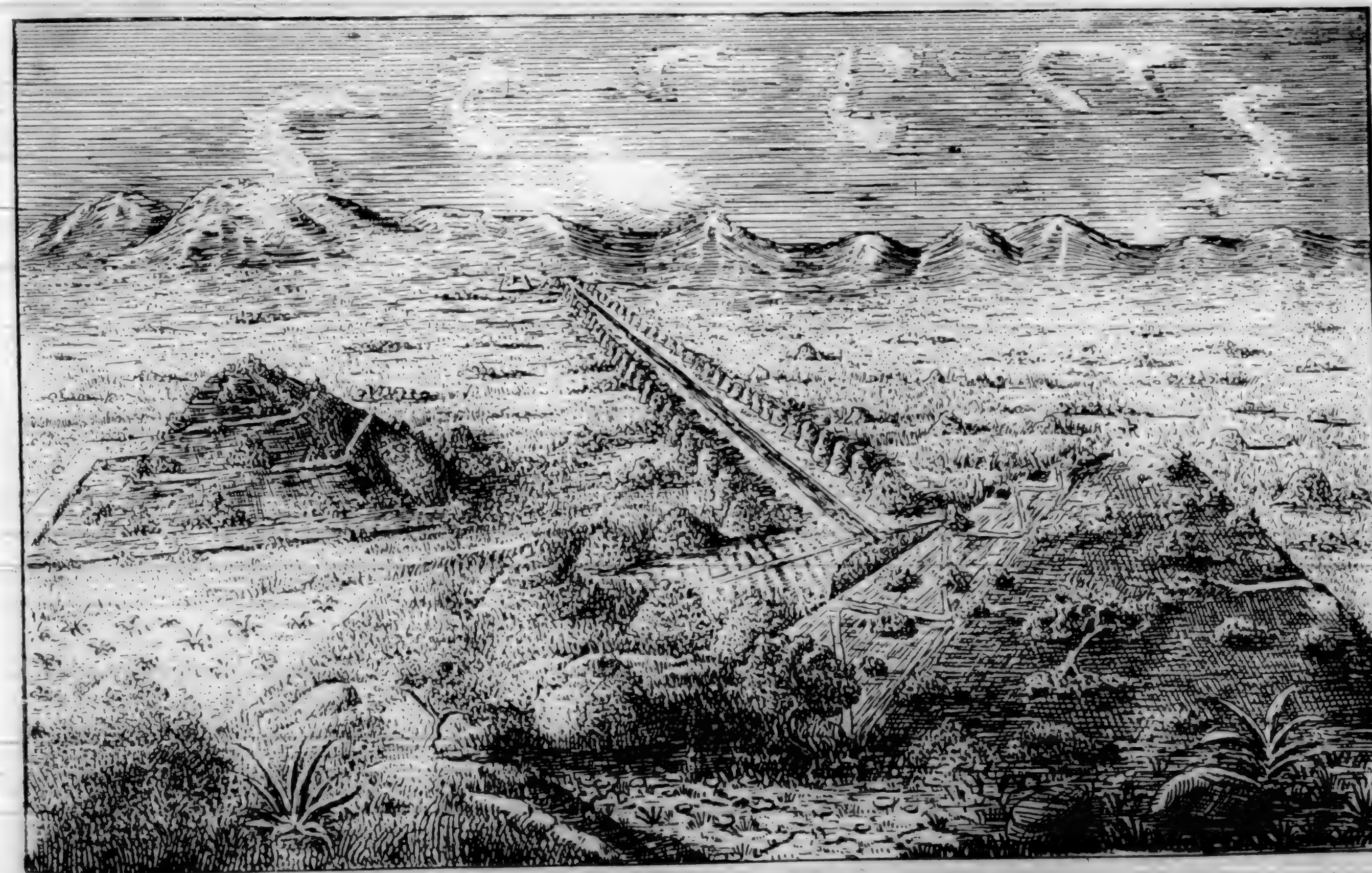
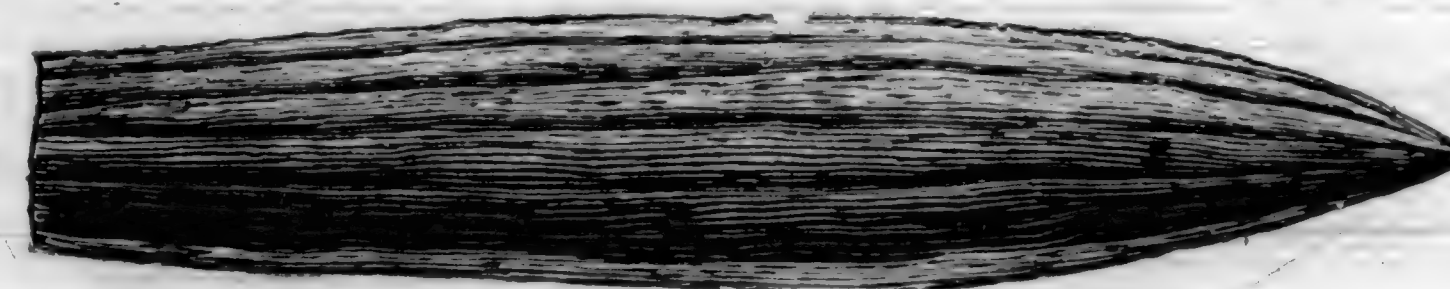
Early in the morning we started on the Vera Cruz train, which is there as our overland. On board we had a body of 200 soldiers to guard the train, a luxury the United States could not afford with her little army.

The sun was spreading his golden rays over the silvered tops of the Popocatepetl and Iztacihuatl, flooding with light the beautiful and romantic valley of Mexico. Moving along with the train, the imagination cannot keep pace with the numerous recollections that history brings to the mind by the sight of the monuments spread before the eyes of the traveler.

We see, at our starting "Coapan," "Tlatelolco," and "Saint James Tecpan," where the heroic Cuauhtemoc, the last emperor of the Aztecs, was taken prisoner while endeavoring to run away with his family in a canoe. He is said to have told Cortez to kill him, as he could no further defend his country. Near that very spot are the ruins of the palace of the Aztec governor sent by the Mexican Crown to the city of Tlatelolco. A moment after we are at the Guadalupe Causeway, built by the Franciscan monks, at the head of which presided Fray Joan, of Torquemada, the Mexican Titus Livius. At the end of that causeway we find Guadalupe, where the treaty between the United States and Mexico was signed in 1848. There is the temple, where the Indian virgin is worshiped. A mast of a ship can be seen carried all the way from Vera Cruz by sailors who believed themselves to have been saved by that virgin from shipwreck. At our right we see Lake Texcoco, covered formerly with acalis, as to-day is Chalco, with chinampas, or floating gardens. Only a few minutes more and we pass Ehecatepec where the patriot Morelos was shot in 1815. After a little while we stop at the station of Teotihuacan to go by stage to the town of the same name. From that point we

walk for a mile through a thicket of cactus, organs, perus, etc., and arrive at a deep gulch, which we cross, and find ourselves in a troglodytic field. Numerous openings show the entrances of subterranean caverns. I entered some of them, but did not find the end of many; they probably intercommunicate with one another, and go to great distances. Here begins the Indian sacred ground; at every step we find obsidian points, which are there still called by the Aztec name of *itzli*. A short walk places us before the great pyramids.

They are situated at twenty-eight miles from the Capital of Mexico, to the northeast,



and not the northwest, as Mendoza says. They are two in number, though lesser tumuli, or earth mounds, abound around and in the vicinity of them. Torquemada asserts that, in his time, there were no less than 2,000, which probably were only a part of the ones built originally.

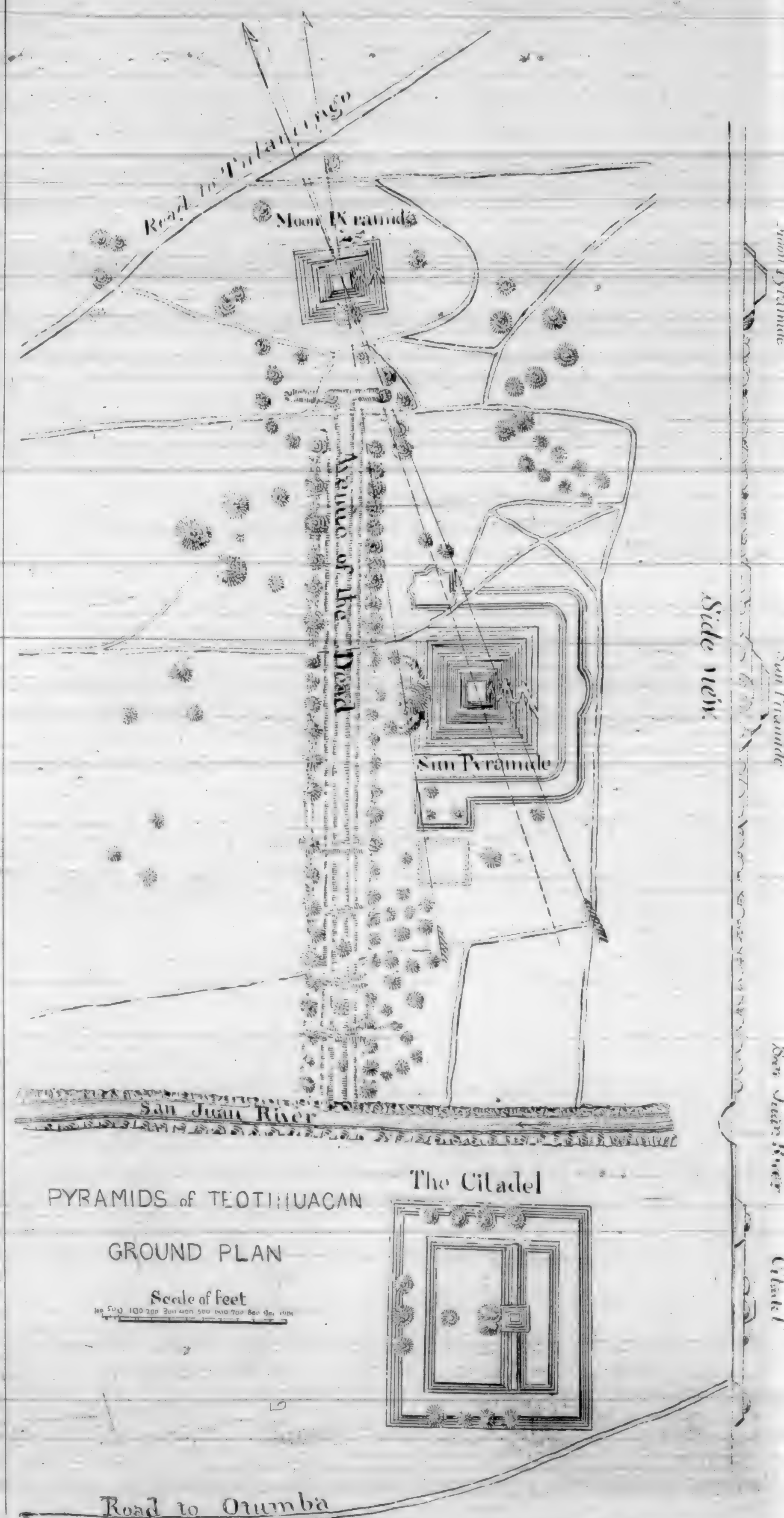
At the northern extremity heads the *Mez-til Itzacual*, or Pyramid of the Moon. The observer placed on its summit and looking southward sees close to its base a square about five hundred feet on each side, formed of tumuli, or mounds, which the Mexicans call *tlaltels* or *cocillos*. Starting from that square, there is an avenue several miles long and about two hundred feet wide, with a line of earth mounds, or *tumuli*, on either side. These are very well defined for a distance of nearly a mile, where they cross the San Juan River. This avenue was called by the Mexicans *Micoatl*, or the "Avenue of the Dead." The earth mounds are elevated from the level of the avenue, and along it, on either side, run wide sidewalks, in the shape of steps. Midway between the Pyramid of the Moon and the San Juan River, or at a distance of 2,600 feet from the Pyramid of the Moon, stands *Tonatiuh Itzacual*, or Sun Pyramid. At the other side of the San Juan River, a large, walled square, called the Citadel, with a pyramid near its center, forms the third prominent structure of this remarkable group of prehistoric monuments.

The geographical positions of these monuments, as determined by the scientific commission of Pachuca, are as follows:—

Moon Pyramid, Lat., $19^{\circ} 41' 52.80''$; Long., $98^{\circ} 35' 18.32''$, Greenwich time. Sun Pyramid, Lat., $19^{\circ} 41' 26.74''$; Long., $98^{\circ} 35' 18.32''$, Greenwich time. Citadel Pyramid, Lat., $19^{\circ} 40' 51.57''$; Long., $98^{\circ} 35' 18.96''$, Greenwich time.

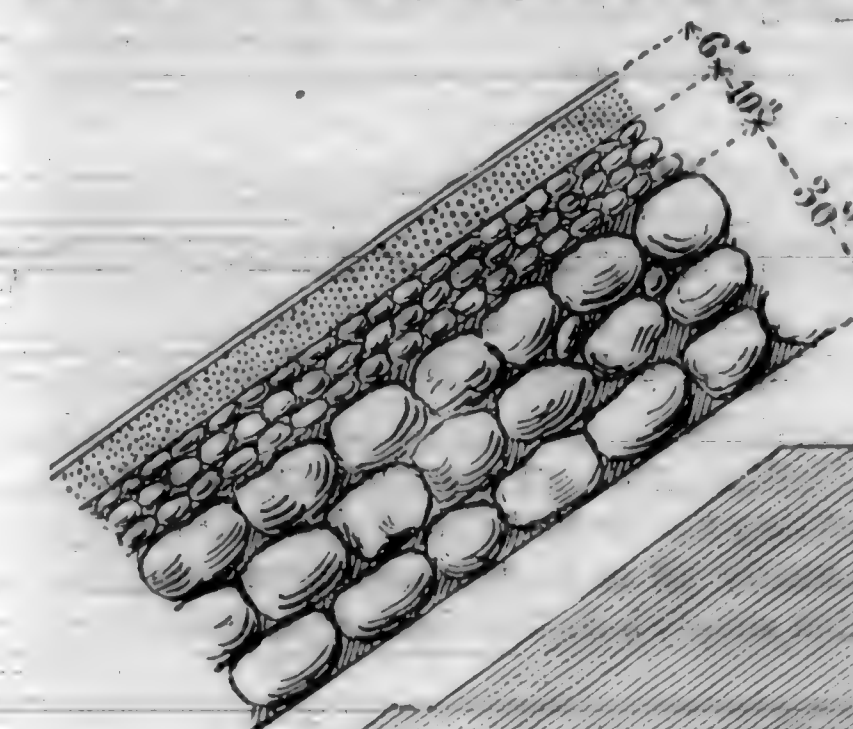
The sides of these pyramids do not follow the direction of the cardinal points, as stated by Brasseur de Bourbourg, and others, and as the Egyptian pyramids do. The Moon Pyramid follows just now the magnetic points, but that is only an accidental circumstance. The sides of the Pyramid of the Sun, as well as the Citadel, follow intermediate points of the compass.

There is, however, this remarkable circumstance in the situation of the pyramids, that the line joining the centers of both, follows within two degrees a true north and south line. The little discrepancy may be accounted for by the supposition that they were aligned by some star near the pole at the time of their construction, probably Alpha Draconis, but not Polaris, as, erroneously, Almaraz says. Taking in consideration that the pyramid builders nearly always placed the sides of the pyramids in parallel lines, I am inclined to think that the diagonals of the quadrilateral forming the bases of the pyramid, point to two prominent points in the Valley of Mexico, which can be determined as soon as accurate surveys of the pyramids and valley are made.



PYRAMID OF THE MOON.

This is the smaller of the two. The base is a rectangular quadrilateral, 511 feet long on the sides running east and west, and 426 those running north and south, the elevation from the base is 138 feet. The dimensions given by Clavijero, viz., 88 by 86 perches, or 1,492 by



THE CITADEL.

As the name indicates, this is an inclosure in the shape of a fortification. Four walls 1,000 feet long, each side, 260 feet wide, and 33 feet high, inclose a pyramid in the shape of the tower, common in old fortifications. The tower is connected with the outer walls by one running in a north and south direction. All the walls are as those of the Sun Pyramid, with inclined faces, or in talus, and the western wall is only one-half as high as the rest.

THE TLALTELS, OR MOUNDS.

These are little monticles in great numbers scattered around the pyramids and along the

1,319 feet, are three times too large. It covers a surface larger than the Superior, and nearly as great as the Great Pyramid of Egypt, or twice as large as our Union Square.

This pyramid, as well as that of the Sun, was formerly divided in four stages, or bodies, separated by a walk around three of its sides. One of these divisions is plainly visible yet, at a height of about seventy feet from the ground. The side without walks or steps is at the east, and there is at present the zigzag road to ascend them. But, according to Clavijero, there were formerly steps at the sides in the same fashion as those of the *teocalis* and the great Cu in the city of Mexico.

The manner of building these pyramids is by layers parallel to the sides, and not horizontally as we would build them; the material is a kind of McAdam composition. First is a layer of boulders and mud about thirty inches thick, the boulders being about ten inches on each side. On top of this there is another layer, six inches thick, of mud mortar, and finally a finishing coat of lime. These layers are repeated over again through the whole mass, as far as it has been uncovered. It is possible that when properly examined some variations may be found.

PYRAMID OF THE SUN.

This is the larger of the two, with a rectangular base 735 feet east and west, 761 feet north and south. Its height is 203 feet. It covers an area as large as the Cheops, or Splendid Pyramid, in Egypt, and larger than our largest square, Alamo, or Lafayette Park. Around this pyramid there is a very large wall, 131 feet wide and 20 feet high. This wall is discontinued at the west side. The faces are not vertical, but inclined, or in talus.



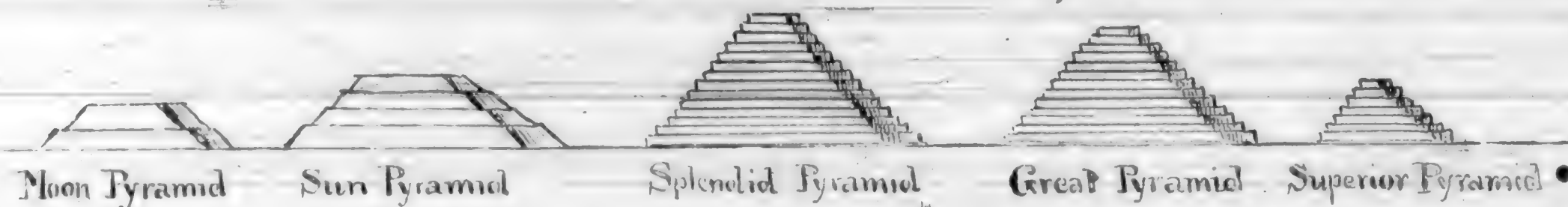
avenues of the dead, in groups, sometimes forming regular geometrical figures. Their outer form is a half spheroid, but they cover structures nowhere met with in similar monuments.

Each monticle covers a building, home, temple, mausoleum, or whatever it may be. Though connected with one another, they are isolated in their greater part. With a circular or polygonal plan they have only one side connected with the adjoining buildings. The floors and walls are admirable, though made of dry mud; they are covered with a composition of lime and metallic oxide, that would shame our best cements, Roman, Portland or Rosendale. The hard finish of those walls is made of a stucco not to be compared with our plaster. After a lapse of centuries (no one knows how many) they are so bright and shining that it gives pleasure to behold them. The floors are without cracks, without using Schillinger's patent.

Some of these *tumuli* have been broken open for treasures, building materials, or archeological objects, more for the former than latter. In all of them have been found vases and objects of art. In some, beautiful ornaments of silver, gold and stones.

Megalithic structures were so abundant that they can be seen used for house building, roads and bridges in the country around. I saw many in the neighboring town of San Juan of Teotihuacan, which would honor any museum in the world. And yet the Mexican Government suffers them to be destroyed, and loses not only objects of intrinsic value, but the key to unlock many of the secrets of the ethnography of this continent. There is not in any one spot on this continent as much material together as in Teotihuacan. It would be worth the while of any society of wealthy American to send a scientific commission there. In one day I gathered more than 2,000 penates, and as many obsidian arrow points and knives. I acquired two large idols and several vases, which, however, I lost in Acapulco by being ignorant of the Mexican law of Treasuretrove.

Mexican Pyramids



In the avenue of the dead, opposite the Pyramid of the Moon, lies, abandoned and exposed to the dilapidations of the weather and vandals, a monolithic statue which may be *Moctli*, the one alluded to by the early Mexican historians, said to have been on top of the Pyramid of the Moon. It is eleven and one-half feet in height, and five and one-half feet on each side. It must weigh no less than 18 tons. These monuments are supposed to be the most ancient built by the hand of man in this continent. Who were the builders is not known. Betancourt says it was the Mexicans, but all other authors say that the Mexicans, when they arrived at the valley of Mexico, found these pyramids already built. Father Siguenza says it was the Olmecs, but that race has left no remains of their architecture, or records, upon which an opinion can be formed. Clavijero and Torquemada think they were built by the Toltecs, by whom the pyramid of Cholula is supposed to have been built. Sahagun says it was the Totonacos who built them. Mendoza, from geological consideration, ascribes to these pyramids a greater antiquity than any of the above-named race attained, and infers that they were built by a prehistoric race. No matter which race built them, they occupy, in the history, tradition, and legends of all of them, a most prominent place. The ground where they are placed was the Holy Land and the Mecca combined. The name Teotihuacan implies it.

The early writers translate it "*The city of the gods*." Mendoza translates *Teotl*, God; *otli*, road; *huan* and *can*, close to; or "a place, close to the holy road." My friend Agustin Ziehl, translates, *Teotia*, to worship; *huan*,

plural termination; *can*, as before; the whole, "Oratory, or place of worship."

In that spot the Indian tradition says the gods assembled after the world was created to metamorphize two of them into the *sun* and *moon*, and, according to some of the traditions, the pyramids were built at that time by the gods. When the Toltecs were tyrannized by their kings, they went in peregrination to Teotihuacan to propitiate the gods, who, however, destroyed them.

These traditions, ridiculous as they are, show the veneration which all the Indian races had for their pyramids.

The object in view of the builders of the pyramids is also surrounded by darkness, and only by a minute study of the structures themselves and a comparison with other similar ones, may we form more or less plausible conjectures.

Egyptian Pyramids



Half a century ago, Champollion's discoveries gave the key to classify and understand the wonderful monuments of Egypt. The deciphering of the cuneiform character has thrown light to arrange and establish the dates of the temples and palaces of Nineveh and Babylon. All the Greek and Roman structures have been surveyed, illustrated, classified, and described minutely. The Dagobes and rock-cut temples of India have been brought to the reach of tradition and history, and have shown that those of Burmah, Cambodia, or China were not so remote that their origin could not be traced. Only the monuments of America still defy the endeavors of Americans to wrest from them the secrets of their history.

The builders of the pyramids were utterly illiterate, and have left no written record of their erection, nor are there any legible inscriptions on the stones, found on or around them, which offer any hints to the inquirer. They are in this respect similar to the old world monuments known as Barrows, Cairns, Giant's beds, Bazinas howes, Tumps, Lows, etc.

And, as Ferguson says, "Till antiquaries are agreed whether the dolmens are monuments of the dead or altars for sacrificing men, whether the circles are temples or tombs or observatories, whether the mounds are tombs or law courts, it seems impossible, without arguing every point, to say anything that will be generally accepted."

If we cannot hope for the exact determination of the time of building the pyramids, or the race that originated them, however, we can find striking resemblances to similar structures in both continents.

We find in the old continent the everybody's-known pyramids of Egypt, with a great resemblance to our own. Their size is not very different; the areas covered by the two largest ones, in both hemispheres, are nearly the same, whereas the smaller Mexican pyramid is, in areal size, between the Great and Superior in Egypt. It has been stated by nearly every writer on the subject, that the American pyramids, like the Egyptian ones, were oriented by the cardinal points; but it is not so. On the contrary, it is a distinguishing characteristic of the structures on this continent, to be nearly all with their sides running according to intermediate points of the compass.

Another point of resemblance consists in that they are associated with funereal remains. In nearly all such structures human remains, either simply buried, or incased in cists or urns,

are to be found. It has been made a subject of many studies, and the origin of many theories, the possible use to which the Egyptian pyramids could be put for astronomical purposes. The pyramids we are considering have no apparent device by means of which they might be made serviceable for that purpose. We might say, borrowing a botanical expression, that the pyramids in the valley of the Nile, and those in the valley of Anahuac, are of the same *genus* but of different *species*.

The geographical distribution is also remarkably similar in both continents. Starting from the north, we find them in England and Scotland, especially in hilly countries; in *tumuli*, *dolmens*, *avenues*, *circles*, and the fanciful Dracontia of Dr. Stukeley, attaining the greatest dimensions at Avebury and Stonehenge. In Ireland, we find similar structures all over that country, under the names of cairns, which are specially described in the accounts of the battle circles of Moytura.

The *tumuli*, *dolmens*, and other monuments of the like, are very numerous both in Scandinavia and North Germany. To the Danes the credit is due of the first attempts to a systematic classification. We find them also in France and all the countries bordering the Mediterranean Sea. In Algiers and Tripoli they are numerous, and some in Algiers resemble those of Teotihuacan in the connection of the *tumuli* by rows of stone. The islands of the Mediterranean afford also many samples of these monuments, sometimes of great beauty and splendor. They extend themselves to Palestine, India, and the Siberian steppes. In Europe, as well as in Asia, they attain the largest dimensions and the most beautiful

forms in a zone not far from the tropic of Cancer.

If now we come to this side of the Atlantic, we find them at the south of the shores of the Great Lakes, and spreading themselves easterly as far as the western boundary of the State of New Jersey, and westerly as far as Oregon and even Vancouver Island. The finest specimens of these structures are to be found along the great rivers Missouri, Mississippi and Ohio, generally on their borders and on alluvial soil. The Marietta works and Pyramids, on the banks of the Muskingum River, as described by Squier and Davis, have many points of resemblance to the Pyramids of Teotihuacan.

Going northward they change their form from the spherical to the pyramidal, and improve both in size and shape, attaining the best form at a zone not far from the tropics, thus resembling in their geographical distribution the monuments of the old world. Another feature is that, in proportion as we go northward, what the mounds lose in importance, the inclosures gain in extension, so that, in the old continent, the latter are either absent or of little importance, in Egypt or India, attaining an extension of several miles in the northern countries.

The same occurs in America. The walls, that in Teotihuacan measure scarcely a few thousand feet, reach, in Ohio, several miles, and assume all kinds of shapes. It seems as if the mound builders had started from near the tropics, where they held undisputed sway, and, going northward, had to protect their buildings with fortifications and other works, from the aggression of hostile tribes. The similarity of these structures raise, naturally, the question whether their builders were from the same race in both continents; and, if so, whether they emigrated from the Old Continent to the New, or *vice versa*?



era, in which time, iron, they suppose, began to be used.

This classification is obviously incomplete, inasmuch as most probably before they used bronze, man used gold, copper, and tin, which is found in many instances pure, in a native state. Besides, a great period of transition must have elapsed between two successive ages. In our country they have been classified according to the probable purpose for which they were built. That of Squier, Davis, and Lapham, is as follows:—

1. Inclosures for defense.
2. Sacred and miscellaneous inclosures.
3. Mounds of sacrifice.
4. Mounds of sepulture.
5. Temple mounds.
6. Animal mounds.

The Pyramids of Teotihuacan would be classified by Danish antiquarians as belonging to the Bronze Age, as different tools and ornaments have been found within them, though never iron has been found. According to the American classification, they belong to all the several denominations, excepting the last one.

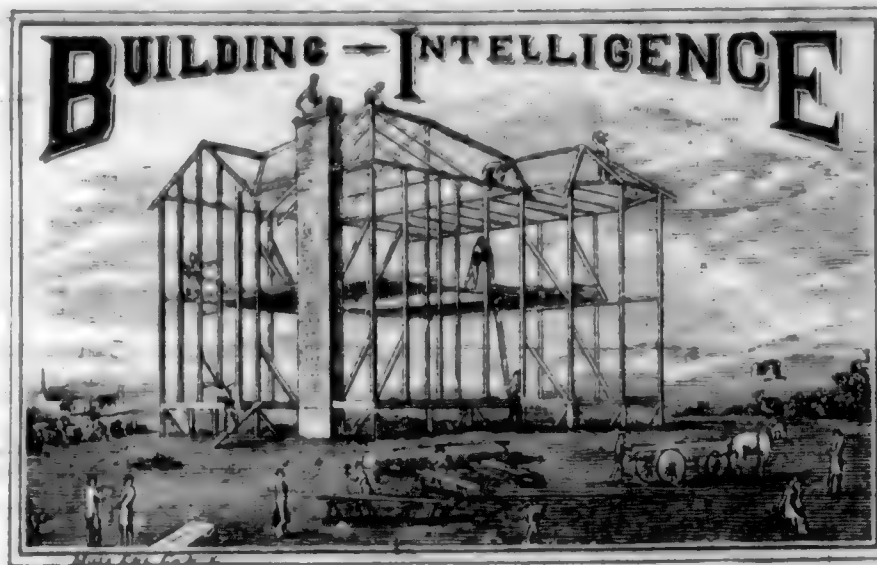
They were inclosures for defense, as shown by the walls, excavations, and strategical position they occupy. Besides being placed in the highest part of the valley of Mexico, they were walled on the pregnable sides. Dr. Manfred, a member of the Mexican Geological Society and one of those sent by that society to explore those monuments, thinks that the well or shaft found in the interior of the Pyramid of the Moon is the entrance to a gallery going to the Pyramid of the Sun. He states to have seen similar structures in New Zealand, and in the Pampas of Sacramento, in South America, which the natives call *Pahs*. Each pyramid, or mound, has a central well, which gives entrance to galleries going to long distances. When the natives are attacked he says they defend the mounds to the last, but, if overpowered, they disappear through the wells, and make their escape to long distances. He thinks that a proper exploration would show that both pyramids are connected by a gallery.

Close to the citadel I found large heaps of obsidian arrow points, and on the neighboring river many boulders of the same material of which the arrow points are made. I presume there they had their arsenal. They were "sacred inclosures" inasmuch as, according

Among the penates, or little figures, I found in Teotihuacan, there are all the types of mankind. The resemblance cannot be accidental, as they are found with even the same ornaments used by the respective type races. It seems as if people of all the races, known to us, had inhabited the Valley of Anahuac, or that the races which inhabited that valley were acquainted with all the races, and had perpetuated them in their statues. But, then, the same resemblance is found in the flora and fauna of both countries, and we are forced to conclude that either similar conditions of land, position, and climate will produce the same organisms, with similar tendencies, or that the earth, in her cosmogonical and geological life, has, by means of her changes of rotation, upheavals and depressions, uncovered, and immersed successively all her surface, and gradually shifted the organized world from one place into another.

In the utter impossibility of determining the history of these monuments, the Danish antiquarians have classified them in three classes:—

Those belonging to the remotest age, in which no metals of any kind were known to man; and they have called them as belonging to the "Stone Age." The Stone Age they suppose to come down to about 2,000 years B. C. The monument in which, besides the stone relics, copper, gold and brass are found, they place as belonging to another age, called the "Bronze Age," which comes down to our own



BUILDING INTELLIGENCE

We do not answer anonymous communications. Contractors are not regarded as architects, simply because they do, at times, make plans for buildings.

Friend, Architect, Constant Reader, old subscriber and others, by sending us their proper names, will receive letters in answer to their questions.

SAN FRANCISCO.

Market, cor. Seventh. Four-story brick.

O. — Odd Fellows Hall Association.

A. — Wright & Sanders.

C. — Carpenter work — E. Farrell.

C. — Brick work — J. Liebert.

\$253,000.

Broadway, near Battery. Four-story brick.

O. — California Cracker Co.

A. — Wright & Sanders.

C. — Carpenter work — T. Moffatt.

C. — Brick work — J. Liebert.

\$28,000.

Devisadero, near California. Four two-story and basement frames.

O. — J. Winterburn.

A. — McDougall & Son.

C. — J. McKay.

\$18,000.

Devisadero, cor. Pine. One-story frame.

O. — B. — G. Hinkle.

\$2,000.

Pine, cor. Broderick. Two-story and basement frame.

O. — Mrs. A. Seannell.

B. — T. P. Kelly.

\$3,500.

Devisadero, near Sutter. Two-story frame.

O. — G. Harrison.

C. — A. Jackson.

\$4,000.

Scott, cor. Bush. Two two-story frames.

O. — G. Edwards.

B. — H. Rowe.

\$5,500.

Steiner, near California. Two-story and basement frame.

O. — B. — J. P. Shepherd.

\$1,000.

California, near Webster. Two-story and basement frame.

O. — C. Hermann.

A. — Kenitzer & Raun.

C. — W. Pluns.

\$7,000.

Pine, cor. Webster. Two-story frame.

O. — Donjohn.

A. — Townsend & Wyneken.

C. — Treadwell & Thompson.

\$6,000.

Jones, near Geary. Additions.

O. — W. M. Smith.

Day's work.

\$2,000.

Polk, near California. Three-story frame.

O. — L. Schew.

A. — W. H. Wharf.

Day's work.

\$15,000.

California, cor. Larkin. Three-story frame.

O. — L. Sonnenberg.

A. — Kenitzer & Raun.

C. — Conrad & Miller.

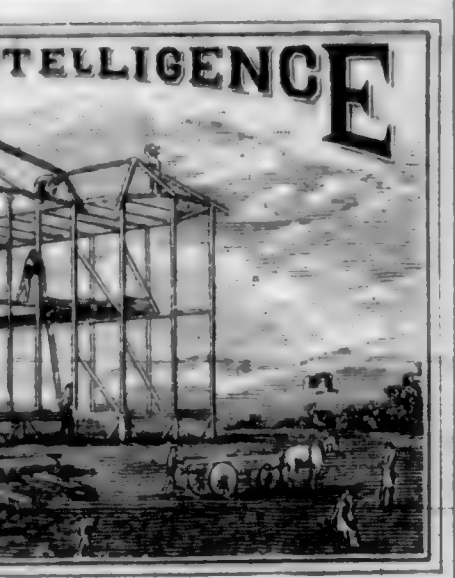
\$12,000.

Leavenworth, cor. Geary. Three-story frame.

O. — Doctor Cleveland.

Day's work.

\$1,500.



Hyde, near Sutter. Two-story frame.

O. — M. Blake.

A. — J. Marquis.

C. — Gray & Stover.

\$7,000.

First, near Howard. Three-story and basement frame.

O. — J. Quick.

A. — J. Marquis.

C. — J. O'Brien.

\$8,000.

Clay, cor. Leavenworth. Eight three-story frames.

O. — C. Spaulding.

A. — J. Marquis.

C. — Cummings & Reiman.

\$33,000.

Devisadero, cor. Pacific Avenue. Two-story brick and frame.

O. — Dr. McLean.

A. — Curlett & Cuthbertson.

son.

Total cost, \$65,000.

California, near Franklin. Additions.

O. — J. Carolan.

A. — Curlett & Cuthbertson.

C. — J. Wilcox.

\$9,000.

O'Farrell, near Dupont. Alterations.

O. — Plagemann & Bernhardt.

C. — G. Seis.

\$8,000.

Oak, near Grove. Three two-story frames.

O. — R. Ewing.

C. — J. S. Mackay.

\$8,500.

Haight, near Broderick. Two-story frame.

O. — Mrs. Wakenan.

A. — Townsend & Wyneken.

C. — Treadwell & Thompson.

\$9,000.

Devisadero, cor. Waller. Three two-story frames.

O. — B. — C. Hinkle.

\$15,000.

Block, bounded by Haight, Waller, Scott, and Devisadero. Seventeen two-story frames.

O. — B. — J. Hinkle.

\$68,000.

Laguna, cor. Olive Avenue. Two-story frame.

O. — L. Zeiss.

A. — W. Schrof.

C. — H. Weiss.

\$2,680.

Ellis, near Powell. Alterations.

O. — W. J. Turner.

A. — H. D. Mitchell.

C. — J. Geary.

\$5,000.

Natoma, near Seventh. Three-story frame.

O. — M. Doyle.

A. — W. Moser.

C. — P. Laherty.

\$5,000.

Golden Gate Avenue, near Devisadero. Three-story frame.

O. — J. Neuman.

A. — W. Moser.

C. — J. H. McKay.

\$12,000.

Ellis, near Franklin. Alterations.

O. — T. Donahue.

C. — M. Murphy.

\$1,000.

Webster, near O'Farrell. Alterations.

O. — B. — M. Magrane.

Day's work.

\$4,000.

Fulton, near Buchanan. One-story frame.

O. — T. Roy.

C. — A. N. Allspough.

\$600.

Pierce, near O'Farrell. Two-story frame.

O. — Carvill Manufacturing Co.

Day's work.

\$2,500.

Fillmore, near Fulton. Two-story and basement frame.

O. — J. Bauman.

A. — W. G. Copeland.

C. — R. McCann.

\$8,000.

McAllister, near Polk. Alterations.

O. — R. Crockett.

C. — T. M. Quackenbush.

\$700.

McAllister, near Seventh. One-story brick.

O. — J. K. Prior.

Day's work.

\$16,000.

Fulton, cor. Webster. Additions.

O. — National Brewing Co.

C. — W. Huwe.

\$2,000.

Webster, near Grove. Two-story frame.

O. — J. Ling.

C. — W. Grant.

\$2,500.

Nebraska, near Yolo. One-story frame.

O. — J. McClellan.

C. — T. Mitchell.

\$1,100.

McAllister, near Franklin. Three-story frame.

O. — Mrs. Kemme.

A. — T. J. Welsh.

C. — J. Furness.

\$7,000.

Silver, near Fourth. Three-story frame.

O. — Mrs. Hanbert.

A. — T. J. Welsh.

C. — M. Lynch.

\$7,000.

Guerrero, near Twenty-third. Two two-story frames.

O. — Depreire.

A. — W. Moser.

C. — Binet.

\$7,000.

Fifteenth, cor. Market. Two-story frame.

O. — Judge Wendell.

A. — R. H. Daley.

C. — Commary & Beardslee.

\$9,000.

Boardman Place, near Third. One-story frame.

O. — W. Black.

C. — Thompson & Treadwell.

\$1,300.

Tenth, near Harrison. Two two-story frames.

O. — M. Coniff.

A. — T. A. Eisen.

O. — T. J. Hamilton.

\$9,000.

Twenty-third, cor. Dolores. Two two-story frames.

O. — J. Clancey.

C. — D. Spangler.

\$4,000.

Jessie, near Eighteenth. Alterations.

O. — S. Sullivan.

C. — J. Doherty.

\$1,900.

Second Avenue, near Fifteenth. Three two-story frames.

O. — B. — G. Edwards.

\$9,500.

Page, near Gough. Two three-story frames.

O. — Mrs. Strasser.

C. — J. T. Grant.

\$8,000.

Tenth, cor. Minna. Five two-story frames.

O. — T. J. Bergin.

A. — J. R. Martingauge.

C. — J. Mulcahy.

\$22,000.

Shotwell, near Twenty-second. Alterations.

O. — A. W. Jackson.

A. — G. A. Bordwell.

Day's work.

\$1,600.

California, near Montgomery. Alterations.

O. — Produce Exchange.

A. — T. A. Eisen.

C. — Maxwell & Stevens.

\$4,000.

Brannan, cor. Sanford. Four-story frame.

O. — T. J. Parsons.

A. — T. A. Eisen.

C. — F. Day.

\$15,000.

Grove, near Franklin. Two-story and basement frame.

O. — H. H. Besby.

A. — T. A. Eisen.

C. — C. Mills.

\$4,000.

Golden Gate Avenue. Alterations.

O. — W. A. Scollay.

C. — Leonard, Bamber & Co.

\$1,500.

O'Farrell, near Dupont. Alterations.

O. — C. S. M. Hills.

\$3,000.

Market, near Fifth. Alterations.

O. — R. C. Church.

A. — W. Patton.

C. — J. H. Cory.

\$4,000.

Battery, cor. Clay. Alterations.

O. — A. — Percy & Hamilton.

C. — J. Cox.

Market, near Jones. Alterations.

O. — C. T. Forrest.

C. — G. Richardson.

Washington, cor. Van Ness Avenue. Three-story and basement frame.

O. — J. F. Merrill.

A. — Cleveland & Swain.

Carpenters — Treadwell & Thompson.

W. E. Stevens — Mason.

\$60,000.

MISCELLANEOUS.

Santa Cruz. Three-story frame. O. — A. F. Swanton; C. Chas. Kaye; \$8,000. Three-story frame. O. — Jos. Capelli; C. — W. A. Liddell; \$2,000. Two-story frame. O. — C. W. Davis; C. — C. W. Davis; \$2,500. Two-story frame. O. — Shorb, C. D. — Moulton; \$2,500. Neptune Bath House. O. — Captain Miller; C. — C. Kaye; \$10,000. Two-story building. O. — Farmer's Union Corporation; C. — John Morrow; \$10,000.

Livermore. One-story frame building. O. — L. H. Cutler; C. — C. W. Bradshaw; \$1,500. One and one-half story frame. O. — Wm. Budworth;

The lowest price for which good, hard-burned brick can be purchased at the present time is eleven dollars per thousand, the only concession granted being one per cent. discount for cash. In addition to this price, from 50 cents to \$1.50 per thousand is charged for hauling, depending altogether upon the distance. At the price given there is a clear profit of at least three dollars per thousand. In a small building where only a few thousands are necessary for foundations and chimneys, the cost is not much increased; but on the new Odd Fellows' Hall, where nearly four millions are required, the case assumes a totally different aspect.

This state of affairs has received careful study from those most interested, and more than one project is on foot, to counteract the designs of those holding the brick supply in their tight grasp. Among other things, the advisability has been considered of the Master Masons themselves combining and starting a manufactory of their own, thus in a great measure making them independent of the syndicate now controlling the market.

We can see no good reason for a project of this kind not being a successful one. Unity of action and strict observance to a well digested set of rules will enable the leading masons to form a company that, with judicious management, can so regulate the supply of brick and the price thereof that owners can make preparations a long way ahead for building, feeling sure that they can make calculations on the cost of improvements and thus determine if the same will return a profitable income.

There can be no question but that some arrangement will be made before next year's building season will commence, to regulate the price of bricks, and still leave a fair profit to the manufacturer. We understand that one of the largest consumers of brick in the city has taken hold of the problem, and if his intentions are carried out as stated to us, the price will be materially lower in the near future.

In this connection, we would suggest that the matter of masons' wages become an important one. Patterning after the example of the manufacturers, whenever labor is in demand up jumps the wages to as high a standard as the owners will bear, and when work is scarce on account of the great cost of materials and labor, the price gradually drops. One of the great questions to be considered is, Can a standard of wages and prices of materials be adopted, so that owners can calculate in the future the cost of any desired improvement.

Building Without Plans.

THE carpenter or contractor who is emphatic in his assurances that plans and specifications are not necessary may be likened to a druggist who should propose to furnish the medicines for a serious case of illness without the doctor's prescription; or to an opponent in a case at law, who should make the absurd proposition

that he and his lawyer could settle the question without the aid of a judge and counsel on the other side. The relations of the owner and contractor must always necessarily resemble a case at law. The contractor's knowledge of the business is his counsel, the architect is the owner's counsel, and the plans and specifications are the judges. The best way to keep out of a real case at law is to provide this silent little court to settle every question.

The Increasing Prospects of this Journal.

WE once more renew expressions of gratitude for the handsome patronage extended to this journal, both in subscriptions and advertisements. It has by far exceeded the highest expectations of its founders, and if earnest efforts will accomplish it, the future will be no less a triumph than the past has been.

It is pleasant to listen to the very many complimentary expressions volunteered by patrons—personally strangers to us—known only by the feelings of friendship brought about through the influence of what has appeared from time to time in this journal.

It also greatly pleases to have a large number of our advertising patrons tell of the returns received, and the business advantages derived from advertising in our columns. We shall not "blow our own horn" in this regard, but refer those who have not, to those who have continued their advertising in this journal. Judicious advertising always yields a fair return for the money spent.

The Painters' Strike.

THE maximum rates of wages paid to journeymen painters up to the present time, has been \$3.00 per diem. Recently, however, the spirit of dissatisfaction has manifested itself among the daily toilers with the brush and paint-pot, resulting in the demand for \$3.50 per day, which being not acceded to by the bosses, a strike has resulted.

Up to present writing, just prior to going to press, no general concession has been made by the master painters, although some have been compelled to comply with the demand for an advance, for the purpose of completing work under way, within the limits of contract time, and to avoid liquidated damages. A few of the employers, for reasons of their own, have yielded, and in time there may be a general concession.

The opposition to the advance, on the part of the employers, is not based so much upon the financial feature, for in all cases of contracts taken after the advance becomes the rule, the difference can be provided for in the estimates for new work. But it is a well-known fact in painting circles, and among mechanics generally in other branches, and to architects, that adulterations of paint materials is a common practice with a certain class of master painters, who take work at prices that pure stock cannot be afforded, using various compounds composed of ingredients containing no

elements of white lead and oil, and by this and other unfair means, deprive men who do honest work and use proper materials and are unwilling to degrade the painting art, from anything like a fair show in the field of contracting. And the better men realize the disadvantage at which they are placed, for the frauds can better afford, with the use of their abominable pastes and slushes costing but little to prepare, to pay \$3.50, than competent and worthy men can afford \$3.00, using the pure articles.

The hitch is mainly upon this ground; the better class of bosses feeling that there should be something done in the way of exposures of things existing and practiced daily in the painting business, to equalize matters, so that the public may be able to understand matters fully, and know who are *painters* in the right and true signification of the term, and who the men that roll up their sleeves and manipulate with their hands and arms, stuff that they call paint, but which contains not one-twentieth part of pure paint stock, which they palm off upon, and deceive owners with, while those who will not descend to such perversion of the mechanical art, have less to do than they should have, and suffer financially by being crowded out in so many cases, by reason of owners, for the sake of an *apparent* saving in first cost, accepting the "slush heavens" at a low figure, rather than paying a fair advance over fraud prices, to good and reliable men for good work.

For Architects.

ARCHITECTS who practice in the large cities will be interested in the answer given by the law editor of *La Semaine des Constructeurs* to a correspondent who asks whether the usual commission can be collected, where old materials are used in building, upon the cost of the work as it would have been if all the materials were new. The reply to this important question is a very satisfactory one, at least for architects in France. It appears the judicial decisions have established the law there that for his services in the construction of a new building an architect is entitled, in summing up the cost upon which his commission is calculated, to reckon all materials, whether old or new, and whether furnished by the proprietor or not, as if new and furnished by the contractor, the courts holding that the work and responsibility of the professional man, and his proper compensation, are the same in both cases. Moreover, if, as often happens in cities, the demolition of structures already existing on the ground forms a necessary preliminary to the construction of a new building, and if the architect of the latter includes in his service the direction of the work of taking down and sorting the old materials, and the provisions for the protection of the public, he is entitled in France, by a decision of the Tribunal of the Seine, to collect commission upon the cost of these operations, in addition to his fees for work upon the new building.

Compiled Items of Interest for Mechanics.

Finishing Saws.

A LATE improvement consists in tempering and straightening the saws at one operation. This is done by heating the saws to the proper degree, and then pressing them with a sudden and powerful stroke between two surfaces of cold iron. A drop-press is employed for the purpose. The mechanism is quite simple and inexpensive. Its use is said to effect an important economy in the manufacture of nearly all kinds of saws and improve their quality.

Street, Store and Bank Fronts, \$4.00

IN filling up cracks and breaks in walls, painters experience a great annoyance from the rapidity with which the ordinary plaster of Paris and water "sets." A remedy will be found in using vinegar instead of water. Mix the same as if water was used, and the result will be very much like putty, and will remain plastic for about a half an hour, finally becoming perfectly hard.

Cottages and Villas, \$0.00

GLYCERINE GLUE.—A German chemist has discovered that the strength of glue is very greatly increased by the addition of one-fourth as much glycerine as glue. Glycerine has many other uses, among which one of the least known is its property of removing pencil marks from paper in a very perfect manner. It may also be combined with starch and plaster of Paris, to form one of the most durable cements for various kinds of apparatus.

Builder's Guide, \$2.00

GRECIAN mythology tells us that the inventor of the saw once found the jawbone of a snake, and used it to cut through a piece of wood, then imitated it by jaggung an iron plate, and thus made a saw.

Modern Perspective, \$0.00

It is reported that the carpenters and sawyers of Paris have made the singular proposal that a tax shall be put upon all machines used by their employers, according to the work they perform.

Wooden and Brick Buildings, \$18.00

INDIAN ink running. If it is for drawing plans you may prevent it running by adding a little sugar to the the Indian ink.

How to Make Cisterns.

CISTERNS, as a general rule, should be made as deep as possible, for the sake of coolness and economy, because it is easier to arch over a cistern twenty feet deep and twelve feet in diameter, than one twelve feet deep and seventeen feet in diameter, and these would be of equal capacity. The following table of the contents of the various sized cisterns may be of interest in this connection: For each ten inches in depth the following diameters will give the contents named: 8 feet, 313 gallons; 9 feet, 396 gallons; 10 feet, 489 gallons; 11 feet, 592 gallons; 12 feet, 705 gallons; 14 feet, 959 gallons. Double these diameters will give four times as much capacity.

Church Architecture, \$4.00

CREASES in drawing paper or in engravings may be removed by laying the paper face downward upon a sheet of smooth, unsized white paper, covering it with another sheet of the same, slightly damped, and then iron with a warm flat-iron.

Practical Carpentry, \$1.00

ONE of the most important features in an interior arrangement is the actual and relative height and width of doors and windows. The question is whether the apparent proportions of apartments cannot be greatly modified by the treatment of the necessary openings. A window in the center of one side of a room gives more light than if at one side of the center, but it has the effect of shortening the length of that side. The same is true of doors in similar positions. The higher a window is the more light it will give, but the lower the room will appear. In doors, nothing is gained by increasing the height beyond a proportion to the width that shall prevent a stunted appearance. Their relative height to that of the windows is a nice question of balance, that can be best determined by experience.

Universal Assistant, \$2.50

VARNISH and paint can be removed by a solution of caustic soda. The operation may have to be repeated several times, depending upon the thickness of the materials to be removed.

COAL Oil is soluble in Ether, Naptha, Chloroform, etc. Stains in carpets made by the oil, with proper manipulation, can readily be removed by either of the above reagents. Care should be taken not to have a light around while making the experiment.

Buck's Practical Designs, 50c

LIQUID GLUE.—4 ounces hard glue, 16 ounces acetic acid; dissolve by soaking and heating. Spaulding's glue is supposed to be ordinary glue dissolved in good, strong vinegar. Another way is to add a little pyrolygneous acid to a thick solution of glue and water.

Cummings' Architectural Details, \$6.00

THE apprentice system is finding strong advocates, not only among employers, but among intelligent workmen and trade-unionists, who have heretofore opposed the system. Skill always pays, always is in demand, and always commands better compensation than where it is lacking.

Bancroft's Histories.

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

There are to be thirty-nine octavo volumes, with maps and illustrations, fifteen of which are now ready. They will be well printed on good paper, neatly and substantially bound, uniform in style, and will average over 700 pages each. Three or four new volumes per annum will appear until the entire series is completed. Subscribers will not be obliged to take the work unless it corresponds with the description in every particular.

PER VOLUME.	
Bound in Extra, English Cloth, neat and attractive style.....	\$4.00
Bound in fine leather, Library Style.....	5.50
Bound in half calf, half Russia or half Morocco.....	8.00
Bound in Russia Leather or Tree Calf.....	10.00

Any information in regard to the above will be given by addressing the office of this journal.

Old English Homesteads.

BY A CURTIS BOND.

THE structural stability of old English dwellings and the massiveness of their material, has preserved a vast number of them dating centuries back. In the superior class of residences there is ample provision for indoor comfort, whilst the prevailing disposition was to put wood to its best account in turning and carving, and to hide the nakedness of walls by paintings, which, if gaudy, were at least suggestive.

It is noticeable that in houses of any pretensions the ornament was such as to give it a distinctive and appropriate character. The room of Mary, Queen of Scots, at Hardwich House, Derbyshire, has panels of inlaid woods representing profiles of the Cæsars. The state-room walls are divided in half the upper portion, having landscapes and figures on a white ground, tapestry covering the lower portion.

An early poet tells of a room on the walls of which appeared,

"Old portraitures
Of horsemen, hawks and hounds,
And hart all full of wounds."

The designs were often only outlined or roughly filled in, but the scenic effect would be heightened by the light being admitted through narrow, casemented windows, and never too abundant.

The bedsteads, not infrequently placed on an elevated platform, were of so solid a character as to well merit the designation in wills and other documents, as "beds of tymbre." That of Henry VIII., now to be seen in Hampton Court, is described in an old inventory as having "postes and head curiously wrought." Old oaken chests, oddly carved, were invariable accompaniments of dining-room and sitting-room furniture.

Ends and backs of benches for the dining-table, massive and richly carved, were prominent features of the decorative ensemble and the extent to which ceiling decoration was carried, contrasts strongly with the prevailing plainness which succeeded, but the sunken panels, with carved borders, were in keeping with the walls of the room when of wood, and which, in paneling and coloring, were singularly ornamented.

Domed, scenic, oval, masonry recesses were frequently planned by architects to hold the side-board, and thus prevent them from obtrusively occupying the floor space. An immense amount of carving was often lavished on staircases, which, with their ample breadth, were always rendered a prominent feature, the effect being aided by the practice, from the time that glass came into general use, of lighting them from above. In old drawings of manors, with surrounding grounds, the garden pavilions in stone or brick, and composition or wood, on which much care and cost were lavished, form conspicuous features and are suggestive of a departure in architecture with ourselves in this line. The pediments of many

of these wooden temples, in rustic or classic form, were adorned with figures of satyrs, the graces, griffins, dragons, etc., in short, all descriptions of vagaries, not to be too critically scanned, serving to gratify the sight, the sport of fancy breaking away from the conventional styles of more permanent erections.

Evolving from the early house of the past generations of Englishmen to the present business house of New York City, is a progression by no means so violent in its change as would appear at first sight, for the constructive qualities of both are worthy of especial notice in their stability. The architect of the modern building has discovered that permanency in his structure is an element essential to their appreciation and necessary for his own reputation. In fact, singular as it may appear, more attention is given in New York to the construction and substantiality of business buildings than of residences. Dwellings, where possibly a dozen different families are congregated, on fashionable flats, renting from \$2,000 to \$6,000 each apartment per year, are made in a flimsy and precarious way when compared with the magnificent stone buildings constantly being put up in the lower part of the city. The protection of human life, in a word, is a secondary consideration to the safety of books and office furniture.

Early in May a large number of firms will remove their offices to a new building (referred to some months ago), on Nassau Street, between Cedar and Liberty, occupying the site of the old post-office. Masons are busy laying the stone in the main hall, and plasterers are putting the finishing touches to the walls. Every day witnesses new crowds gathering on the corner of the streets thereabouts to study the ornamental features, which are so plentifully shown.

The building of the Mutual Life Insurance Company is destined to be an architectural attraction for the prescribed ten days, which is the duration of wonder in this country, and by the end of that time, no doubt, another edifice will have been started with novelties shown in its construction and ornamentation that will detract attention from the present. That, in its turn, will be eclipsed by other efforts, and so it will go on, as Dean Swift says, "*ad infinitum*."

The portico of the Mutual Building is two stories in height. The first story consists of large piers of granite, the alternate blocks polished and fluted. These are planked by two very handsomely polished Quincy granite columns. The frieze contains a panel upon which the title of the company is set in polished granite letters. The ceiling of this story of the portico is paneled with richly moulded squares, three in number, which inclose foliated rosettes, elaborately carved, all in strict conformity with the style of the building, which is Italian Renaissance. The capitals of the polished columns are of white Italian marble, decorated with handsomely modeled cap-work. The second story is of Indiana limestone. The piers, unlike those of

the first story, are paneled, and enriched with elaborate carvings. Next to these piers are granite columns smaller than those below, and supporting an arch with a vaulted paneled ceiling.

The capitals of the flanking piers contain heads typical of Europe, Asia, Africa, and America. Europe is represented by the head of a Caucasian, Asia by the head of a Chinaman, Africa by a negro, and America by the everlasting Indian. They were modeled in Rome.

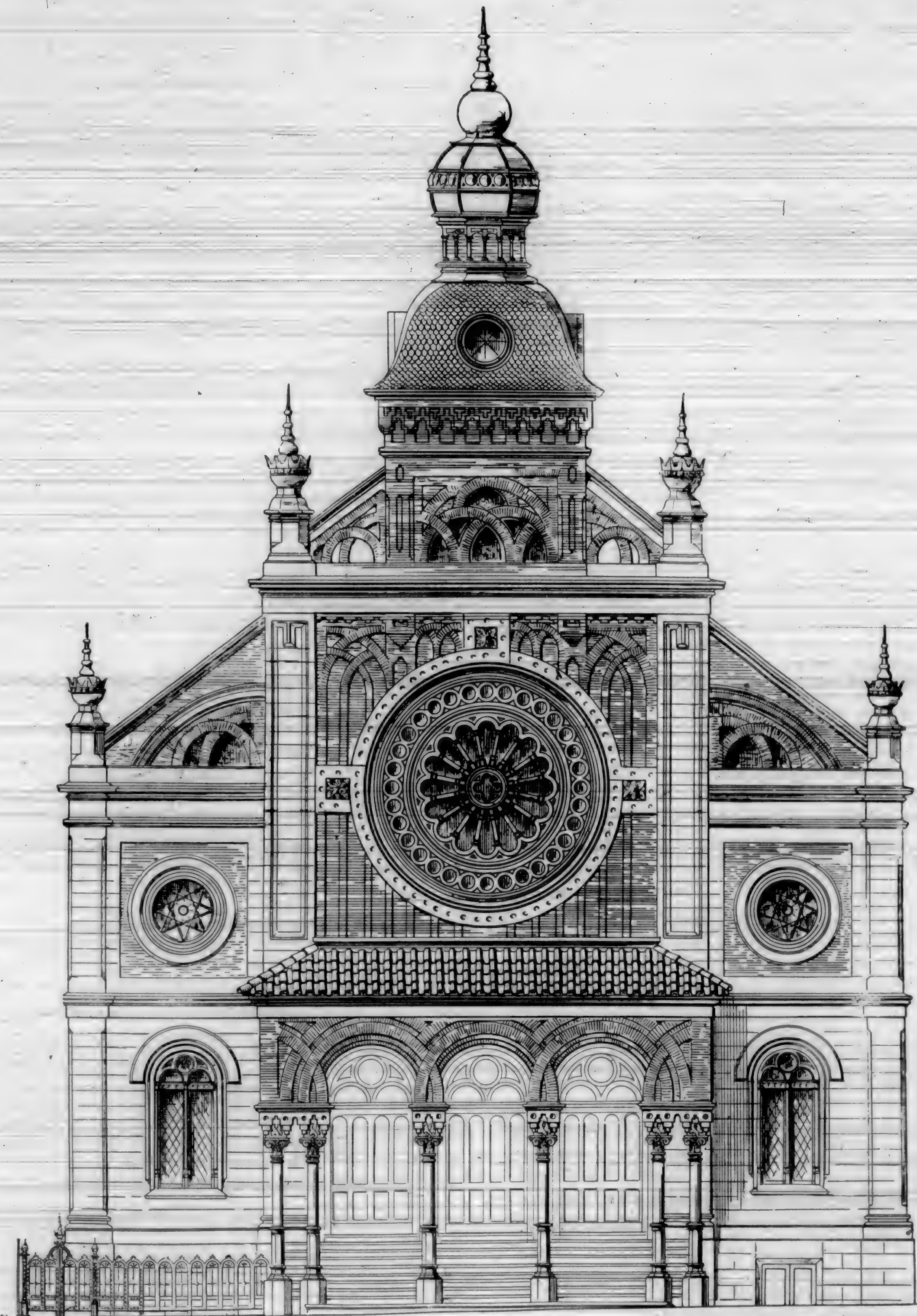
The whole building is so harmonious in its proportions that the size of the portico is really lost sight of, and is beyond what an ordinary observer would imagine. Its length is over 64 feet, and its breadth over 26 feet. The building is 185 feet in length on Nassau Street, 111 feet on Cedar Street, and 115 on Liberty. It is about 150 feet in height, divided between eight stories.

Wood carving has become, like stained glass, such an essential in architecture that it may now be considered legitimately as one of the phases of the art.

Carvings abound which show the limits and monotony of the art rather than the varieties of which it is susceptible. For pervading expression, all details must be brought into subordination to a governing purpose. It is this manifestation and not mere manipulative skill that gives carving its true value. At the same time technical methods must be used to the utmost, and especial care taken in transitions of form—transitions which are often rough and rude to a fault, though displaying a certain kind of ingenuity.

There may be inequality in a carving and yet without blemish, as, for instance, when the objects in bold relief are highly finished, and the details somewhat sketchily worked out, but this sketchy aspect must be executed so skillfully as not to bear the appearance of slovenliness. Chopped-up execution and scattered details are to be avoided. The whole art does not consist in mere representation of objects in relief, but there is necessitated a certain unity of design which will be greatly aided by giving to each part its proper scale. As illustrating this latter point comes the following scathing English critique on a carved panel: "It represented a piece of French carving, and is a fearful and wonderful piece of art. It contains a rose which might be a cabbage; close by is a snail with a horse on his back; near the snail is a squirrel much too small, and a butterfly much too large, and, resting one foot on the roof of the snail-shell, sucking honey from a kind of fuchsia, is a bird of such strange aspect that we have no choice but to conclude that at length we are privileged to behold a portrait of the eccentric chuck itself."

It cannot be too often urged that time and skill must be employed on the composition as well as on the execution, and that but a portion of the praise due to good, artistic carving is to be accorded to the manual labor. Carving may be indulged in as an amusement, but



FRONT-ELEVATION.

Scale: $\frac{1}{4}$ of an inch to the foot.

Synagogue of the Bnai Beshurun, Madison Ave.

let the aim be to embody in the work some feature of excellence. Of various devices by which special effects may be secured, may be instanced the emphasizing, by a number of small holes, the central portion of a leaf between the two projecting lines which represent the mid-rib, and the delineation or intersecting stems by making some more depressed than others. Some carvers show a tendency to substitute angular for rounded forms, thus directing the eye rather to sharp outlines than to broad surfaces, and to unduly multiplying parts which must be rendered proportionately minute. To please in minor details wood carving should exhibit a swift touch and an easy lightness in the rendering of the details.

Excellence in wood carving does not necessarily lie in the presentation of objects in the boldest possible relief. When the art was carried to its highest perfection in France, in the reign of Henry II., there was extreme simplicity of treatment, and the finest contrasts of light and shadow were obtained without high relief.

The obstructions to travel, and the annoyance of having the sidewalk occupied with the dirt and boards, essential accompaniments to the reconstruction of a building, has been such a cause of complaint in our city where existing buildings are constantly undergoing repairs, that means have now been adopted to avoid this sort of confusion. A bank recently erected in Wall Street found it desirable to absorb into itself the entire sidewalk in its frontage; and, to accommodate the traveling hundreds who daily pass that way, a wooden structure was put up forming a second sidewalk, elevated some five feet above the natural one. Pedestrians were asked to climb a few steps to reach this made walk, and the workmen wheeled the mortar and carried their material beneath. Over the wooden walk was a substantial roof to protect passers from an accidental brick that might possibly find its way from the upper stories.

Another excellent arrangement was recently seen on Twenty-third Street, where the owner of a corner building was adding three stories to its height. An enormous wooden funnel was constructed from the first floor to the roof, running up the side of the building at its extreme rear. At the first story the funnel turned abruptly at an angle and continued out over the sidewalk to the gutter, where it terminated in a pair of steps. The height of this arm or angle from the ground was sufficient to permit people in the street passing beneath it. An elevator ran up the funnel, carrying to the roof all the materials necessary for the construction going on. By this means the street was kept clear, and the occupants of the house were saved the dust from the walk and the unsightliness of dirty heaps about the doors.

Architecture has of late received much attention from the magazines. *The Century*, not long ago, had an article upon the architectural league of this city, and has followed

that up with articles bearing more directly upon particular buildings. This month *Harper's* has the first of a series upon recent buildings in America—or rather in the United States, beginning with business houses, and presumably intending to follow it up with residences, etc.

In this connection the prevailing craze might be referred to, that has taken possession of society ladies, which is to become authoresses, and those who have the "vital spark," are making efforts to fan it into a particularly lively flame. Several have succeeded, and this paper to which I have referred, in *Harper's*, is one of that sort, being written by Mrs. Schuyler Van Rensselaer. If this craze will last long enough to accomplish any good to the young ladies, it will be a most commendable fashion.

* * * * *

The illustration I sent this month is a departure from the strictly country architecture which I have made it a point to furnish for the past few months. I am induced to illustrate this synagogue for the reason that it is the very latest building put up in the city, and is destined to be very prominent from the rich congregation that is to worship in it.

The style is the Moresque and the Architect is Mr. R. Guastavino.

Improvements in Men and Machines.

It would be a curious study to ascertain how far the improvement in machines and in tools had kept pace with that in the skilled mechanic. One thing is certain, at the beginning of the inquiry, that a skilled mechanic is of just as much value to-day as ever. How much he has improved is a question for scientific examination rather than one for absolute statement. It would be a queer assertion that the men of fifty years ago were inferior to those of the present. All the facts of the past, as well as those of the present, show that our present mechanics are no more mechanics than those of half a century ago. All the great improvements in hand tools and machine tools for the last fifty years have come from the individual efforts of men who had done their work before the present advent of machine and automatic tools. These men—these workmen and inventors—made possibilities out of suggestions, and realities out of imaginings. To them belong the realities of the present machine shop.

It would seem from this that it is not the tools and the appliances that make the workmen, but the workmen who make the tools. There are just as good mechanics to-day, with all our mechanical appliances for good work, as there were when every job required a new arrangement of tools for work. In fact, the improvement in machines presupposes the capacity of the machine makers.

And yet, these improvements have their influence on the workman; the better the tool, the more exactive the workman. There are

gray-headed, almost superannuated, workmen in our shops who have voluntarily discarded all their old time notions to take up with some "new fangled trick" that has been proved to be an advance toward perfection. Every improvement in tools—induced and perfected by mechanics—tends to advance in the true mechanical improvement of the workman.—*Scientific American*.

Tin Casing to Retard Flames.

THE principal cause of the rapid spreading of flames, in modern buildings, is found in the fact that the elevator shafts furnish such perfect flues for making a strong draught. When, added to this, these openings through the floors of a building, from top to bottom, are incased with wood, alone forms the partition walls separating such a flue from the different stories, it will be readily seen that we have a surprisingly perfect arrangement for the quick spreading of a conflagration from cellar to roof. A cheap and easily obtainable means for partial protection from this danger, in buildings where the most improved construction has not been followed, would be to line the elevator shaft and the connecting doors and casing, as well as the car, with tin. This would not, of course, make these openings proof against the action of a fire which has been some time in progress, where the accumulated heat would be like that of a furnace, but it would interpose a measure of protection which would effectually check a fire in its initial stages, and prevent the sudden flashing into a blaze, through this channel, of all the floors at a time of a great store or warehouse. This is a precaution which may be taken with so little trouble and expense that it is worth the consideration of every owner or occupant of a building where the elevator shaft is of the old style of combustible construction.

The Lost Rivers of Idaho.

ONE of the most singular features in the scenery of the Territory of Idaho is the occurrence of dark, rocky chasms, into which large streams and creeks suddenly disappear and are never more seen. These fissures are old lava channels produced by the outside of the molten mass cooling and forming a tube, which, on the fiery stream becoming exhausted, has been left empty, while the roof of the lava duct, having at some point fallen in, presents there the opening into which the river plunges and is lost. At one place along the banks of the Snake, one of these rivers reappears, gushing from a cleft high up in the basaltic walls, where it leaps, a cataract, into the torrent below.

Where this stream has its origin, or at what point it is swallowed up, is utterly unknown, though it is believed that its sources are a long way up in the north country. Besides becoming the channels of living streams, these lava conduits are frequently found impacted with ice masses which never entirely melt.

A Brick Tenement House.

SAN FRANCISCO can justly be termed blessed in not having within its limits a brick tenement house; but as we have received repeated inquiries for a house of this description, that could be erected in the "fire limits" and not conflict with the "fire ordinances," we present the accompanying elevation and plans of a building suitable to those who desire to live in "flats" and yet reside in the business portion of the city. They were prepared expressly for this Journal by W. Claude Frederick, Architect.

The elevation, though striking and presenting many features not usually found in San Francisco architecture, is not an expensive one; the arrangement of the rooms is clearly shown by the engravings and will well repay a careful study. Each floor above the first is a duplicate of that presented on page 87.

To Prevent Scratching Matches on Paint.

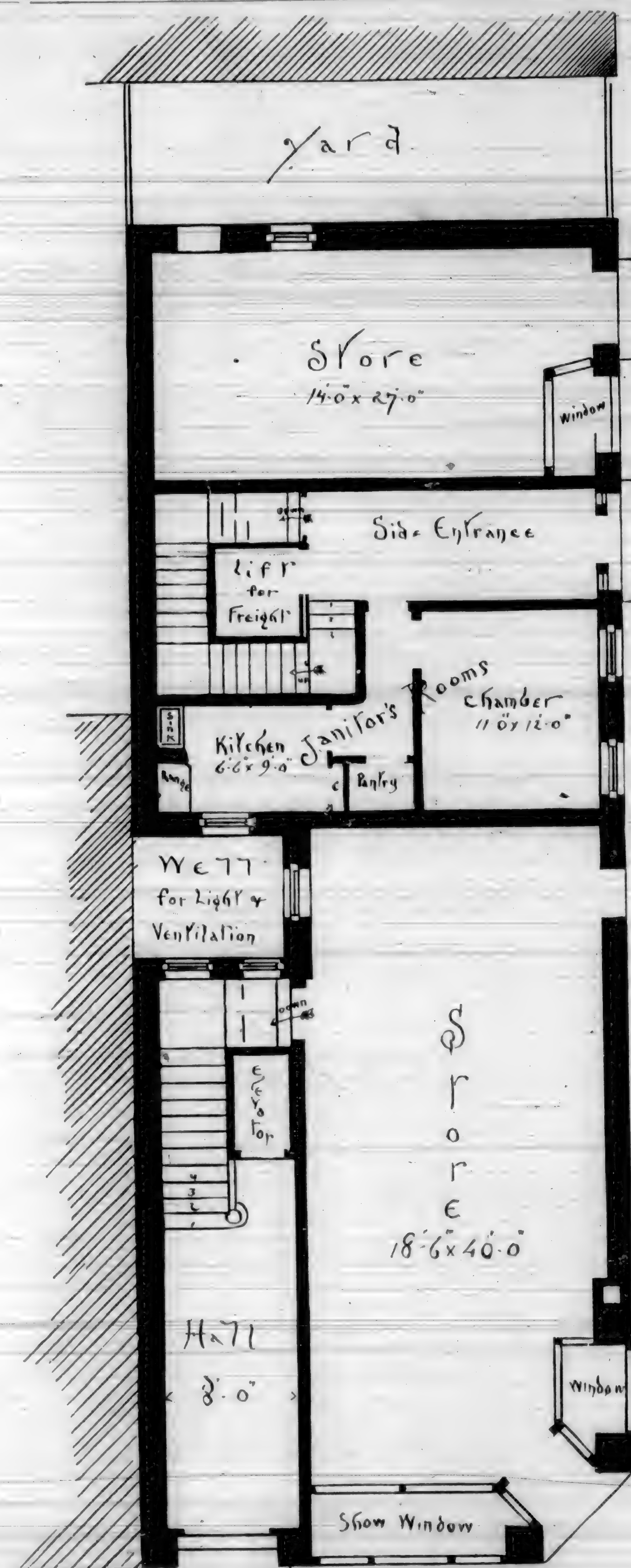
A CORRESPONDENT, in Florida, of *New Remedies*, speaking of the defacement of paint by the inadvertent or heedless scratching of matches, says that he has observed that when one mark has been made, others follow rapidly. To effectually prevent this, rub the spot with flannel saturated with any liquid vaseline. "After that, people may try to strike their matches there as much as they like, they will neither get a light nor injure the paint," and, most singular, the petroleum causes the existing mark to disappear, at least when it occurs on dark paint.

How Carpet Tacks are Made.

THE iron is received from the rolling mills in sheets from 3 in. to 12 in. wide, and from 3 ft. to 9 ft. in length, the thickness varying, according to the kind of work into which it is to be made, from 1/16th to 1/32nd of an inch. These sheets are all cut in about 30 in. pieces and, by immersion in acid, cleaned of the hard outside flinty scale. They are then chopped into strips of a width corresponding to the length of the nail or tack required. Supposing the tack to be cut is an 8-oz. carpet tack, the strip of the iron, as chopped and ready for the machine, would be about 11-16ths of an inch wide and 30 in. long. This piece is placed firmly in the feeding apparatus, and by this arrangement carried between the knives of the machine. At each revolution of the balance-wheel the knives cut off a small piece from the end of this plate. The piece cut off is pointed at one end, and square for forming the head at the other. It is then carried between two dies by the action of the knives, and these dies, coming together, form the body of the tack under the head. Enough of the iron projects beyond the face of the dies to form the head, and while held firmly by them, a lever strikes this projecting piece into a round head. This, as we have said before, is all done during one revolution of the wheel, and the knives, as soon as the tack drops from the machine, are ready to cut off another piece.



ELEVATION OF BRICK TENEMENT HOUSE.—W. CLAUDE FREDERICK, ARCHITECT.



FIRST FLOOR PLAN OF BRICK TENEMENT HOUSE.

Architectural Competitions.

THE subject of competitive plan making, which, in nearly all cases, means obtaining men's services without an equivalent, is being very freely ventilated and discussed in all journals and publications issued in architectural interests, throughout America, England and other countries, with ninety-nine per cent. of all that has more recently appeared in print, strongly condemnatory and in opposition to the methods practiced, under the delusive and misleading pretext of competition, by which State, county, and municipal governments, corporate institutions, associations, and sometimes private individuals obtain and secure the results of the labor, skill and coin of architects without compensation.

The many wrongs inflicted upon the profession as a whole, and upon its more worthy and competent members individually, through the *modus operandi* of competitions, have grown to such magnitude, and become so unmistakably the means through which gross injustice in nearly all cases is practiced, that the feeling and sentiment among the more intelligent and honorable in the profession is decidedly and emphatically opposed to the disreputable method of competitions as practiced—particularly during the past decade.

Some, and by far too many of the "Set up's" have been shrewdly-managed affairs, so disguised by finely-worded conditions and pretenses as to deceive and mislead silly men in the profession, into an expenditure of effort, time, labor and expense, while, in fact, the chances of success have been ninety-five per cent. in favor of some certain party enjoying the decidedly large prestige of being the party preferred by those managing affairs.

In England, a movement is on foot under the auspices of the Royal Institute of British Architects, the object of which is to obtain the signatures of all practitioners of creditable repute, pledging themselves not to participate in any competition not subject to the arbitration of disinterested professionals, recognized as qualified to adjudge the intrinsic merits of the plans submitted, and enjoying a good reputation as to moral integrity.

We are right glad to learn that the architects of England have taken so decided a stand in the matter, and only regret that the profession in our own country is so overrun with pretenders and men of mediocre professional abilities that it would be folly exemplified to express the hope that a reform in professional practices, as far as competitions are concerned, is among the reasonably near probabilities.

But this the respectable architects in California can do, especially members of the chapter,—refuse to participate in any competition, not conditioned exactly as provided in the constitution and by-laws of the organization, and such other regulations as may at any time be adopted by the local or parent chapter.

Bound Volumes California Architect, \$2.50

Modifying the Proportions of a Room.

TO MAKE a room appear higher, the plane surface of the ceiling should be decreased by the mouldings of the cornice, by panels, or, in the absence of these, by bands of color performing the same office. A vertical system of line should be adopted in mural decoration, and the mantel should be lower.

To make a room appear lower, exactly the opposite treatment should be adopted; that is, to increase the plane ceiling, adopt a horizontal system of mural decoration, with a dado and a high mantel.

To make a room appear wider, is accomplished, to a certain extent, by making it appear lower; but where this is undesirable, or where it is insufficient, the effect can be reached by adopting a mural decoration on a graduated scale of form, decreasing upward, so that two or more patterns at the top similar to those at the foot are found to occupy the same space as one at the foot, and this effect can be much increased by a gradation of color upward from dark to light.

To make a room appear narrower is accomplished, to a certain extent, by making it appear higher; but where this is undesirable or insufficient, the effect can be obtained by adopting a strongly-drawn large pattern in strong color for mural decoration.

To make a room appear longer is to an extent accomplished by making it appear lower and narrower; but where these are undesirable or insufficient, the effect may be obtained by decreasing the scale and strength of color of the mural decoration adopted at the ends.

To make a room appear shorter is accomplished, to an extent, by making it appear wider and higher; but the effect can be achieved by increasing the scale and strength of color of the mural decoration adopted at the ends.

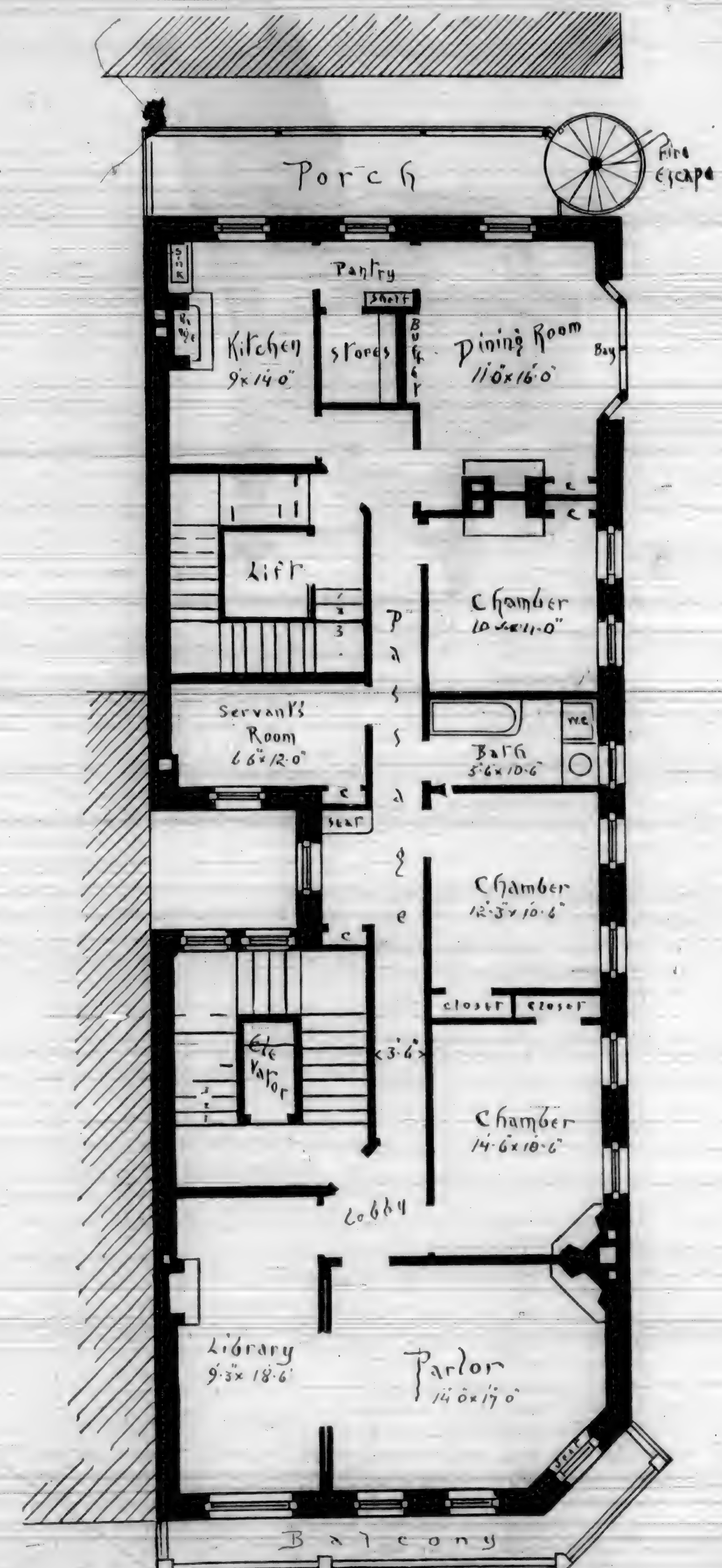
Any of these effects can be modified or increased by the treatment of the floor surface, whether by carpets, rugs, painted boards, or by parquet flooring, lines running across a room, or rugs laid down at intervals, having the effect of shortening, and consequently to an extent of heightening and widening a room. Lines running in the length increase this dimension, and to an extent reduce the height and width. A polished floor increases the apparent height of an apartment by reflecting all vertical lines and prolonging them.

"HISTORY OF ARCHITECTURE in all Countries from the Earliest Times to the Present Day." By Jas. Fergusson.

This work is one that should be in the possession of every architect. Especially should students and draughtsmen secure a copy. Being a reprint of the London edition, the price has been materially reduced. Two large volumes, containing over 1,200 pages, beautifully illustrated. Price, complete, \$15.00.

"BUILDING SUPERINTENDENCE."

This new work is of invaluable assistance to the architect and builder. It is written by a gentleman long connected with the architectural profession, and is eminently practical in its character. We will send a copy to any address upon receipt of \$4.00.



SECOND STORY PLAN OF BRICK TENEMENT HOUSE.



DESIGN FOR CHAIR.

The Pyramids.

WHY the pyramids were built is a question which has puzzled antiquarians and savants for centuries. The theory of John Taylor was that the pyramids were erected by kings who had conquered and were detested by the Egyptians, and that while the tradition of injustice in making them labor on such stupendous piles lingered on through after history, the purpose and meaning of the kings and their architects had been forgotten. Taylor believed that the Great Pyramid was designed to record in its proportions and its interior features, certain important truths of religion and science, which were not for the people then living, but for men who were to come 4,000 years or so after. And this view has been accepted by Prof. Piazza Smith, Astronomer Royal, of Scotland, whose writings have attracted a great deal of deserved attention.

But R. A. Proctor, the most popular living writer on scientific subjects, combats this theory with a great deal of learning and plausibility, in a work on "The Great Pyramid," published by R. Worthington. He maintains that the structure was essentially astronomical and astrological—the two were then virtually one—and that no explanation which does not take this element into the account can explain facts. There are many pyramids, and each belongs to a separate king; we are forced to believe that there was some special relation between the pyramid and its builder, seeing that each king wanted a pyramid of his own. The theory that they were tombs receives only a partial support, and would not account for the most important features discovered in their peculiar architecture.

Without exception, the pyramids are built on special astronomical principles. Their

square bases are built so as to have two sides lying north and south. "One can imagine no reason why a tomb should have such a position," writes Mr. Proctor; and he says: "It is not easy to understand why any building at all, except an astronomical observatory, should have such a position." And he elaborates an ingenious theory which fits remarkably well as it goes, why these wonderful structures were built as we find them.

Each king had his pyramid, and each had his horoscope cast. A succeeding king could not use the pyramid of his predecessor; it was closed up and abandoned and a new observatory begun. But no explanation yet made has rendered it at all clear to the practical modern mind why the ancient kings exhausted their subjects with the labors that were necessary to the raising of these massive mountains of stone and brick. Mr. Proctor admits that there are difficulties in the astrological theory, but they arise from our inability to understand how men ever had such fullness of faith in astrology as to devote enormous sums and many years of labor to the pursuit of astrological researches. Besides the essay on the "Great Pyramid," this volume contains short papers on the origin of the week, Saturn, and the Sabbath of the Jews, astronomy, and the Jewish festivals. The volume is rich in ingenious materials and scientific information.

STAINED GLASS WINDOWS.

MESSRS. G. W. CLARK & CO., 645 and 647 Market Street, have on exhibition the most beautiful and artistic designs that have as yet been shown to our people, for stained glass windows. They have secured the agency of the La Farge Decorative Art Company, and are fully prepared to furnish stained glass work of every description and in a great variety of designs. Messrs. Clark & Co., are also agents for *Lincrusta Walton*, the most beautiful material yet invented for decorative purposes.

A French Class.

Under the Auspices of the S. F. Chapter.

DURING the past month, a class in French has been organized, principally intended for Architects and students connected with the Chapter. Any one, however, can join. The terms have been placed especially low for the purpose of inducing many of the younger members of the profession, and those interested in art, to join the class.

The class will be under the direction of Madame Pietro Mezzari, a lady well known in artistic circles. The class meets every Friday evening. Parties wishing to join will please send their names and address to this office.

Books and Special Notices.

GOODELL & WATERS, of Philadelphia, have sent us their Illustrated Catalogue of Wood Working Machinery. It contains numerous engravings of every kind of machinery used for wood working purposes. We would advise those desiring to purchase anything in their line to address a note to the above firm.

THOS. KANE & CO., of Chicago, have forwarded to us a specimen sample of their wood carpeting, which we will be pleased to show to callers.

FOUNDATIONS AND "FOUNDATION WALLS" for all classes of buildings, pile driving, building stones and bricks, pier and wall construction, mortars, limes, cements, concretes, stucco, etc. Practical explanation of the various methods of building foundation walls for all kinds of buildings. Revised and enlarged edition. A copy of this work will be sent free of postage to any part of the world upon receipt of the Publisher's price, \$2.00.

We have received two new works by Wm. Paul Gerhard, entitled "Sanitary Drainage of Tenement Houses," and "House Drainage." This writer is well known as one of the most experienced, and best qualified of the sanitary experts of the present age. A copy of these works should be in the possession of every house owner, and their contents thoroughly studied.

PATENTS AND INVENTIONS.

List of U. S. Patents for Pacific Coast Inventors.

(From the official list of U. S. Patents in DEWEY & CO.'S SCIENTIFIC PRESS PATENT AGENCY, 252 Market St., S. F.)

FOR WEEK ENDING APRIL 29, 1884.

- 297,657.—CULTIVATOR—Daniel Archer, Madison, Cal.
- 297,910.—TRACK CLEARER—Ephraim B. Bishop, San Francisco, Cal.
- 297,664.—MITER BOX—William L. Boyver, San Francisco, Cal.
- 297,668.—TOBACCO SWEATER—George Brownstein, San Francisco, Cal.
- 297,594.—STRAW CARRIER FOR THRESHING MACHINES—Maximilian J. G. ssner, San Francisco, Cal.
- 297,796.—CARTRIDGE IMPLEMENT—Henry T. Hazard, Los Angeles, Cal.
- 297,698.—SAW SWAGE—Simon Kinney, San Francisco, Cal.
- 297,699.—PIN FOR ELECTRIC INSULATORS—John M. Klein, San Francisco, Cal.
- 297,714.—VEHICLE—Jacob Price, San Leandro, Cal.
- 297,857.—FIRE ESCAPE—George Sinfield, Portland, Oregon.
- 297,647.—SUBMARINE VESSEL—Josiah H. L. Tuck, San Francisco, Cal.
- 297,648.—MARINE TORPEDO—Josiah H. L. Tuck, San Francisco, Cal.
- 297,734.—WHIFFLETREE—James Whitcomb, San Jose, Cal.

NOTE.—Copies of U. S. and Foreign Patents furnished by DEWEY & CO., in the shortest time possible (by telegraph or otherwise), at the lowest rates. All patent business for Pacific coast inventors transacted with perfect security and in the shortest possible time.

A Summer Resort Cottage.

THE accompanying illustrations represent a design for a comfortably arranged cottage to be built at a seaside or summer resort. Economy, with ample accommodations, are the main features. All the partitions are made of inch boards. The front is covered with rustic, which may be extended around the building, depending altogether upon the amount of money one wishes to expend. The rooms are very convenient and large enough for the purposes intended. The dining hall, with its cheerful fireplace, may also be used for a general meeting room in the evening.

The plan is admirably adapted for places like Pacific Grove and was prepared especially for the consideration of parties desiring to locate in that beautiful place.

We are indebted for the plans to W. Claude Frederick, Architect.

Album of Mantels.

A NEW work, containing designs for every description of mantels. Price, \$8.00.



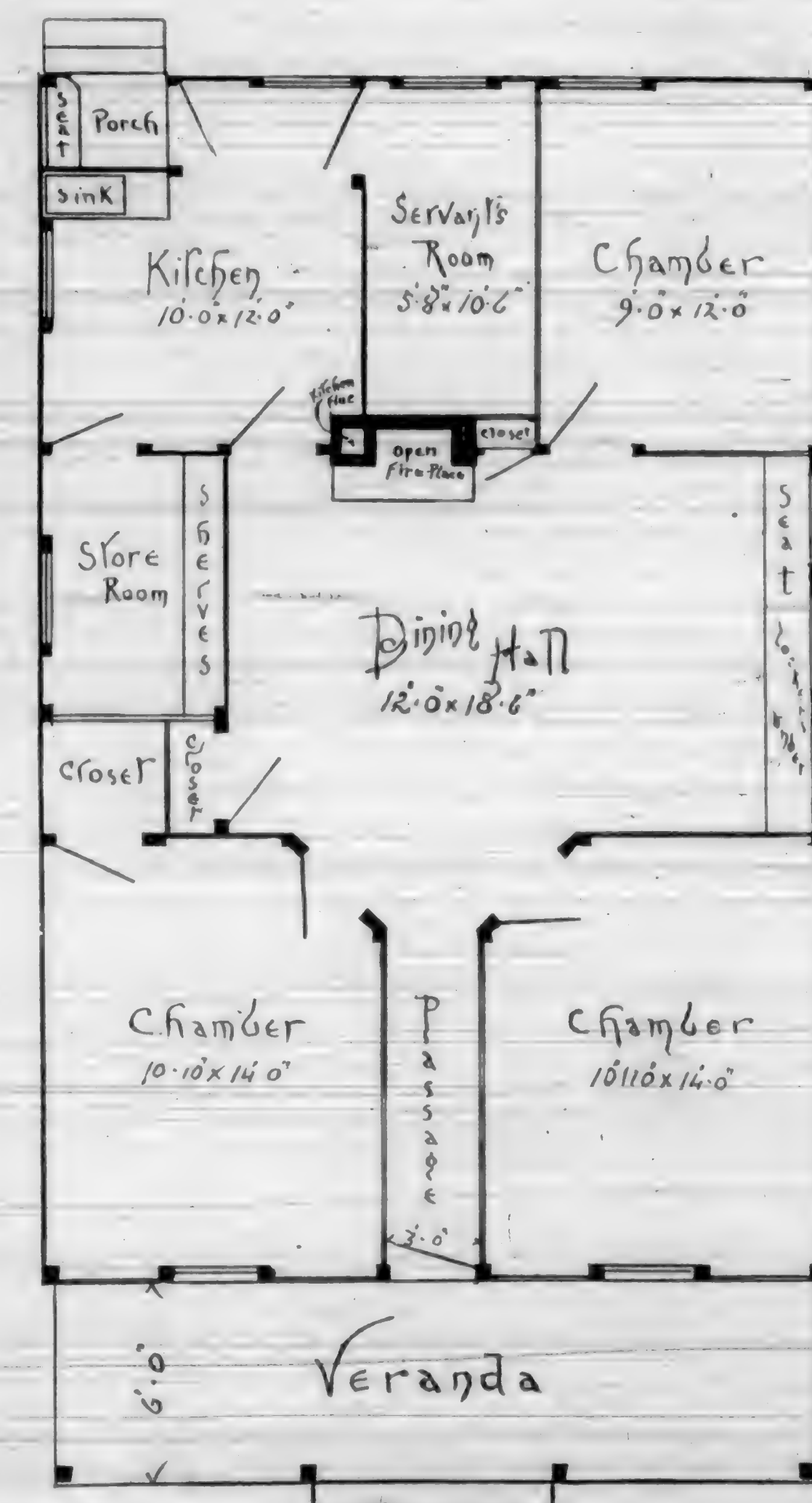
DESIGN FOR A SUMMER RESORT COTTAGE.

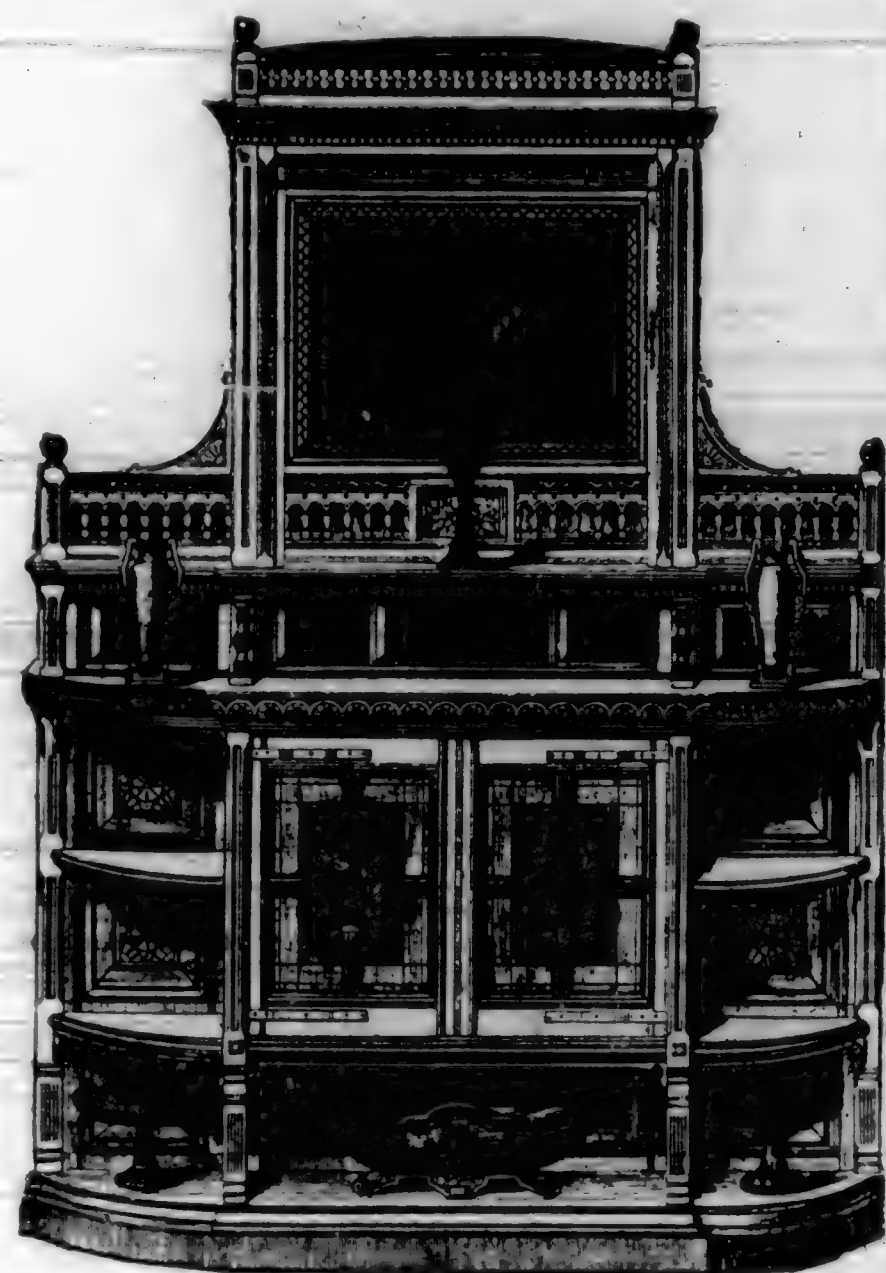
Work—for a Home.

THERE are two important steps to be taken by every young man who has to depend upon his own exertions for a living. The first is to master some occupation which he can rely upon in after life for a livelihood. The three or four years spent in learning a trade are to most young men years of privation, during which they are compelled to exercise the most rigid economy. The lessons taught during these years, if properly applied, will render the next step—the procurement of a home—comparatively easy of accomplishment. A wage worker, in the possession of a good trade and a comfortable house to live in, is on the highway to competency.

The greatest obstacle to the steady advancement and prosperity of the mechanic is the constant drain which the landlord makes upon his income. It is plain, therefore, that the first step toward independence is for the mechanic to own his own house. If he has to pay out in rents every ten years as much money as would secure for him a comfortable home, there is but a slim chance of his ever accumulating much money. Once a wage worker becomes his own landlord, he can save a sum annually at least equal to what his rent would be, and this continued for a period of years must result in a competency if a judicious use is made of the money. It may not be possible for all mechanics to obtain homes of their own, but thousands who continue to be renters all their lives could do so if they would only make an effort. It requires some degree of self-denial to accomplish the result, but once obtained it removes the chief obstacle to those steady accumulations which are the foundations of all fortunes, great and small.

Detail Cottage and Constructive Architecture, Price \$10.00.





HANDSOME DESIGN FOR A CABINET.

Unhealthy.

[Special Eastern Correspondence of the CALIFORNIA ARCHITECT.]

IN a series of articles prepared from actual laboratory data, we shall strive to show plainly, first, the wanton ignorance in the home; second, the superfluity of physicians and their gross inefficiency; and, lastly, the comparatively few occupants of graves who were not murderers or suicides, perhaps both. In making these tests, and in the preparation and presentation of resulting facts, we have only consulted what the spectroscope, microscope, chemistry, and physical laws have revealed, having no desire to array myself in an antagonistic manner with any trade or profession in life. To the contrary, we take this manner of inviting the co-operation of all, in order that, when completed, it may be truly said of them, 'tis finished, and wiser are we.

Late in the autumn of 1883, one of the most beautiful, and enterprising cities on the Ohio River found itself in the embrace of an epidemic, the nature of which baffled all available medical talent. Expert architects and engineers were unable to agree concerning its cause, but unanimously urged a rigorous cleaning up and thorough fumigation of all the infected wards which comprised the most popular and aristocratic in the city, but all of no avail. The disease spread, carrying death before it, until scarcely a house in the entire square but wept over the vacant chair. To be sure the physicians all theorized, nevertheless they failed to arrest its progress.

When the epidemic had begun to subside, the municipal authorities seemed to have awakened from their lethargy and set about investigating, manifesting a willingness to assist, financially, all who reached results that appeared reasonable. Of course chemists were

on hand in numbers, with their appliances for examining liquids, gases and solids as a means of reaching some conclusion. The water supply furnished from a rapidly running stream by the Holly system was found good and pure in the ordinary acceptance of the term, but a close inquiry revealed the fact that localities the most afflicted with the epidemic—a sort of low form of typhus fever—were supplied largely from private sources. These being analyzed, unmistakable evidences of uric acid and dumb bell crystals were found, though the wells were well kept, free from filth, and far removed from all apparent opportunities for contamination, still this extraneous matter was present and necessarily had an origin somewhere.

Before proceeding farther, it will be best to describe the situation of the place. The city is situated on a very high point, built substantially, mostly of brick and stone. In or near the center is the Court House and public park, occupying an entire square, which is surrounded by a beautiful and high iron fence, between which and the street is a stone pavement, it being, as it were, fenced in with heavy railing, to which the farmers, traders, hucksters, etc., fastened and fed their teams, which at the time of our first visit, was lined closely all the way round with a medley of teams. The gutter, substantially laid with granite and cement, made perfect drainage for all liquids deposited, while once or twice per week the jailor and the prisoners scraped all solids, etc., and washed them down the gutter, which conducted them to the river, below the filter from which the city's water supply is obtained. Apparently, here was a perfect system of drainage, for where the surface drain or gutter entered the river, the stream contained high banks and run in the form of a current, the city occupying the inner or concave side. We have been thus explicit in our description that all may appreciate fully the situation to be discussed further on.

In the spring preceding the outbreak of the epidemic, the county had given the contract for erecting a bridge across the river at the lower end of town, and the city awarded the contractor the privilege of making coffer-dams for laying pier foundations, but to make the expense of hauling stone, iron and all heavy material less, this contractor made a dam from the inner shore, nearly three-fourths across the stream. On the top of this was a roadway or pike.

By tracing carefully, by the aid of microscopic chemistry, we found that the dam had furnished a different current for the river, and all along the right bank the water was stationary above where the gutter from the square had a termination. A large factory had been erected on a low, marshy tract adjacent, and procured its water supply from shallow driven wells. This tended to drain off the stagnant water, when this backwater from the river found ample space to accommodate the slightest raise.

From this low section the water gradually

seeped and eventually found its way into the wells, the water from which poisoned scores. Thus we found direct communication well established between the Augean Stables at the square of the Court House to the wells of the citizens.

(To be Continued.)

Painting

PAINTING is one of the many things that an architect is expected by his client to be thoroughly posted on, and certainly for his own comfort he should be. Yet how many architects are there who understand the matter? It is easy enough to specify "two-coat" or "three-coat" work, and to remember what parts of the building it is best to have treated in one way or the other; and to superintend the painting, so far as to make sure that wood is primed only when thoroughly dry; that it is properly rubbed down and filled is also comparatively easy, but to superintend the mixing of the paints, to be able to detect and condemn inferior and adulterated oils, to be sure that the lead is not mainly barytes, to be able to take the paddle yourself, and by a real knowledge of the properties of pigments to mix a tint that you desire to obtain, to know what of the many brands of "ready-made" paint it is allowable to use,—these are attainments that the architect rarely has. Yet he should have them. He should know what varnishes will crawl and crack, and what will stand; he should know about stains, about wax and oil polishes, metallic paints, shellac, and the infinite variety of pigments. And we believe that some day he will find it well for him to know these things with a scientific if not a practical knowledge, and not leave them as now entirely to the honesty and intelligence of the painter's foreman, just as now he knows more about plumbing than the architect of ten years ago ever dreamed of knowing.—*Am. Architect and Builder.*

SAWDUST, as an ingredient of mortar for house plastering, is commanding considerable attention in certain directions. It is used in place of sand. It is claimed that such mortar is more porous than the ordinary kind, consequently the face of a wall composed of it is warmer; that it is a non-conductor of sound and dampness; that it overcomes the echo in churches and halls. In the manufacture of the mortar a glutinous substance is used, which sticks it firmly to the wall.—*The Lumberman.*

SACK'S AUTOMATIC SELF-DISCHARGING WATER CLOSET.

We would call particular attention to this New Water Closet, now being introduced in this city by Mr. Wm. E. Stevens. Its merits are fully set forth in his statement and card on Page IX, to which we will refer those interested. It is the only self-discharging closet now in the market, and its simplicity and non-liability to get out of repair, warrant its general adoption by every architect, property owner, plumber, etc. They can be seen in successful operation at Mr. Stevens' place of business, Market cor. Larkin.

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

John M. Curtis.

GENERALLY those who are most successful in this world are the ones that, being left alone in the very early stages of life, with no parents to watch and guide their course, yet struggle manfully along, and develop the talents given to them by the Great Architect above.

Mr Curtis was left an orphan when very young, and his guardianship was assumed by Wm. T. Coleman, of this city; to this gentleman does he owe much of his success as a builder, and, later, as an architect. The principles instilled by Mr. Coleman into Mr. Curtis' mind, were those that taught the man to be independent and to take care of one's self by persevering industry and thus earning success.

Early manifesting an inclination to handling carpenter's tools, Mr. C. was apprenticed with Messrs. Burt & Son, of St. Louis, at that time one of the prominent contracting firms of that city. Upon the completion of his article time, he entered the office of Mitchell & Brady, architects, in the same place, and remained over five years in their employ.

California presenting unusual inducements to men of energy, Mr. Curtis started for San Francisco; shortly after his arrival, he was employed by E. J. Baldwin as assistant architect of his magnificent hotel and theater, remaining in that capacity until the entire building was finished.

Feeling that a more extended practical knowledge of carpentry was necessary in order to thoroughly master all the intricacies of his future profession, Mr. Curtis again entered the lists of contractors in this city. Several fine dwellings were built under his direction, some of which were under the immediate superintendence of the senior editor of this journal.

After an extensive experience in the building line, we find Mr. Curtis again resuming his practice as a professional architect. Among his first clients, was his former guardian, whose offices he designed, and which are among the nicest fitted up in the State. All the principal street decorations used during the Triennial Conclave, were designed and erected under the supervision of Mr. Curtis.

Business increasing, Mr. Curtis associated himself with A. A. Bennett, and located his offices in the German Bank Building, 528 California Street. These gentlemen have now under construction the Sonoma County Court House, at Santa Rosa, the Humboldt County Court House, at Eureka, the University of Southern

California, at Los Angeles, and several private dwellings.

Mr. Curtis is also, at present, supervising architect of the new City Hall. He is a member of the S. F. Chapter American Institute of Architects and is prominently identified with several Fraternal Associations.

The Liability of Contractors.

A RECENT decision of the Supreme Court of Nebraska is of special interest to builders. S sued B for \$492.60, the balance due him for building a two-story brick house, and B made a counter claim for defective material thrown out and money expended in repairing the unskillful work of S. The contract price was

workmen.' The question is not one of skill on the part of the contractor, but of compliance with the contract." If a contractor agrees to erect a building in a certain manner, he must comply with the agreement, and no plea of a lack of skill, of himself or any of his workmen or sub-contractors, will constitute a defense for a failure to comply with the contract.—*Building.*

Gas Leakages.

AN indicator of gas leakages has been constructed by Mons. C. V. Jhan, and is described in the *Revue Industrielle*. The apparatus consists of a vessel of porous earthenware, such as the porous cell of a galvanic battery, set upside down, and closed by a perforated India rubber stopper. Through the hole in the stopper, the inside of the vessel is connected with a pressure gauge containing a little colored water. The vessel can be exposed to the air of an apartment where a leak of gas is suspected; or a sample of the air may be contained in a bell glass inverted over the porous cell. The diffusion of gas through the earthenware raises the level of the water in the pressure gauge; and when the latter is properly graduated and proportioned to the capacity of the cell, exact and delicate indications may be obtained in a simple manner. This species of diffusometer is so sensitive that when an Argand burner is gradually turned down until it is extinguished, the instrument, if held above the burner, will show a considerable rise of the water in four or five seconds. If held over an ordinary burner, turned on just sufficiently to be ignited, the liquid rises very rapidly. When the instrument is graduated in millimeters, a volume of one-half per cent. of gas in a room

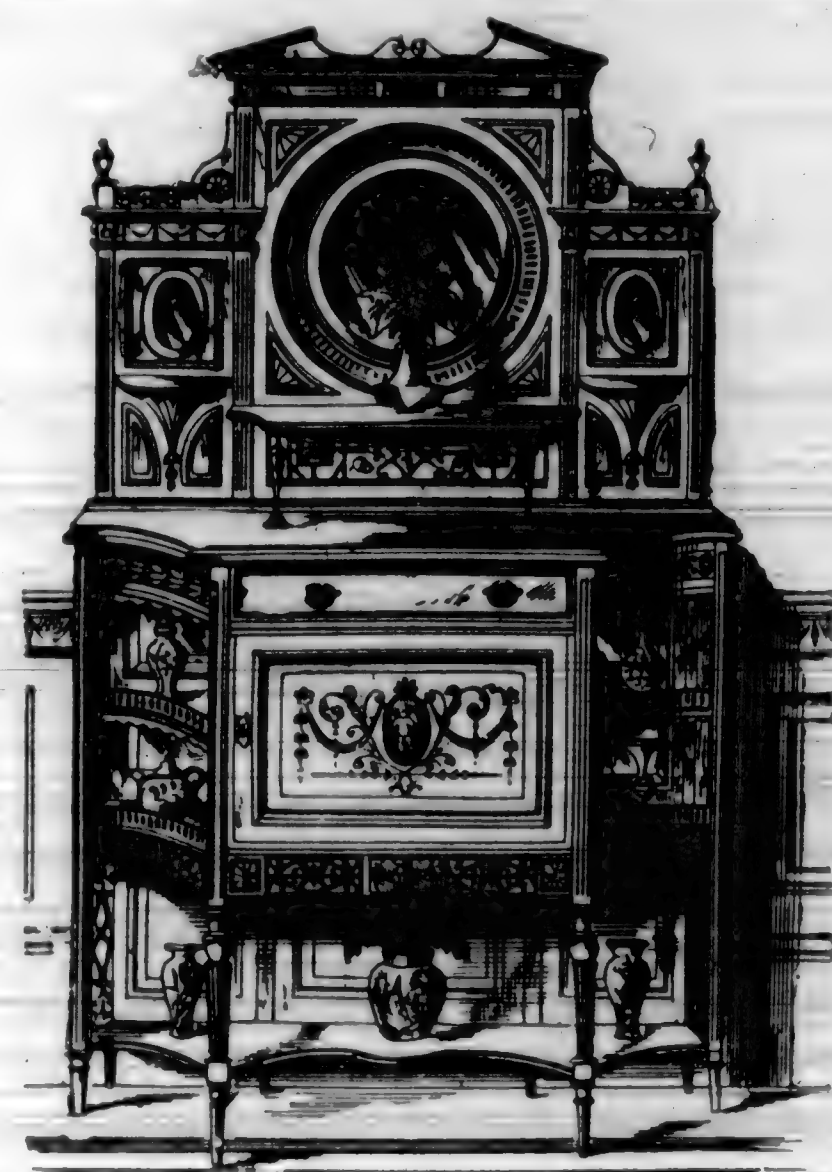


CAL. ELEC. ENG. CO.

JOHN M. CURTIS.

\$2,535, and the plaintiff paid \$2,042.40; the counter claim was \$1,985, for which the defendant got judgment. The defense to the counter claim was a most novel one, viz.: that the defendant had "no experience in laying foundations, as the defendants knew." The case, *Sherman vs. Bates*, was carried to the Supreme Court, where the judgment was affirmed. Judge Maxwell, in the opinion, said: "A party entering into a contract to construct a building thereby agrees that all parts of the structure shall be put up according to the agreement. As a defense to inferior workmanship, he cannot say: 'I am not a mason, or carpenter, or tinsmith; therefore I am not liable for defects caused by unskillful or careless

may be distinguished by it. An example is afforded by a case of sickness, which, in the opinion of the medical attendant, was due to gas poisoning. Some doubt arose on the point, because gas was not laid on to the house. The diffusometer was brought into requisition, and showed the presence of gas, the source of which was afterward found in a broken main three meters distant from the house. A modification of the same instrument is made, whereby the sensitive portion is adapted for permanent exposure in any place difficult of access—such as the ceiling of a theater or public building, where gas might be expected to collect, the indicating portion being fixed anywhere within view.



NEW DESIGN FOR CABINET.

The Reliability of Ready Mixed Paints

THE question of the reliability or durability of ready mixed paints continues to be one of the most interesting and perplexing ones connected with the trade. Shall the oft-repeated statement, "Ready prepared paints are not to be depended upon with that degree of certainty which good work demands," be taken as an accepted truth, not admitting discussion, or, on the other hand, shall the decision be reached that there are honest, ready-prepared colors, and that the question of the responsibility of the manufacturer should determine where they be purchased?

The value or durability of a color depends upon the vehicles used in mixing the paints, and when, through downright dishonesty, or the demands of a too strong competition, artificial pigments are used, an unreliable product is the result, and the prejudice existing among so large a class of painters against the use of ready-mixed paints is strengthened. When this is so strong that it is almost impossible to induce painters to make use of ready-mixed paints at all, surely it must be conceded that there are some good reasons back of this prejudice.

One old painter says: "I have always and still entertain prejudice against the mass of ready-mixed colors and paints turned out by grinders and manufacturers. My objections are that we cannot safely rely upon their quality or even the honesty with which they are compounded—so many different substances are called by the same name. We find ochres, for instance, in the market, which have little, if any, of the natural pigments in them; many of them are artificial products. The same with umbers, carmines, vermilion, in fact, with nearly all our colors and pigments that it will pay to imitate."

A strong argument many painters bring forward in favor of mixing their paints is

that these imitations and frauds can more readily be detected in the crude materials than in the prepared paint or color. While this is true, it is also the fact that the painter who mixes and grinds his own colors can very easily be, and very frequently is, imposed upon by adulterations, artificial pigments, etc.

It is an admitted fact among the best class of painters that where the skill and honesty of the large manufacturer can be relied upon, the latter can better secure uniformity of quality and color. Experts in the mixing and application of paints—men thoroughly understanding the chemical relations of the colors being handled and with a large amount of material to select from—must certainly be able to secure a more uniform result, both as to quality and tone of color, than the ordinary painter in his shop, with few facilities for the work on hand, and a limited stock from which to select.

Again, a greater degree of durability can be obtained by the large manufacturer who is at the same time honest in his manipulations. The permanence of colors in secondary or mixed paints depends primarily in the chemical relations of the colors and pigments employed. These secondary or mixed colors are produced by various combinations, and the rule is to use the least number of colors possible to secure the desired tint. Where the greatest skill is displayed in these chemical manipulations, and where there is the widest choice of material, naturally seem to be the place where the greatest durability in the mixed paint could be secured.

Then there is the question of economy. Granted the honesty of the large manufacturer, with his superior facilities, advantages for purchasing the crude material, etc., is it not reasonable that the cost of manufacture should be much lower than where the opposite is the case? The large manufacturer buys his own materials and thus becomes responsible for their quality, while the painter mixes and combines materials purchased by another party, and the quality of which material he is ignorant of, except so far as a careful examination and his own chemical knowledge go to inform him.

The whole question seems to us to resolve itself down to this: Those who purchase only standard ready-mixed paints manufactured by well-known and responsible concerns, will get honest goods, and those who pursue the opposite course will get the adulterated and fraudulent goods. While there are unprincipled manufacturers, it is not really a difficult matter to find the reliable and honest ones. A good reputation for honestly-compounded paints and colors is built upon a solid foundation, and is not recklessly hazarded by the fortunate possessor. Even the severest competition of his dishonest rivals who undersell him, and promise just as good or better goods than he manufactures, will not drive him into the compounding of adulterated goods.—*The Painter.*

The Trade in Modern Antiquities.

ONE of the chief delights of Continental travel, as every person of experience will admit, is the unlimited opportunities it affords for buying antiquities. The statuary, the coins, and pictures that may be purchased in Italy are a source of never failing interest to English travelers and of never failing profit to Italian dealers. Andalusia, again, is a huge curiosity shop. Being once upon a time in Seville, we came across a retired British grocer, or tailor, or something of that kind, who had just purchased a "Madonna and Child"—unhappily, unsigned—which he had picked up for a few pounds in a dingy back street. He was going to send it to the Exhibition of Old Masters, and, if he ever did so, he probably found that it was worth only a pound or thirty shillings at the outside. It is the same, indeed, throughout Spain.

The altar cloths, the broken fans, the inlaid tables and cabinets, as resplendent as anything in the convent of the Cartufe at Granada, the wonderful chairs and the still more extraordinary scraps of ancient lace, upon which all who have ever traveled in Spain have spent much money—these abound from Malaga to Irun, and naturally one is inclined to speculate a little on the odd circumstance that the supply is more abundant than ever, although the demand is fairly brisk.

Tangiers is, we should say, a hotbed of modern antiquities, and even Mr. Chamberlain bought some of them when he was over there a year or so ago. He ought to have known something about this class of goods, being a Birmingham man, but the childlike faith of the president of the Board of Trade in all things ancient is notorious. America, oddly enough, has taken to this business of manufacturing the antique Dutch cabinets, that, with bronze panels, dingy and marked with the cracks of fictitious centuries, are turned out every day from Chicago furniture stores, and for some purposes they are quite as useful as if they had indeed belonged to some departed burgher in the dead cities of the Zuyder-Zee.

New York experts in this sort of forgery make a specialty of Queen Anne chairs and tables, and the imitation is so perfect as to deceive all but those who have studied such things minutely in Europe. The explorer of furniture stores may come upon magnificent specimens of English Gothic chamber pieces, or ancient-looking (hippendale and Sheraton chairs, which might have belonged to Queen Elizabeth but for the fact that they did not.

It must be puzzling at first to discover in New York shops stamped leather chairs of the time of Louis Treize, plentifully ornamented with brass nails, whose heads are fully an inch in diameter, and the citizens of that enterprising city are invited to become the happy possessors of as many of these treasures as they like on ridiculously low terms. If, however, the explorer is inquisitive, and the furniture venders are in a tolerably can-

did mood, the visitor may be conducted into some back yard where these gems of high art are produced.

A Queen Anne's chair, just made, can, for instance, be supplied with worm holes by the simple process of tilting it bottom-side up and firing a charge of pigeon shot into the bottom and front of the seat.

Old armor, too, is a good line in this business, the drawings required for the purpose being made from the collection in the Grand Opera House, in Paris. It is said that Birmingham knows something about this branch of the trade, and that helmets, shields, casques, breastplates, and complete suits of mail are regularly manufactured for the gratification of credulous oil speculators and retired pill manufacturers. If a man starts a lot of ancestors he likes to have dummies of them in his hall rigged in their medieval iron-monogery. If Birmingham did not gratify him, Germany would.

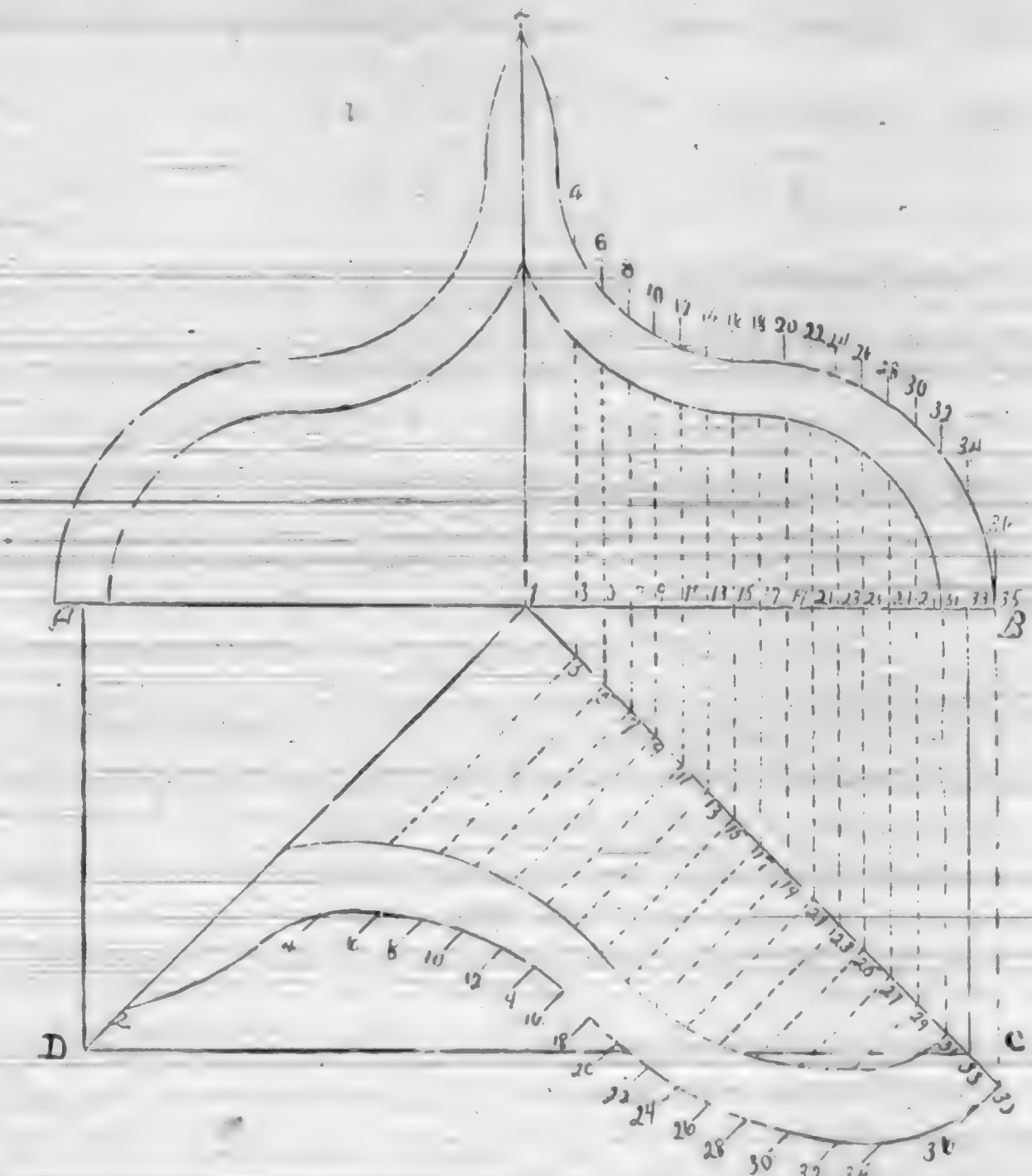
It is astonishing how many tons of antiquities are annually sold along the Rhine, and it is even asserted that in Castle Colburg, where Martin Luther threw his inkstand at the devil—and unhappily missed him—the original splash was cut up and sold long ago; but that as the timber is massive, the place is carefully re-inked every night for the purpose of sale the next day. We cannot say how much truth or falsehood there may be in this particular story. There might have been some excitement in seeing the original transaction if both the distinguished parties to it were present. There can be none in gazing on a patch of ink. The trade in modern antiquities, however, is a curious reality, as real as the sale of old clothes or tombstones. It is a fact calculated to weaken one's faith in life.—*Ex.*

Color.

TO THE house painter who is ruled largely by the restrictions of a customer as to choice of colors and quality of material, and, it may be, by prevailing customs of decoration also, the study of color does not seem a great necessity. To put paint of some sort where it will prevent decay has been his chief duty; what the color was, or what the effect it would produce, seemed less important.

In the calling of the painter, aside from its conventionalities and bread-earning purposes, there is an ample field for his genius, if he have it, or for any talent he may possess. Between black, the one extreme of color, and white, its other extreme, there is a long stretch of varied and beautiful landscape, which can be made more beautiful by careful cultivation, or uglier by neglect and distortion. In order to its proper cultivation, the painter must acquaint himself with the qualities of color, the variations to which it is susceptible, its expressive power, and its proper relationships by harmony and contrast.

That color can speak to the artistic eye is



RULE APPLYING TO THE CURVED RIBS OF BAY WINDOWS.

a fact well known. That it too often tells a tale of the ill treatment to which it has been subjected quite as pitiful, and probably more truthful, than the street beggar, is also true, and that underskillful manipulation it reveals its power, unequaled to charm and to instruct, is beyond question.

What variations lie between black and white, and what the proper relations of these variations are, nature teaches; for they all are found in the golden glory of the sunset, in the somberness and majesty of the storm, in the endless variety and beauty of vegetation, in the grey, purple and brown of rock, hill and mountain, and in the soft tint of untainted water. Watch the play of light in nature's work, drink copiously at this unfailing source of knowledge, and lessons in the use of color may be learned which will greatly improve present tastes with regard to decoration.

The expressiveness, the sympathy, the contrasting beauty which can be got out of color for house decoration, should be drawn out by the painter and applied so that none of our buildings would be ugly in appearance, or inharmonious with surroundings. Study and persevering practice will accomplish this, and it will prove a source of intellectual and pecuniary profit to those who become masters of the art.—*The Painter.*

GAS FITTERS' CEMENT.—Melt together four and one-half parts of resin (by weight), one part beeswax, then stir in three parts of Venetian Red, and pour into moulds made of oiled paper, or cold iron moulds.

Explanation of Above Diagram.

A B C D shows ground plan. A B 2 elevation of common rafter. 1 C to be the seat line of hip. Square from seat line C 1 out to D; space the curve 2 B into as many parts of parts, the more, the more accurate. Let fall from the numbers on the curved line perpendicular to the numbers on the seat line C 1. Square from the numbers on seat line 1 C commence and transfer from seat line 1 B in their respective places, to corresponding places on seat line of hip 1 C by those transfers. These are found to trace curve theory. Cut and stand up as shown. Of all the cuts that are a source of annoyance to carpenters, the above is one that to many is most difficult of mastering.

The rule applies to the curved ribs of bay windows, also to roofs that curve both ways. Ribs for arbors also apply to roof of octagonal ground plans. M. J. MARION.

Science of Carpentry Made Easy.

A WORK that should be in the possession of every mechanic, as its pages are full of practical, instructive matter pertaining to carpentry, bridge building, etc. Price, \$5.00.

How to Build, Furnish and Decorate.

SIX HUNDRED and fifty illustrations, consisting of plans for every kind of a building. A PERFECTLY NEW WORK. PRICE, \$10.00.

Indexed Atlas of the World.

BUT one copy left. Price, \$30.00.

Stained Floors.

THE popularity of stained floors goes on increasing. Nowhere are they more appreciated than in sleeping-rooms, where sweetness and freshness are the main considerations. Just what is the best stain is a difficult question to decide. A writer in the London *Queen* is of opinion that permanganate of potash is the best. It is much used in the navy, and is very satisfactory in sitting-rooms and sleeping-rooms. As most people know, permanganate of potash not only stains, but purifies and disinfects the rooms which are stained. The mode of procedure is this: Procure a good quality of permanganate of potash; dissolve about an ounce and a half of the crystals in a gallon of boiling water—this will make quite a dark stain—use a stick to stir up the mixture; then with a painter's flat brush lay on the stain, working the way of the grain of the wood quickly and boldly. A small brush is useful for corners and crevices, and a pair of heavy gloves should be worn while at work, as the permanganate stains very considerably. Salts of lemon or the lemon juice will, however, quickly remove the stains from the hands. When dry the staining can be repeated if the color is not dark enough, and then when perfectly dry the floor should be rubbed dry with an old duster, and linseed oil should be rubbed on freely with a piece of flannel, always applying it with the grain of the wood. Two or three layers of the oil are an improvement, and firmly set the stain. The floor is then ready to be polished with beeswax and turpentine. To prepare this, spread or cut up the wax into small pieces; put it in a gallipot, and pour sufficient spirits of turpentine over it to just cover it; set the pot in the oven or on the stove until the wax is thoroughly melted, then set it aside to get cold, when it should be of the consistency of pomatum. Put on the wax—not too much of it—with a piece of flannel, and polish with a polishing brush or a big silk duster. This mode of treating floors is quite the best and most wholesome for bedrooms, which should be stained all over, under the beds and everywhere. They can be kept very clean and bright by a daily rubbing with the duster and a weekly application of beeswax and turpentine. Turpentine is cleansing, and floors so treated do not require the weekly scrubbing which is so objectionable in cold and wet weather. Some people object that these floors require so much labor; but after they are once well polished, the labor is not more than scrubbing floors and washing oilcloths, and they take away two-thirds of the terrors of house cleaning. Those who like the more common varnished floors should stain the floors as above, but instead of the linseed oil a coat of size should be laid on. This can be obtained at the paint shops, and should be dissolved in boiling water to the consistency of thin gum, and then laid on with the brush evenly and with the grain. When the size is perfectly dry and hard it can be varnished with one or two coats of

copal or egg-shell flat varnish. These floors require to be dusted daily and to have a little linseed oil rubbed in occasionally. These require less care than a waxed floor, but when they get shabby they are not so easily renovated. A flannel bag in which the broom can be encased is the best floor duster and one most easily managed. — *Set.*

The Manufacture of Glue.

GLUE is an inspissated jelly, made of the parings of hides and horns of any kind, the pelts obtained from furriers, the hoofs and ears of horses, oxen, calves, sheep, etc. These are first digested in lime water, to cleanse them from grease or dirt; they are then steeped in clean water with frequent stirring, afterwards laid in a heap and the water pressed out. They are then boiled in a large cauldron with clean water, skimming off the dirt as it rises, and further cleansed by putting in, after the whole is dissolved, a little melted alum or finely powdered lime. The skimming is continued for some time, after which the mass is strained through baskets, and suffered to settle, that the remaining impurities may subside. It is then poured into the kettle again, and further evaporated by boiling and skimming till it becomes of a clear darkish brown color. When it is thought to be strong enough, it is poured into frames or moulds about six feet long, one broad and two deep, where it gradually hardens as it cools, and is cut out when cold into square cakes. Each of these is placed in a wooden box opened in three divisions to the back: in this the glue, while yet soft, is cut into three slices by an instrument like a bow, with a brass wire for a string. The slices are then taken out into the open air and dried upon a kind of coarse network, fastened in movable sheds four feet square, which are placed in rows in the glue maker's field. When perfectly dry and hard it is fit for sale. That is thought the best glue which swells considerably without melting by three or four days' immersion in cold water, and recovers its former dimensions and properties by drying. Glue that has got frost or that looks thick and black, should be melted over again. To know good from bad glue, the purchaser should hold it between his eye and the light, and if it appears of a strong, dark color, and free from cloudy or dark spots, the article is good.

To this account may be added some experiments on a glue made from the raspings and trimmings of ivory, the refuse pieces and shavings of the button mould makers, and other pieces of hard bone that cannot be turned to account in entire manufacture. Six pounds of button mould shavings were put into a copper boiler with twenty-four quarts of cold water, and first let soak for two hours. The fire was then kindled and the liquor slowly brought to boiling, and kept at this heat for nine hours. After standing a night, fourteen quarts of clear gelatinous liquor were drawn off by a syphon, and two quarts more were

obtained by pressing the residue. This was duly evaporated without addition, and when of the proper consistence was allowed to subside for half an hour, when it became firm enough to cut into cakes, which being hung up for a fortnight in a barn, yielded fifteen ounces of solid glue, or rather less than a sixth of the weight of the bone shavings originally used. A similar experiment made with ivory turnings yielded nearly the same proportion of glue. The jelly from these clean white bones is at first very transparent, and with but little color, and when concentrated by evaporation it always deepens in color, but if well made still remains transparent. A piece of this glue put into cold water swelled, as happens with common good glue, and in twenty-four hours had absorbed fifteen times its weight of water, but without dissolving, and by again drying in the air it returned to its original bulk and weight. It appears that at Paris there are three sorts of glue commonly sold. The best is imported from England, and is of a deep red; the next in value is the Flemish, which is whitish and transparent, and the most ordinary glue of the country is black and opaque.

In using glue, the carpenters first break it and cover it with cold water, and let it stand for about twenty-four hours, by which, as already mentioned, it swells to many times its original bulk after which the soaked pieces are melted, without more water, over a slow fire and kept simmering for about a quarter of an hour, with frequent stirring, and are then cooled. It is now a firm jelly, of such a consistence as very readily to be cut by any instrument, but too stiff to be tremulous. When wanted to be used, it is merely warmed, which renders it sufficiently fluid to be spread over the surface of the wood with a brush. Wood joined by glue requires from one to three days to be perfectly cemented, which is known by the hardness of the portion that remains on the outside of the joining; and the force of cohesion of the best glue is such that boards as thick as any commonly used in furniture carpentering will quite as readily give way to violence in any other part of the substance as at the joining. Glued boards will not set in a freezing temperature, the stiffening being owing to the evaporation of the superfluous water of the glue, which is prevented by great cold.

A variety of gelatinous cements of less firmness than common glue and known by the general term of *size*, are made for the use of paperhangers, gilders, bookbinders, house painters in distemper, and many other trades, by boiling down in water the clippings of parchment glove leather, fish skin, and many other kinds of skin and animal membrane. These are used either alone or mixed with vegetable tenacious substances, such as flour paste, gum arabic and tragacanth, and the like. The preparations of these jellies is very simple, the substance used (parchment shreds, for example) being merely dissolved in water by boiling, strained and evaporated to a due consistence. Eel skins and the skins of other fishes make a cement which is much valued for its transparency and tenacity. — *Furniture Gazette.*

MASON'S and BUILDERS' EXCHANGE OF SAN FRANCISCO, Room 11, 314 Montgomery St.

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

ROBERT MITCHELL, President, 807 Turk St., Box 26.	
J. WAGNER, Wagner's Potrero Ave. bet 22d and 23d Sts.	3
CRAWFORD FERRIS, 9 Bourbon St.	20
JOS. SMITH, 2635 1/2 Harrison St.	36
JOHN MCCARTHY, 2509 Folsom St.	7
WM. DUNBAR, 27 11th St.	14
GEO. RICHARDSON, 518 Ellis St.	39
C. R. WORRELL, 888 17th St.	5
J. G. LIEBERT, Treasurer, 330 Oak St.	32
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MATT. MCGOWAN, 614 Linden Ave.	17
JOHN CALVERT, 812 Hyde St.	40
THOMAS BUTLER, 593 Ash Ave.	28
ROBERT HIGGINS, 1724 Jessie St.	13
JOHN DOWNS, 269 Minna St.	18
J. HAF, 516 Kearny St.	6
G. D. NAGLE, 427 Montgomery St.	24
N. R. TUCKER, 1411 California St.	14
S. L. PLEACE, 634 Stevenson St.	11
O. E. BRADY, 822 Valencia St.	22
THOS. WHITE, 45 Minna St.	4
J. J. CROOKS, 1929 Sutter St.	9
JOHN COX, 608 Jones St.	16
J. F. RILEY, Secretary, 813 Howard St.	38
P. O. SULLIVAN, 543 Stevenson St.	35
BYRON BROS., 11 26th St.	34
JOHN BYRON, 19 Shotwell St.	27
M. FARRELL, 139 1/2 11th.	52
W. E. STEVENS.	46
CON. HOLMES, 726 Hayes St.	10
JOHN H. HANAVAN, 1711 Jessie St.	15
G. W. KENNEDY, 1013 Vallejo St.	51
B. A. THOMPSON, Oakland.	25
JOHN McDERMOTT, 124 10th St.	33
D. J. O'BRIEN, 323 Dup nt St.	31
S. N. ROBERTS, 54 3d St.	56
G. T. WATSON, 638 Market St.	64
C. SCHOENMAKER, 323 1/2 Chestnut St.	62
CHAS. CATE & SON.	58
R. RINGROSE, 261 1/2 Sacramento St.	75
J. BENDER.	73
PATISON & OAKLEY.	66
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PAT. BRICK CO.	29
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A. E. BUCKMAN, Grader.	42
JAS. E. WHITTIER, Asphaltum.	41
DAVIS & COWELL, Lime and Cement.	43
KENNY & McCUE, Graders.	44
H. & J. RALSTON, Oakland Iron-men.	78
JOHN KEL-O, Grader.	76
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T. W. PETERSON & Co., Brickmen.	68
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" 41 to 50 " "	23 50
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" 71 to 80 " "	26 50
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Rough Clear for Flooring, \$1 less than above rates.	
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Shakes.	" 12 00
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Redwood.	
Rough Merchantable.	per M feet \$22 50
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" No. 3.	27 50
" No. 1, 1 x 8.	37 50
" No. 1, 1 x 10.	40 00
" No. 2.	35 00
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T. & G., 1 1/2 x 4 and 1 1/2 x 6.	40 00
" 6 in. 12 ft. and over.	37 50
" 7 to 11 feet.	32 50
" under 7 feet.	30 00
" No. 2.	30 00
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" 7 to 11 feet.	39 50
" under 7 feet.	30 00
Half-inch Surface.	32 50
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Shingles.	" 2 15
Battens, 1/2 inch, lineal feet.	1c
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8 d cut ore Extra per keg (over standard).	25
6 d " " " " " "	50
4 d and 5 d " " " " " "	75
3 d " " " " " "	1.50
10 d to 20 d Brad, h'd.	1.50
8 d " " " " " "	1.50
6 d " " " " " "	1.50
4 d and 5 d " " " " " "	1.75

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Promptly forward your subscription for 1884.

tions for membership were received from A. A. Bennett and Emil John.

A long and earnest discussion then ensued upon the advisability of allowing one member of an architectural firm to belong to the Chapter when the other member or members do not desire to join. No definite conclusion was reached.

Committee on Indentures presented a report which was laid over till next meeting. The secretary was authorized to have printed a number of copies of the by-laws, immediately upon receiving the articles of Incorporation of the Chapter, and to combine the latter with the by-laws.

The meeting adjourned to Friday evening July 11th, as the regular night comes on the 4th, said day being a national holiday.

Division Fences.—The "Call" in Error.

A CORRESPONDENT asks, through the question column of the *Morning Call*, whether the respective owners of lots are obligated to bear equal proportions of cost of fences built upon the division line.

The *Call*, which in matters with which it is familiar generally returns correct answers to its querists, is correct in saying, "If two persons own adjoining lots, and one wishes to fence around his lot, he cannot compel the other to share the expense of the division fence between the two lots," but it is greatly in error in stating, "But afterward, if the owner of the second lot desires to fence in his property, he must pay half cost of the division fence if it is used as the only fence between the two lots." There is no legal rule or law justifying the use of the word "must pay." Morally, it would be only fair and just for the second owner to pay half cost of the division fence, but if he does not see fit to do so, the one who built the fence can have no financial redress in the cost thereof. He may by law prevent the second party from using such fence for the purpose of attaching clothes lines, sheds, or other constructions, or in any manner making use thereof, by nailing or securing to it. But the second man may enjoy the use of such fence for all the purposes of inclosure simply, without paying a farthing toward the cost of erection.

The Ordinances Regulating the Construction of Buildings in San Francisco.

THE "orders" defining the Fire Limits and regulating the construction of both brick and frame buildings in San Francisco, has been printed and bound in convenient form, containing 114 pages. The copy before us is the latest upon the subject matter regulated, having been passed by a vote of eleven to one in the board of supervisors, February 27, and approved by his honor, Mayor Bartlett, March 3, 1884.

The objects in view with those originating the various orders as passed, were evidently to define and enforce the practice of safe and secure methods of construction, with fire risks and

dangers as the basis of judgment, and the conclusions reached. The necessity for a perfect and equitable code of ordinances to regulate and prevent the many abuses that have been so commonly and generally practiced in San Francisco, is admitted by all intelligent architects and builders; for the violations and disregard of the correct science of construction and mechanical principles in the erection of buildings in California, are very numerous; and it is not a matter of surprise that those to whose special care the fire interests of the city are confided, should be alive to the importance and necessity of buildings being so constructed as to insure, first, the greater security against the occurrence of fire, and the best means and facilities in controlling conflagrations when they do occur; secondly, to diminish the risks and dangers always more or less possible to firemen during active service, and thirdly, the most practical and safest means of escape to occupants of burning buildings; all of which is proper and wise, where *common rights and privileges* are not unnecessarily prescribed and restrained. But it is possible, and a thing that has often been done by law-making powers, to go beyond limits at which they should stop; for there is the possibility in law and ordinance making, as in all the other affairs of life, of attempting, comprehending, and seeking to cover and do too much, thereby making legal enactments, passed presumably for the protection and bettering of matters and interests legislated upon, onerous and oppressive, and therefore unjust.

How nearly the exactly right and fair has been reached in the passage of the "fire limit orders," or how handsomely the overstepping of legitimate and proper bounds has been avoided, is a question undoubtedly affirmed and claimed by the framers of the "orders," while architects, contractors and owners very generally disapprove and oppose many of the provisions and regulations of the book of orders and submit thereto with no special manifestation of good grace.

The dissatisfaction that exists arises largely from the fact that there are many really competent architects and builders in San Francisco, who claim to, and do understand and know as perfectly, exactly and comprehensively the numerous requirements involved in building constructions, as do the law-making powers, whose knowledge of building matters and principles is almost exclusively second-hand, and devoid of any more than incidental personal experiences as to architectural or building sciences. And when such men are confronted in the exercise of their professional and mechanical practices, by legal orders and ordinances which in many of their details are considered as unnecessarily restrictive, faulty, and not of recognized consistency and practical utility, it is the most natural thing imaginable that a rebellious feeling should exist.

Reference is made to the subject under notice, simply because the feeling is so general, and so freely expressed by architects and others, in reference to many of the provisions of

the "orders," which, in the main, are good, sound and proper; and if purged of the objectionable features, would meet the hearty approval of all competent and worthy architects and builders, as both the professional and mechanical departments of building science are infested with men whose attempts at designing and construction require laws and orders to force them to even half consistent practices, and who would be much nearer their proper spheres of operation with the reins of a mule team or a pick and shovel in hand.

Buildings.

SECTION 48 of the "Fire Limit Order," as passed by the Board of Supervisors, provides that all doors of ingress and egress, to and from halls and buildings used for public assemblages, shall open both ways—inwardly and outwardly—and in no case inwardly only.

The section not defining explicitly the class of buildings contemplated, and included in and by the intent and meaning of the order, beyond the general expression, "all buildings used for public assemblages," the fraternal organizations people claimed that the order was not intended to reach and include halls and buildings devoted to secret society purposes, and the late decision of Judge Peral in the appeal case of District Engineer Kennard vs. John Goldman—the defendant having been arrested for misdemeanor, and tried in the Police Court for non-compliance with the order requiring entrance doors to halls to open outward—sustains the theory that lodge room buildings are not public halls, and therefore not subject to the provisions of the "Fire Limit Order!"

A QUESTION is raised by *La Semaine des Constructeurs* which is of some importance in this country as well as in Europe. One of its correspondents in speaking of the items which should be included in the cost of a party-wall, for the purpose of determining the amount that should be paid by a person wishing to use it to support an adjoining building, remarks that, according to the decision of the courts, the owner of the wall is not entitled to include the architect's commission of five per cent. as a part of the cost of the wall, half of which the adjoining owner is bound to pay in return for the privilege of using it. This seems to the correspondent, as well as to the editor of *La Semaine*, rather unreasonable, and the latter even goes so far as to say that where the party-walls had been constructed without the intervention of an architect, the owner should still be entitled to add the usual architect's commission, as compensation for the trouble which he had been at in making contracts and supervising the work. As five per cent. on the value of half an ordinary city party-wall would be from fifty to a hundred dollars, or even more, it ought to be worth some one's while to settle the question definitely. Although we have heard the point discussed here, we have never seen the architect's percentage specified as an item in the account of the cost of a party-wall. If any one of our readers knows of local customs or precedents favoring a different practice, we should be very glad to be informed of them.—*American Architect and Building News*.

Compiled Items of Interest for Mechanics.

Fire-Proof Fabrics.

MUCH interest has been shown of late years in the invention of processes for rendering fabrics fire-proof. The *Popular Science News* gives the following summary of the most approved methods:

Among the means recommended for this purpose, we may, in the first place, mention one of exceeding simplicity, applicable to muslins, and all dresses which are starched after washing. It is merely necessary to mix the starch with sal ammoniac and plaster-of-Paris. The goods thus dressed may certainly be set on fire by the flame of a match; but the fire does not extend. The inventor of this first process afterward recommended—

Borax.....12 parts.
Epsom salts.....0 "
Dissolved in 80 parts warm water.

The tissues to be prepared are dipped in the solution until thoroughly saturated. They are then pressed, wrapped in a cloth, wrung again, laid between cloths, and passed through a mangle, after which the articles are ironed while still damp. The necessary quantity of starch can be stirred into the saline solution.

Vogt dissolves—

Sublimed sal ammoniac.....2 parts.
Sulphate of zinc.....1 part.
Water.....15-20 parts.

The starch or other ingredients required for stiffening or finishing are added to the solution. The fabrics are steeped in the mixture till thoroughly saturated, pressed well out, and dried. According to Siebrath, a good result may be obtained by steeping the dresses in a solution of five per cent. alum and five per cent. phosphate of ammonia. Tissues so treated are said not to burn, even if previously rubbed with gunpowder. The powder deflagrated, but left the tissue unburnt.

Among other agents proposed for the same purpose are soluble glass, tungstate of soda, ammonia alum, and hyposulphite of soda. According to Versmann and Oppenheim, phosphate of ammonia is mixed with half its weight of sal ammoniac, and a twenty per cent. solution of the mixture is used.

Tissues which are intended to be ironed are afterward treated with a twenty per cent. solution of the tungstate of soda.

The "phenix essence" of M. Pereles consists of a mixed solution of tungstate, silicate, and phosphate of soda.

Nicol proposed a bath of—

Alum.....6 parts.
Borax.....2 "
Tungstate of soda.....1 part.
Dextrine dissolved in soap-lye.....1 "

The dextrine is said to cause the salts to adhere better to the fiber.

The following recipe is given in a recent German journal:—

Sulphate of ammonia.....8 parts
Carbonate of ammonia.....2 "
Boracic acid.....2 "
Borax.....1 "
Starch.....2 "
Water.....100 "

The dresses or other tissues are taken through this mixture boiling.

Another recipe is as follows:—

Boracic acid.....5 parts.
Sal ammoniac.....15 "
Potash felspar.....5 "
Gelatine.....1 "
Starch paste.....50 "
Water.....100 "

This mixture is applied with a brush.

Wooden and Brick Buildings. \$18.00

CINDERS IN THE EYE.—One of the most effective means of removing a cinder or a small particle of dirt from the eye, is said to be the introduction into the eye of one or two grains of flaxseed. The grain should be placed under the lids, and soon produces a mucilage, which envelops and drains away the foreign bodies.

Modern Perspective. \$6.00

TURNING SQUARE POSTS.—To drill a square hole used to be considered one of the impossibilities of the workshop, but some one with more ingenuity than sense contrived to do it. Turning square posts, however, is an accomplished fact, and machines for doing such work are in daily use. Square baluster posts, table legs, etc., are now produced, moulded or plain, in large quantities.

Builder's Guide. \$2.00

THERE is said to be a lady living in Canton, Miss., who is so modest that she turns her head when passing a pile of undressed lumber.

Cottages and Villas. \$6.00

THE VERY LATEST.—A man out West bought a bedstead, the wood of which was so green that one warm spring day it broke out all over with little groves of waving branches. In autumn the children picked the chestnuts from the side pieces, and the next spring tapped the headboard for maple sugar.—*Ex.*

Street, Store and Bank Fronts. \$4.00

DON'T.—Don't call a very large, strong, sinewy man a prevaricator. If you are sure he is a prevaricator, hire another man to break the news to him.

Universal Assistant. \$2.50

BLACK PANELS.—To obtain a hard, smooth, glossy black surface on wooden panels for art decorating purposes, dissolve gum shellac in alcohol and add enough powdered ivory-black or drop-ivory to give it the consistency to apply with a brush. Put on three or more coats, rub down with rotten-stone and a woolen cloth when dry, and varnish with thin coach varnish.

Practical Carpentry. \$1.00

IN order to obtain the largest possible square from a circle, multiply the diameter of the circle by 7,071, which will give the length of one side of the square.

Church Architecture. \$4.00

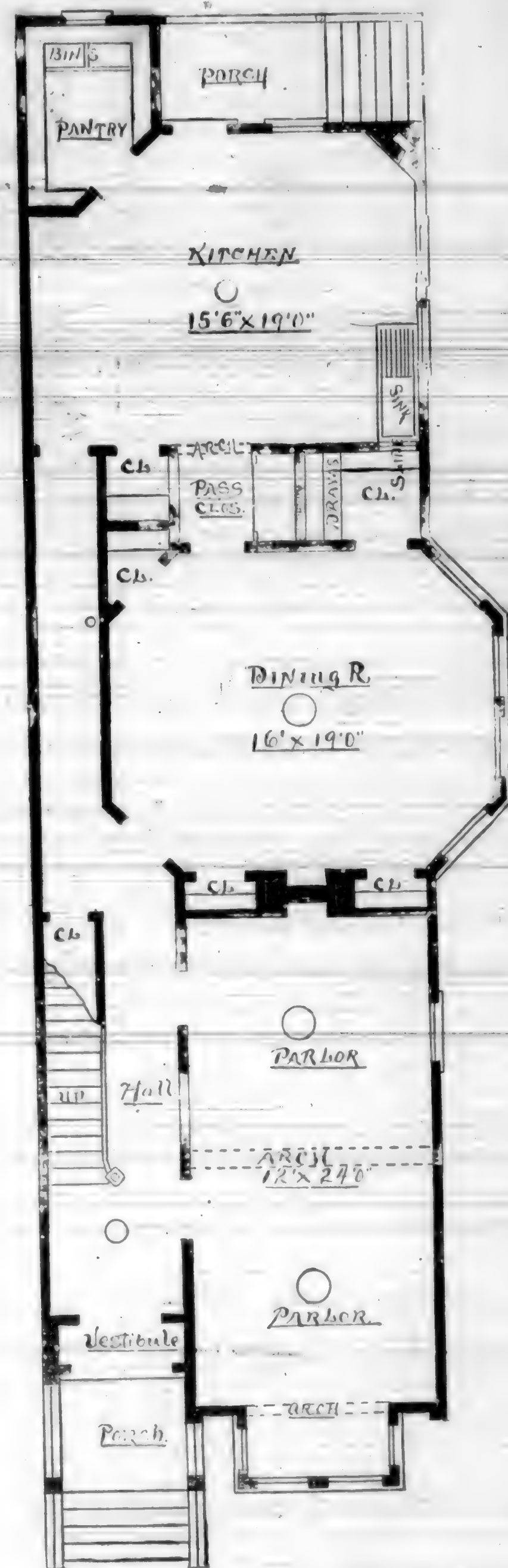
SLOW-GROWN VS. FAST-GROWN TIMBER.—A general impression exists that slow-grown timber is the strongest, but the opinion does not, it is said, stand the test of experiment. There is in London a government establishment for testing the quality and strength of all woods and metals used for government purposes, the chronicles of which are said to be very interesting. Among other things which have been proved there, is the fact that fast-grown timber—oak at least—is the strongest, and bears the greatest degree of tension.

Cummings' Architectural Details. \$6.00

A RUBBER cushion under the legs of a work-bench will deaden the sound of hammering so completely that it will not disturb the inmates of adjoining rooms.

Buck's Practical Designs. 50c

Standard Scroll Book. \$2.00



FIRST FLOOR PLAN OF \$5,500 DWELLING.

Our First Competition—Result.

AFTER a thorough and impartial investigation of the numerous plans presented by applicants, for the various awards offered by the proprietors of this Journal, the Committee have awarded the Premiums as follows:—

FIRST PRIZE; "AS YOU LIKE IT."—Author, Junius H. Morse, 10 Pemberton Square, Boston, Mass.

SECOND PRIZE; "GARRICK."—Author, John C. Wolf, 57 Broadway, New York.

THIRD PRIZE; "ORIOLE."—Author, W. Claude Frederick, 65 West Fayette St., Baltimore, Md.

FOURTH PRIZE; "Hoosier."—Author, J. W. Hammond, Frankfort, Ind.

HONORABLE MENTION; "TEASE SQUARE."—Author, Oliver C. Smith, S. W. cor. 6th and Vine Sts., Cincinnati, Ohio.

We publicly extend our thanks to the Committee, Messrs. Sanders, Pissis, and Mitchell, for their earnest efforts in arriving at the result. It was a task of more than unusual difficulty to decide upon the merits of the various plans. That their decision was just is evinced by the fact that not a single premium was awarded to competitors on this coast. Hence, no partiality was shown in making the awards.

After receiving the plans from the Committee, we carefully studied the various designs, and are satisfied that good judgment was exercised in declaring the result, as stated. We could not help but notice a general fault with all the designs. There is not a single one that can be built for anything like \$5,000 in this city, and, strange to say, the plans presented by competitors residing in California, were as far out of the way in this regard as those from the East. We also noticed carefully the estimates, and found that, although they were all near the required amount, still there were many items much too low, and many omitted altogether.

In one estimate the price of brick laid in the wall was given at \$12.50 per thousand. This figure is so much at variance with the price in this city, viz. \$20.00, per thousand, that we are at a loss to conceive the conditions which would naturally give rise to such a difference.

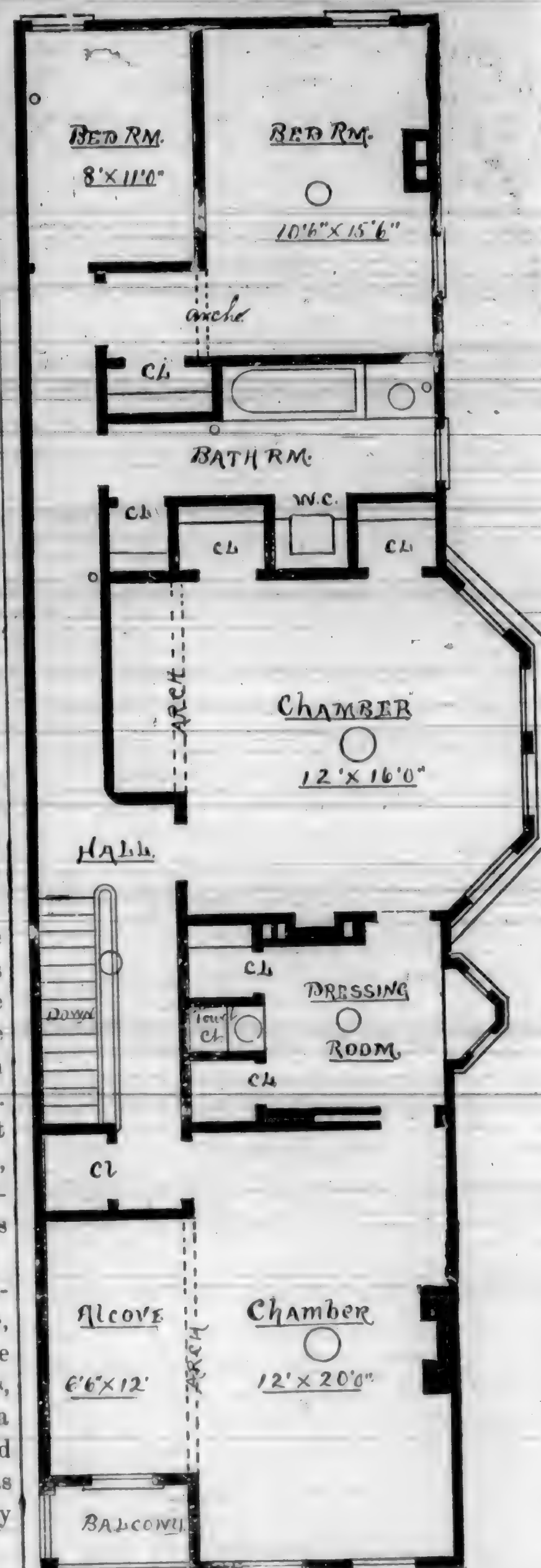
In another case, the labor was placed at \$1,350. This seems incredible in a \$5,000 house, but not hardly more so than is given in another estimate for work where the same is placed at \$430.

We very much regret that one of the contestants should have gone to the Committee, and, without the advice or sanction of the Editors of this Journal, withdrawn his plans, simply because he thought he could not get a premium, and therefore concluded he would withdraw the same before the result was announced. Being a new-comer, we generously overlook the affair.

We sincerely regret the apathy shown by architects and draughtsmen residing on the Pacific Coast, in regard to presenting plans for this competition. The premiums—\$60, \$50, and \$40—for the first three prizes were certainly worth striving for, and when, in addition to the money, the publicity given to the successful authors of the various designs is taken into consideration, we are surprised that more energy was not exercised by our California brethren in striving to secure at least one of the prizes.

As a whole we are well pleased with the result. There were more plans received than we had hoped for when our offer was made. Those receiving premiums, and those of whom honorable mention is made will appear in successive numbers of this Journal, the first of which will be in our July issue.

It is our intention to shortly issue a pro-

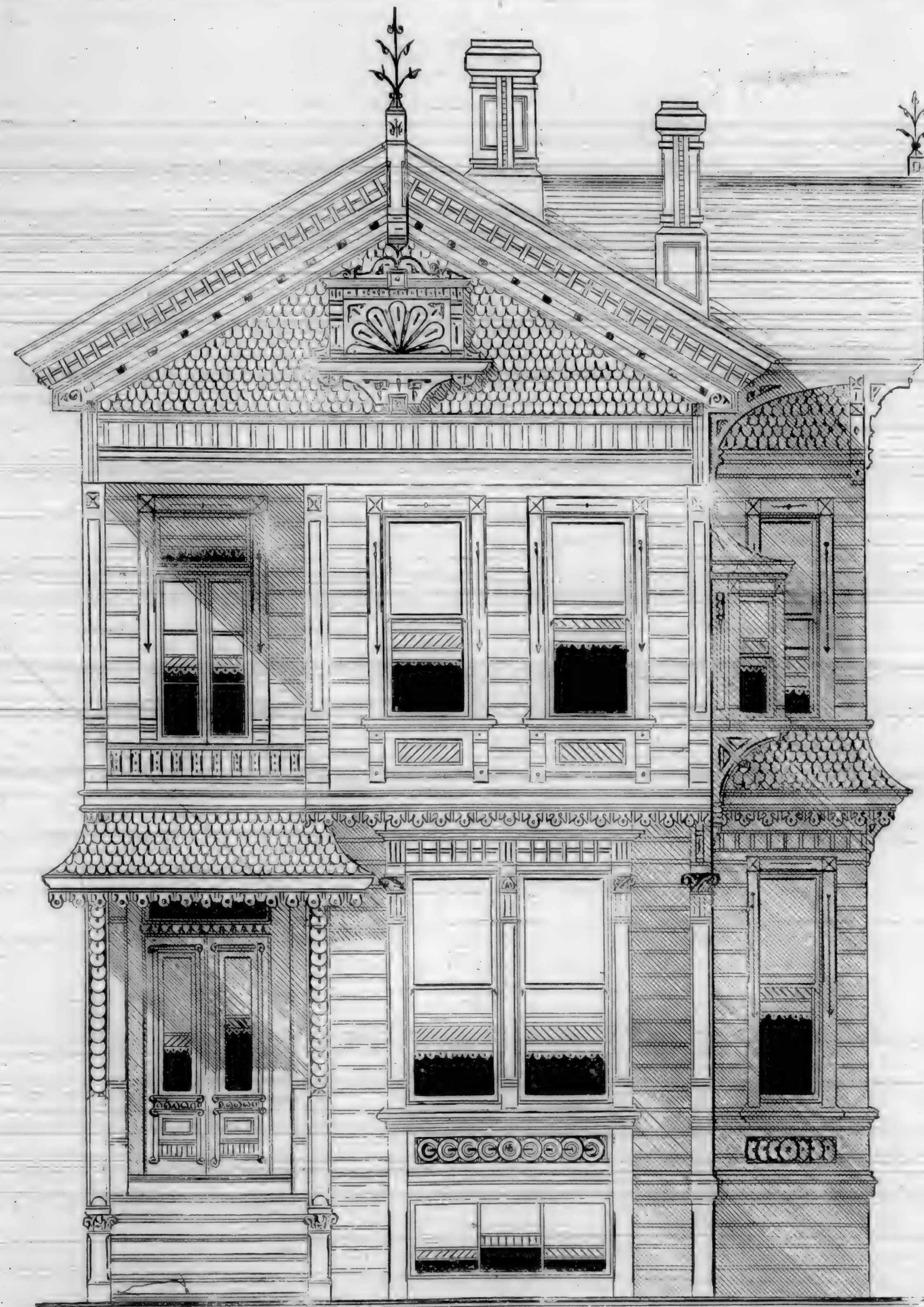


SECOND FLOOR PLAN OF \$5,500 DWELLING.

spectus for our SECOND competition. This will be for a country dwelling to cost not over \$3,500. To avoid such discrepancies in estimates as were contained in the first, we will specify distinctly the prices to be used for lumber, brick, etc. Parties desiring to compete will please send us their address as soon as convenient. This second competition is OPEN TO ALL.

All our competitions will be under the control of a committee appointed by the S. F. Chapter A. I. A., thus ensuring absolute fairness in the awarding of premiums.

Modern Carpenter's Companion..... 1.25
Modern House Painting..... 5.00



CITY OR SUBURBAN DWELLING, COSTING ABOUT \$5,500.

The Journeymen Painters' Movement.

At the time of going to press with the April number of this Journal, the issue between the master and journeymen painters remained unadjusted, with the indications strongly in favor of the workmen. Since then the anticipated concession has been made by the masters, and the journeymen are joyous over their success in securing the advance in wages demanded.

As was stated in a former issue, the resistance on the part of employers was influenced by a virtually criminal wrong existing with so many of those who assume the position of masters, whose regular business practice has been, and is, to swindle and rob owners through contract engagements, and honest bosses by the use of all manner of stuff manipulated into a solution made to resemble, to the unpracticed eye and credulous owners, the appearance of paint. And in fact a paint—for the term paint is defined by Webster's unabridged as, "To cover or smear over with coloring matter." Consequently any mixture that can be applied with a brush, and which gives color, comes under the name of paint, the ingredients used not being defined or expressed by the term. But when the painting of a building is let, either upon the basis of a specification or upon a verbal understanding, the universal presumption is that white lead and pure linseed oil shall constitute the pigments of the color used, and honest painters so understand the matter and govern themselves accordingly in fixing a value for the work to be done; while the "professors" of the adulteration art, destitute of all mechanical pride and principles, resort to the use of base mixtures, fifty to ninety per cent of which cannot be found nor purchased of any reputable house manufacturing or dealing in white lead, pure oils and genuine paint stock.

Consequently the honest men who do use the proper materials, and are faithful to their employers, stand no equal chance when the "professors" are allowed to compete. It is not reasonable to suppose that those who use genuine paint stock, costing, say ten cents per pound more or less, have any comparative standing with those who use slush, costing three to five cents per pound. And it is this unequal grievance that seemed to compel the master painters to resist an advance, while the "professors," knowing their advantages, could, with financial safety, accede to the demand for increased wages on the part of journeymen.

The terms "swindle and rob" have been used in this article; are they warranted? Emphatically, yes. Robberies and swindles are of unlimited kind and varying degrees, and those who, through contract opportunities, obtain money from owners in payment for material used and work performed, differing from, inferior to, and of far less value than that covenanted and agreed to be used, are nothing less than a special class of swindlers and cheats. Yet the class of owners who let their work to such men,

simply upon the ground that the parties offer to do the work at a very low price, without any regard to the standing or reputation of the persons engaged, merit all the bad usage received; while that fact does not lessen nor justify the rascalities of those who abuse and degrade a mechanical pursuit, about and around which clusters so many grand and sublime facts in history, in the arts and sciences, and in the grandeurs of the universe, with its mountains, fields and valleys made beautiful by the Artist of eternity, in the millions of tints, hues and colors spread out over all of earth's surface, each shade being in and of itself pure and unadulterated, proclaiming to the world their origin through the perfect and pure laws of natural growth, as established by Him who organized the perfect system of truth and love, brought forth by each return of seasons, and who added to the sun's golden rays, the soft moonbeams of night, and completed the beauties of the firmament by changing clouds of unspeakable grandeur and the colors and tints of arching rainbows.

But we leave the subject in hand for the present, to be further considered and treated when we shall have gathered and added to our practical knowledge of the matter other information in detail, sustaining and confirming all that has been outlined in this article.

To this end we ask the assistance of all reliable users of pure paint material, whether masters or journeymen, assuring them that authenticated facts alone, without the use of name, will be used in this connection.

THE STRENGTH OF WOOD.—It may seem strange, says the *Midland Industrial Gazette*, that a board one inch in thickness, of any solid wood, requires less force to tear asunder than one of the same thickness composed of a number of layers of wood, the resistance being augmented by crossing the grain. For instance, five samples of lumber, as represented in the following, were carefully adjusted and subjected to tension with these results:—

Walnut, solid		87.4	pounds to tear asunder.
Gum, " "		98.7	" " "
Poplar, " "		71.13	" " "
Cherry, " "		84.07	" " "
Ash, " "		69.91	" " "

One-fifth of an inch of each sample was now placed together, grain all running in one direction, when, after being glued and thoroughly dried, it required a strain of a trifle over 100 pounds to tear apart, and the strangest feature of all was it separated with the wood that showed the greatest resistance when tested solid, hence though the resistance is increased in all, the weaker woods show the greater. Again, the grain was crossed with each layer alternately when the resistance was still further increased 28.5 pounds, and when crossed diagonally we found a better result still, it being about 80 pounds greater than required to split or tear asunder the original wood.

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Nails.

A LARGE dealer in builder's hardware said recently that the demand for clinch or clout nails and for chisel pointed wire nails had largely increased within a year, as compared with that for the ordinary cut nails, and that flooring nails with the wedged-shaped heads were also used in place of the nails with the flat upset heads. His reasons were that better work resulted from the better nails, and there was far less waste. For the coarsest purposes the less first cost of the ordinary cut nails with the flat head induced builders to continue their use; but he believed the improved form and better material of the tough wire and clinch nails would, in time, drive out the inferior material and defective form. The principal advantage of the wedge-shaped head, as in floor nails, is that the head never breaks off in driving, as it is only a gradual enlargement of the body of the nail, instead of an upset across the nail. But the chisel point of the wire nail is its especial merit, as it cuts a clean passage through the fibers of the wood for the following of the body of the nail, instead of "stunting" and mutilating the fibers, as the blunt-pointed nails do.

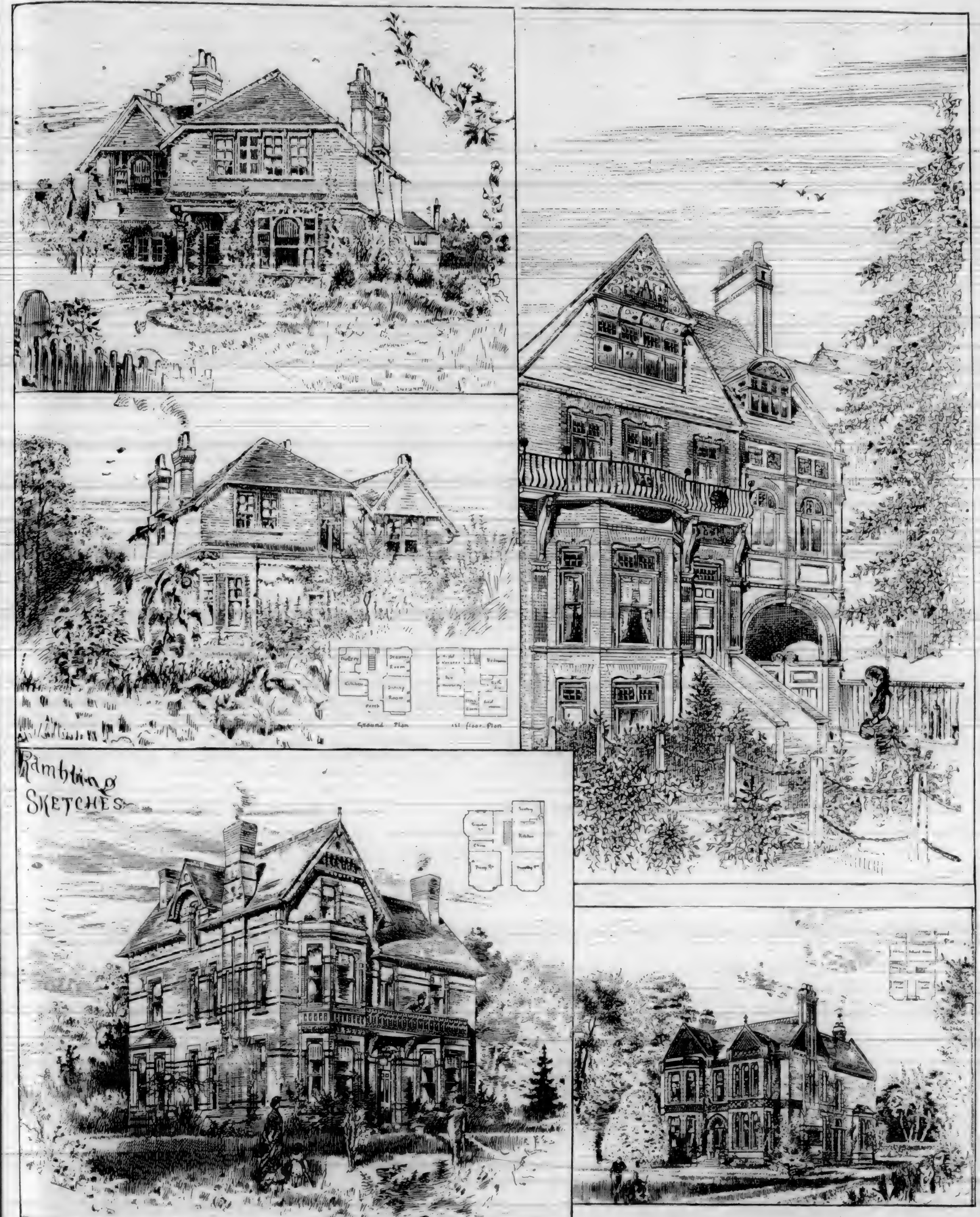
The common cut nails will not usually clinch, even when the clinch is turned in the direction of the grain of the wood; but they may be considerably toughened by heating to a red, and gradual cooling. A hardware establishment was burned a few years ago, and among the stores were nearly a hundred kegs of cut nails of various sizes. The remains from the fire were sold to another dealer, and as soon as the value of the burned nails became known he could sell no others until they were gone.

The Little Shop.

It is time that notice should be taken of the work done, as well as of the place taken, by our small shops. The "big concerns" do not monopolize all the skill and mechanical capability in the country. They may profess to do the best work and produce the best results, because they are furnished with the best tools, but they do not monopolize the mechanical skill, nor collect all the best workmen. Many of the best manipulators, and a very large proportion of the most exact mechanics, are in the little shops, content, may be, to be the foremen, when in a big shop they would be only first-class workmen. The small shop men are valuable in any shop where mechanics, rather than operatives, are required, because they are generally "men at a pinch," "expediency men," and generally excellent workmen.

The proprietor of a large manufacturing establishment, building fine tools of a particular character, claims that his best men come from small shops, where make-shifts and contrivances are the rule. "Such men," he says, "can make the shop hum" by their methods.

It is very convenient to have a shop full of adapted tools, but it is also convenient to have in the shop graduates from "the little shop," who can contrive, as well as tend, a machine. —*Scientific American*.



A FEW GENERAL DESIGNS FOR COUNTRY DWELLINGS.