

crops, for drying fruit, for irrigation, for conducting water to mining districts, and many others, all show how the mechanic arts and industries are stimulated and developed when a new territory is opened for labor, and communication made easy and rapid. Look at these arts and industries as they languished on all this coast under Spanish rule. Then see what they are doing for all the States here now. What will they do for Mexico in the near future?

All new subscribers for 1884 will receive the balance of this year free.

The Lost Art in Color Making.

BY HENRY E. COLTON.

ONE of the most interesting lectures delivered by the great lecture orator, Wendell Phillips, and which is also reproduced in his published memoirs, was upon the lost arts. At the time of its delivery it was read and commented on by thousands. In that lecture, Mr. Phillips states "that the walls exhumed at Pompeii reveal colors richer than anything we can produce at the present day." Had Mr. Phillips contented himself with saying that they are superior to anything we are now producing for commercial purposes, his statement would have been one of undoubted truth, but it is an absurdity to assert that in the present enlightened state of chemical science throughout the world it is an impossibility to accomplish any result which has been done in the past time. The colors of the ancients were limited to a small number, while the shades with which we ornament our villas, and fresco our houses and public buildings are numbered by hundreds. The use of colors is an evidence of civilization, and the character of those colors an indication of the nature of the people who use them. The warm, sensuous Egyptians and Greeks ornamented their houses and their bodies with the glowing scarlets and purples, and the softer blue was with them the color of love and divinity. In comparison with the varied and brilliant shades produced by our own manufacturers, the colors of the ancients were inferior, but, when compared in point of durability, those of the Egyptians and Greeks have decidedly the advantage. Had Mr. Phillips stated this fact there could not have been a possibility of successful contradiction; at the same time it must be understood that those colors are not more durable than any our manufactures and chemists can make, but more durable in tint than any they do make.

The colors used by the ancients were not chemical; they were natural vegetable and mineral substances, or were made by fire processes. Their black was, for many years, made from the charcoal of vine twigs and wine lees. Appelle, a Greek, invented the process of making black from ivory clippings, and to this day no improvement has been made upon his invention. Their red was, for a long time, a very brilliant ochre from Palestine, and afterwards, the native cinnabar from Spain. Their blue was a carbonate of copper ground very

fine. Their yellow was from two sources, the expressed juice of some plant, and an ochre. Their white was a preparation of lime. The painting of the ancient Egyptians does not deserve that name; it was simply skillful plastering. The color was mixed in the lime or cement of which the wall was to be made, or it was put on while the cement was still wet, so as to strike in. The tools used were a rough brush made of bamboo fiber, a pointed instrument and a spatula. With the pointed instrument the artist marked out the lines of the figures, and with the brush or spatula, his assistant put on the color. There are numerous pictures in the British Museum which exhibit these persons at work, and like everything else of that Egyptian day, they plainly indicate the heavy mechanical nature of the work. All their figures were stiff, without elegance in shape or grouping, and they knew nothing of mixing colors so as to produce varied shades. The Greeks derived their colors from the Egyptians, and improved on them. The age of Appelles marks an era in the history of ancient paints and painting. He not only discovered a richer black, but also introduced the mixing of colors for producing shades, and he also introduced an improvement in the mural or plastic system of painting, whereby the tints were made brighter and more fresh-looking. And we may add that this very system of frescoing is constantly used at the present day, being considered by some a great secret. The basis of it consists in mixing the color with glue, water, and wax. Appelles also discovered and used a mixture of oil and gum in his painting, but did not give it fully to the public. Previous to his day painting had been merely a species of mural decoration incorporated into the wall and immovable, but with his improvements he introduced also a system of painting on wooden boards, which might be affixed to the walls, or used as paneling. He seems, too, not to have lacked appreciation, for upon discovering his purple, he first used it on a portrait in which he clothed the great Alexander in the royal color, who was so much pleased thereat that he paid the artist a sum equal in our money to \$50,000 gold.

It is thus seen what were the colors of the ancients. The chief colors of the present day are, with one exception, all made by chemical processes in the wet way; ultramarine is the only one which the civilized nations make with a fire process. It is generally thought and believed that the Chinese make quicksilver vermilion by a fire process, and hence its much greater durability and richness of tint. In this simple difference of manufacture lies the secret of the opposite qualities of the ancient and modern colors. The latter are brilliant, but a few months of sun and rain and the luster is gone; the former may not be originally so brilliant, but hundreds of years do not dim its surface or change its tint. The president of the American Color Manufacturer's Association not long since said it would not pay to make colors by a fire process.

This simple statement is the key to the whole

mystery of deterioration in modern color-making. The manufacturers, in the thirst to get rich or to make sales, have striven for the production of an article which could be made at cheap rates and show well while being sold, and have not cared or striven to achieve durability in material or tint. The public taste, instead of being elevated by the offer of something better, has been constantly debased by the inducement of cheapness. If, instead of striving to see how much base material a little true color would tint, the color manufacturers had been for these years past striving to produce durable colors at cheap rates, their profits would not have been materially decreased, as they would have kept from the business those who do not value reputation, but only work for present profit, and they would have sustained for their business the reputation it deserves from the high character of some of the men engaged in it. The public taste is slowly and surely demanding something more permanent than the gaudy to-day and pale to-morrow tints now sent forth from the shops. There is no lost art. Our chemists can make more perfect colors, and our painter artists can use them more skillfully than any of the ancient Egyptians, Greeks, or Romans. *Nashville Artisan.*

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Cleanliness of Sinks.

ONE of the most prolific causes of defilement and offensive odors in kitchen sinks and their outlets is the presence of decaying grease. This comes from the emptyings of kettles in which meat has been cooked, in the dish water, and in the soap. The grease lodges in every crevice, and catches at every obstruction. A remedy may be found in the use of the common alkalies instead of soap, aqua ammonia in washing clothes, and borax in washing lawns and laces, and washing soda in cleaning dishes. These alkalies prevent a solid soap from forming in the sink and its pipes, and neutralize all effects of decomposing fat.

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Drawer Making.

Most articles of furniture being fitted with drawers, the method of making, fitting, etc., forms a very important branch of cabinet making. I shall, before describing the manner adopted, make a few remarks respecting the work into which they are fitted, and other essential particulars. Drawers are most frequently placed one above the other in carcasses, being supported and separated in front by partitions. These partitions play a very important part in the structure, and one to which sufficient attention is not usually given. I shall, for the sake of illustration, assume that we are making a cabinet about twenty inches or so wide. I need not enter into details, but will suppose that it is to be constructed with two or three drawers, placed over each other in front. The ends, having been planed over, both inside and out, should be squared up. For this purpose they must be fixed together. This is done by means of a small handscrew at the edges, or by nailing them in four places near each corner. All work intended to receive drawers should be squared up a little out of the square. It should be a trifle wider at the back than the front, and also a little higher. A very small amount will do; it must not, of course, show to any perceptible extent; about one-eighth inch is quite sufficient.

The tops and bottoms for your carcass should be of three-fourths inch pine; in larger work you may with advantage increase this thickness. You should get them out $1\frac{1}{4}$ inches longer than the inside measure your work is to be. This will allow three-fourths inch nearly each side for dovetailing into the ends. This thickness of wood will work about five-eighths inch, and you should have your partitions finish the same, to keep all the front in unison. The position of the drawers is now set out on the inside-front edge of one end, and the other marked from this. You must first mark the top and bottom thickness, and then divide remaining space for your drawers, carefully marking the top and bottom of each partition edge. From these markings the ends are squared across, and grooved to a depth of one-fourth inch with an iron to correspond with the thickness of the edges. The partition edges should be of sound, seasoned pine, three-fourths inch thick, and $2\frac{1}{2}$ inches wide.

In larger work it is advisable to use a little thicker and wider stuff. They must be got out two inches longer than your drawer fronts are to finish. Their front edges are slipped or faced with similar wood to what you are making the cabinet of, the slips and edges being toothed before gluing together. The back edges are plowed about one-half inch deep, with a three-sixteenths inch iron. The tops and bottoms having been dovetailed together, these partition edges should be tightly dovetailed in from the front edges and cramped up. The dovetails should be three-quarters the thickness of the ends long. In some cases, where the drawers stand back in work, it is impossible to put in the edges in this manner.

They should then be tenoned in and cramped. You will require some runners; they should be of pine. Get them out the length the drawers are to be, and an inch, or rather more, wide. They are plowed on one edge with the same iron as used for the partition edges, and about the same depth. Take them to the requisite thickness—that of the carcass end grooves. Be very particular with this; they must fit well. The best way is to get a piece of wood and groove it similar to your ends.

Now, after taking the runners to a thickness, just try whether they will all draw tightly through it. You will be able to see where a shaving or two is wanted off. You must tenon them into the back edge of the partition rail. Now glue the mortise, knock them into the rail and into the carcass grooves. It is unnecessary to glue them; but it is better to put a screw through the runners at the back into the ends. The next thing is to get out some partitions. They should be of very dry, seasoned wood; pine will do very well. Their thickness should be about that of nine-cut stuff; the length a little more than that between the runners, allowing for the plow grooves each side and a little additional, say one-eighth inch, for working. For most purposes the width of a board, eleven inches, is sufficient; but if the carcass is very wide, it should be greater. These partitions are smoothed over, and the front and one edge squared, then chamfered, until they will fit the grooves in partition edges and runners pretty tightly. Now put the chamfered side in the runner. Remember, the direction of the grain of the partition should be across, the same as in the partition edge in front; mark its length, square this across, and chamfer it the same as before. Then remove any glue that may be in the grooves of the partition edges and runners, where the tenons are, with a narrow chisel, run your partition in, and drive them home into the edges with one or two blows with a mallet.

Sometimes drawers are placed side by side, as in the top frame of a library table, which usually contains three, or the front of a dressing table with two. In both cases the method of construction is very similar. The top and bottom rails forming the partition edges will be in the library table, or anything similar, dovetailed into the ends from the top and bottom respectively. In the dressing table, which would be supported on legs, the top rail only would be dovetailed in, the bottom one being tenoned into the legs. The width of all these rails may be from three inches to four inches, and their thickness, assuming the jobs are made about four feet wide, should be seven-eighths inch finished. The other partitions separating the two or three drawers, the dividing partitions, will be tenoned into the top and bottom rails. They should be got out long enough for the tenons to come right through, the projecting ends being afterward cut off. Underneath and above each dividing partition a cross rail or rails should be tenoned into the front rails and dovetailed into the top and bottom of the back frame.

It is necessary to get out some pieces to act as guides, and glue them on the bottom cross rails up to the dividing partitions in front. They need not be very wide, three-fourths inch or one inch will do; their length that of the drawer sides, and their thickness the same as the dividing partitions. You should work them underneath, then glue, and set them square with the dividing partitions. This is best done by running a square along the front rails, and putting the girders up to its edge. In a dressing or toilet table there will be a space at each side, because the end framing will be mortised and tenoned into the legs. This space, the difference between the framing and the square at the top of the legs, must be filled up level. This will be all that is requisite; it is not necessary to use runners with partitions fitting into them, as in carcass work, because the difficulty we have to counteract there, that of the tendency of the ends to cast, does not here exist. Partitions may be used in a dressing table; they are useful for preventing the drawers getting so dirty; but they merely act as dust boards, and are not essential to the structure.

Drawers have occasionally to be fitted into work where they are placed at the back of it, and draw forward over another portion of it, like those in small cabinets, writing tables, and secretaries. They are in these cases usually much smaller than in those previously described. When in this position they should never be allowed to be level with that portion of the work they draw over. They must work on a bottom. This should be one-eighth inch, or rather more, thick and one-fourth inch wider than the drawers from back to front. It is fitted in and the ends mitered; now fit same thickness in at each end, and in the middle or wherever the drawer divisions are to be. All these should be about two inches wide, and put in in the same manner. To these partition girders are fitted as before described.

The foregoing examples include most cases in which drawers are met with, although they are sometimes, either for want of space, or because the work is of a miniature description, fitted in carcasses without partition edges. They often work on tongues. There is nothing special in the construction in this case. The ends should be set out and plowed for the tongues about three-eighths inch deep. These grooves should be well glass-papered before putting together.

In selecting wood for drawer making, care should be taken to select that which from its nature is most suitable. What is required is a straight, firm, durable wood, one whose surface will offer or present the least friction when in use. This is especially necessary for the sides. The best woods are oak, teak, and mahogany for large and medium-sized work; for smaller work sycamore and boxwood may be used. You will readily observe the different appearance and nature of either of these compared with a softer wood like pine, or one of a sticky or gummy nature like cedar.—*Building News.*

Enlarging the Dining Rooms.

IN the good old times when the mistress and her daughters did all the housework there was not the necessity for a room consecrated to ornamental china and fancy cooking that is now felt in all well regulated and high toned families. Indeed, the clean, bright, open kitchen with its sanded or polished floor was a very comfortable and convenient place for the family to assemble, not only for their evening work and amusement, but for their daily bread. When the mistress retired from the kitchen and gave up its care and management to subordinates the change in that department is scarcely less than the modification of the style of living throughout the house. From being an inviting place it became an uncomfortable and confused workshop whose appearance and character were highly uncertain. Generally the modern dining-room is an apartment devoted to a special purpose. In families where the old fashion of doing her own work is kept up by the mistress it is practical to use this room even for a sitting-room, but if the business of clearing and setting the table is carried on by the ordinary kitchen servant it must be abandoned by the rest of the family so large a part of the time that it cannot well be made to serve anything else than its one legitimate purpose. In many houses, especially those that were built several years ago, there was a sort of compromise by making this room very small, barely large enough to contain the table and its row of chairs, consequently houses otherwise capacious are often found with a dining-room of altogether inadequate dimensions. In houses that are blessed with hospitable intentions this should be at least as large as any other single apartment in the house. How to get more room is a question more commonly asked in regard to the dining-room than of any other in the house, unless the front hall be excepted. Like the familiar advice concerning the resumption of specie payments it may be said that the best way to enlarge a dining-room is to enlarge it. If this cannot be done without encroaching upon other rooms of the house which are already small enough, then space must be taken from outside. As tables are arranged in a majority of cases the first demand is for more length. Many rooms which would be large enough if it were not for a projecting chimney breast or sideboard, are cramped by these articles so as to be practically of very small size. Hence if a recess can be made to contain the sideboard with space enough around it for the servant who waits upon the table to stand without encroaching upon the room itself, such an addition will add to the capacity of the room just as much as if the whole side were extended, and the saving of cost as well as the improved appearance will be very great. Of course this suggestion is only intended for houses and buildings which feel their limitation in this respect, and there is great satisfaction in treating a defect in such a way as

to convert it into an actual advantage.—*The Builder.*

All new subscribers for 1884 will receive the balance of this year free.

Paper Hanging.

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

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

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

subdued coloring and of tint that harmonizes with the lower. Thus, the color used about the frieze should be the same as that on the lower part, but of a lighter shade, intermixed with some other colors that form a harmonious link between the two shades. Contrasts must be carefully avoided, but pale pinks, blues, and ambers can be blended together above a subdued gray-blue ground. The two portions of the dado should be joined together with a light wooden (black or brown) railing, or with a line of paint.

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

Gaswork Washings for the Sewers.

IT has been discovered that the best disinfectant for sewer gases is the washings from gas works. This serves a double purpose—that of annulling the poisonous effect of the sewer gas and at the same time enabling persons having defective traps to detect it by the strong, pungent odor arising therefrom, while sewer gas alone, almost odorless, permeates the building, carrying sickness and death with it. The washings from gas works, at least, will not clog or obstruct even the smallest of sewers, while their presence, as above stated, might save valuable life.

Detail Cottage Architecture. Price \$10.00
Grimshaw on Saws. Price \$4.00.
Mechanics' Geometry. Price \$5.00.

The Egyptian Sphinx.

ON the western bank of the Nile, and near the second largest pyramid, stands this famous object, which has from time immemorial so excited the awe and curiosity of the traveler. As long ago as the time of Herodotus, the first man who ever conceived the idea of writing a history, and who lived four or five hundred years before the time of Christ, this gigantic and mysterious human head was raised above the sand, looking upon the beholder with the same calm and serene expression, as if superior to the vexations of life, and to the mutations of time, as much a puzzle as it is in our own day. It was then hoary with age, though over two thousand years have since rolled away. First the Persians, under Cambyses, before Herodotus' time, invaded and devastated the country. Then the Greeks, under Alexander and the Ptolemys, his successors; then the Moslems, one of whom, as a hater of images, sought in vain to destroy it; and then many other lesser powers down to the Turks of the present day; all alike unaffected by any respect for the monuments of antiquity, and ignorant of their value as records of human progress and decay.

The deep mist and darkness of the Middle Ages rolled over it for centuries, and still the Sphinx remains one of the wonders of the ancient world, mutilated, disfigured, neglected, and sometimes almost forgotten, but always serene, impressive, and awe-inspiring.

It is hewn from the salient angle of the rocky ledge on which stand the great pyramids; part of the cap, the back, and the fore-paws, when the rock was abraded, being supplied by masonry. The savants, under Napoleon, uncovered the back and shoulders, and obtained approximate measurements; but it was not until 1818 that the entire figure was displayed to its pedestal. The honor of this work is due to the Italian Cavaglia. The loose sand, anciently restrained by artificial irrigation, and doubtless highly cultivated, but now continually shifting about in that rainless country with the slightest breath of air, was removed by the labor of from sixty to eighty persons for several days. No trace of these excavations, made at so much cost, now remains; the upper part of the figure alone being seen, rising as before about thirty or forty feet above the level of the soil. It faces eastward toward the Nile. At the rear is the pyramid of Shafra, while toward the north, in a corresponding position in reference to the pyramid, stands another rock, which, in the opinion of Lepsius, it may have been the intention of the builder to carve into another Sphinx, as a twin guardian of the approach to the sacred pile.

Cavaglia's efforts laid bare a descent from the Nile for 135 feet succeeded by a flight of thirteen steps, after which was a platform and a second flight of thirty steps to the rocky pavement on which the figure rests. The body is that of a lion, with human head and shoulders. Though often spoken of as feminine in features, the broken fragments of a beard which

have been found demonstrate the incorrectness of the assertion. Indeed among thousands of sphynxes found in Egypt, but one is known having a female head, though those of the Greeks are almost always male.

The posture is recumbent, with the forepaws stretched out in front a distance of fifty feet. The body is 143 feet long, and the height to the top of the head is 62 feet. Between the forepaws is a level space which was used as a temple or a place of sacrifice. Here were the remains of an altar with charred embers still preserved—the relics of a sacrifice offered, perhaps, to avert the tide of invasion that overwhelmed the worshippers. Several small sphynx-like figures stood near or under the chin. Under the chin is an immense granite tablet, fourteen feet high, seven broad, and two thick, covered with hieroglyphics relating to one Thothmes IV., and flanked by two other tablets of limestone. These formed part of the inclosure of the sacred area.

The traveler, Dr. Pococke, asserts that there are openings in the back and in the top of the head; but these could have been nothing but seams in the rock, or spaces left by dislodgment of parts of the masonry, as Lepsius, a most careful observer, who visited it in 1843, states that no opening to the interior whatever was to be seen, and that the mass of the statue obviously must have been hewn from the native rock.

The following striking passage as to its present appearance is from Denon:—

"Though its proportions are colossal, its outline is pure and graceful, and the expression mild, gracious, and tranquil. The character is African, but the mouth, the lips of which are thick, has a softness and delicacy of execution truly admirable. That it is an Egyptian head is plainly evident, notwithstanding the mutilation; but the type is fuller and broader than usual in Egyptian statues."—*Illustrated World.*

All new subscribers for 1884 will receive the balance of this year free.

Spearing for Timber.

A NEW industry has recently been developed in Ireland—a sort of timber prospecting never dreamed of by our American pine hunters. It is a well-known geological fact, says the *North-western Lumberman*, that immense tracts that are now bog lands in Ireland were once covered with forests of oak and pine, and that in cutting peat, immense trees of these varieties are found imbedded in the earth at depths of ten, twenty and thirty feet, in many cases whole groves being found standing just as they grew. To find out the location of these miniature subterranean forests is now the speculative work in which some industrious Irishmen are engaged. The timber, when brought to the surface, is found to be perfectly sound, and the oak, which is as black as ebony, is used extensively for ornaments of jewelry and fancy cabinet work, and sells at high prices. A recent visitor to the wild moor and mountain

region of Donegal thus describes the way in which the seekers after buried forests operate: Two men, armed with steel rods about thirty feet long, traverse the bog, and by running their rods into the ground are able to ascertain where the trees are to be found. They work by what may be termed natural mathematics, and quickly determine the length of their prize, its approximate diameter, whether it is pine or oak, and is or is not a clumper—one of a company or clump. They fix on twenty or thirty feet square, and cross it with their searchers, say north and south, and then east and west, search it across each way, a stab to each foot or so, and in the course of a few minutes they know whether that area contains what they are looking for. The square lying next and next, and all near each other, are so searched, and the discoveries, if any, are marked for future action. The unproductive are also marked, to avoid future loss of labor.

RIDDELL'S WORKS.

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Any of the above will be sent by mail, post-paid, upon receipt of price.

The Triennial Conclave Gathering.

IT has come and gone since our last issue, and left no other than the most pleasing reflection. We can add not a word more to the many good things that have been said of us and to us as a people. Our Eastern friends came among us in uncertainty, not knowing whether we were a peculiar people, or a large-hearted, generous branch of the human family. It is safe to say that all questions upon these points have been fully settled—largely in favor of the latter proposition. The Knights of California and the Masonic fraternity generally have special reason to feel proud of the grand affair in its entirety, and the citizens of S. F. as a whole cannot but mingle in sentiment with their specially interested brethren. The occasion will never be forgotten by those who participated in or witnessed the many interesting displays, and in the future, the influence of what has been is sure to prove of very great benefit to our State. We return hearty greetings to the many noble Knights who called personally at the office of this journal.

Cottage Homes.

COMSTOCK has sent us a neatly printed work with the above title. Being perfectly new, many new designs are found in it, representing the latest phase of New York architectural styles. Price, \$5.00.

Pacific Saw Manufacturing Company.

NEARLY twenty years ago, N. W. Spaulding, James Patterson, and C. P. Sheffield conceived the idea of establishing upon this coast a MANUFACTORY for the purpose of making every kind of saws known to the trade. Beginning in a small way, at a place on Pine Street between Front and Battery, they succeeded at once in attracting attention by the excellent manner in which they turned out their work. The introduction about this time of Spaulding's improvement of inserted teeth attracted the attention of saw-men generally all over the United States, and the young firm was soon crowded with orders. Larger premises became a necessity, and the present quarters on Fremont Street were secured. Within the past few months a further extension has been added, in order to keep pace with the demand that has been increasing from year to year. East of the Rocky Mountains orders have been received for the saws of this company, and they are gradually, but surely, working their way into general use in all the main lumbering districts of the United States. A specialty of this company is the manufacture of the N. W. Spaulding Patent Circular Saw and Plate, with inserted adjustable teeth. This is an invention of incalculable value to the lumbermen and sawyers, as the plate of the ordinary saw, which is very expensive, becomes useless when the teeth are worn out. But this patent plate is so constructed that when the teeth are worn out they can be detached and new ones inserted, thus affording the advantages of a new saw at a nominal expense.

The cross-cut saws manufactured by this company are achieving a national reputation. They excel in the perfect manner in which they are ground, forming a true taper from the point of the tooth to the back of the saw. The excellent material used, and the improved method of tempering, enables these saws to carry their cutting-edge for a much longer time than most of the imported saws.

Saws of all sizes and descriptions are made by this company; circular-saws, seventy-two inches in diameter, milling-saws sixteen feet in length, the finest dentist and butcher-saws, pruning and hand-saws; in fact, every kind known to the trade.

Carpenters have discovered that the saws manufactured by this company are superior in temper to many others; and although the first cost is greater, this is made up in a short time by the saving of files and time necessary for putting them in order. Workmen have found out that saws easy to file are but trash. More attention is being paid by all of our saw manufacturers to having hand-saws of a harder temper than formerly given.

Our engraving represents many of the different kinds of saws made by this company. About fifty men are now employed under the immediate superintendence of the proprietors. No cheap work is allowed to leave the establishment, every saw being inspected by a

member of the firm before it is placed in the market. Should at any time a saw with the name of this company stamped upon it be found to contain defects, it will be remedied without additional charge, or a new one be substituted.

This company has the most complete and ample facilities for the manufacture of saw mandrels, planing and curriers' knives, springs, etc., also for repairing in all its branches, re-tempering, strengthening, gumming, grinding, polishing, etc.

American House Carpenter. Price \$5.00.

Hemacite Door Knobs.

ARTISTIC in design and finish, of material as durable as iron, with the assurance that once placed properly in position no ordinary wear and tear can in the least harm them, these KNOBS stand to-day almost without a rival. The beautiful designs and ornamentation of these knobs at once attract attention, and their low price is the death knell to the old-fashioned white knobs. They can be obtained from \$6.00 to \$24.00 per dozen pairs, depending altogether upon the amount of work on the kind you select. The PRINCIPLE of their construction is the same whether you get the lowest or the highest price quality. They are guaranteed to outlast any other knob now before the public. They can be obtained at almost any hardware store. Some of the highest priced are not kept in stock, but any one wishing to obtain them can select the pattern from any of those in the illustrated catalogue, issued by the company and it will take but a short time to get them direct from the factory. Information in regard to these knobs can be obtained from hardware dealers, the office of this Journal, or direct from the Diblee Manufacturing Company, Trenton, New Jersey.

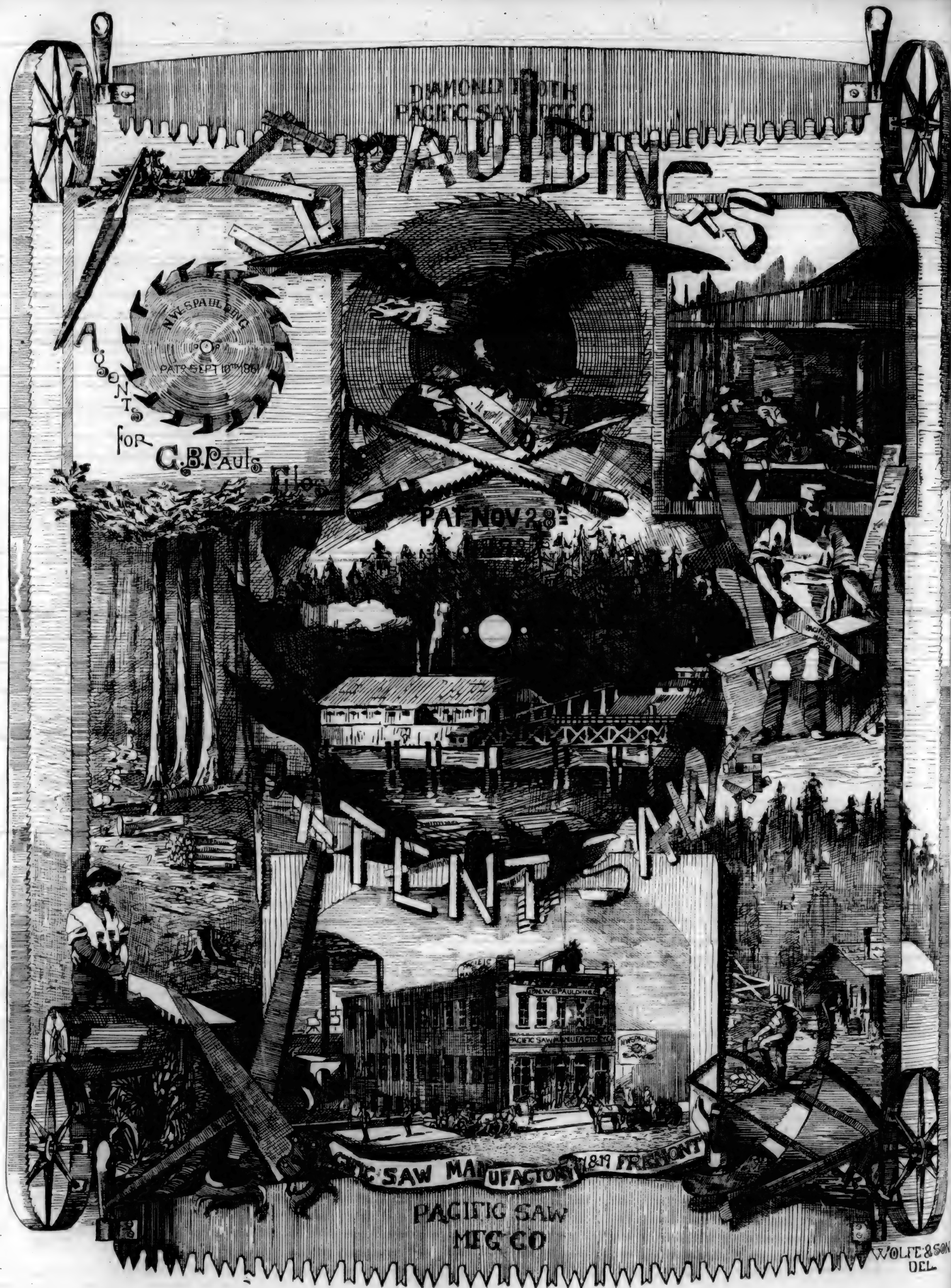
The Protection of Iron Against Rust.

IT is still an open question how best to protect iron against oxydation, commonly known as rust. He who would find an effective preservative would indeed be a benefactor, for by its means numerous noble structures, into which the tooth of time is now eating slowly but surely, would be preserved to posterity. It is well known that wherever air and damp come in contact with even the smoothest iron surface, rust soon makes its appearance. By its operation not only is there a constant waste going on, but the remaining iron is rendered brittle. A coating of less oxidizable metals, such as tin, later lead, and zinc, and quite recently nickel, has, therefore, been applied, and with some effect: Earthy glazes, such as are applied to pottery, have also been used for coating iron vessels for household purposes. But all these coatings of metals or glazes have been found in most cases either impracticable in application or too expensive. For extensive use, coatings consisting of oils mixed with metallic oxides, earths, etc., have thus come into use.

Now, it has been observed that iron does not rust in dry air, even in dry oxygen. Iron, also, frequently does not suffer when exposed, without being painted, to the open air—weather-cocks, fences, etc., having lasted for centuries. But in that case it has been found that they have been protected by the formation of a thin layer of peroxide of iron, which has acted as a safe covering against exterior influences. This experience led to the artificial production of a layer of magnetic oxide, superheated steam being used for the purpose. It is not to be supposed that such a treatment will find extended application; and a protective covering obtained in this way would only be effective in the case of iron in pure air, but not where it comes in repeated contact with water or carbonic acid. An interesting phenomenon has likewise been observed on railways. It has been found that iron sleepers and spikes rust very much if the line is not used for some time. It is assumed that iron bodies are more liable to rust in a state of rest than if they are exposed to vibration from time to time, in which case perhaps an electrical effect comes into play, which lessens the affinity of iron to oxygen.

In demolishing old buildings, there are often found iron cramps, blocks, etc., which, so far as they are surrounded by mortar, are completely free from rust, just as if they had only left the forge. A similar phenomenon has been met with by M. Vicat, a French engineer, when he had the anchor fastenings of several suspension bridges exposed which had been put down thirty years before. Where the iron in the masonry was surrounded by rich lime mortar, there was not a sign of the formation of rust, whilst the continuations of the anchors in hollow spaces were rusted to such a degree as to have lost two-thirds of their former dimensions. It has been frequently observed that iron does not oxidize in water if small quantities of caustic alkalies, or alkaline earths, are solved in it, in which case acids of whatever nature would be excluded. It appears that the above experiences have served as the basis for the rust-protective paints, invented by Herr A. Rieglmann, of Hanau (Bavaria). He adds to his paints caustic alkaline earths (barytes, strontian, etc.). By coating iron with them, it is said to be in the same state as the anchors of suspension bridges in lime mortar. Although simple coatings of such paints, owing to their slight thickness, cannot contain much alkaline matter, as is the case in walling in iron, alkaline effects will show themselves as long as they contain a certain percentage of it. But in any case those paints are free from active acids, which cannot be said of all our paints for iron. Should the paint be found in practice to possess the protective properties claimed for it, a step in advance would have been taken in the preservation of iron, and its greater application would be ensured.—*The Builder.*

Modern House Painting. Price \$5.00.
Street, Store and Bank Fronts. Price \$4.00
Plasterer's Manual, enlarged. Price 75c.



S. F. Chapter American Institute of Architects.

THE Chapter met in regular session October 5th, the President, John Wright, presiding.

The minutes of previous meeting were read and approved.

A delegation from the Masons and Builders' Association of San Francisco being in waiting, the regular order of business was suspended, for the purpose of affording the delegation, consisting of Messrs. Richardson, Cox, and Leibert, an opportunity to explain the object of their visit. Mr. Richardson, in behalf of himself and colleagues, laid before the Chapter the following resolution adopted by the Masons and Builders' Association, requesting that the Chapter give the subject matter of the resolution such consideration as its importance may warrant:—

HALL OF MASONRY AND BUILDERS' ASSO. OF S. F.
314 Montgomery Street,
October 5, 1883.

To San Francisco Chapter, American Institute of Architects.

GENTLEMEN: At a regular meeting of the Masons and Builders' Association of San Francisco, held October 1, 1883, it was resolved that on and after January 1, 1884, we respectfully request you to segregate all work appertaining to the mason work from other contracts exceeding three hundred dollars, labor and material included.

ROBERT MITCHELL, President.

After the withdrawal of the delegation, the resolution submitted for consideration was received, and a committee consisting of Messrs. Macy, Welsh and Gash, appointed to report thereon at the next regular meeting of the Chapter.

A partial report from the committee appointed at the August session of the Chapter, to take into consideration and report upon the plumbing rules and regulations adopted by the Board of Health, was received and read, and after considerable debate thereon the matter was re-referred to the committee for further consideration, with Mr. Laver substituted as a member of the committee in place of Mr. Curlett, who is absent from the State.

Wm. Lee and M. G. Bugbee were elected student members, and Messrs. John Hall, R. C. Ball and W. Copeland proposed as fellows.

The President then read his annual address, which was listened to with marked attention, and received with applause and a vote of thanks. Its publication in the CALIFORNIA ARCHITECT AND BUILDING NEWS was ordered by vote of the Chapter.

The annual report of the Treasurer for the year ending September 1st was submitted, showing that all indebtedness had been liquidated, leaving a balance of cash on hand for future purposes.

Messrs. Laver, Henricksen, and Gash were elected Trustees for the current year.

Adjourned.

CHAPTER PROCEEDINGS IMPROPERLY REPORTED.

M. G. (not Sumner) Bugbee, as reported by the *Morning Call*, was elected a student member.

The *Chronicle's* report was full of errors. The suggested amendments to the plumbing rules and regulations read before the Chapter, was by a single member of the Committee and not by the Committee as a whole, nor a majority thereof, which was re-referred, with no disposition on the part of the Chapter to urge their adoption upon the Board of Health. All that about reducing the cost of plumbing 15 per cent., depriving the Inspector of present powers—the reflections cast upon the Inspector—"not knowing his own mind from one week to another,"—"his actions depending largely upon who had the job in hand"—thus insinuating partiality and favoritism, etc., etc., are decidedly unfair and unjust misstatements. Mr. Sweeney, the Plumbing Inspector, as a mechanic is too well informed not to understand all the necessities involved in proper plumbing work by the plumbing rules and regulations, and too intelligent and upright as a man to be swerved from a consistent and uniform course of action by personal favoritism.

Architectural Quackery.

THE following from the *Detroit Journal* is so thoroughly in harmony with the views repeatedly expressed in this journal upon the same subject, that we copy in full, regretting to learn that the architectural profession in Detroit is cursed with the same class of incubuses that have done so much to lower the standard of competency in those claiming to practice the great science of architecture in California; by pandering to the avarice and caprices of owners who permit themselves to be humbugged into engagements with men of exceedingly limited acquirements as practicing architects, and no thoroughly educated and scientific knowledge of the profession, simply because they offer their trashy services at rates which propose a saving, but which in practical results are far more costly to deluded owners than would be the services of competent men at the highest rates of commission.

"It would seem that the ancients, more freely than the moderns, understood and appreciated the dignity and importance of the profession of the architect. By the Greeks, the name 'architect' was originated, denoting literally 'a master workman,' and clearly implying not only the designer of public and private buildings, but a man versed in all the details of their construction, and competent himself to direct the workmen as they wrought. And we know, from the ancient writers, that this was the practice of the celebrated architects of antiquity, the men who in Egypt, Babylonia, and Greece, reared those wonderful structures, the ruins of which have won the respect and admiration of preceding ages. By the Greeks the architect of the Parthenon was honored as an artist of merit and fame equal to that of Zeuxis, the painter, or Phidias, the sculptor.

"The present utilitarian age by no means estimates the profession of the architect at its true rank. This is due to a number of differ-

ent causes, foremost among which is the fact that it is not protected by any of those restrictions which serve somewhat to elevate and maintain the ranks of the professions of law and medicine. It is notorious that even in those vocations scores of incompetent men are each year, in every State, let loose upon society to work no end of mischief by their allied ignorance and presumption. How much more then must this be the case with the profession of the architect, unprotected as it is by legal enactments and open to the entrance of all those classes who, because they may profess some knowledge of building or have obtained a smattering of the science of designing, have the impudence to deem themselves, and to hold themselves out to the world, as fully competent architects and designers.

"The true architect is a man possessing an innate love and appreciation of the true, the beautiful and the grand in form; a taste which has been purified and enriched by years of study and communing with the most perfect of earth's buildings; a skill, the result of long and thorough study and constant practice and a practicality of mind which enables him to adapt old and recognized forms of beauty to the want and convenience of modern times. Such architects are to be found in considerable numbers in Great Britain, France, and Germany, where they are first thoroughly instructed and drilled in the great technical schools which exist in those countries, such instruction being further supplemented by years of careful study under some experienced architect.

"But how stands the case in America? Here a young man with little education and often with a lamentable deficiency of natural or those other qualifications which should be possessed by any aspirant to so important a profession, enters the office of any practicing architect, and studies for a year or two the designing of ordinary buildings and the drawing of plans, with hardly any acquisition of knowledge of details, of the materials employed in building or the builder's art. At a time when he is just beginning to understand the rudiments of his profession and would commence to investigate thoroughly its various departments, he rushes into the business world, and in a glaring sign announces himself to the public as a competent 'Architect and Superintendent.' The next step with this bold adventurer is to toot or drum for business, and with unblushing effrontery he makes a thorough exploration of the town or city in which he may reside and interviews every unlucky individual who may by any probability be likely to erect a building within the next five years. The principal and often the only argument that he can urge in favor of his employment is the cheapness with which he will do the job, thus degrading the standard of an honorable profession, and tending to bring into equal contempt with the community the true architect and the charlatan.

"The result is what might naturally be ex-

pected, buildings constructed with total lack of taste and with no regard to the fitness of things; designs copied bodily from some cheap book of plates and adopted with a serene contempt for all actual surroundings; matters of detail and of construction turned over entirely to the mason and carpenter, who work their own sweet will upon the building. The frequent result is a structure alike devoid of beauty and of utility, an edifice which is likely to stand for a considerable number of years, a fitting monument alike to the incapacity, want of taste and lack of skill of architect, builders, and proprietor.

"Not unfrequently the most serious accidents occur through the incompetency and carelessness of these mushroom architects; but the cheapness with which their services can be secured seems to be, to the general public, an attraction which no amount of reason or common sense is able to prevail against, and the grossest blunders, with results that cannot afterwards be remedied, are constantly to be found in pretentious and showy houses in Detroit and other large cities, where new buildings are being erected with vordrous rapidity, and which should form permanent additions to the beauty and attractions of the localities.

"It is not surprising, after these considerations, to learn that of all the army of so-called architects there are not more than five genuine architects and artists in this large metropolis, and that a great proportion of the vast amount of building annually done in Detroit is of such a character that it must, by a competent man, be pronounced a sham and a humbug, soon to demand repairs and alterations, never to satisfy the owner or tenants, and possessing as its chief merit a somewhat speedy perishability.

"For such a serious state of things, about which there unfortunately cannot be any doubt, there certainly should be some remedy, and it would seem to lie in the double but kindred discretion of a more enlightened public opinion which should bestow patronage more wisely, and of legislative action which should throw around the profession restrictions which would tend to elevate it and free it as far as possible from charlatans and pretenders.

"Very great delay, loss and litigation are frequently occasioned by the failure of incompetent or careless architects to prepare full and detailed plans of the buildings which they are employed to design. Owners and builders should, in all cases, be furnished with one full copy each, as in that event the work can be carried on completely according to the plans of the architect, and the owner, in case of any litigation arising, has in his hands the plans, the very best evidence, in conjunction with the specifications, of the architect's full designs, and of measurement, cost, etc. The plans for the workman to follow can hardly be too full or too much in detail. Such thoroughness on the part of the architect is an invaluable benefit to both owner and builder."

BUILDING NOTES.

From Lathrop to Los Angeles.

A trip has recently been made by our agent through the southern part of our State. His primary duty was the distributing of a portion of our supplement in every town upon the route. Not only was this duty faithfully performed, but scores of new subscribers were secured, and a full record of building improvements was noted.

Modesto.—Mr. R. McHenry is having erected a two-story and basement brick. It is building by days' work, at a cost of \$25,000. Numerous small buildings and improvements are under way.

Merced.—Can boast of a new Episcopal church. A. Isaacs & Francis; C. E. Francis; cost, \$300. Two-story and basement frame; O. J. H. Upton; A. C. Beasley; days' work; \$4,500. Two-story brick; O. M. F. Moran; C. W. H. Ford; cost, \$15,000. Several small buildings are in process of construction.

Athens.—The Southern Pacific Railroad Company is having erected a warehouse, at a cost of \$2,000.

Fresno.—Has grandly arisen from the effects of fires that laid low nearly all the business section of the town. In addition to buildings previously reported, we note the following: Methodist-Episcopal church; C. P. M. Behunin; \$2,000. Two-story and basement brick; O. W. E. Gilmore; C. F. Bant; \$400. Mr. Banta has the following buildings in his charge: Two-story brick for Mr. Shelly; \$5,000; two-story brick for Statham & Co.; \$9,400; one-story and basement brick for Alcese & Co.; \$5,800; two-story and basement brick for H. C. Warner; \$4,000; one-story brick for Mr. Ryan; \$1,600.

Fowler's Station.—The Southern Pacific Railroad Company erecting a two-story frame; \$3,000.

Tulare.—Two-story frame for L. D. Murphy; C. G. W. Palmer; \$5,000. One-story brick for B. W. Jachins; \$5,000. Three-story brick for J. Asher; C. Bonner & Young; \$2,500. One-story frame; O. F. M. Schultz; \$1,000. Mr. J. F. Kessing is erecting four one-story frame, at a cost of \$10,000. Backlapi are having built four one-story brick; C. G. W. Palmer; \$12,000.

Los Angeles.—Our agent remarks that "in the new part of the town every other building is new." The record, in addition to those previously reported in this journal, proves that Los Angeles is the most progressive building center in the State, San Francisco being its only rival. We omit the streets, as the list is so lengthy. The following are under the superintendence of Kysor & Morgan, architects: Two-story brick for Joseph Mullally; C. Keelan & Grant; \$5,500. One-story frame for Major Wicks; C. Beville & Co.; \$4,500. Two-story brick for John Schumacher; C. Willard & Phillips; \$2,400. Two-story brick for L. J. Hammond; C. C. Handerson; \$15,500. Two-story brick for J. Bryson; C. Beville & Co.; \$17,000. Two-story brick for Dr. Wilkey; C. J. D. Campbell; \$11,500. Two-story brick for Dr. Griffin; C. A. M. Mackray; \$11,954. Building on San Francisco Estate; C. O. Boncham; \$15,500. Baptist church; C. W. O. Burr; \$21,000. Catholic college; C. M. Fitzgerald; \$28,000. One-story frame for Mr. Kerckhoff; days' work; \$4,000. Two-story frame for Mrs. Scott; C. R. B. Young; \$5,500. Two-story frame for Mrs. McDouall; C. Hargett; \$11,000. Two-story frame for S. C. Hubbard; \$12,000. Two-story frame for J. E. Webber; C. J. E. Wood; \$6,000. Double frame building for Mrs. Gorman; C. Thos. Golding; \$7,000. One-story frame for J. W. Hinton; C. H. Rhea; \$4,000. Two-story frame for Mr. Ducommun; C. A. Biles; \$3,000. Two-story frame for J. Mead; \$2,800. Two-story frame for — Hickox; \$2,000. Two-story frame for Dr. Ch. A. H. Selgthy; \$4,500. One-story frame for W. F. Marshall; \$3,500. Two-story frame for H. Rorick; \$5,500. Two-story frame for D. Steavens; \$5,500. — B. J. Reeve, architect, reports the following: Two-story brick; O. A. Valla; C. J. E. Wood; \$40,000. Two-story brick; O. J. Barnard; C. W. O. Burr; \$35,000. Four-story frame; O. Mrs. Bumiller; \$30,000. St. Paul's church; C. Skinner & Shaplin; \$25,000. Presbytery church; C. J. E. Wood; \$7,300. Two-story frame; O. J. Sandouse; C. G. E. Scamman; \$6,800. Two-story frame; O. W. H. Barclay; C. G. E. Scamman. One-story frame; O. J. A. Taylor; C. C. Handerson; \$4,200. Two-story frame; O. R. & N. C. Wilson; \$9,000. Alterations; O. J. Lacy; C. Golden & Beauchamp; \$3,200. One-story frame; O. J. C. Kays; C. G. E. Scamman; \$2,400. Two-story brick; alterations to the Bishop's residence; C. J. E. Wood; \$2,600. — The following are scattering: A livery stable is being converted into a theatre; O. Perry Bros.; C. A. S. Mackay; \$6,000. One-story frame for Mr. Gungeon; A. John Hall; \$2,000. Two-story and one-half-story frame for Fred. Dohs; C. Chisom & McCall; Mrs. Ronnas is having built a one-story frame, S. Broemer drawing; the plans and superintending the work; One-story frame; O. W. R. Hasson; C. R. S. Cox; \$2,000. Three one-story frame; O. Ward & Wilkerson; \$3,300. Two-story frame; O. Mr. Sholl; C. John Sholl; \$3,500. One-story brick warehouse; O. Kerchoff & Cuzner; days' work; \$3,500. Three-story frame planing-mill; O. Kerchoff & Cuzner; \$6,000.

A POPLAR tree was lately cut near Moulton, Ala., that measured 58 feet in circumference at the butt, was 150 feet long, and was expected to turn out 100,000 shingles.

Book Notice.

LIFE OF SIR WILLIAM E. LOGAN, K. T., LL.D., F. & S. R. F. G. S. First Director of the Geological Survey of Canada. By BARBARA J. HARRISON, B. A., Ph. D. With steel portrait and numerous woodcuts. New York: John Wiley & Sons, 15 Astor Place. 1883. Price \$2.50. 432 pages, octavo.

NEW YORK STREET ARCHITECTURE.

The Renaissance.

BY A. CURTIS BOND.

OUR illustration shows a building in course of erection on Broadway, to be occupied by a firm of Japanese-goods importers, and which has progressed now only so far as the first floor. It is constructed of brick, the pilasters of granite, and having a granite edging to the circular spaces in the wall. These round windows give a novel appearance to it that is one of its peculiar features. The style is a very uncertain Renaissance, built up more from the imagination of the architect than from any following of a particular school.

In this universal disposition to return to the manner of construction of preceding generations and adapt their styles to our present changed circumstances and surroundings, we must ask ourselves whether or not the result is to be as satisfactory as might be secured by the exercise of the inventive genius toward an entirely new conception. We must recognize the existence in the human mind of two distinctive faculties—the imitative and the inventive—and although it appears to have become the fashion to exercise the former rather to the exclusion of the latter, too much care cannot be taken that from imitative it does not become servile, and every succeeding effort show a deterioration and a decline from its predecessor. The spirit of the detail may be there, and the minutæ may be perfect; but there will be an air of constraint that will detract seriously from its effect. Take, on the other hand, the encouragement and exercise of the faculty for invention; it presents a new and attractive feature from the oldest materials, and it converts stereotyped shapes into most pleasing forms.

I know this is a very old plaint, but it is a very good one, and it is called to my mind by reading a lecture recently delivered in London upon the subject of architectural revivals. The lecturer took the ground that our modern imitation had become positively imitation only, and as such was to be condemned. The difference, in a few words, between good and bad architecture is this: If a man has no clear and distinct idea to express—has a vague and shadowy desire to say something rather like what his neighbor has said, or a slight improvement upon that sentiment—there is very little chance that he will be able to express anything worth hearing, or that will, if transmitted, convey any intelligible and lasting idea to a generation coming after him.

The new Produce Exchange is almost completed, and it promises to be one of the attractive features of lower New York. It looks out upon Bowling Green, from Beaver and Stone Streets. It is an immense square building, five stories in height, and having at one corner a square clock-tower, rising about sixty feet above the roof of the building proper. The architect has chosen a sober and plain front, looking more substantial than decorative, and

giving the impression of solidity. There are dwarf porticoes at the entrances, composed of eight square granite columns, placed against the walls in groups of two, and directly in front of these a similar number of round granite columns, highly polished. These sixteen columns have a particularly massive appearance, while they neither encroach upon the pavement nor take from the depth of the building. But the most noticeable feature, and that which distinguishes the structure from everything else about it, is the principle upon which the windows are set in the wall—being constructed within great arches, or indentations, springing from the second floor, and looking like immense and elongated gun-holes in a fortress. These arches, as is also the body of the structure, are in brick, and the arrangement is such that, unless one be almost at the very edge of the arch, it is impossible to see the window within; at a short or a long distance the window is entirely lost to sight, and the stupendous dent only is seen, as if some great force had driven back the bricks and left its impress upon the façade. The effect is peculiar, and not unpleasant. Between these arches are medallions, bearing the coat-of-arms of the States and many of the cities of the country, New York alone being omitted. An inscription over the side entrance reads, "New York Produce Exchange," whereat the daily papers have made many uncomplimentary allusions and comments, claiming that it is for a fact the *New York Exchange*—but why label it so? Are the builders afraid some one will kidnap it at night and cart it off to a rival town, that they must needs put the name of the village owning it upon its stone, on the same principle that they paint a steamer's name upon its small boats? They all claim that *The Produce Exchange* is sufficient.



Figure 1.

There is a peculiar interior decoration that possibly deserves notice. It is a frieze of animal heads, extending about the large room—boar, cow, and bull alternate with pig, ram, and ewe, while at each corner an immense buffalo

head projects some ways from the wall. The heads are made of terra cotta, and are realistic in every particular. The buffalo heads are the only ones that would not be taken for the natural object itself.

I saw a staircase recently which I think might interest some of your readers, and so I made a sketch of it, and a very small plan of its construction and details. It is unnecessary for me to say that the style is distinctively French, and is such as is ordinarily encountered in the Parisian dwelling-house, but very seldom seen here, excepting in public buildings; and yet it is an economizer of space, while it is at the same moment exceedingly attractive in its effect. In this particular instance, however, the staircase is quite large and pretentious, as economy of space seemed to be no object.

The constructive material is iron, the string-board is of that metal, and in two parts, bound together by the baluster-bolt, as will be described further on; the back of the steps is of iron, the balusters and hand-rail of oiled oak. From the ground to the first floor there are twenty-two rises; from the first to the second, twenty-eight steps, and the same number from

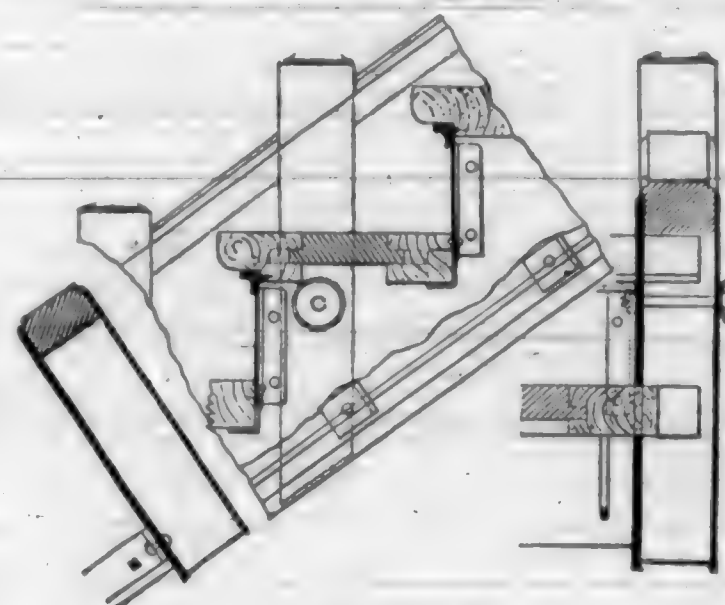


Figure 2.

the second to the third. Midway between the floors is a broader step, serving as a landing-place, or sort of lobby, at which is a window; or there might be a niche, if the window is not convenient. The lower step in this especial flight is five feet long, the following one is four feet and six inches, and so on until a quarter of the circle is reached (Figure 2), at which point the staircase has to take its normal width of four and one-quarter feet. The rises are paneled in oak and finished by a molding, as shown in Figures 3 and 4.

The string-boards being of iron, as I have said, are fastened together by a long bolt, which, beginning at the head of the baluster-post, extends through it and through two screw-holes in the iron plates, being held in place by the usual nut. The under part of the iron steps, that exposed to view, is plastered.

As will be noticed in the sketch (Fig. 1), the wall is wainscoted the entire length of the stairway, and at each floor is fixed a seat for the relief of those whose errand may lie in the upper apartments.

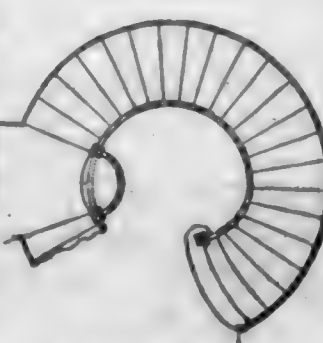


Figure 3.

The California Redwoods.

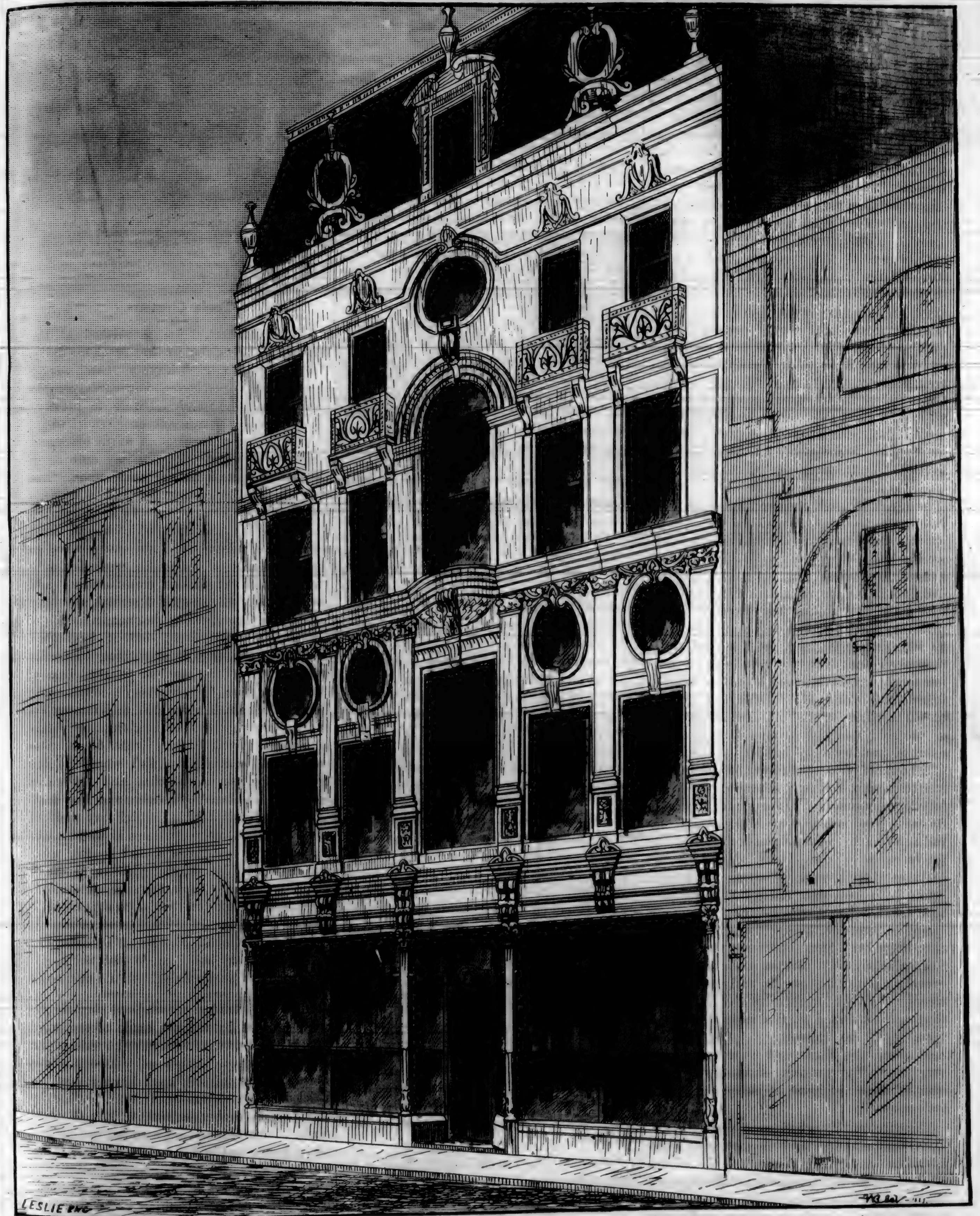
A CORRESPONDENT of the *Federal Australian* from San Francisco describes the cutting down of some of the great trees on the Pacific shore. He says:—

"It is a magnificent yet a painful sight to witness the operations in one of these redwood forests. You stand in the midst of vast trees, so close together that there is a dim religious light around you like that of a cathedral. This delusion is furthered by the apparent regularity with which many of these trees grow. You can look down a long aisle as if it were a groined arch of cathedral roof, and the only thing which undecives you is, on looking up, far above your head, to see rifts of blue sky between the branches. But you are suddenly startled by a long cry of warning, which follows the rhythmic chopping sound of the axe and the swish of the saw. It is the woodman, and his melancholy cry portends the fall of a mighty tree. There is a long and labored groaning sound; it is the tree-breaking away from the friendly base which has held it, perhaps, for ages. Then there is a sharp 'crack.' The tree has snapped in twain. The mighty mass trembles slightly for a moment, then inclines in the direction toward which the practiced woodmen have designed it to fall. It topples—it falls. There is an awful crash—the falling tree is smiting the branches from a fellow tree which still stands upright, but not for long. There is a sound like a peal of thunder—the tree has struck the ground. The earth trembles for rods around, as if there were an earthquake; there is a cloud of dust, and all is over.

"The redwood is a most valuable kind of timber. It is very slow to burn, and if ignited is easily extinguished. It is very heavy and very dense in fiber, yet very easy to work, splitting with the most perfect accuracy, and yielding to the saw, the chisel, etc., with the utmost ease. When polished it makes a most handsome wood for interior fittings, and many of the finest houses in California are fitted with this wood in its polished state."

Mr. John Wright's Address.

WE direct special attention to the annual address of the President of S. F. Chapter of Architects, appearing in full in the present number of this journal, which contains many suggestions worthy of perusal and practical application. Students in the profession should feel specially interested, and show their appreciation of the efforts being made by Messrs. Wright, Saunders, Pissis, and other members of the Chapter, and by the Chapter as an organization, to provide courses of free instruction in the preliminary and advanced studies in architecture. Every gentleman practicing the profession upon this coast should unite with the Chapter, as by so doing each would derive a personal benefit from joining heartily in the Chapter work, and every student and draughtsman who will unite and co-operate with earnest purposes, will receive tenfold in return for all expended time and money.



A SKETCH IN THE RENAISSANCE STYLE OF ARCHITECTURE.

Want to Build Cheaply.

THE number of owners desiring to build cheaply, who do not start in with cheapness as a material factor, are the exception; the rule being to contemplate a building or buildings of certain size and character, and fixing the sum of intended expenditure from ten to fifty per cent. less than sufficient for the purpose. The very first thing sought to be impressed upon the mind of the architect is—that the outlay must not exceed a certain amount, although the improvement desired may reasonably be worth a much greater sum—if built in accordance with the prevailing demand for "good work," "first class," etc. If owners were more reasonable in their exactions, being willing to accept the only class of work possible under the restricted cost proposed, it would be all well enough; but the price is almost always fixed upon the basis of slop-shop, shoddy work, accompanied with—"I want a good, substantial, well-built building," and sometimes even a "first class structure." The inconsistency of the proposition amounts to ridiculousness. A customer who would approach a merchant or dealer in any class of goods, wares, or merchandise, and propose to buy salable articles in the regular way at less than cost of production, would receive but little if any attention, and perhaps the intimation that his custom was not desired. It is a very common thing for men who make ridiculously low offers for things that they would like to possess to be told to go where there is more need of iced water than overcoats. Yet it is equally as just and fair to ask a tailor to make a suit of clothes intrinsically worth \$75 for \$50, or a jeweler to sell a "first-class" time-piece at the value of the gold used in its manufacture, as to exact of architects and builders the erection of a house of a certain prescribed class and character, at a cost sufficient only for a far inferior construction. Owners have a right to fix the sum of outlay, but it is not fair for them to demand, in return, material and labor far in excess of such limits. And it is but little less than a business outrage for men to define both cost, size, and quality, and then reproach architects because they cannot accomplish impossibilities. If the instruction run: build me a house of certain size and accommodations for a certain amount, with no exactions as to the specific fittings, appointments and class of work, other than "the best that can be afforded for the stipulated sum," there would be consistency. But there is none when the limits and requirements diverge ten to fifty per cent.—a thing very common in the experience of competent architects generally.

The effect of this is bad, as it places architects who are honest and competent at a disadvantage, and greatly demoralizes the science of architecture in its technical and constructive features; and gives larger opportunities to the class of frauds operating under the name of architects, who are unworthy the

name in any respectable sense, and who play upon owners' credulity with the deceit of cheapness, while, in fact, the latter is simply a sacrifice to misplaced confidence in men who do no more than others might do, if they would lower themselves to the same level of architectural botchery.

Bed-Rooms.

NO BED-ROOM should be sombre. Sanitary reasons underlie what seems to be merely a matter of preference. It is pretty well understood that dark wall-papers absorb not only light but infectious qualities in the atmosphere. On this score wall-paper is considered by the best medical authorities as objectionable, and rooms that have been repapered after having had in them contagious diseases, it has been found that years afterwards in removing the paper from the walls the germs have been sufficiently preserved to reproduce the infection. This, however, is a risk that is rarely run in private life. The papers that are now made for bed-rooms are so attractive that one may be well tempted to use them. What are known as the Morris designs—vines and flowers over surfaces broken by lattice-like bars—have been the suggestion for the greater number of the bed-room papers that are now produced. There is one advantage in these that is worth considering, and that is what is known as the repeat of the design is so dexterously concealed that in illness or nervousness they have not that element of torment that every one, who has had the misfortune of illness, can recall in the old-fashioned wall-papers.

Dados are not used in bed-rooms, but the frieze is of importance. Tinted walls are to be preferred even to artistic wall-papers. I have in mind a delicately tinted pink wall, with a deep frieze of wall-paper in luscious pink and cream roses on a gilt ground, with a small gilt molding between the field and frieze. Painted walls are cleaner, healthier, and every way to be preferred. Light tints are, of course, most desirable, and the wood-work, if painted, can carry out the same scheme. For example: The walls are of a faint pink; the frieze has a gilt molding, a deeper tinted pink band leading into the cove, which is faint pink and greenish-gray, separated by gilt lines; the ceiling is faint pink with a center ornamented in pink, gray, and gilt. The doors have their panels of pale pink with gilt molding; the sides and frames are greenish-gray.

This is simply a hasty sketch of one room. Deeper greenish-gray and red, olive and pink, turquoise or robin's-egg blue and greenish-gray, buff and scarlet are all tints that can be used together in the same way.—*Mary Gay Humphreys, in Decorator and Furnisher.*

THE price of logs in the neighborhood of Astoria, Oregon, has advanced from \$5.00 to \$6.00 a thousand.

All new subscribers for 1884 will receive the balance of this year free.



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

Trade Circulars.

AS AN architect, I am astonished at the number of trade circulars that reach me daily. Nearly every post brings a batch—large sheets, small sheets, books, show-cards, pamphlets, and samples; and if I were to preserve all I receive for future reference (and I would like to) I should require an extra office and clerk for arranging them, to say nothing of the wall-space to hang the cards upon. The result is that the waste-paper basket receives by far the larger portion. This, to me, appears to be a great waste of cash, and must come out of the profits. I am quite alive to the importance of being in possession of a knowledge of the various manufactures, and carefully scan all circulars I receive, and keep large piles for reference, the accumulation of which upon forty years; but it has often occurred to me that if something like order were adopted by the senders, in the sizes of their documents, they would be much more likely to be saved, and much easier for reference. Suppose, for instance, that all documents were issued foolscap size, a file of these would not be un-ightly, and would fit the ordinary foolscap receptacles, and references would be facilitated by turning over leaves all the same size, instead of which my shelf of trade circulars, although kept as well as can be, is a complete muddle, and to find what you require is like searching for a needle in a bundle of hay. As an instance, this morning's post brought me two documents, one a book 6 inches by 3½ inches, and another a sheet 3 feet 3 inches by 2 feet 2 inches. The question is what am I to do with them—for they are both worth saving? H. M. (BUILDER.)

"DEAL."—Readers of technical journals are often puzzled by the use made of the word "deal" by nearly all foreign publications, and some home ones. As generally used it means simply a piece of soft wood lumber; but the strict definition of the word, as understood by the English timber merchant, is, soft wood timber, imported, and sawn to the section of 9 x3 inches, or 8x4 inches, or 10x4 inches. Similarly "planks" are 12x3 inches or 12x4 inches, and "battens" 7x2½ inches, or 7x3 inches, all irrespective of length, which varies considerably, and of the country or port they come from.

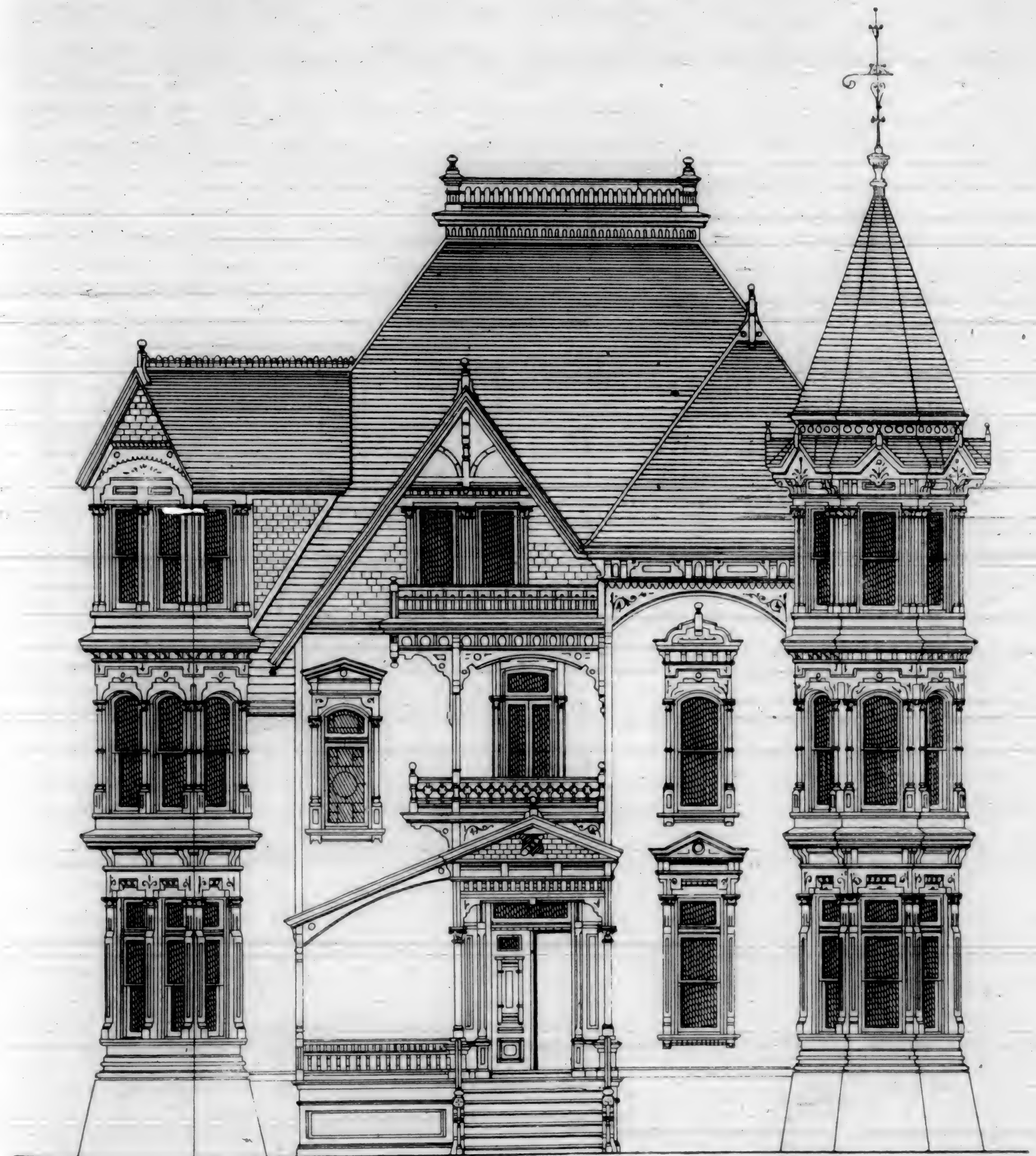


PLATE 2.—SUBURBAN RESIDENCE—COST FROM \$12,000 TO \$15,000.

We desire to have a uniform time for the commencement of all our subscriptions. In order to do this, we have credited those whose subscription commences in any month between July and January with the difference so their time will begin with the first month of the year. New subscribers will receive the remaining numbers of the year free of charge. All subscriptions must begin with either July or January.

American Institute of Architects.

A FULL report of the proceedings of the Institute, which commenced its seventeenth annual session at Providence (R. I.), on the 29th ult., has been forwarded to this journal, and we regret that lack of space precludes more than a brief mention of a few of the many prominent matters of interest brought forward during the several sittings. The following extracts will doubtless be read with interest by architects on the Pacific Coast:—

"The walls were hung with many fine specimens of architectural drawing, contributed by the members, one remarkable design being the outgrowth of a discussion held at the last annual meeting in Cincinnati, over the erection of a building in New York City for the Institute. The artist, with uncommon skill and nicety of finish, had combined all the architectural forms of ancient and modern schools in a massive and lofty structure, which commanded the admiration of all, in that it displayed a thorough and accurate knowledge of architectural science."

There is something pleasing to every intelligent architect in the above extract, as it touches the higher and finer chords of architectural thought and reflection, and presents suggestions far removed from the lesser order of things found in daily practice by architects in nearly all parts of the United States. There is so much of a demoralizing tendency practiced in the profession that incidents of the character quoted become refreshing to honorable men, who love the science of architecture as well for its intrinsic beauties and grandness, as for the profits flowing from its pursuit.—ED.

"The presiding officer of the Convention is Thos. U. Walter, LL.D., of Philadelphia, who ranks as the oldest member of the Institute by practice and years, and is a gentleman of dignified and imposing appearance. He commenced work at the drawing-board in 1829, furnished the plans for Girard College in 1833, and designed the wings and dome of the National Capitol in 1852, and for sixteen years was engaged in the perfection and completion of this master-piece of architectural art. Although advanced in years, he has a fine physique, and hale and hearty bearing, as the result of systematic exercise and daily application to his chosen art."

Would that one so worthy and able, and honorable in the profession, could live in the full enjoyment of all his physical and intellectual powers until the office-boys of the present day became gray-haired and old in following in his professional footsteps. The President's address contains much of stirring interest, closing as follows:—

"I take occasion to remark, in conclusion, that the unlimited freedom that characterizes the composition of architectural forms, at the present day, demands a far greater amount of study, and a higher degree of cultivation in the perception of the beautiful in art, than ever existed in the past."

"The simple and artistic forms of the Pagan world have yielded to the inspiration of a

higher civilization. The fetters that held architectural forms to classic models for centuries have been broken, and the fact has become patent that progress is the life-blood of architecture."

"Medieval art, glowing with the benign influences of Christianity, emancipated the processes of design from the trammels of formulated methods, and led to the subsequent development of the beautiful creations of the later Gothic school, which still claims our highest admiration, and our profoundest study."

"By tracing the mental processes by which the human mind has been led onward, from the first rude attempts of our race, to impress an artistic character on the art of building, up to the highest architectural developments of the present day, the student is prepared to abnegate all conventional trammels; and in view of the treasures of the past, laid at his feet by an exhaustive literature, he has acquired the habit of thinking for himself."

Reports of officers from numerous Chapters were received, all showing a healthful state of things generally, and an increasing interest in various sections of the country in Chapter work. New Chapters are being formed in many places not heretofore represented in the parent body. As a matter of local interest, we quote:—

"The San Francisco Chapter reported that it was progressing finely, having 41 members, with an average attendance during the year of 14; that it was clear of indebtedness, with a splendid set of books, etc.; and that it recommended that a regular time of holding the Convention should be adopted, so that the Chapter away off on the golden western shore might contribute to the body, that its 'good works may be seen of men.'"

It is with pride and pleasure that we refer to our home branch of the Institute, which in membership is about equal to, if not the largest, of any Chapter in the Union. And if the few worthy men in the profession who have thus far failed to unite with the Chapter would master their disinclinations and become Fellows, San Francisco Chapter would, beyond question, assume first position numerically.

A paper was read by Prof. G. Lanza, of the Institute of Technology, Boston, on "The Strength of Materials from Actual Tests;" also one by John A. Fox, F.A.I.A., of Boston, which "dealt in frequent and vigorous denunciations of 'architectural competitions.'"

We will give its full text in our next issue.

ELECTION OF OFFICERS.

The Committee on Nominations presented the following list of officers, who were unanimously elected:—

President—T. U. Walker.

Treasurer—O. P. Hatfield.

Secretary—G. C. Mason, Jr.

Board of Trustees, ex officio—H. M. Congdon, A. J. Bloor, E. T. Littell, Napoleon Le Brun.

Committee on Publication—H. H. Holly, Charles Crapsey, T. M. Clark, J. McArthur, Jr., G. C. Mason, Jr.

Committee on Education—Prof. W. R. Ware, N. Clifford Ricker, Henry Van Brunt, Alfred Stone, Wm. A. Potter.

Secretary for Foreign Correspondence—T. M. Clark.

President Walter, in accepting the position, thanked the Convention for the honor. He was sorry that he had not made himself more useful, but the wide distances between the Chapters made it almost impossible to meet the members but once a year. Heretofore he had done the best he could to further the interests of the Institute, and hereafter he would continue to do the same. He would accept the office with many thanks. [Applause.]

Mr. T. M. Clark, of Boston, read a very ably-prepared paper, upon "The Architect as a Sanitarian," from which we take only the opening sentence:—

"Not long ago a plumber, in describing to me the difficulties under which he, in common with the better class of his brethren, labors in competing for the work which architects have to give them, said that he had just come from an office in which the proprietor had been expressing the opinion that 'this fuss about plumbing and drainage was all humbug; that 'people used to live as long without it as we do now,' and that he 'didn't think there was anything in it.' Probably this individual is not the only one of his kind, and it is well worth considering whether the 'fuss' that some of us are in the habit of making about what we may call the organs of excretion in our buildings, is a proper and necessary part of our professional service to our clients, or merely the indulgence of a diseased appetite for novelty, to be gratified at our clients' expense. I trust there are not many among us who hold the latter view."

We should like to copy in full, but space will not permit in this issue.

Very many other matters of interest were presented, discussed, and enjoyed, and the Convention adjourned, with a recommendation that the Trustees, in whose hands the selection of places of meeting is reposed, select Albany, N. Y., for the next annual session of the Institute.

Paper Mill Directory.

We have received from the publishers, C. W. Bryan & Co., a copy of the above directory. From it we find that there are 4,463 paper and pulp mills in the world, of which number 1,099, or nearly one-fourth, are in the United States. There are eight mills in this State, the largest of which are those of the California Paper Company. The only kinds manufactured here are news and wrapping paper. The work is very handy for those interested, and is sold at the low price of \$1.00.

Modern Architectural Designs and Details.

We have just received a large number of this work. We regard it as one of the best books issued for architects and contractors. Sent post-paid to any address, upon receipt of \$10.00.

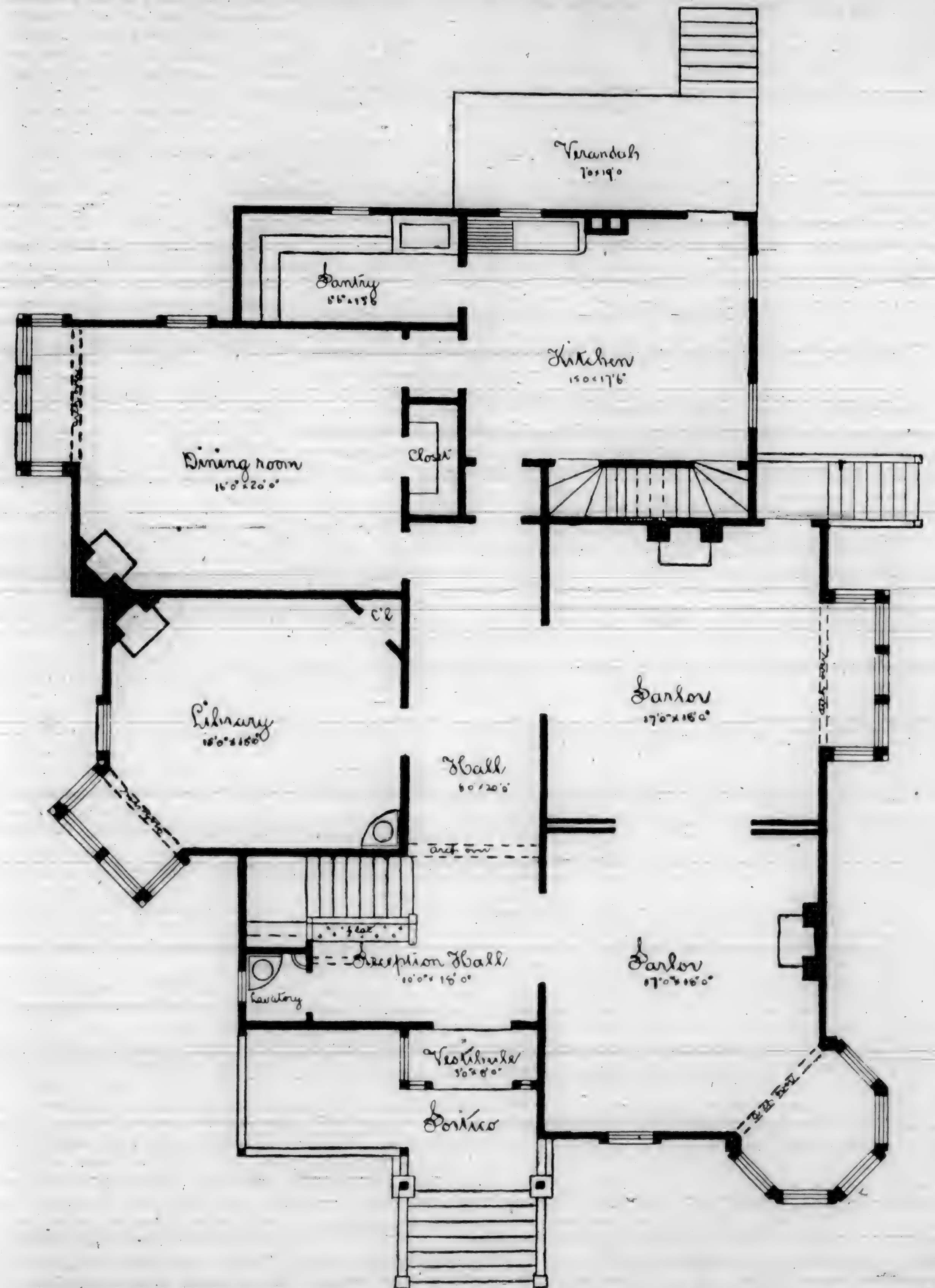


PLATE 3.—FIRST FLOOR PLAN OF SUBURBAN RESIDENCE.

The Annual Address

Delivered Before the San Francisco Chapter
of the American Institute of Architects,
by the President, John Wright,
F. A. I. A.

FELLOWS AND ASSOCIATES:—Conforming to what appears to be an established rule, that the newly-elected President shall open the proceedings for the forthcoming year by delivering an address, it falls to my lot once more to invite your attention to a few remarks, suggested by the occasion which has called us together.

I heartily congratulate you on the recurrence of these opportunities for friendly intercourse and mutual help—opportunities, it would seem, which we ought to hail with peculiar satisfaction, inasmuch as they not only open the way to all that is desirable in the way of professional association for its own sake, but it enables us, by taking a general review of the past year's work, to forecast the future, and with renewed hope and fresh encouragement to press forward in the prosecution of the important objects which the Chapter proposes to accomplish. It also enables us to promote, as a Chapter, as far as in us lies, those general projects for the good of the Institute at large which are at the present time engaging its attention. I would, therefore, in the first place, ask you to follow me in a brief review of those matters of more immediate interest to ourselves which have occupied our attention hitherto, and which we hope to develop in greater fullness in the future.

As will be seen by the Secretary's report, the number of members, consisting of Fellows, Associates, and Draughtsmen, is 41; but while our monthly meetings have been regularly maintained, the attendance at the meetings has not always been satisfactory. This may be owing, however, to the era of business prosperity with which the past year opened, and which may have interfered with the Chapter's sessions to some extent.

Several papers, on subjects of considerable interest, have been read during the year; and were this feature developed as it might be, greatly increased interest in the meetings would doubtless ensue. In this connection, I would suggest that, by pre-arrangement, promises of papers on special subjects might be obtained from different members of the Chapter, to be read on certain fixed occasions, according to their convenience. Were the titles of these subjects published beforehand, they would probably attract a greater number to the meetings, and at the same time much useful information would be gathered, and still others incited to aid in the good work. The abundance of material, and the varied nature of the almost universal knowledge needed in the theory and practice of architecture, renders selection easy, so that each may have an entire department to himself, without the least fear of having his chosen domain invaded.

I will now revert to a subject which has occupied a considerable share of our time and

attention during the past twelve months, namely:—

THE STUDENTS' CLASSES.

In alluding to this subject, I shall be compelled to refer you to the latter part of the address delivered by me before this Chapter a year ago, wherein three propositions were made, embodying a scheme for the gradual establishment of a sort of "Technical School of Architecture," the first of which was that free classes should be established for the article pupils of the members of this Chapter; second, that a system of competitions amongst said students should be inaugurated; third, that a traveling studentship should be founded by the Chapter, and that a student should be selected by competition to receive the benefit of the studentship, at the end of three years. This scheme was, after due consideration, adopted as the basis of future operations, and the first proposition has been virtually put into effect.

Three classes have been established—one in practical architecture, one in free-hand drawing, and one in modeling, and have been in regular session for several months.

With the present Chapter year a mathematical class will be inaugurated, and as soon as proper arrangements can be made, a carving class will be put in operation—thus combining something practical with theoretical instruction, and so relieving the monotony of study by a delightful variation of real work.

It is also hoped that during the present year a proper course of reading may be laid out, and an effort made in the direction of a systematic series of competitions.

A class in construction is very much needed, and it is suggested that occasional Saturday afternoon visits be paid by the classes, under the direction of volunteer conductors, to some particular building in course of construction, or to some planing-mill or machine-shop, or to the rolling-mill or the glass-works, or wherever useful information may be gathered and practical ideas obtained, so as to supplement theory by an inspection and familiarity with the practical, on every possible occasion.

We do not hope to accomplish more than the above at the present time. Were our means greater, our progress would be faster. By the Treasurer's report, however, it may be seen that we are out of debt, and that we have a balance in his hands. Still, our progress must necessarily be slow. Time, as well as means, is necessary in the training of the young men, whose available leisure seems to be, even now, very much absorbed in their arduous though interesting studies.

The third and final proposition, embracing the founding of a traveling studentship, though still in abeyance, we hope to accomplish in due time. It has been suggested that the funds arising from life memberships should be devoted to this end.

It must not be forgotten, however, that there are many other important objects, which, to insure our success as a Chapter, must in due time receive our careful attention—the pro-

urement, at an early day, of a suitable room for meetings, classes, etc.; the formation of a library; the collection of materials for an architectural museum—all matters of most essential necessity, if our school is really to progress and prosper.

It must be remembered that without progress prosperity is impossible. As soon as the tree ceases to grow, it begins to die; and so it will be with ourselves. But there is growth of more than one kind. Growth in numbers is not the most important kind of growth, although what will conduce to that end in a healthy way is worthy of the most careful consideration. Growth in associated effectiveness is a growth of a better kind, and still more indispensable; and growth in individual excellence is a matter of the very highest importance, since the perfection of the whole body depends on that of each member. And here let me say that we must not allow ourselves to be daunted by the greatness of the task before us, either as individuals or as a body.

One thing that we may feel assured of is that true earnestness in these, the most worthy objects to which it is possible we can devote ourselves, will unfailingly meet with its due reward, not only in the confidence of a public which never fails to ultimately distinguish the true and disinterested from the false and selfish effort, but in the ultimate countenance and co-operation of many of those who, while they have proved themselves most worthy members of our profession, still look askance at our efforts, as though they were unworthy of their regard. We must prove, however, by acts, not words, our unyielding determination to succeed, and ultimate success is a foregone conclusion.

It is true that there are many difficulties to overcome. In other countries, the work we are striving to accomplish is undertaken by the Government. Italy, Germany, and France support extensive and elaborate establishments, furnished with every necessary appliance and help. The school of fine arts in Paris is rightly estimated to be the best in the world, and had under its care last year 270 painters, 190 sculptors, and 570 architectural students, and is supported by an annual subsidy of \$60,000.

Its museum contains the choicest examples of architecture and sculpture, constructive and decorative, from every quarter of the world, and in every known style, and is constantly increasing its collection. A course of study in this school is the recognized mode of training adopted by French architects. The student passes through an elaborate and systematic course of study, under competent professors. The French Government not only brings up the young architects in the way it thinks they ought to go, but when they commence life on their own account, it regulates them by a stringent set of rules, rigidly enforced.

In this country, however, the Government does not assume to foster its children with the paternal solicitude of older countries inured to

[Continued on Page 170]

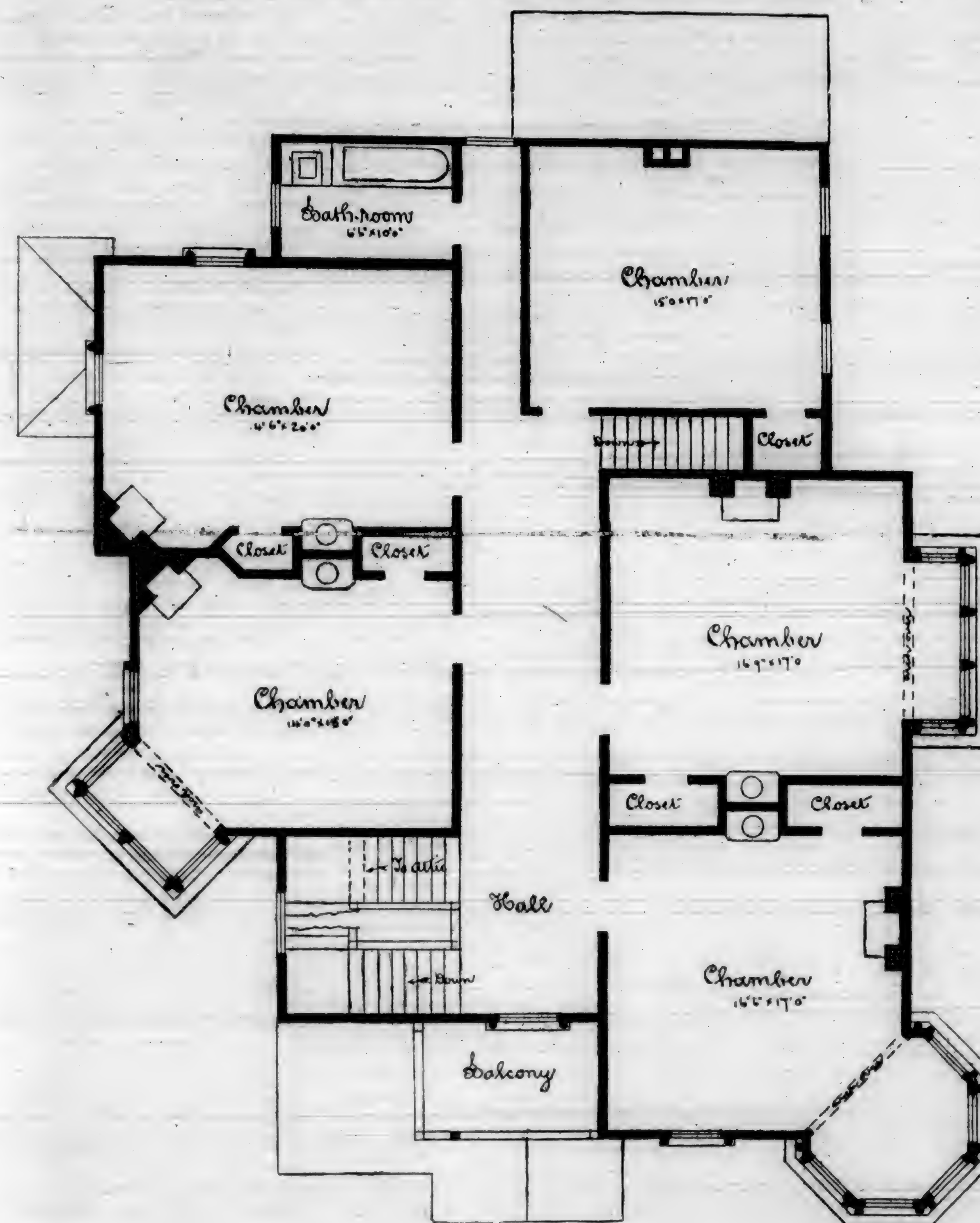


PLATE 4.—SECOND FLOOR PLAN OF SUBURBAN RESIDENCE.

We have just received a large number of Modern Architectural Designs and Details. This work should be in the possession of every Architect, Contractor, and Builder. Price—post paid—\$10.00.

(Continued from Page 168.)

the usages of monarchical methods, but ever leaves them to pursue their own predilections in freedom. And there is no doubt much wisdom in the method, for though at the present time, as regards architecture, at least, there has hitherto reigned only the negation of order, the wonderful tendencies of free institutions to ultimately settle by a sort of natural selection into appropriate forms of order and of law, encourages us to hope that, through mutual co-operation and a broad and fraternal feeling pervading our Institute as a whole, and each Chapter in particular, some system may in time be evolved which shall regulate and control by force of sentiment, rather than of law, the principles and practice of all our members.

As regards the question of professional education in general, a factor of such great importance to our national progress in the practice of our art, a few words may not be out of place.

There are in this country at least three recognized schools in which architecture is taught by theoretical as well as practical methods. The Illinois University, Columbia College, in New York, and the Institute of Technology at Boston, all afford, in varying measure, courses of instruction in architecture in which, apparently, very complete systems of study are provided. It is needless to say that the humble and as yet very incomplete attempt this Chapter has inaugurated is not intended even as a substitute for such a course as is above alluded to.

It is merely such a course as we are enabled to carry out without expense to the pupils, and without compensation to the teachers, unless it be the satisfaction they feel at being enabled in some measure to supply, by a practical effort, some of the many disabilities of our isolated position. And now a few words to the students in the language of an English architect of eminence:—

"After our Creator's glory and our country's service, nothing so surely claims our greatest energies, and our whole capacity, as our chosen calling in life, not only as an effort to earn our daily bread, but because whatever so necessarily absorbs the greatest share of our time and strength, both of mind and body, should at least be done nobly and well."

It is excusable, perhaps, for those who are compelled to toil in an endless round of monotonous and uncongenial employment, to seek in amusement some relaxation from the tedium of their life, though even the meanest and most repellant of callings may be lightened by the magic influence of a hearty good-will, and rightly viewed may even be engaged in with satisfaction if not delight.

But to the architect who has not mistaken his vocation, what can be more delightful than the ever-varying, always-inspiring aspect of the glorious Queen of the Arts—Architecture. "How she calls into equable play all the faculties of mind and body. At once sedentary and active, speculative and practical,

artistic and business-like, the architect must combine the most opposite qualities, can make useful the most varied tastes, and can turn to profit the most comprehensive information; nor should we deem anything whatever in the whole domain of science and history foreign to or useless in his studies."

With a field before him far wider than the most exalted faculties, the most untiring energy, and the most prolonged life can fully improve, the architect may yet remember with satisfaction that to the untiring assaults of an unyielding determination to excel, there is nothing in the whole realm of knowledge, and of art, that is necessarily beyond the reach of his attainment.

One at a time the rounds of the ladder of life may be mounted, and the faithful climber, who always looks up, and never looks back but to gain encouragement to mount still higher, though he may never attain the pinnacle of his desires, will soon be surprised at the vast horizon which opens to his views. And he will, while glorying in the progress he has made, be ever ready to lend a helping hand to the brother on the round below, and can afford to regard with generous pleasure and admiration the progress of his fellow on the round above.

These and similar considerations furnish an incentive to the young architect to study and to labor with diligence and zeal; for although absolute perfection within even the narrow limits of one profession be unattainable to man below, at least the basis may be laid, and an advance made by the earnest worker towards, not only a useful life in this world in his chosen path, but for an eternity of development of perhaps undreamed-of faculties, of wisdom, and of goodness, in that realm of life beyond the natural, to which, in various ways, and wide-diverging forms of belief, we all look forward.

It now remains to close with a few brief remarks on the objects and interests of the American Institute of Architects, as recorded in the proceedings of the Sixteenth Annual Convention, held in Cincinnati, Ohio, October 25, 1882.

The chief subjects of interest there recorded were, first: a motion to enlarge the fellowship of the Institute. A recommendation to that end was made by the committee having the same in charge, and mailed to each member of the Institute, together with a series of consequent changes proposed to be made in the by-laws of the parent body. These changes are made with a view to throw all necessary safeguards around the admission of fit and competent persons, and appears to be carefully drawn, and conceived in a critical though liberal spirit.

The idea of an examination of candidates would seem to be relinquished as impracticable, and, indeed, under the free institutions and broad constitution of the United States such a plan is not likely to be more successful than in medicine, where the quack and the charlatan too frequently carry off the lion's

share of patronage—at least, that of the ignorant and credulous.

The "voluntary examination" plan seems never as yet to have been brought to a successful issue. Were, however, the examinations made governmental and compulsory, as in law and education, the result might be different; but no private body could hope to command such an authority as to preclude the unauthorized practice of pretenders.

The most liberal course in this matter seems likely on the whole to attain the largest measure of success, the true guarantee to which will remain with each individual member after all.

The next question is germane to the last mentioned, and embraces the idea of a truly American Institute which embraces the dominion of Canada within its bounds. This seems worthy of the approval of all, and is of good augury for us too, for we have British Columbia to the north and Mexico to the south, both of which regions are in the line of great developments in the near future.

Another matter which has been touched upon is one with which we can surely sympathize. It is the idea that the Institute shall assist in the matter of traveling studentships. This is a step in the right direction and will lead, we think, to the ultimate development of one of the most useful functions of the parent body.

Another and final question of interest is the ultimate erection of a home for the Institute.

At the convention of 1882 it was proposed that a general competition should be invited, requesting designs from architects throughout the country, with the suggestion that the development of a "national style" should be the object aimed at. Under the circumstances, the suggestion is worthy of careful consideration.

It would seem, however, that the earnest and honest effort of each of us to develop to his utmost the truest and purest principles within his knowledge, modified and controlled by the climatic peculiarities and physical surrounding of each portion of our wide-spreading land, whether tropic, temperate or arctic, mountain or plain, is the course most likely to result in a realization of what may justly claim to be called a truly American style.

PAINTED woodwork may be classed among the necessary evils of house decoration. No one in his sober senses will put paint on good woodwork if he can get an equal effect by the use of natural wood. But the costliness of all hardwood, and especially the expense of working it, renders the use of pine practically inevitable.

A CORRESPONDENT writing from Pierre, Dakota, says that collections are made when the lumber is on the wagon. This is necessary for the safety of a dealer in a new country, as the people are strangers to each other, and no doubt many a dealer wishes the same custom was prevalent in older sections.—*Lumberman.*

Steel Square and Its Uses. Price \$1.00.



The Foreman.

THE position of foreman of a shop or boss of a gang of workmen demands as its object the turning out of a fair amount of good work. Some fill one portion of this demand and others the other portion, but it is only the manager of men who fills both.

Employers are sometimes at fault in demanding from foremen the largest possible amount of work in a given time, always prodding and pushing, grumbling because a job occupied more time than they expected, and picking up every trifling interruption as a deliberate attempt at imposition. If a foreman is honorable and sensitive he will not bear this nagging, and so in shops ruled by such a proprietor changes of foremen are frequent. One such instance occurs to mind, just now, of a proprietor of a very thriving business, requiring the services of nearly a hundred good workmen besides apprentices, who had lost three foremen within two years either by resignation or dismissal. "Can you recommend a good foreman?" he inquired. "You have an excellent man for the place now in your shop," was answered, naming him. "Oh, he'll never do, he's one of the men himself. I don't want a man who is familiar with the workmen; I want a driver, and he ought to be a stranger." The position of foreman in that establishment is periodically vacant, and a stranger who can bring fair recommendations and has the qualifications of a "driver" can generally have assurances of a position, even if he has to wait a short time for his predecessor's shoes. And yet, this proprietor is in no usual sense "a hard man;" he simply has a wrong idea of the duty of a foreman. His ideal foreman is a mechanical blusterer who stirs up cyclones in the shop, produces an atmosphere of general uneasiness, and "makes the men hop round lively," as he once remarked. The workmen make trouble for every new foreman, and his "life is not a happy one."

There are, however, some foremen who are instructors rather than managers of men. Under their rule more time is spent in the details of work, in correcting errors, in "doing over," than should be required to complete the job. The scrap heap under their management grows to enormous proportions; every slight error in work and every slight mistake in apprehension of an order makes another accretion to the growing pile. Under such foremen the workmen never learn economy of time or of material.

A truly capacitated foreman is a possibility, and his portrait is drawn from no fancy sketch. In the establishment where he is a manager a strike has not occurred since it had an existence—twenty-five years. Probably there are many like him, and his portrait may stand for those of others.

Although he is generally as exact as the workmen to the "bell hour," there is no stir among them if he is late and no letting down of attention when he goes out. He assumes a

part of every job and does it, wearing his honorable overalls like his men. He is not afraid of a loss of dignity or a relaxation of authority by addressing his men familiarly. He suffers no diminution of well-earned superiority in asking advice of some of his more experienced men. If one of his men "runs against a snag," he goes at once to his foreman, who either knows what to do, or has some proper and timely suggestion to make. He contrives to have his men interested in the work from incipency to finish, and when one of them shows hearty interest in the work and turns out a good job, he is told of it in plain words that cheer his heart, instead of being rewarded with a grumpy "That'll do."—*Scientific American*.

The Mission Street Railroad, San Francisco, Cal., to Run Cars by Electricity.

THE Mission Street Railroad is about to experiment with electricity as a motive power on their road, and in the course of about a week a car will be run by the new power. Advantage has been taken of the discovery of Faure, the French scientist, with regard to the capacity of electricity for storage. To each car will be attached a dynamo machine, which is usually made use of in the generation of electricity. The machine consists of a cylinder which, being made to revolve rapidly in front of magnets, generates electricity, which is conducted off for use by wires. But the machine can also be used in another way, the process being reversed. If electricity is fed to the machine through the wires, the cylinder revolves. In the first instance, power is converted into electricity, and in the latter electricity is converted into power. The dynamo can thus be used by means of suitable attachments, to give motion to the wheels of a car, the electricity which is fed to it being kept in storage batteries, which occupy but a small space. These batteries are charged at the engine-house, where a steam engine is made to run a dynamo, which generates the electricity.

That cars can be moved by the means described there is little doubt.—*Electrical Review*.

A MECHANICAL writer says: "The best workmen I have ever known in machine shops are those who give a little attention after stopping time, just as a good groom takes the best care of his horse when it is the hardest worked, seeing that it is cared for before he gets his own supper. The result in the one case is that the horse is always fresh and ready for hard work, while the machine is always turning off a good quantity and a good quality of work."

Should this Journal be received by any subscriber who does not want it or beyond the time they intend to pay for it, let them not fail to write us direct to stop it. We will not knowingly send the paper to any one who does not wish it, but if it is continued, through the failure of the subscriber to notify us to discontinue it, we shall positively demand payment for the time it is sent.

School House and Church Architecture. Price \$4.00.

The Present Place of the Plumber.

THE part which plumbers' work has to do in practical sanitation can hardly be overestimated, and yet to a considerable extent it may easily be overlooked. Indeed, it is mostly invisible, it is covered up in our walls, in our ceilings, or under our floors. Hardly anywhere is a pipe to be seen, the object being to keep as much out of sight as possible. Yet it is through these hidden pipes that both water and waste are carried through our houses; even into our sleeping rooms, where during our unconscious hours we are especially liable to be poisoned by noxious gases, and all these water pipes and waste pipes are unavoidably connected more or less closely with the drains, that we all know are vast reservoirs of noxious gases of decomposition, which, if not guarded against, will rise from beneath into our dwellings flooding every room with the breath of the plague. We have new-fangled names for apparatus, and elaborate statements regarding systems which are certainly calculated to mystify, and perhaps are sometimes designed to mislead, rather than to render clear the very simple fact that good material and good craftsmanship are alone needed to secure adequate water service within the house, and make such connections with the main drainage as to effectually prevent offensive smells and the escape of sewer gas into the house, which are the chief objects of the plumbers' art. Cheap work—so-called—really the dearest of all work, inferior craftsmanship and the semi-scientific theories of inferior or untrustworthy architects, self-elected sanitary engineers, and other persons who think things rather than know them, are, I am convinced, at the root of all that is now found defective in the plumbing as well as other bad arrangements in our houses.

It is common to denounce speculative—or as they are called—jerry builders; but, may I be allowed to suggest that, if there were no jerry public there would be no jerry builders? Simplicity of terms as well as of treatment will do more, I think, than anything else can to obtain that reform which the National Health Society and other sanitary associations are demanding in the interests of public health and comfort. These I know are but elementary truths, yet I venture to impress them in the strongest manner upon the attention of this assembly, because my experience tells me that it is from the violation of the first principles of soundness that the public suffer the evils they do from bad plumbers' work in their houses.—*Mr. Shaw to the National Health Society of England*.

PLEASE NOTICE.

The 75-cent edition of the Steel Square and its Uses is OUT OF PRINT. We cannot supply any more, as we have received notice from the publishers that their stock of that edition is completely exhausted. We have a number of the new and enlarged edition, which we will mail direct to any address upon receipt of

ONE DOLLAR.

This edition contains 30 more pages than the first one issued.

Management of Burned Forests.

AT the Forestry Congress in St. Paul, a paper by B. E. Vernon was read on this subject. In the management of a burnt forest, the essayist showed it is necessary to study the influence of the fire on the soil and on the standing timber before deciding upon the treatment. The vitality of the timber left standing may be injured by the scorching flames. In hardwood forests where the reproduction is expected from the stocks, as in the coppice, the reproductive power is injured in proportion to the degree of heat developed by the fire. In pineries, where reproduction can only be expected from the seed, the young seedling falls the first victim to the merciless fire. When the fire kills its original growth or causes its speedy death, the conditions of forest growth are at once changed and those alternations of species occur which are the natural consequences of the change of their conditions. The essayist went on to show how, in the case of a destroyed pine forest, the light-seeded species first takes the place of the old growth. Gradually, however, acorns and nuts will be deposited in the shade of the new growth, and as the light-seeded trees die off, the more valuable trees get a chance to grow, and gradually occupy the lands. This new forest of hardwood trees if protected by fire will long occupy the ground, but the original pine forest will not appear again until the land, long enriched by an annual deposit of leaves, has been again stripped of its trees and mellowed by years of cultivation. The forest fire, then, which destroyed the original pine forest, also destroyed the capacity of the land to reproduce a similar crop of trees for a period which may be set down at from 50 to 100 years.

The essayist showed from this the importance of protecting the forests by dividing them into blocks, for instance, by means of avenues from two to six rods in width. Where the risk of fire is caused by the proximity of a railroad, safety belts along the endangered line are recommended. Where forests have been partially destroyed, various measures are recommended according to the character of the forest. Where the destruction of heavy timber is a total one, the wisest plan is the immediate replanting of the land. Dead trees should not be allowed to remain, as they form the very best opportunities for the development of injurious insects. In forests of deciduous trees, where the heat generally is not as intense as in pine woods, it may be a cheap plan to await a new growth from the stocks and carefully nurse the more valuable species, in time filling up the bare spaces by planting shade-enduring species. In this, as in every other problem of forestry, it is impossible to prescribe any definite rules that will cover all the requirements of particular cases. A thorough elementary knowledge of the conditions of forest growth alone will enable the forester to decide what methods to adopt for the restoration of lost growths and reparation of the damage inflicted by fires on the soil and the forest.—*Lumber World*.

Common Defects in the Sanitary Arrangement of Houses.

THE best plan in the examination of a house is to begin at the top of it, and so we will begin examining a house from the roof, proceeding downward, and in our way I will point out the different mistakes that are likely to be made in the sanitary arrangements in various parts of the house.

The first thing which we must consider is that we have to get rid of the water that falls on the roof. The water from the gutter in front of the house may be disposed of in one of several ways. It may be conducted by a pipe outside of the house down the front into the area; or it may be conducted by a gutter through the roof, or, perhaps, through one of the rooms in the upper story into a gutter, over the middle of the house, between two parts of the roof, and down the middle of the house by a pipe into the drain; or it may be conducted direct from the gutter by a pipe, not outside the house, but inside the house, passing down through one or two stories inside the rooms, perhaps through the best bed-room in front of the house, through the drawing-room, carefully hidden by some casing made to look like an ornament, through the dining-room and kitchen into the drain in the basement. Smells having been perceived in different parts of the rooms, especially in the bed-rooms, various sanitary arrangements may be improved, and even made as perfect as they can be, by a kind of amateur tinkering prevalent nowadays in sanitary matters; and yet this defect, which is so exceedingly serious, which is known to give rise to serious disease, is entirely overlooked—perhaps for years. The same is the case when the rain-water is carried in a gutter through the roof into a gutter between the two roofs in the middle of the house, and down by a rain-water pipe inside the house. In such cases similar disasters may occur.

But there is an additional danger from the fact that these inside gutters are in themselves most pernicious things. Soot and rotten leaves collect in them, and air blows through them into the house; and especially when these gutters are under the floors of bed-rooms, this foul air is often the cause of illnesses which occur in these rooms. Even gutters which are not themselves directly connected with the drains, and which are open at both ends, but in which decayed leaves and soot accumulate and give off foul air into the rooms, may be the cause of sore throats. I have known this to be the case in rain-water gutters, which have been carried inside the house, so that they might not form an unsightly feature outside, and which have passed through the bed-rooms under the windows in a kind of position in which a sink would be. These gutters have been open at both ends, and only 10 or 12 feet long; and yet in such a case I have known illness to occur in these very rooms, which I should never have suspected to be due to these gutters if I had not known in previous cases that illness had arisen from the passage of rain-water gutters through rooms.

The housemaid's sink is often placed in a small closet just under the stairs, without any window or any sort of ventilation whatever (and we know what kind of things are kept in the sink!), so that the housemaid's sink in such a position has not by any means a very savory odor. The housemaid's sink should under no circumstances be in such a position. It should be against an outside wall and have a window. As a rule, the material used for the sink itself is lead—wood lined with lead.

The waste-pipe of the housemaid's sink, as a rule, is connected directly with the trap of the nearest water-closet. There is a grating in the sink, and there is no trap in or under the sink, but the waste-pipe is connected with the trap of the nearest water-closet. This is a bad arrangement. A worse arrangement is for the waste-pipe to be connected with the soil-pipe of the water-closet, in which case some kind of trap is generally placed on the waste-pipe of the sink. This trap is frequently what is called a "bell" trap, and is placed in the sink. The disadvantage of the bell trap is, that when you take the top of it off, you take the bell with it. The bell is the arrangement which is supposed to form the trap, by the edges of it dipping in the water in the iron box; and you see at once, when the bell is removed the trap is removed, and the waste-pipe, wherever it goes, is left wide open, and, if connected with the soil-pipe of the water-closet, the foul air comes up into the house. Very frequently, also, the waste-pipe of the sink has underneath it what is called a D trap. A D trap is a trap which the water passing through it can never clean, so it retains foul water, and, therefore, even under sinks, such traps ought not to be allowed, on account of the foul matters which accumulate in them.

The waste-pipe of the housemaid's sink should not be connected with the water-closet or soil-pipe; neither with any pipe that goes directly into the drain. Its own pipe should not go directly to the drain, which is very frequently the case, but through the wall of the house into an open head or a gully outside. Very frequently the housemaid's sink is supplied with water, not from the cistern on the roof, but from the cistern not only supplying the nearest water-closet, but actually inside the nearest water-closet, in which case, no matter what valves you have, you are supplying your sink with water which is kept in a cistern inside the water-closet, and that is far worse than supplying a sink with water from a cistern which also supplies the water-closet, with a reasonably protecting valve.

Close to the housemaid's sink, and very frequently over it, is the feed cistern to the hot water apparatus, which has also an overflow pipe, and the same remarks refer to this overflow pipe, except that it is a thing much more liable to be overlooked, as to the overflow pipe of the drinking-water cistern.—*Prof. Corfield, in the Sanitary Plumber*.

Lessons on Hand Railing. Price \$5.00.
Stables, Fences, Out Buildings, etc. Price \$2.50.

Importance of Roads.

WE are not aware that any estimate has ever been made of the actual cost of the public roads of the United States, or that the expense of providing them has ever been attempted by any bureau of statistics, but we make the rough estimate that they have cost at least \$700,000,000—probably much more—while unknown millions are annually expended in attempting to keep them in repair. If the money were only well applied, it would be an expenditure of great profit and economy, as everything which the farmer does off his own land is greatly affected by their condition. All his many loads of surplus farm products are drawn over them, and it makes some difference to him and to his horses whether those loads are conveyed easily over hard, smooth surfaces, or dragged through mud and against stones with severe labor to the team, fatigue to the driver, and wear and breakage to the wagon. Every week he and his family, more or less, go to the village for numberless errands, or to church on the Sabbath, and the good or bad condition of the roads seems to affect every fiber, pleasantly or unpleasantly, of their feeling or nervous sensations. On an average, there is at least twenty miles of traveling each week for the members of a single family. It would make a difference of five dollars a week, everything counted, whether this teaming and traveling is done over a nice, comfortable road, or through mud holes, sloughs, ruts, and unbridged streams, or against stones. Five dollars a week amounts to \$250 a year, a snug little sum to tax the farmer with; and when this sum is multiplied by at least five million owners or drivers of horses, carriages, wagons, heavy teams, etc., the aggregate cost would be something over a billion dollars! Does any one say this is too large an estimate? Then proceed in detail and show in what particulars; but do not blindly and ignorantly say it is wrong without careful examination. Suppose, however, we admit that it is double the reality, is not the six hundred millions every year, expended directly or indirectly by our people, worthy of more attention on the part of patriots, statesmen, politicians, office seekers, public-spirited men, writers for newspapers, agricultural journalists, and in fact of every one who passes over a road?

So long as our public highways in most parts of the country are made and repaired with so little interest and so little thought, we must suffer an enormous loss. We would like to ask how many of our readers who drive or ride over the common roads, never see a loose stone, or a fixed stone, to strike, jolt, and batter every passing wheel, or who do not see hundreds of them which might be removed with the expenditure of a small portion of the road tax? How many never saw sods and muck scraped into the road bed, to form a highway or "turn-pike," which would be excellent for corn and potatoes, but which when worked into a mass of mud, or cut into ruts a foot deep, constitute a strange object to be called a "road"? How

many never saw along the roadsides, thrifty patches of thistles, burdocks, mulleins, John's wort, nettles, etc., etc., ready to seed all the neighbors' fields? Until we can find such happy persons in the majority, we hope more attention may be given to correcting these evils, although we would not lessen the praiseworthy attention which is now freely accorded to enterprises and interests of almost infinitely less importance, but good in their small way.

Ancient Tools.

A PAPER that was recently read before a scientific association in England, gives some interesting particulars about tools used by the artisans who worked on the ancient buildings of Egypt, and other moribund civilizations. The subject proved specially valuable in showing how skilled artisans performed their work 4,000 years ago. The great structures whose ruins are scattered all over North Africa and Asia Minor, demonstrate that great artisan and engineering skill must have been exercised in their construction, but when parties interested in mechanical manipulations tried to find out something about the ancient methods of doing work, they were always answered by vague platitudes about lost arts and stupendous mechanical powers which have passed into oblivion. A veil of mystery has always been found a convenient covering for a subject that was not understood. The average literary traveler who helped to make up the tons of books that have been written about Oriental ruins, had not the penetration or the trained skill to reason from the character and marks on work what kind of a tool was employed in fashioning it.

A trained mechanic, Flanders Petrie, happened round Egypt lately, and his common-sense observations and deductions have elucidated many of the mysteries that hung round the tools and methods of ancient workmen. From a careful collection of half-finished articles with the tool marks fresh upon them—and in that dry climate there seems to be no decay in a period of 4,000 years—he proves very conclusively that the hard diorite, basalt, and granite were cut with jewel-pointed tools used in the form of straight and circular saws, solid and tubular drills and graving tools, while the softer stones were picked and brought to true planes by face-plates.

That circular saws were used the proof is quite conclusive, for the recurring, cut circular marks are as distinctly seen on these imperishable stones as are the saw marks from a newly-cut pine plank. This proof of the existence of ancient circular saws is curious, for that form of saw is popularly believed to be of quite modern invention. That another device supposed to be of recent origin was in common use among Pharaoh's workmen is proved by the same authority. We have met several machinists who asserted that they made the first face-plate that ever was used in a machine shop, and we have read of several other parties,

who made the same claims, all within this century. Now this practical antiquary has gone to Egypt and reported that he found the ochre marks on stones made by face-plates that were used by these old-time workmen to bring the surfaces true.

As steel was not in use in these days the cutting points for tools must have been made of diamond or other hard amorphous stone set in a metallic base. The varied forms of specimens of work done show that the principal cutting tools used were long, straight saws, circular disc saws, solid drills, tubular drills, hand grainers, and lathe cutters, all of these being made on the principle of jewel points, while metallic picks, hammers, and chisels were applied where suitable. Many of the tools must have possessed intense rigidity and durability, for fragments of work were shown where the cutting was done very rapidly, one tool sinking into hard granite 1-10" at each revolution. A curiosity in the manner of constructing tubular drills might be worthy of the attention of modern makers of mining machinery. The Egyptians not only set cutting jewels round the edge of the drill tube, as in modern crown drills, but they set them in the sides of the tube both inside and outside. By this means the hole was continually reamed larger by the tool, and the cone turned down smaller as the cutting proceeded, giving the means of withdrawing the tool more readily.

As indications on the work prove that great pressure must have been required to keep the tools cutting the deep grooves they made at every sweep, the inference is that tools which could stand the hard service they were subjected to must have been marvelously well made. Our modern tool-makers give employment to a high degree of mechanical skill, and extended metallurgical knowledge is requisite for the selection of material to make first-class tools. But when we reflect on the difficulties these ancient tool-makers had to surmount, in fastening and retaining stones as cutters on a base of bronze, we can appreciate the perfection their art reached. They probably followed methods of hardening copper alloys which are not known to us and are not discovered by modern metal workers, because the knowledge is not essential, but the real mystery of how clean cutting of hard substances was done in those times lay in the acquired skill of the tool-makers.—*American Machinist*.

PLATE glass was discovered in an accidental way in 1688 by a man named Thevart. It is attributed to the breakage of a utensil containing some of the melted material, a portion of which flowed under a large flagstone, which, when subsequently removed, was found to cover a plate of glass. Thus was suggested the idea of casting glass in plates.

Grimshaw on Saws. Price \$4.00.

Mechanics' Geometry. Price \$5.00.

American House Carpenter. Price \$5.00.

All new subscribers for 1884 will receive the balance of this year free.

The Mechanics' Fair.

FOR neatness of arrangement, and general good order, as shown by exhibitors generally, the Fair of 1883 compares favorably with the best that have been held. Those having goods to display are not satisfied that the old grooves should be used again, but with commendable zeal and interest have studied up new methods of interesting visitors; and the result is shown in the large number of orders given for many of the articles on exhibition. Upon entering the vast building, the fear of a conflagration is greatly modified by the display of

HARKNESS FIRE EXTINGUISHERS.

For which it is claimed that the number on exhibition is sufficient to check any fire that could possibly occur in the building. A peculiarity of the liquid used is that it will not injure the finest fabric. For this reason it is said that many ladies having expensive wardrobes have ordered these machines for private use.

ART GLASS WORKS.

A beautiful arbor, made from specimens of the artistic work of Mr. Mallon, at once arrests the attention of the observer. This is an industry that has been built up on this coast only by the exercise of an indomitable will, aided by a judgment and skill obtained only by years of study. We can commend the work of Mr. M. to those in need of anything in his line.

PACIFIC SAW WORKS.

This is, in our judgment, one of the most attractive features of the Fair. The arrangement of the hundreds of saws is truly artistic. Every kind of saw is represented, from those used by watch-makers to the mulays used by our mill-men. The energy displayed by the proprietors of these works is worthy of emulation by all of our local manufacturers, for it is to our manufactures we must ultimately look for an increase of population. We will send a fine engraving to all correspondents, representing the various saws manufactured by this Pioneer Company.

JUDSON NAIL WORKS.

This company is fortunate in having the prestige of success from the start. The superior quality of the nails made is already having the effect of diminishing the supply sent from the East. It is only a question of time when these works will be able to supply the entire Pacific Coast with all kinds of nails, spikes, etc.

IRON MANTELS—ARTISTIC TILES.

Montague & Co., as usual, are ahead of all competitors in the display of the above specialties. The mantels on exhibition are much admired for their beauty, as well as cheapness. They are made in imitation of ancient and modern marbles, and woods of all kinds, including laurel and black walnut, rosewood, etc. This firm also imports, direct from Stoke-upon-Trent, all kinds and patterns of encaustic, plain, art-painted, glazed, and majolica tiles.

BROWELL'S CHIMNEYS.

Mr. Browell is fortunate in having secured a place for the display of his chimneys where one cannot fail to see them. He presents a large variety of patent chimneys and ornamental tops. A peculiar feature of these is the easy manner in which they can be attached to a house, and the bands are so fixed that in case of the settling of the house no possible damage can be done to the chimney. Mr. B. also keeps on hand a full supply of sewer-pipe, of all sizes.

ORNAMENTAL NEWELL POSTS.

Mr. P. B. McKay makes a specialty of hardwood work, and displays a beautiful assortment of Newell posts, plain, fancy, and ornamental; also, baluster-rails, moldings, and all kinds of inside finish. Mr. McKay's long experience enables him to equal, if not surpass, any one in this same line of goods.

WEED & KINGWELL.

A beautiful display of bells, valves, lubricators, etc., is made by this firm. They have taken the lead in the manufacture of rich-toned bells, and orders are weekly received from all parts of the Pacific Slope. We understand that this firm is prepared to furnish chimneys of bells for the use of churches. They also manufacture the celebrated Gordon valve, particularly adapted for outside garden hose and fire-plugs. Added to its superiority is the fact that it is much cheaper than the ordinary hose-bib.

RADIATORS AND FOLDING GATES.

Mr. Harvey has been the means of adding a new industry on this coast. His folding and extension gates are admired by all who stop to see the practical working of these safeguards against burglars. They can be fitted to a window in such a manner that in day-time they cannot be seen, and at night, when in position, they are an effectual safeguard against the opening of windows from the outside. They are also particularly applicable to store-fronts. Mr. H.'s radiators are in use all over this coast, and give general satisfaction.

HENRICKSEN'S SAFETY CLUTCH.

These clutches are now recognized as the best in use. It is impossible for the cage to fall, from the breaking of the cable, when this appliance is attached to the elevator. They are automatic in their action, and are simply the exponent of a natural law.

In our next issue we will notice several others of the more conspicuous exhibits.

Brick Mason—Separate Contracts.

THE brick masons in San Francisco have perfected a society organization, mainly for the purpose of protecting themselves against losses by sub-contracting work. They neither propose nor contemplate anything in reference to prices or labor, leaving these to be regulated by demand and supply, but they request of owners and architects that all jobs of mason work—which generally includes grading and drain pipe work—which amount to more than

\$300, shall be let by separate contract to masons, irrespective of all other contracts. The movement is all the more worthy of consideration and favor because it emanates with the very best and most responsible of our master masons, who are actuated by no motive designed in effect to advance prices, or in any way abridge advantages to those contemplating the erection of buildings.

The principal argument used in support of the movement is the repeated failure of original contractors, and the great uncertainty of pay under the sub-contract rule. It is well known in building circles that very large amounts of money have from time to time been lost by sub-contractors through the defaults of those holding original contracts; and the present movement on the part of the master masons is to secure themselves against the uncertainties attending sub-contract work.

All new subscribers for 1884 will receive the balance of this year free.

Detail Cottage Architecture. Price \$10.00

PATENTS AND INVENTIONS.

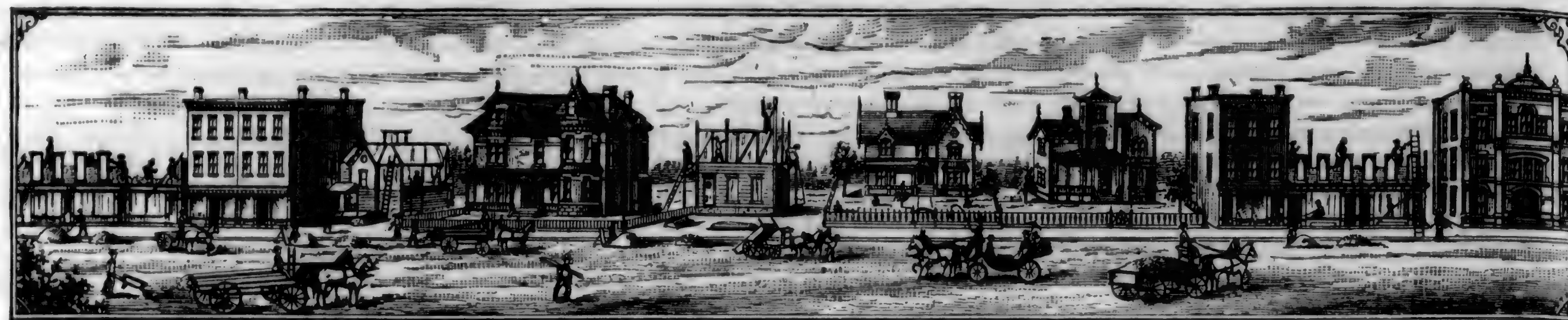
List of U. S. Patents for Pacific Coast Inventors.

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

FOR WEEK ENDING SEPTEMBER 25, 1883.

- 285,541.—AGRICULTURAL BOILER—S. N. Alford, Portland, Or.
- 285,462.—REVERBERATORY FURNACE—J. H. Canavan, Globe, A. T.
- 285,463.—PLOW—Jas. Clausen, San Luis Obispo, Cal.
- 285,465.—LUBRICATOR—M. L. Conway, S. F.
- 285,740.—FIRE ESCAPE—E. C. Eyl, Jefferson City, M. T.
- 285,481.—MOLD-BOARD FOR SIDE-HILL PLOWS—Paul Gregory, Davenport's Landing, Cal.
- 285,487.—APPARATUS FOR REMOVING SAND BARS—J. H. Huffer, Jacksonville, Or.
- 285,753.—NASAL INHALER AND INVIGORATOR—Jas. Keck, Portland, Or.
- 285,755.—SAMPLE EXHIBITOR FOR WALL PAPERS—Jas. E. Kidd, Stockton, Cal.
- 285,757.—SLATE PENCIL SHARPENER—W. P. Kirkland, S. F.
- 285,422.—THRASHING AND CLOVER-HULLING MACHINE—A. W. Lockhart, Sacramento, Cal.
- 285,495.—CHECK BOX—David Lubin, Sacramento, Cal.
- 285,499.—STATION INDICATOR—Thos. Melrose, S. F.
- 285,508.—AMALGAMATING ORES AND SAND CONTAINING GOLD—A. B. Paul, S. F.
- 285,514.—CABLE RAILWAY—Henry Root, S. F.
- 285,520.—APPARATUS FOR EXTINGUISHING FIRES ON VESSELS—A. F. Spawn, Oakland, Cal.
- 285,700.—SAND-GUARD FOR RAILWAY—T. W. Stapleton, Portland, Or.
- 285,530.—COMBINED CANE AND FAN—Wm. Verbeck, S. F.
- 285,720.—HEADER—Jos. H. Winn, S. F.
- 285,601.—BEVEL SQUARE—M. Farley, Portland, Or.
- 10,606.—TRADE MARK—J. R. Williams, Stockton, Cal.
- 3,547.—LABEL—M. A. Scott, Livermore, Cal.

NOTE.—Copies of U. S. and F. rein 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.



BUILDING INTELLIGENCE.

Although our report is not as large as usual, it must not be inferred that there is a cessation of building interests. On the contrary, it is but seldom, at this season of the year, that so many buildings are seen in process of erection. One of the principal reasons for our slack report, is the absence of our regular news gatherers. During the past month they have been on a trip through the northern and southern sections of our State, and Oregon; and the good results achieved by them will be found in another part of this issue. The following list embraces all of the work in the different architects' offices, and a few others, the owners of which have dispensed with professional services:

SAN FRANCISCO.
 Contracts for Dunham & Carrigan's building, mentioned in our last report, have been awarded as follows:
 A. Wright & Sanders.
 C. J. Hughes, brickwork; T. H. Day, carpenter. \$150,000.
 Market, corner Fremont. Alterations.
 O. Lachman.
 A. Wright & Sanders.
 C. Haft. \$7,500.
 Mission, x Sixteenth and Seventeenth. Two-story and basement frame.
 O. Dr. Wagner.
 C. Newsom Bros.
 C. McKay. \$8,000.
 Mission, x Nineteenth and Twentieth. Three-story frame.
 O. A. O. U. W.
 A. G. A. Bordwell.
 C. Gray & Stover. \$6,800.
 Gough, x Fulton and McAllister. Two three-story frame.
 O. Robert Gordon.
 A. G. E. Voelkel.
 C. J. H. McKay. \$18,000.
 Fulton, No. 414. Repairs.
 O. R. Gordon.
 A. G. E. Voelkel.
 C. Hutchins & McLean. \$1,000.
 Jones, x Clay and Sacramento. Two-story frame.
 O. A. W. Foster.
 O. Curtis & Be. nett.
 C. R. McCann. \$8,500.
 Guerrero, x Twentieth and Liberty. Two two-story frame.
 O. G. E. Turner.
 A. Newsom Bros.
 C. Moore Bros. \$10,000.
 Filbert, corner Buchanan. One-story frame.
 O. Mrs. J. Wright.
 A. Townsend & Wyneken.
 C. Orr. \$1,100.
 Haight, near Scott. One-story frame.
 O. and B. P. Connor. \$2,200.
 Point Lobos Road, near Ninth Avenue. One-story frame.
 O. G. Schmeiser.
 A. Newsom Bros.
 C. R. P. Traxler. \$2,300.
 Union, nr. Hyde. Two-story frame.
 O. Mrs. White.
 C. B. F. Ellis. \$2,500.

Pacific Ave., x Polk and Larkin. Two-story frame.
 O. George D. Bliss.
 A. T. J. Welsh.
 C. J. Blake. \$7,000.
 Linden Ave., x Octavia and Laguna. One-story frame.
 O. D. J. Oliver.
 A. T. J. Welsh.
 C. P. Laherty. \$2,300.
 Potrero. Two-story frame.
 O. Carroll Bros.
 A. T. J. Welsh.
 C. J. McGeeary. \$4,500.

Lombard, x Taylor and Jones. Two-story frame.
 O. D. W. Tietzer.
 A. T. J. Welsh.
 C. B. Dryer. \$6,000.
 Lombard, x Taylor and Jones. Two-story frame.
 O. Ed. Rotger.
 A. Geilfuss.
 C. B. Dryer. \$4,400.
 Post, x Stockton and Powell. Additions.
 O. Verein Eintracht.
 A. Geilfuss.
 C. W. Plums. \$6,000.

WOODLAND.
 One-story frame.
 O. C. Voigt.
 C. Jackson. \$1,200.
 One-story frame.
 O. J. Borach.
 B. Glein & White. Days' work. \$800.
 Improvements on hotel.
 O. L. Knight.

MISCELLANEOUS.
 Santa Rosa. Three-story brick; O. County of Sonoma. A. Curtis & Bennett; C. Carl & Croly; \$80,000.
 San Rafael. Two-story frame; O. Frank Zook; A. Curtis & Bennett. C. I. Shaver; \$8,500. Two-story and attic frame; O. L. Schless; A. Wright & Sanders; C. J. Roberts. \$25,000. Two-story frame; O. Mrs. Butterworth. A. W. D. Mitchell; C. J. A. Jackson. \$3,700.
 San Jose. Julian, x Second and Third; two-story frame. B. B. O. A. Schoenheit; A. Theo. Lenzen; C. W. S. Buyles; \$7,000. Fourth, cor. Williams; two-story frame; O. Mrs. D. Murphy; A. Theo. Lenzen; Days' work; \$7,000.

MARKET REPORTS.
LUMBER—Pine.
 Common Rough, up to 40 feet, per M feet. \$22 50
 " 41 to 50 " " " 23 50
 " 51 to 60 " " " 24 50
 " 61 to 70 " " " 25 50
 " 71 to 80 " " " 26 50
 Refuse Rough. 18 50
 Common Rough, sized with planer—\$2 additional on above rates, per M feet.
 No. 1 Flooring, 8 inches and over, " 33 50
 " 4 " and under, and 1 1/2 x 4 and 1 1/2 x 6 " 35 00
 Flooring and Stepping. 40 00
 Rough Clear for Flooring, \$1 less than above rates.
 Second Quality Flooring and Stepping. per M feet 28 50
 Ship Plank, Rough. " 28 50
 " Planed 1 side. " 32 50
 " 2 sides. " 35 00
 Deck Plank, Rough. " 33 50
 " Dressed. " 37 50
 Laths. " per M 3 75
 Wool Slats. " 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. " 27 50

BERKELEY.
 One-story frame.
 O. D. A. Jackson.
 B. Gilbert & Son. Days' work.
 Frame building.
 O. John Winters.
 B. Mr. W. Winne. \$2,300.
 Additions.
 O. J. Roth.
 C. B. Dryer. Days' work.

Rustic, No. 1, 1x8. " 37 50
 " No. 1, 1x10. " 40 00
 " No. 2. " 35 00
 " Under 10 feet. " 35 00
 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
 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. " 20 00
 " Square. " 17 50
 Siding, 1/2 inch. " per M 2 50
 Shingles. " 27 50
 Battens, 1/2 inch, lineal feet. " 1c
NAILS.
 10 to 60 pennies, are quoted at. \$3 90
 8 " " 4 15
 6 " " 4 40
 5 and 4 " " 4 85
 4 and 5 " brad-heads at. 5 15
 6 " " 5 40
 8 " " 5 75

A VERY modern discovery has thrown new light upon one of the most remarkable legends of the Middle Ages. Most reading people now know something about the ptomaines, the intensely poisonous alkaloids which have recently been isolated from the corrupt juices of a decomposing body, and, although the first announcement of their discovery was received with incredulity, and almost derision, are now recognized as distinct substances, existing in several varieties. Further research has shown that the new alkaloids are capable of entering into combination with other substances, yielding stable compounds having new properties, and it is found that the ordinary white arsenic easily combines with many of them, to form volatile liquids of frightfully poisonous character. The singular coincidence between this discovery and the history of the sixteenth century lies in the fact that one of the many traditions respecting the *aqua Tophana* of the Italian poisoners, that deadly drug which destroyed life instantly, and without fear of detection, relates that it was prepared by sprinkling white arsenic upon pieces of pork, and collecting the liquids which drained from them, adding subsequently a vegetable infusion. The first part of the process is exactly the same as that now found to be the easiest mode of preparing the arsenical ptomaines, and it seems altogether probable that experience may have led the refined Italian poisoners, who, as the stories go, could destroy their victims by the perfume of a bouquet, to the secret concoction of the very substances which beneficent science is now adding to the list of well-known, and perhaps medicinal drugs.—*The American Architect and Building News.*

N. C. WALTON,
 Asphaltum and Asbestos Roofing,
 219 MISSION STREET,
 SAN FRANCISCO, CAL.

The California Architect and Building News.

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NO OTHERS RECEIVED.

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A square is 1 of an inch in length by width of the column. 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.

SPECIAL NOTICE TO SUBSCRIBERS.

It is our intention, in the future, to have all new subscriptions begin either with the January or July numbers. In order to have a uniform time with subscribers now on our books, credit will be given to those whose subscriptions fall due between this issue and the 1st of January, with the intervening months, so that by sending \$2.00 NOW, you will receive a full receipt for 1884. All new subscribers will receive the balance of this year free.

Holding off for Lower Prices.

MANY owners are postponing the erection of contemplated improvements, having in view the idea that, owing to the advent of the winter season, the price of labor will be reduced; also, that materials of various kinds, from a cessation of building operations, will accumulate on the dealers' hands, and the latter will be only too glad to make a discount for cash.

We can assure all such, by positive information secured from lumber dealers, hardware, paint, glass, and other material men, that there is not the least chance of a fall in prices of the various materials necessary to erect and complete a building. In fact, everything tends to show that prices will be stiff from this onward, for some time to come.

We can positively say that lumber will not in the near future be any cheaper than it now is. During the past month it has been raised in price, and we have no doubt that as soon as the dear public gets used to this advance, another turn of the screw will be given, and a dollar or two be added to the already exorbitant price; and this in the face of the fact that some of the lumber dealers are complaining that their money is lying idle in the bank, and no one is willing to use it and pay a reasonable interest thereon.

The price of hardware is regulated by the Eastern market. We doubt though, even if a reduction be made in the manufacturing districts, that a corresponding price will be adopted here. The truth is that all over the State building operations were never in a more progressive state than at the present time. The demand for hardware has been such that no old stock of any kind is on the dealers' hands, and consequently there are no old patterns to work off at nominal prices and thus weaken the general market. There is not a firm of prominence in the city but takes pride in showing their customers complete new patterns in every branch of hardware.

The manufacture of paint on this coast has almost stopped shipments from the East, and as the proprietors of the manufactories are giving—in fact, always have done so—the best material at the lowest cost, no lessening of price in this commodity is to be apprehended.

The variations in the price of glass doors, windows, etc., are but very small, with the chances in favor of a raise.

Plumbing, and materials used in work in connection therewith, are as cheap now as they will be for some time to come. Under the operation of the new plumbing law, the price of plumbing has been materially advanced.

Owing to the great demand for skilled labor in every branch of mechanical work, no reduction in the price of a day's labor may be looked for. On the contrary, prices are apt to be advanced, and we have no hesitation in saying that carpenters, masons, plasterers, etc., will obtain higher wages next year than they have received during the one now about closing.

Bricks have advanced in price, and, with a strong combination holding all that can be manufactured, no decline need be looked for in this direction.

It will thus be seen that those who intend to build are more likely to have their work done cheaper at the present time than they can next year.

Another fact should be borne in mind. Each succeeding year witnesses a more general introduction of the old-fashioned moving day, and tenants prefer to move into a new house as long as it suits their wants. Owners consequently have none too much time in which to complete a building by the first of April.

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 now printed. The charge is but 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 Chapter, American Institute of Architects.

THE regular monthly meeting of the Chapter was held on November 2d. In the absence of the President, H. C. Macy occupied the chair.

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

During the month a class in mathematics was organized under the direction of J. Gash. The classes in modeling, perspective, and flat drawing were being better patronized, and the pupils showed much ambition to excel.

After discussion it was resolved that at least one member of a firm must belong to the Chapter to enable the students connected with the office to take advantage of the lessons given in the different classes.

J. E. Wolfe, of Committee on Plumbing, tendered his resignation, owing to a severe spell of sickness, which had rendered him unable to attend to the necessary duties. On motion, the resignation of the entire committee was accepted, and the President appointed the following Fellows to complete the work of

the Plumbing Committee—Messrs. Henriksen, Welsh, and Moore.

John Hall and W. Copeland were elected members as Fellows. The application of R. C. Ball was laid over till next meeting.

A communication was received from the Garland Trap Manufacturing Company, calling attention to the virtues of the traps as a sewer gas protector. A sample of the trap accompanied the communication. Placed on file.

Committee on procuring a seal for the use of the Chapter reported that they had concluded to adopt the seal used by the Association of Architects, formed some years ago.

The money premiums offered by the Chapter for the best design for seal, were to be awarded to the pupil presenting the best sketch in architectural drawing.

Trustees were authorized to procure a seal by the time of next meeting.

The following report was presented by the committee appointed to consider the proposal made by the Masons and Builders Association at the last meeting of this Chapter:—

To the San Francisco Chapter of the American Institute of Architects:—

GENTLEMEN: Your Committee appointed to consider the resolution presented to this Chapter in its October session, by the Master Masons, in reference to its segregation of all mason's work amounting to more than \$300, have carefully considered the matter, and respectfully report in favor of said resolution. Respectfully submitted.

H. C. MACY,
THOS. J. WELSH,
J. GASH.

San Francisco, November 2, 1883.

The report caused considerable discussion. Objection was raised that the amount specified, \$300, was too small for a separate contract. The report was finally laid on the table, with the understanding that it could be taken up at any time the Chapter may see fit. Adjourned.

Church Building an Index to Prosperity.

ALMOST a true index to the prosperity of any State may be found in the number of its churches and schools, and we regard the establishment of the former in so many different places as a better criterion to judge by than the latter. In villages of only twenty or thirty houses, a school house is always to be found. In the majority of small communities, the school house is used as a church, exhibition room, etc. Every little entertainment is given in the village school house. When a portion of these little communities come together and resolve to build a church, or meeting-house, it is always an evidence of prosperity, for without good crops of fruit or cereals, the farmer would not be in a condition to spare a portion of his earnings for something that could be put off a little longer, and unless the village blacksmith, mechanic, and store-keepers were doing well, they could not spare money as long as the school house would do.

It is a notable fact that the founders of all the new towns south of Los Angeles—and

there are dozens of them—will, in their prospectus, in large letters, proclaim the fact that the place is to be blessed with free schools and churches, the latter word generally in large type. And it seems to be a fact that the prosperity of any community depends greatly on the class that are generally found on one day of the week in their places in the country meeting-house. We do not remember of any time in the history of our State when so many small churches were in process of erection as at present. Even in some of our almost neglected mining towns, there have been enough good folks combine together to form a congregation, and take measures to erect a place of worship. This fact proves another thing, and that is, since the decadence of mining, the ground has been found admirably adapted to the raising of fruit, and the moment the farming element predominates, churches and schools are found a necessity.

The Master Masons' Resolution.

As heretofore announced the Master Brick Masons have banded together in an organization for mutual protection, and by resolution declared their intention to maintain the right of original contracts on all jobs of mason work costing more than \$300. Said resolution was presented to the Chapter of Architects at its October session, and placed in the hands of a committee, who, at the meeting held on the 2d inst., reported favorably upon the petition. After a lengthy debate it was resolved to lay the subject matter on the table, etc., mainly upon the ground that by the Chapter favoring and endorsing the action of the masons, scores of other trades, —millmen, plumbers, painters, plasterers, tinsmiths, roofers, sewer-layers, graders, etc., etc.,—might, with equal propriety, set up similar claims and an indorsement of the Chapter, thus involving the Chapter in an almost endless series of contract issues.

The adoption of the resolution and the organization of the Masons' Society presupposes a reason for such action. This is found in the simple fact that sub-contractors in all the various branches of building operations have, during the past thirty years, been subjected to repeated and sometimes ruinous losses through the irresponsibility and defaults of original contractors. In a very large number of such cases the defaults have amounted to downright business salaries, while others have been the result of incompetent men undertaking work far below prices sufficient to enable the payment of actual costs. It is not therefore to be wondered at that the masons have made the move they have, and we trust that they will so thoroughly organize and co-operate as one man, that neither designing rogues nor men incapable of estimating true values of things to be done, will be able to cheat and defraud better men of their rights.

In behalf of the few worthy and responsible contractors (carpenters), it is scarcely necessary to say a word. They stand above reproach; and if buildings were never let to others than our first-class men there would have been no

necessity for any masons' organization. The brick masons nor any other branch care an iota who they work for so long as payments are sure. But in view of the fact that uncertainty of pay in full surrounds a very large proportion of the building contracts let in San Francisco, there should be no surprise felt that sub-contractors should seek protection.

The Pacific States Historian.

HUBERT H. BANCROFT was born at Granville, Ohio, in 1832. His parents were from New England. At the age of sixteen Mr. Bancroft entered the bookstore, in Buffalo, of his brother-in-law, George H. Derby, who, in 1852, sent him to California with a stock of books and stationery. Mr. Derby died before the goods reached San Francisco; but true to the original purpose, Mr. Bancroft, in 1856, opened in a modest way the establishment which in less than thirty years was one of the largest of the kind in the world. Shortly after beginning business he began collecting material for a history of the Pacific States, by which term is signified the western half of North America, from Alaska to Panama, including all of Central America and Mexico. After gathering all that America would yield he several times visited Europe, always with marked success, until his collection numbered 35,000 volumes. Then he erected a brick building specially for his library on Valencia Street, San Francisco.

But long before this he began to write. He studied hard and wrote diligently. As preliminary to his historical series, in 1875 he published the "Native Races of the Pacific States," in five volumes, which was received with universal commendation throughout the world. The most eminent scholars of Europe and America were lavish in their praise of it. Then came the "History of the Pacific States," which is indeed a series of histories, altogether covering the entire coast, one twelfth of the earth's surface, and probably the greatest work of the kind ever undertaken by mortal man.

In all there are to be thirty-nine volumes. Volume XI. has just been printed. They are all uniform in size and binding. Any information in regard to the above can be had by addressing the office of this Journal.

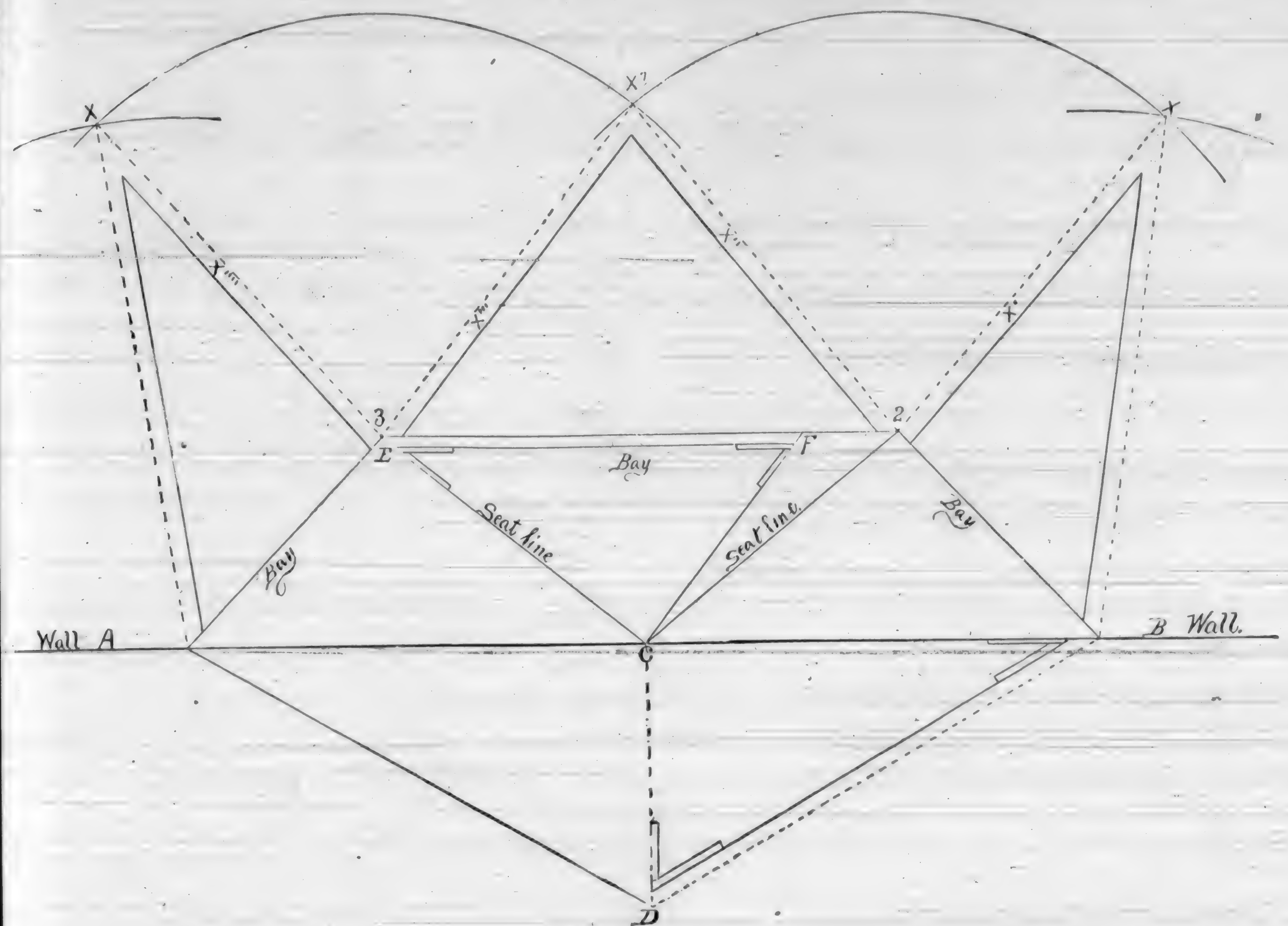
BUILDING SUPERINTENDENCE.

A Manual for Young Architects, Students, and others interested in Building Operations as carried on at the present day.

WE received a copy of the above work from the Publishers, J. R. Osgood & Co., too late for extended notice in this issue. From a hasty perusal, we conclude that young architects, as well as those persons not of the profession who are occasionally called upon to direct building operations, will be greatly benefited by a careful study of this work. Its author is T. M. Clark, well known to many of our readers.

We will send a copy of the above work to any address upon receipt of the price, \$4.00.

"Vodge's Architect and Builder's Pocket Companion and Price Book Edition of 1883," revised and enlarged, \$2.00.



A GRAPHIC DESCRIPTION, ILLUSTRATING THE METHOD OF STANDING THE CUTS OF THE HIPs OF BAY WINDOWS OVER GROUND PLAN IN POSITION. (SEE ABOVE DIAGRAM.)

A B is the wall line; A 3 2 B is the ground plan; C D is the elevation; C B, C 2, and C 3 are seat lines; square from C 3 seat line makes C F equal elevation; then F E is the length and cut that will correctly stand over seat line C E. Draw a line D to B, then take the distance D B in the compass, stand on the angle B, draw a curve as x; now don't change distance you hold in your compass, but stand in angle A, draw another curve x; now set the compass to the distance already found, namely, E F, and stand with compass on angle 2, draw a curve cutting right and left, as x x'; stand on angle 3 with same distance as from angle 2, and draw curve cutting x x'; draw lines as shown, A x, x x', 3 x', x' 2, 2 x, x B; now commence to cut along the dotted lines as shown, and hinge from B to 2, and from 2 to 3, and from 3 to A, and from C to B; fold up and they will stand over ground plan in position. M. J. MARION.

We have dotted the lines as shown, to illustrate the value of models. Take a sharp knife and cut the paper along the dotted lines; fold up the parts separated and the practical

working of the above problem will be at once apparent. We would advise our readers, however, to make the diagram on a piece of card board, following the explanation closely, thus saving the above for future reference.

Mr. M. J. Marion, the author of the above neat study, has decided to remain for awhile in this city. He has in his possession testimonials from some of the most celebrated architects, mechanical engineers, and surveyors in the United States. His system of teaching lines is strictly original with himself. For the present he can be found at 631 Sacramento Street. Draughtsmen, students, builders, etc., would do well to engage his services.

Building.

WE have received a copy of the illustrated edition of *Building*. It contains nineteen selections from foreign architectural journals. The purpose of this edition is to give selections from leading papers of Europe. The editor naively remarks, "We have ordered every journal of value published in England or on the Continent." The best of the ideas culled from these will be given in *Building*. Terms, \$5.00 per year. Orders received at this office.

Plaster and Plastering—How to Make and How to Use It.

A new work, and by far the best yet brought to our notice. It is a complete guide for the plasterer in the preparation and application of all kinds of plaster, stucco cement, lime, etc., with useful and practical information on the chemistry, qualities and uses of the various kinds of limes and cements, together with rules for measuring, computing and valuing plaster and stucco work.

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P. H. JACKSON.

Attorney for Mrs. E. A. Hyatt.

P. H. JACKSON & CO.

No. 2 California Street and 231 First St., S. F.

Architecture of Country Houses.

BY A. CURTIS BOND.

In this letter I have shown a double country house with plans, and for the information of our architect friends, or those who would like to put the design into actual use, I propose to give the specifications. The building, as will be seen, is frame, and combines two dwellings under one roof, and has recently been put up in the suburbs of the city at a cost of \$1,600.

The architect, Mr. A. F. W. Leslie, thus writes:—

The main house is 27 feet deep, and 48 feet front, with an extension 13x30 feet. Cellar 7 feet high. First story 9 feet 2 inches; all the measurements to be between timbers.

All frame timbers to be of first quality, and all as well seasoned as can be had. All timbers for joiners' work to be free from loose or black knots, and well seasoned.

SIZE AND KIND OF TIMBER.

Sills 2x8, posts 4x8, plates 2x6, first and second story joists 2x10. All joists supporting partition to be 3x4. Rafters 2x5.

EXTERIOR

To be first covered with hemlock or spruce, well nailed, laid over diagonally, then with sheath paper, then with first-quality pine beveled clap-boards not over six inches wide, and to lap not less than $\frac{1}{4}$ of an inch. Corner-board $1\frac{1}{2}$ x4 inches, and $1\frac{1}{2}$ inch, $\frac{1}{4}$ round in angle, well nailed. Water-table $1\frac{1}{2}$ x6 inches, and beveled on top with lip. Window and door casing outside to be $1\frac{1}{2}$ x4 inches, and according to scale drawing shown herewith. (See illustration.)

ROOFS.

First covered with good hemlock boards, then with sheathing-paper, and then with good blue slates, with chipped corner ridges to be covered with tin and well flashed around chimneys in good, workmanlike manner; valley to be well lined in workmanlike manner with charcoal tin. Gutters to be framed as per scale drawings, and lined with best charcoal tin and well soldered. Roof of piazza and bay window to be finished as main roof.

PIAZZA.

Build piazza as shown on plan. Rear platform at kitchen door to be supported by 5x5 inch chestnut posts, extending high enough to support a plain hand-rail finished with cross supports, made box-shaped, with beveled edges. Steps $1\frac{1}{4}$ inches, well-secured stringers $1\frac{1}{4}$ inches, risers $\frac{3}{8}$ of an inch, all finished in a neat manner.

CASINGS.

All inside door and window casings to be $\frac{3}{8}$ x6 inches, with cove and berth; base to be 6 inches high. All to be finished with a neat moulding of any pattern.

DOORS.

All doors, except outside and sliding-doors, to be $1\frac{1}{2}$ inch thick, moulded on both sides, except closet doors, which shall be moulded on room side only. Front and sliding-doors to be $1\frac{1}{2}$ inch thick, with raised mouldings. Front door to be hung with 4x4 inch bronze

bolt. Sliding-door to be fitted with track and rollers. Suitable locks on all doors, with porcelain knobs, except front door, which must have bronze knob.

WINDOWS AND BLINDS.

All windows to be glazed with second-quality French glass, except cellar window, which must be American make. All windows to be hung by cord and weight, and good sash fastenings. Rolling slat blinds on all windows, with good trimmings. Cellar window to be hung with button and good hook.

STAIRS

To be as shown on plan, with a 7-inch Newel, 4-inch moulded rail, $1\frac{1}{4}$ -inch baluster, all of walnut, neatly and strongly fitted up. Box stairs leading to cellar.

FENCE.

Build fence around entire lot—as may be selected.

MANTELS.

Make neat wooden mantels in kitchen, dining-room, and chamber, to cost not less than \$10.00 each. One slate or marble mantel in each parlor, to cost not less than \$20.00 each, all set.

PLUMBING.

Iron sink, porcelain-lined, 18x30 inches, to be fitted up in kitchen where shown on plan, ceiled up and small door underneath; fitted with tin waste-pipe to connect with drain. Sink fitted with a pump with suction-pipe leading to the bottom of the cistern.

PAINTING.

All work usually painted should have two good coats of best white lead and oil, and of such color as may be selected.

MASONRY.

Masons to excavate for cellar, privy, and cistern, and earth deposition to grade. Foundation to be laid up of stone to within 6 inches of grade, balance 8 inches built wall, a good 10-inch footing cover to start with below cellar bottom. Chimney as shown on plan, carried up to roof with common brick, and topped out with good quality face brick, all to be well plastered from top to bottom.

PLASTERING.

All to be lathed with good spruce laths, then plastered with two good coats, well troweled, to make a good job. Parlor and dining-room and front hall to be hard-finished, and a neat cornice and center-piece in each parlor.

Build cistern and privy sink where directed, in a good, workmanlike manner.

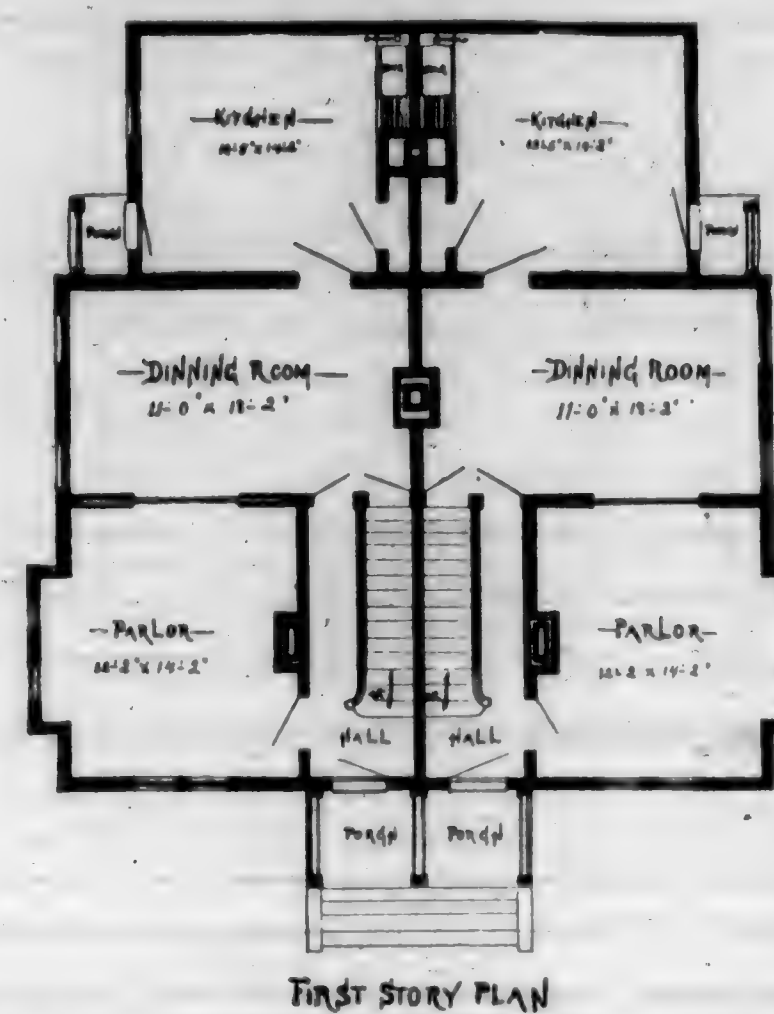
All necessary culture and all carpenter work described, to be done in a neat manner, and all defects rectified and left completed.

The materials all are to be of the best of their several kinds, and all work herein specified, to be done in the best and most workmanlike manner, and finished throughout.

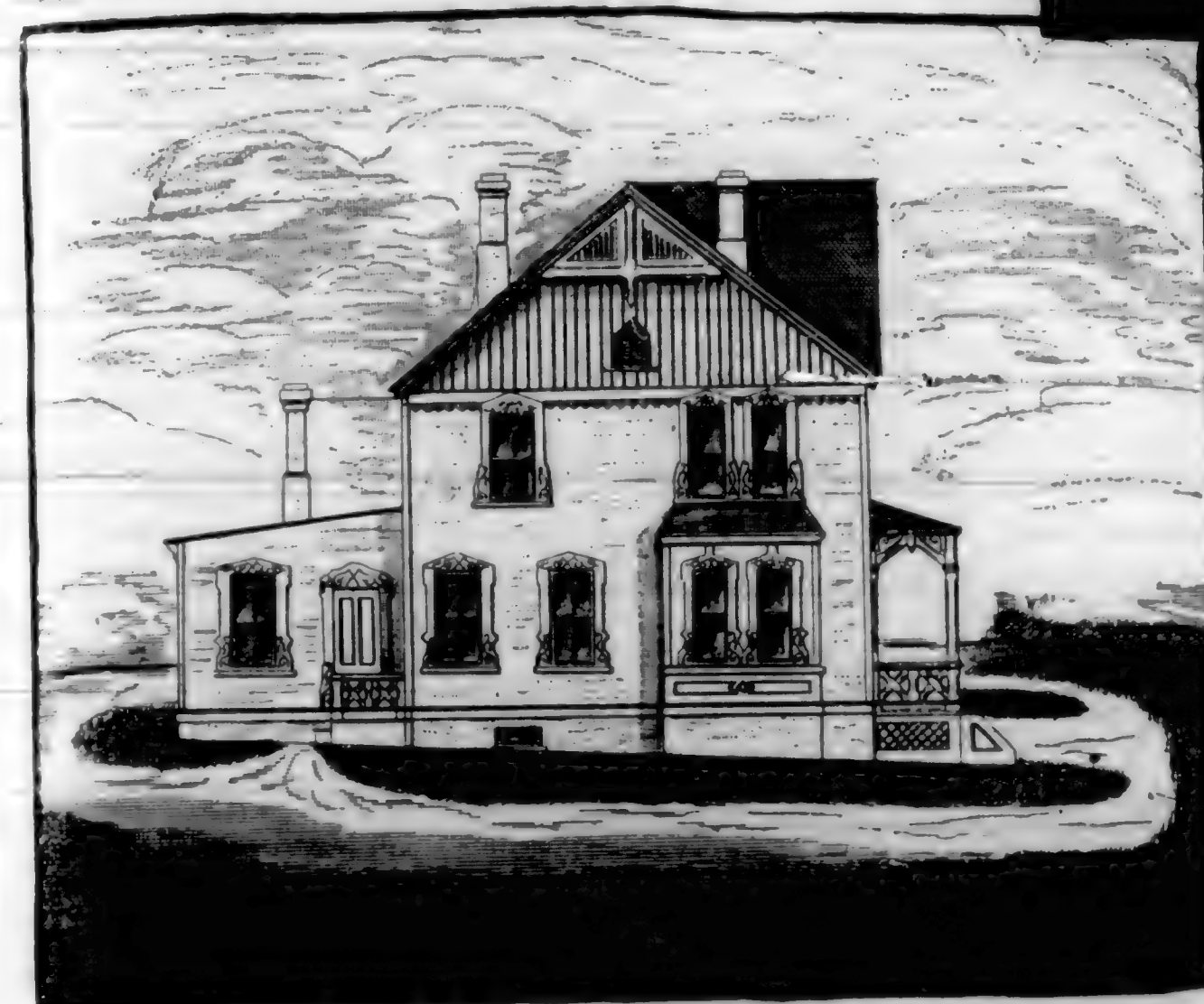
The common use here of shingles in house-building has led to other means of coloring than that of paint. Staining the exterior is often adopted, although the stain is, in itself, less durable than paint, for out of door work,

although the action of the weather washes out the color in some degree, and has the effect of softening the tints and blending them harmoniously together. These softened and blended effects have a charm in the diversity of shades, while painting has a monotonous appearance. A more weathered look is given to the shingle work, which much enhances the picturesque effect. The best mode of applying the stain is by using turpentine or oil as a medium. The mixture of color and oil, says a writer, should be thinned with considerable turpentine, so that it will strike in the wood. The surface afterwards should receive two coats of oil. Or, the stain may be applied with turpentine, or by adding the oil in separate coats, to preserve the color. Vinegar is sometimes used as a vehicle, and with success. The aftercoats of oil are indispensable to a permanent application, and two coats of oil on the top of the stain should be used. Other modes of staining may be used. The natural color of the shingles is sometimes sufficient, and in this case they are often simply dipped into oil before fixing, or a little color may be added to the oil. The California red-wood is a warm and agreeable material, needing only oiling to bring out the color or heighten the tone. Varnish is sometimes applied to the oiled shingles, but the gloss is objectionable, and the coloring is spoiled. The manner of laying the shingles has a great deal to do with the effect of the treatment, as the same stain may give different appearances according as they are laid in straight courses or otherwise. They are often laid so as to break up the surfaces as much as possible, in which case the tone of color will appear darker by the half shadows. Perhaps the most pleasing broken and varied effects are obtained by using ordinary rough-sawn shingles, which gives a shadowed surface, and the stain is unequally taken up by the wood. The colors employed for shingle work are numerous. The shingled or upper stories of a house may be stained a yellowish or orange color, and the dressings, or trimmings, as they are called, a dull shade of bluish green. The lower story may be of a dark reddish tone. In other instances the stain may be of light tints of Indian red or yellow, red and black, burnt sienna with burnt umber, old gold, obtained by using Indian yellow and blue black, brown madder and burnt sienna. More or less contrast can be had by using cool colors in the trimmings, such as blue gray, and warm colors on the surfaces; such as burnt umber, Indian red, sienna. Harmonies are obtained by making one color enter with all the others, or by making the trimmings agree with the body colors, although of lighter tone. In other cases the artist may choose a graded treatment, using different shades of the same color, contrasting with a complementary color. Thus, the body of the house may be in three shades of green, the deepest being placed on the ground story, and the lighter shades in the second and upper stories. A dulled red may be used for the trim-

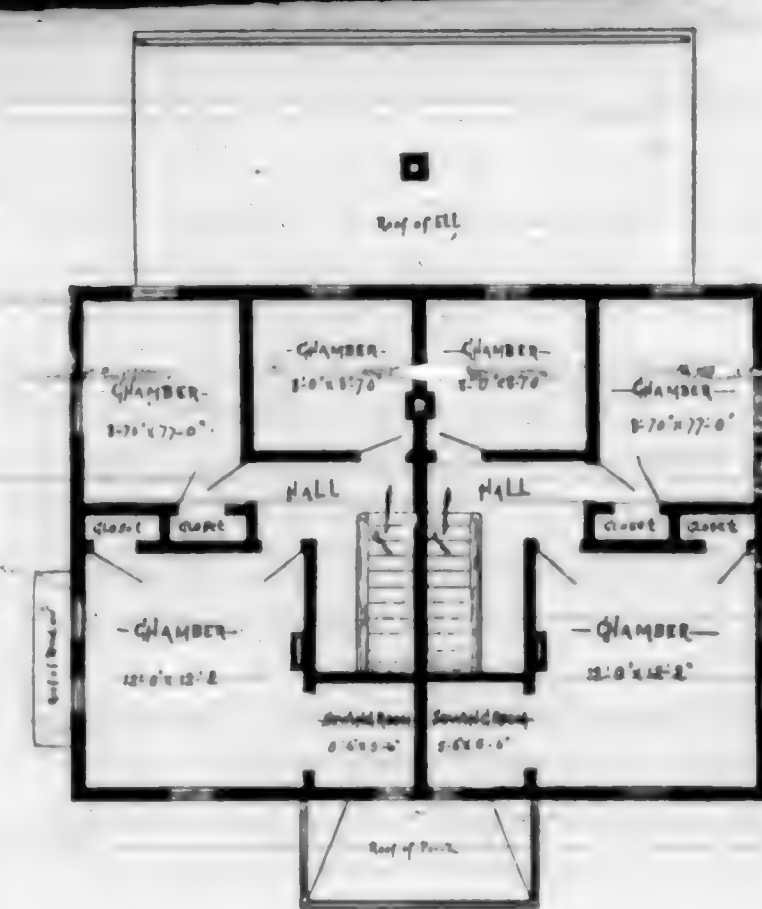
(Continued on Page 182.)



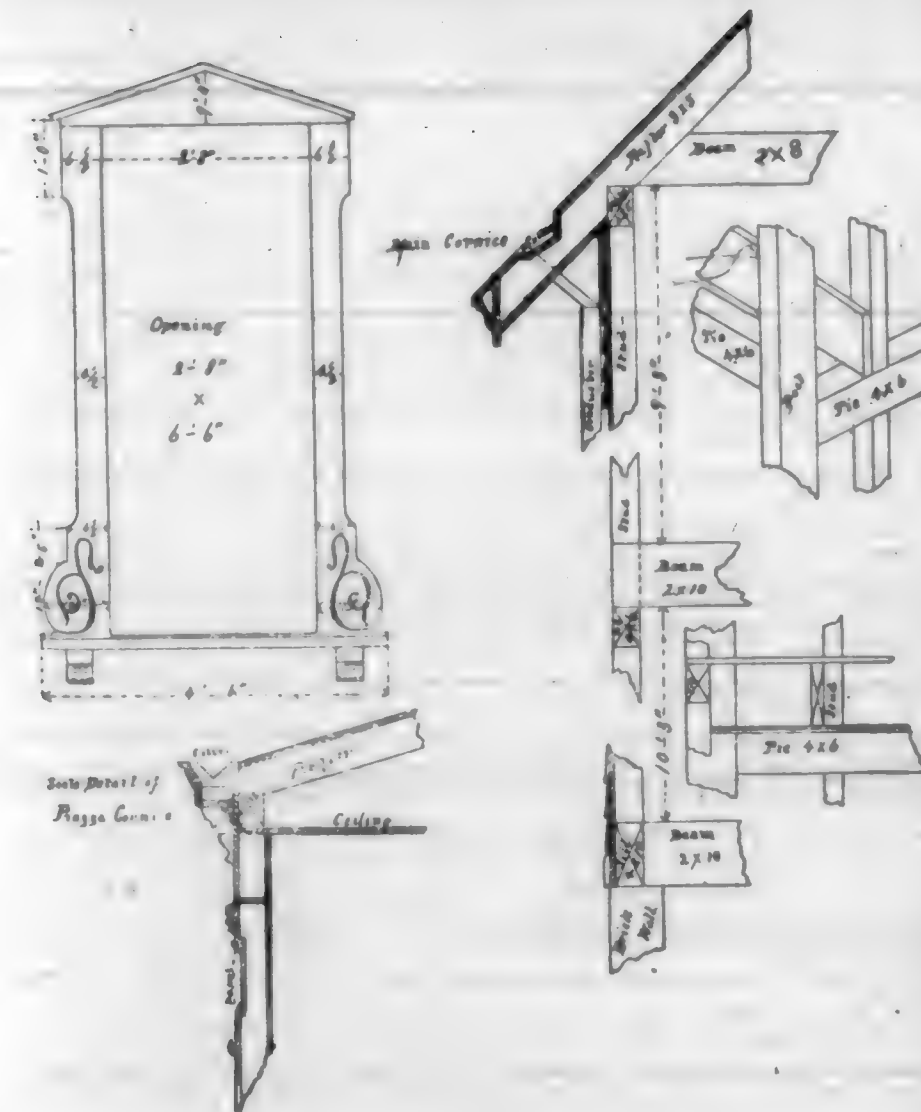
FIRST STORY PLAN



A
DESIGN
FOR A
Double Dwelling
HOUSE



SECOND FLOOR PLAN



FOR DESCRIPTION SEE PAGES 180 AND 182.

(Concluded from Page 180.)

mings. Shingle roofs are often painted a deep red of dull tone, but the coloring soon gets dark from weathering. Venetian red, burnt umber, and lamp-black make a good mixture for this purpose. One author observes, the darkened or dulled scales of color are to be preferred to pure tints. The last require to be produced by white, and are apt to be weak and sickly in expression. Sombre coloring gives a character and dignity which light tints fail to produce. The powerful contrasts of complementary colors are generally less pleasing than a harmony of coloring, that is, where the normal colors are darkened or dulled by mixing with black or gray. According to such a treatment, the preservation of the same character is observed throughout the composition, and the hues and tones have a relation with each other. In other words, the most pleasing coloring for external purposes is that where the contrast produced is that of tone. Such a harmony never wearies, like that produced by crude complementary colors.

It may interest my readers to learn of some protection to iron, in building, from rust. It seems that some French engineer observed that several chains embedded in mortar for a number of years were in no way affected by rust. It was in a bridge that he noticed this peculiarity; so he investigated and found that iron does not rust in water in which are dissolved small quantities of caustic alkalis, or alkaline earths, which neutralize every possible trace of acid. Following up this fact, paint has been made containing caustic alkaline earth. Although a thin coat of paint cannot contain so much alkali as a thick bed of mortar, the alkaline action will still have an effect so long as the coating has a certain consistence. Under any circumstances these new paints will be free from active acids. They are called Riegelman's paints, and have not yet, I believe, been brought to this country.

REMARKS ON THE ABOVE.

We have given the article just as received from our correspondent. Many of the materials specified would not be applicable to this section of the country. The cost mentioned is far below the price for which the building could be erected in this city. With specifications made in keeping with materials and work necessary to complete plan as usually called for in buildings of this kind, the cost would not be less than \$3,700, and probably \$4,000 would be nearer the true figure.

CHICAGO is the greatest lumber market in the world. The single item of sawed lumber received there in 1881 would lay an inch flooring fourteen feet wide round the earth at the equator. The amount of lumber manufactured in the three States of Michigan, Wisconsin, and Minnesota during 1881 would lay such a floor fifty feet wide.

All new subscribers for 1884 will receive the balance of this year free.

American House Carpenter. Price \$5.00.

Chats With Clients.

"THE fact is, I want a house that is totally different from any other house that was ever built."

"Totally different?"

"Yes, absolutely unlike anything that ever was seen on the face of the earth."

"You are an extraordinary man, and have an extraordinary family, I suppose?"

"Well, no, I can't exactly say that, but I'm sick of this everlasting sameness, and I want something that will sort of make people open their eyes and wonder what kind of a fellow it is that lives in such a house. I tell you there's nothing like a little originality in the world."

"You want the house to suit your peculiar needs and circumstances?"

"That's it precisely. I want it to fit me just like a hat or a pair of boots. If I want a suit of clothes made I don't send another man to be measured, I go myself. Something with a house. If it don't fit me I can't live in it with any comfort. Now, you know I'm not exactly like anybody else; I'm not even a twin. Consequently my house ought to be—it ought to be—"

"Totally unlike anything else ever seen on the face of the earth."

"Perhaps that's putting it a little strong, but you know what I mean, at least you ought to. If you can't give me anything new, why then I don't see the need of having any plans."

"What do you say to a house of one room?"

"One room! That wouldn't answer at all. We must have about the usual number of rooms, of course."

"And of about the 'usual' size?"

"Yes."

"Not much chance for originality there."

"Can't you arrange them in some novel way?"

"Possibly. How would it suit you to set them all in a row, or around in a circle, or one above another—tower of Babel fashion—that would be novel in a dwelling-house."

"Altogether too much so. But I wasn't thinking so much about the inside; that of necessity must be similar to other house-keeping establishments."

"Oh, I understand, you wish to appear to be original; that's easier still. Build a high basement of white birch logs with the bark on, the first story of anthracite coal laid in red mortar, second of railroad ties painted blue, and shingle the roof with tin pans, use empty flour barrels for chimneys, get the top of an old 'one-horse shay' for a front porch, and hang all the window curtains on the outside."

"Oh, fie! you're making fun of me. I want something sensible and practical, but not exactly like the common run of cheap houses."

"Why didn't you say so! Originality, like the true poet, is born, not made; unless it springs from an honest expression of your needs and circumstances, and a simple endeavor to meet them in a downright rational

fashion, it will be a sham. Arrange the rooms as you want them, taking into account the location and outside surroundings as well as the internal needs, but without any special anxiety concerning the exterior. Build the walls of the first story of good, honest, natural stones, which abound on your farm. Cover the second story, which will be of wood, with cypress shingles, oiled, but not painted, and the roof with red tiles. If the total result lacks novelty, you can console yourself with the reflection that commonplace obscurity is preferable to conspicuous deformity.

"The materials that I have mentioned are all easily obtained; they are unobjectionable in point of economy and durability; they are especially suitable for the rough and rugged location where the house will stand, and will surely look well unless you force the structure to make false pretenses for the sake of challenging the stupid wonder of your neighbors."—*The Builder.*

Great Pyramid Hieroglyphics.

EDITORS ARCHITECT: In your September issue, the question is asked why the Great Pyramid should be entirely barren of hieroglyphics, in a country where every object of interest seems to be covered with them. From a careful study of the works of travelers and historians who have made this grand monument the subject for their most careful consideration, I find that originally it was beautifully cased and covered with hieroglyphics. According to the Hindoo records, it was "cased with colored marbles," which at least is probable, as fragments of marble and granite were found among the debris.

Herodotus states: "On the outside were inscribed in Egyptian characters the various sums of money expended in the progress of the work." In Wilkinson's Hand Book of Egypt we find that "it was covered with a smooth, inaccessible casing." Dean Stanley adds: "It also seems that these smooth outside were covered with sculpture."

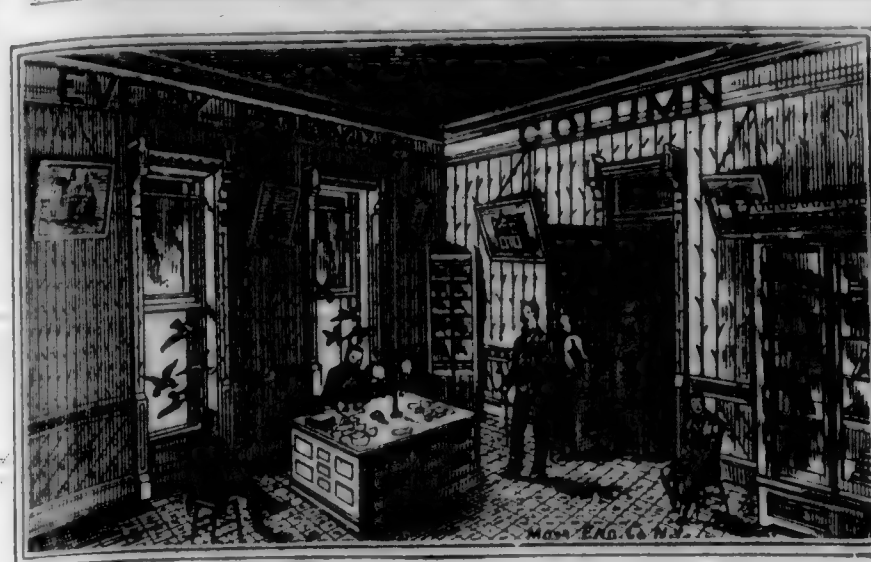
Dr. Shaw says: "It was incrustated all over with the finest granite marble."

The above opinions are confirmed by Abdel-Lateef, who states that "the polished exterior stones were covered with writing, which, if copied upon paper, would fill more than ten thousand pages."

As a settlement of the dispute upon this subject, Col. Howard Vyse, in 1837 actually discovered two of the casing-stones *in situ*: and on the Pyramid of Chephren, near by, more than ten thousand square feet of the original casing may still be seen.

It is a historical fact that the casing-stones of the Great Pyramid were removed in A. D. 1166, by order of Sultan Saladin, to build his citadel at Cairo. Yours truly, G. F.

Should this Journal be received by any Subscriber who does not want it, or beyond the time they intend to pay for it, let them not fail to write us direct to stop it. We will not knowingly send the paper to any one who does not wish it, but if it is continued through the failure of the subscriber to notify us to discontinue it, we shall positively demand payment for the time it is sent.



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

EDITOR ARCHITECT: Will you please give me information through the columns of your journal upon the following queries: What are the wages of carpenters in San Francisco? How long do jobs last? What chance would a stranger have in your city of getting steady employment? How long does your rainy season last, and its effect upon the time of mechanics? By answering the above you will greatly oblige not only myself, but several others, who desire to locate in San Francisco.

Yours respectfully, C. V. TOTILL, Chicago.

Wages depend altogether upon the skill and activity of the man. A stranger would perhaps have to be satisfied at first with \$3.00 per day. This rate could be raised in a short time by carefully observing the style in which work is done, and noticing the different finishes used in various houses, and the manner in which they are put on. Even a first-class mechanic from the East would find it necessary to devote time and study to the business, as done in this city, in order to obtain the full rate of wages. Three to four dollars per day is the ruling price, foremen getting from 50 cents to \$1.00 per day advance on these figures.

A stranger, if he be able, intelligent, and competent, would find but little trouble in securing work.

The length of a job depends somewhat upon the man with whom you get employment. Some contractors keep a gang of men in steady work nearly through the entire year. It takes from three to six months to erect and finish a building of average cost, say from \$5,000 to \$20,000.

Eastern mechanics have an erroneous idea in regard to our rainy season. It generally commences with a few showers in September. October passes, with a few rainy days. During the present season, up to the 1st of November, about 2 inches of rain have fallen. November may be said to be our Indian Summer, some of our most pleasant weather occurring between the 1st of Nov. and Christmas. From the latter part of December to April, it is wet, off and on, same as any other place, but very seldom more than three days at a time being rainy. Snow is seldom seen in San Francisco, and our winter season is about the same as in any other place of the same

latitude where snow is not found at this time of the year. If you are lucky enough to get on a job that is just housed in before the rainy season gets fully started, the chances are that you will lose no more time than you would in any other State under similar conditions. There is almost a complete absence of snow, and with the thermometer seldom below 30° above zero, we think there are but few places which offer superior advantages to first-class workmen.

Items of Interest to Draughtsmen.

WARM water is better than cold for rubbing up Indian Ink.

WHEN it becomes necessary to trim a piece of rubber, it will be found that the knife will cut much more readily if dipped in water.

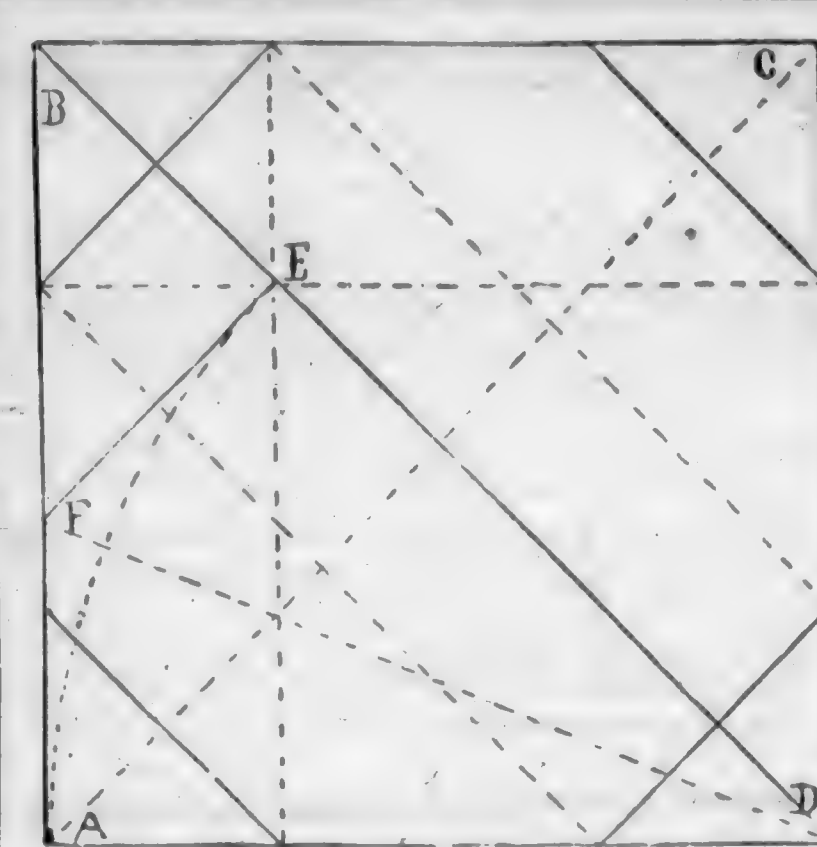
WHEN paste is used to fasten papers to a board, both sides of the paper should be dampened, as the paste takes longer to dry.

IN sharpening pencils, be sure the knife-blade has a good edge. Many a pencil has been half cut away on account of the blade being dull, on account of the undue pressure necessary.

STEAL bread makes an excellent means of cleaning up a drawing. It will hardly remove pencil lines of any strength, but it clears up the surface beautifully. Avoid the crust, as it may dent and scratch the paper when rubbed upon it.

IN selecting a pen, care should be taken to see that the nibs are of the same length, and that they are of sufficient thickness. In some pens the metal is so thin that the nibs really cut into the paper, and another disadvantage is, that in using the very moderate amount of pressure necessary to keep the back nib against the ruler, the two surfaces of the metal become nearly in contact, and the line becomes uneven. A fine pen will not necessarily make fine lines; a pen of medium size, if in order, will work as finely, and the larger handle is more convenient to hold.

It has been a mystery to some people why the dark wood so highly prized for furniture should be called "rosewood." Its color certainly does not look much like a rose, so we must look for some other reason. An exchange explains that when the tree is first cut, the fresh wood possesses a very strong, rose-like fragrance; hence the name. There are a half dozen or more kinds of rosewood trees. The varieties are also found in South America and in the East Indies and neighboring islands. Sometimes the trees grow so large that planks four feet broad and ten feet in length can be cut from them. These broad planks are principally used to make the tops of piano-fortes. When growing in the forest, the tree is remarkable for its beauty, but such is its value in manufacturing as an ornamental wood that some of the forests where it once grew abundantly now have scarcely a single specimen.



NEWARK, N. J., October 13, 1883.

EDITOR CALIFORNIA ARCHITECT AND BUILDING NEWS:—Fig. 1 exhibits the operation of finding the sides of an eight-sided polygon, and also the angle to mitre the sides.

To find the sides of an eight-sided polygon, draw the square A B C D and E equilateral and equiangular; join D B. From the point D as a center, with D A as a radius, describe an arc, cutting D B in E. Then E B equals the side of the polygon, and E F D equals the angle to mitre the sides.

By the use of the square to mitre the sides, place the square with E D on the blade, and E B on the tongue; mark from the latter for the angle required.

By calculation—Let E D equal 18x18 inches, equal 324 plus 324 inches, equal 648 inches, square root of which is 25.4558 inches, minus 18 inches, equals 7.4558 inches, or 7 and 7-16ths inches equal E B.

By proportion—7.4558 inches :: 18 inches :: 7.5 inches; 7.5 x 18 inches equal 135 inches; divided by 7.4558 inches equal 18.1067 inches, or 18 and 3-32d inches equal E D.

I am yours, L. D. GOULD.

Wheeler's Patent Wood Filler.

A NOTABLE progress has been made in the appearance of the different finishes used in a building, since the introduction of this celebrated preparation. By its use the pores of the wood are filled so that a beautiful smooth surface is obtained which could not be had without its use. Although it seems to have been originally designed more especially for hardwoods, it has been found by actual test to be adapted to the softer redwoods and fir, so generally used on this coast. For curly redwood it has no equal, as it brings out the grain of the wood better than any other article of its kind. It is also being extensively used by our piano and furniture manufacturers. It can be obtained from all the principal dealers in paints, etc., on the coast.

In-Doors and Out.

A NEW publication, devoted to sanitary and rural improvement, has made its appearance on our desk. Its items on Healthy Homes and Beautiful Surroundings are decidedly unique in their originality. The price has been fixed at 50 cents per year. The office is at 119 Pearl Street, New York.

Popular Fallacies in Regard to Ventilation.

By Dr. Chas. R. Dryer, of the Fort Wayne College of Medicine.

The first and great popular fallacy in regard to ventilation is that it needs no special attention. This is a more serious error among the well-to-do than among the poorer classes, inasmuch as the houses of the former are more nearly air-tight. With solid brick walls, double-sashed windows, weather-stripped doors, and a base-burning coal stove, the exclusion of pure air is carried to the utmost extent. This condition is happily somewhat relieved by the use of open coal grates. But how many fine houses does the physician enter without noticing the close, foul odor, and the stifling air which comes from over-heating and poor ventilation? In such rooms he finds nervous, headachy women, and pale, irritable children, suffering from colds the winter through. Such families need judicious instruction that respired air contains one of the most virulent poisons known, and that dry and overheated air is debilitating and irritating, leaving the mucous membrane sensitive, to be inflamed by every breath of the natural atmosphere.

The second popular fallacy is that the poison of respired air is carbonic acid.

This is an example of superstition at the "survival" in science of an idea long after it has been proved to be false. It is perpetuated in school text-books and popular treatises innumerable. Indeed, correctness of statement upon the subject is this rare exception; gross error the rule.

Carbonic acid gas is no more poisonous than water; animals immersed in it die just as they do if immersed in water, and for the same reason, viz., want of oxygen. Birds have been made to live in an atmosphere containing 35-40 per cent. of pure carbonic acid, and about an equal per cent. of oxygen. Yet when the carbonic acid of respired air rises to one per cent. that air is very dangerous poison. The solution of this puzzle is that respired air contains a very small proportion of poisonous organic matter, which is constantly exhaled from even the healthiest lungs. Its exact nature has not been determined. It is the source of the foul odor so characteristic of badly ventilated rooms. The air from the exit of pipes of a crowded hall darkens sulphuric acid, decolorizes potassium permanganate, and causes water, or a sponge saturated with it, to putrefy. This poisonous matter is produced in quantities proportionate to the amount of carbonic acid, hence the quantity of the latter is an indicator of the relative quantity of the power, and carbonic acid should never be allowed to accumulate in occupied rooms to the extent of seven-tenths of one per cent.

The third popular fallacy is that the most impure air accumulates near the floor of the room. This false idea has probably arisen from the fact that carbonic acid is more than half as heavy again as air, and can be poured

from one dish to another like water. Although this is true when both gases are at the same temperature, a very little difference of temperature is sufficient to reverse these conditions. Respired air issues from the nostrils at a temperature of nearly 100° Fahrenheit, and is lighter than the outer air at 70° or 80°. Again, the temperature of the body is nearly 100°, usually much above that of the surrounding air. This is sufficient to create an upward current rising from the body of every person in the room, just as the heated air rises above a hot stove. If to these influences be added the more powerful action of a stove, register, or other heating apparatus, it will be understood how the impure air rises and accumulates very rapidly near the ceiling. This can easily be proved by experiment, such as placing candles at various heights. The upper one will burn much more dimly than the lower. At the same time the cooler air from the floor moves toward the stove to enter it, or to join the current rising from it.

The fourth popular fallacy is that the outlet for impure air is best placed at the top of the room, and the inlet for pure air at the bottom.

This may seem a contradiction to the third fallacy, but is not, for several reasons. An opening into a cold place at the top of the room is often not an outlet at all, but simply allows cold air to drop down into the room. If it be an outlet it is very wasteful of heat. The air of the room is heated at some expense, and then turned out of doors as soon as possible. If the inlet be near the floor, there will be a cold draught upon the feet of the occupants of the room, and although such an arrangement may ventilate, it will be attended with such disadvantages as to render it highly objectionable. Wherever possible, there should be an outlet near the floor into a heated flue, in which the upward draught is sufficient to constantly draw the cooler air off the floor. An open fire flue is the most efficient outlet that can be devised. Instead of that, a direct draught stove in which a door above the fire may be opened, answers the purpose admirably. The inlet may be for pure heated air through a register near the floor on the opposite side of the room from the outlet, or for pure cold air by an opening directed upward behind the stove, and above the heads of the occupants of the room. Thus all cold draughts will be avoided; the pure cold air will mingle immediately with the impure air near the ceiling, and the room will be equably and economically warmed and efficiently ventilated. June air may be had in January, and the children will be as merry and rosy as the street children, who have nothing but oxygen to make them merry.

THERE are churches and mosques in Palestine on the roofs of which you could stand from two to five thousand people.

All new subscribers for 1884 will receive the balance of this year free.

How to Cleanse the Waste Pipes.

ONE of the most frequent and trying annoyances of housekeeping, as many can testify, and which a writer in the Philadelphia *Ledger* freely asserts, is the obstruction to the free, quick outlet of the waste water of the wash-stand, the bath-tub, and the kitchen sink.

This is caused by a gradual accumulation of small bits of refuse material, paper, rags, meat, bones, or other offal, which check and finally entirely stop the outflow of the waste water, and then the plumber is called to remove the stoppage with his force pump.

Sometimes this is effective; at others the offending waste pipe is cut out and a new one put in its place at considerable cost.

But the plumber is not always near at hand or free to come at one's call, and the matter demands immediate attention. A simple, inexpensive method of clearing the pipe is as follows: Just before retiring at night pour into the pipe enough liquid potash lye of 36° strength to fill the "trap," as it is called, or bend portion of the pipe just below the outlet. About a pint will suffice for a wash-stand, or a quart for a bath-tub or kitchen sink. Be sure that no water runs into it till next morning.

During the night the lye will convert all of the offal in the pipe into soft soap, and the first current of water in the morning will remove it entirely, and leave the pipe as clean as new. The writer has never had occasion, in over thirty years' experience, to make more than two applications of it in any one case.

A remarkable example of the value of this process was that of a large drain pipe which carried off the waste of an extensive country house, near Philadelphia, and ran under a beautiful lawn in its front. A gallon of the lye removed all obstruction in a single night, and saved the necessity of digging up the pipe and disfiguring the greensward of the lawn, as the plumber intended until advised of this process.

The so-called potash lye sold in small tin cans in the shops is not recommended for this purpose; it is quite commonly misnamed, and is called caustic soda, which makes a hard soap. The lye should be kept in heavy glass bottles or demijohns, covered with wicker work, and plainly labeled; always under lock when not in actual use. It does not act upon metals, and so does not corrode the pipes as do strong acids.

In the whole world there are no known redwood forests outside of California. It is a significant fact, however, that one-fourth more finished lumber, suitable for interior housework, can be obtained from Humboldt timber than from timber grown in any other county in that State. Unlike many other kinds of trees, redwood stumps can be utilized to profitable advantage. For veneering purposes, slices from these stumps are said to be highly prized, and may probably in time prove almost invaluable.—*American Lumberman*.

American House Carpenter. Price \$5.00.

