

Exterior Stains.

[From the American Architect and Building News.]

STAINS for exterior use may be divided into two classes: first, those in which the coloring material is actually dissolved in the vehicle; and second, those which are colored with a very finely divided insoluble pigment, mixed with sufficient fixative to make it adhere firmly. Stains of the latter class are therefore merely very finely divided paints. The first class where applicable, is, in the writer's opinion, superior to the latter, as the grain of the wood in the clapboards or shingles is rather more distinctly and vividly brought out. On the other hand the number of colors is very limited which admit of this application. A few of the colors of this description which have been thoroughly tried by the writer may here be enumerated.

American Asphalt.....	Brown
Trinidad Asphalt.....	Brown
Resin Asphalt.....	Reddish Brown
Aloes Gum.....	Greenish Yellow
Yellow Gum.....	Light Yellow
Alizarine.....	Red
Annotto.....	Red
Eosin.....	Red
Dragon's-Blood.....	Red
Azo Yellow.....	Yellow
Ammonia Yellow.....	Yellow
Methyl Green.....	Green
Malachite Green.....	Green
Nigrosin.....	Blue Black

It is useless to extend this list farther, for the writer has tried almost all the known colors that can be brought into solution in oil. Unfortunately, of this list only the first six are upon careful trial sufficiently fast to be used for exteriors, and of these alizarine is too expensive at present to admit of use except for some special occasion where price is not considered. The remaining ones would many of them answer for interiors, but the combination of rain and sunlight disposes of them outside too easily. We are therefore limited to a very narrow range of colors of this character, and must turn to the second class of colors, viz., those consisting of insoluble pigments with a fixative to hold them on to the fiber of the wood. With these we can obtain almost any desired shade, and if properly ground pigments and suitable vehicles are used, effects can be obtained almost equal to the colors of the first class in respect to showing the grain of the wood. The writer has found the best pigments to be pure oxides of iron (exceedingly finely ground) for the reds, yellows, and browns; pure chromate of lead for lemon yellow; mixtures of these with black and blue pigments for greens and olives. The greatest care should be used in selection of pure and very fine pigments. For a vehicle the best seems to be a purified creosote oil, which practically renders the wood imperishable and is moreover comparatively inexpensive. Linseed oil may of course be used, but it has one difficulty which every one must remember who has seen a lot of old painted shingles taken down. Just behind the butt of the shingle or clapboard is seen a deeply corroded or decayed spot upon the under side, where the

water has been held in between that shingle and the next by the paint, which forms a *cul-de-sac* in which the moisture collects and causes the decay; this is due to the "skin" formed by the drying of the linseed oil, and is not to be found if creosote oil be used in place of linseed. In conclusion the writer would say that he thinks the best way of treating either a clapboard or shingle is to dip about two-thirds of it in the stain, which should be kept well stirred. It should then be allowed to drain back into the pan or barrel by being put into a wooden trough tipping backward, and then should be thrown out on to the grass or clean ground to dry for three or four days. Many houses are built in which the shingles are stained and the clapboards painted. The result would be much finer if both were stained, for stain has the effect of making the whole side of a house look as if it were treated in detail, so great is the beauty and variety of the grain of the wood, while paint reduces the whole to a monotony in which the color *en masse* is the only effect. Any inquiries which the writer can answer will receive the attention of

Yours sincerely,

CHEMIST.

Builders Guide. Price \$2.00.

The Practical Advantages of Trade Journals.

WHAT commerce does to stimulate the industries of the world, the trade journal does for the trade it represents. It would be difficult to name a trade of any importance which is not represented by its journal. The reason of this is clear enough to those who know how much absorbed good workmen are in their calling, and how anxious they are to know what is going on in their own immediate world—what improvements and developments are taking place; what is new, and what becoming obsolete. As the daily paper presents to the general public reports of notable events in the social, political, and commercial world, so the trade journal culls all facts bearing on the interests it represents, and furnishes them to its readers.

The importance of trade journals is indicated by the fact that they are wholly supported by the trades that each represents, and cannot be said, to any appreciable degree, to be read by the outside public. And this condition of things is quite natural, because every one takes the greatest interest in what most intimately concerns himself, and the journal of greatest value to the tradesman is that which has something instructive and encouraging to say about what he is doing, and about what others in the same trade are doing. Some shrewd observers of human nature maintain that the nature and quality of a person's reading, and the departments of a paper to which he turns with greatest eagerness, are sure indexes to his avocation.

Notwithstanding the cordial support given to trade journalism in this country, it may be said that it is not wholly understood or appreciated by those most interested. Much more

could be made of it if its readers were only to consider themselves as contributors and correspondents. There is probably no member of a trade or profession who does not wish to know something or have some doubt removed. There are probably few, whether employers or employed, who have not discovered something in their special calling which, if known, would be of practical value to those of his own trade. Many of the best workmen hesitate to take up the pen to enlighten others, though they are willing to do so, and know that they have ideas which would be helpful to their fellows, simply because they cannot turn out their sentences in a style which they consider proper for a widely-read paper. This is largely due to false modesty, and perhaps through indulging in many a brilliant idea, and often a valuable invention or suggestion of real practical utility is buried in a man's bosom, and dies with him. It is the idea, and not the language which clothes it, that is important. It is the diamond, with its bright sparkle, and not the setting, however rich, that attracts the eye. So the tradesman who has developed anything new in thought or in actual experiment, is in duty bound to give currency to it for the benefit of his fellow workmen, where this can be done without too great pecuniary sacrifice. The gospel parable reproves him most severely who wrapped his talent in a napkin and buried it.

If all artisans and mechanics were to consider their own trade journals as the storehouse for their ideas, and a free exchange for all communications affecting their calling and interest, every journal of this class would grow in importance and general interest. It would be a means of improving their condition, enhancing their skill, stimulating original thought, awakening a more friendly feeling among mechanics, and possibly effecting a better understanding between employers and employed.—*British and Colonial Printer and Stationer.*

"First Class."

A LARGESHARE of the misunderstanding and consequent confusion and trouble in the world seems to come from the lack of an absolute standard of excellence. This is especially the case in matters connected with building. It is a never-ceasing source of amazement to tyros that the estimates, made by thoroughly good, responsible, and intelligent builders upon any given piece of work, for which plans and specifications have been prepared by equally intelligent and experienced architects, should vary so widely. It is by no means an uncommon thing for the estimates of different contractors to vary from ten to thirty per cent., and instances are not wanting where one builder has offered to do work for half the price proposed by another. But a short time ago estimates were made upon a dwelling house in this vicinity, the plans for which had been prepared by one of the best firms of architects in the country, and the lowest figures were \$22,000, the high-

est \$37,000. A still greater variation occurred in estimates for finishing certain departments of a public building whose history is familiar to many people, the highest being between \$42,000 and \$43,000, the lowest between \$18,000 and \$19,000; these estimates were based upon the same plans, the same specifications, and there is no reason to doubt that the men who made them understood the same thing. It certainly is difficult, even for professional skill, to account for these differences, yet it is a part of the experience of every one who has to do with building or with preparing plans for the same. To a large extent this is owing to the lack of thorough training, that is, to this want of an absolute standard of excellence.

"First-class" work does not mean the same thing to men who are differently educated, and, although the phrase is constantly occurring in the written description of work, it is indefinite in its practical application. To one who has had the advantage of a thorough training and practice upon the best kind of cotemporary work, it has a distinct meaning with reference to what he has already done; but to one who has had no such experience, and whose best work would seem to the other entirely unworthy and inexcusable in a given case, it means something entirely different; i. e., although both read the same words, yet judged by the same standard one agrees to perform that which is many times greater in value than the other. Referring to the details of work it is impossible to estimate the value of the labor required to execute anything which depends upon the skill and intelligence of the workman. A spindle, revolving a fixed number of thousand times a minute, may be depended upon to turn out a fixed amount of yarn in a given time. It is not possible to measure the capacity of a workman in the same way. He may drive a nail with two blows or three; he may smooth a board or straighten a joint with five strokes of the plane or ten; he may cover a square yard of lath with plastering or of clapboards with paint in five minutes, or it may take him ten; and this variation carried out through all the details makes the difference between the \$5,000 or the \$10,000 of the aggregate estimate. Hence it follows that the greatest uncertainty usually appears in those structures or parts of a building in which manual labor is the chief item of cost, and the buildings in which this occurs are not alone those of elaborate and expensive workmanship, but those which deviate in their style and manner of construction from conventional and familiar modes. This latter fact accounts for another peculiarity that is often referred to as one of the unaccountable points in building; that is the difference between ready-made houses and those which are built from special plans. It is easy to duplicate the cheap, every-day styles of building—those with which every mechanic is familiar in every part, from the thickness of the cellar wall to the pattern of the scroll-sawed

bracket—but a house of precisely the same size, precisely the same amount of material, and requiring actually the same amount of labor, will be found more difficult to estimate in proportion as it appears to contain more unknown quantities—not necessarily larger or more complex quantities, but they are unfamiliar, and neither contractor nor workman undertake them with as much confidence and expedition. The practical remedy, as far as it appears at present, for this unsatisfactory state of affairs,—for it is unsatisfactory, begetting distrust and disappointment continually,—is the more thorough training of workmen, the dissemination of such technical skill as will give to mechanics and builders not only better facility in doing work, but a more reliable standard of excellence,—in brief, technical, industrial education. It follows, without the need of saying it, that when contracts must be made the only safety lies in keeping clear of all but thoroughly competent and reliable contractors.—*The Builder.*

Village Builder. Price \$10.00.

Rights of Owners of Buildings.

IN referring to the right of owners of buildings, we have not in view such covenants as they may make with tenants, and in which they are secured, but those which exist for compensation for damages inflicted at the instance of neighboring owners. The most unquestioned claim exists where the latter so carry out excavations as permanently to weaken foundations or cause subsidence of adjoining building, thus affecting the value or rentable value of the property, and possibly endangering its maintenance. We may state at the outset that owners of buildings in this country have fewer rights than those generally possessed by their class abroad. The laws in England and on the continent are singularly minute and exacting as to what constitutes special damage, and builders are proportionately embarrassed. In England, the erection of a building can be prevented, so far as it will obstruct the light or interfere with the view from the windows, should such windows have existed for the term of twenty years. These "ancient lights" are jealously protected by the courts, even though pertaining to premises old and dilapidated. Such a legal provision would never consort with our city improvements. On the other hand, as respects the effect of the erection of one building on another, the Supreme Court has held that no compensation can be obtained for indirect damage. It is not even clear that the damage occasioned to houses by the vibration caused by the running of trains on the elevated railways, constitutes a claim for compensation on the part of aggrieved parties, the cases in which they have taken action being yet unsettled among the appeals to higher courts. An instance of a clear case, allowing of compensation, is when the preparation of the foundations of a building causes damage to the neighboring property under different owner-

ship, by subsidence, owing to excavations being carried too low down; or carrying these on beneath such property without proper underpinning, or neglect sufficiently to shore the side wall; or, furthermore, when by injudicious or overcharged blasts detriment of various natures result. But where a building is entirely removed, so as to take away the support which the adjoining building, owned by another party, has enjoyed, the question as to whether a suit for damages can be sustained becomes complicated, for a reason set forth by the *Building News* in treating of damage to buildings, English rulings on this point being followed.

"In theory, the law supposes, for the purpose of a claim, the owner of the servient house to have been acquainted with the fact that his own building was necessary for the support of the adjoining premises—a kind of knowledge that cannot always be brought home with any direct evidence."

This is evidently a point difficult to establish. Houses in streets have very often been built together (afterwards falling under different ownership), and each most probably requires to some extent the mutual support of another, and in such a case the owner of a house has a right to look for support to his neighbor, as the possessors have in law a presumed reservation and grant, even although the original owner parts with some of the houses. The frequent need for taking down internal cross-walls, which perform the office of struts, and for excavating to a greater depth for drains and other purposes than the foundation of adjoining premises, underpinning operations and the like, call for special consideration on the part of architects, that they do not weight builders with undue responsibilities. We can hardly take an extended walk in portions of New York where excavations are being made, or foundations laid, without meeting with instances of sheer recklessness. We must allow that house owners of New York, and it is true probably of those of other cities, are not very forward to assert their rights. They take quietly cracks, and possibly serious settlements, have their doors thrown out of square, and windows fixed without protest, though decisions at law have shown that the building owner is liable. If the latter excavates below a neighboring foundation, he is bound to underpin it, for the first to build and take up his lease is entitled to the support of the adjoining land.

Many buildings are erected depending on lateral pressure, and the law provides a remedy if such support is withdrawn. It is the business of the architect to find out the position of adjoining parties. A landlord owner is responsible for damages to adjoining parties in taking down buildings and walls, the neighboring building being entitled to the amount of support that previously existed, if this support be essential to solidity. There are a great many ways in which property may be interfered with, and the cases in which these have been made the subjects of lawsuits are widely

scattered. The circumstances cited, however, so greatly vary, that it would answer no purpose to specialize them. It may be remarked, generally, that owners of buildings have more rights than, as a general rule, they have chosen to avail themselves of; but this forbearance, viewed from a moral standpoint, should constitute an additional incentive to architects to avoid negligence, and to builders to make the necessary provision against the consequences likely to arise from want of precautionary works.—*Building.*

Our Mammoth Supplement.

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Wood Finish.

THE patented preparations known as wood fillers are prepared in different colors for the purpose of preparing the surface of wood previous to the varnishing. They fill up the pores of the wood, rendering the surface hard and smooth. For polishing mahogany, walnut, etc., the following is recommended: Dissolve beeswax by heat in spirits of turpentine until the mixture becomes viscid; then apply by a clean cloth, and rub thoroughly with a flannel or cloth. A common mode of polishing mahogany is by rubbing it first with linseed oil, and then holding trimmings or shavings of the same material against the work in the lathe. Glass paper followed by rubbing also gives a good luster. There are various means of toning or darkening woods for decorative effect. Logwood, lime, brown soft soap, dyed oil, sulphate of iron, nitrate of silver exposed to the sun's rays, carbonate of soda, bichromate and permanganate of potash, and other alkaline preparations are used for darkening the wood; the last three are specially recommended. The solution is applied by dissolving one ounce of the alkali in two gills of boiling water, diluted to the required tone. The surface is saturated with a sponge or flannel, and immediately dried with soft rags. The carbonate is used for dark woods. Oil tinged with rose madder may be applied to hard woods like birch, and a red oil is prepared from soaked alkanet root in linseed oil. The grain of yellow pine can be brought out by two or three coats of Japan much diluted with turpentine, and afterward oiled and rubbed. To

give mahogany the appearance of age, lime water used before oiling is a good plan. In staining wood, the best and most transparent effect is obtained by repeated light coats of the same. For oak stain a strong solution of oxalic acid is employed; for mahogany, dilute nitrous acid. A primary coat or a coat of wood fillers is advantageous. For mahogany stains the following are given: Two oz. of dragon's blood dissolved in one quart of rectified spirits of wine, well shaken; or raw sienna in beer, with burnt sienna to give the required tone; for darker stains boil half a pound of madder and two oz. of logwood chips in one gallon of water, and brush the decoction while hot over the wood. When dry, paint with a solution of 2 oz. of potash in one quart of water. A solution of permanganate of potash forms a rapid and excellent brown stain.—*Mechanics.*

What Shall We Stand Upon?

A FEW years ago the architect, in writing specifications for his houses, had very little difficulty in describing the floors. Any good, smooth lumber that was well seasoned, would lie still, and which would admit of tacks being driven in and pulled out twice a year was all that was required. Now the description of the parquetry, borders, and inlays, the matching, the woods, the grain, the texture, the provision for rugs and hearths and registers, make the planning and description of the floors an important and sometimes a complicated affair. The demand for carpets still continues, but there is undoubtedly an increased use for floors that are intended to be used wholly or partly uncovered. This is partly owing to the caprice of fashion, which at present inclines towards rugs, and partly to a conviction that bare, clean floors are preferable on sanitary grounds. Of the woods that are most available for such floors probably none is used more than southern pine, and if this is of the best quality it is very satisfactory and not expensive. The poorer kinds are liable to splinter, which is a serious fault. Maple, birch, and cherry are admirable for this purpose on account of their fine, smooth, firm grain, and the readiness with which they take on a hard polished surface. Quartered white oak is irreproachable. It is needless to say that for a perfect floor—that is a smooth, hard, and unbroken surface—it is indispensable that the material should be perfectly seasoned and also that the narrower the separate pieces are the less it will be affected by atmospheric changes; the less liable will it be to develop cracks and wrinkles as it grows old. It is also very important that the lining floor to which it is nailed should be of well-seasoned and reliable stock. A poor foundation ruins whatever is laid upon it, and the finest hard wood floor in the world fastened to an unseasoned layer of coarse spruce or hemlock boards will no more keep in place permanently than a brick wall would stand upon a foundation of logs. Even if the lining floor is seasoned when laid it is liable, especially if the boards are wide, to be swollen by the damp weather in

summer and shrunk by the steam heat in winter, and each board will carry the separate pieces of the finished floor lying upon it. It is a very common thing to see these wide cracks in the upper floor occurring at regular intervals and indicating the width of the boards below. When the upper floor consists of narrow widths running parallel to the lining, that is at right angles to the joists, the trouble arising from the shrinking and swelling of the under floor can be obviated by laying them diagonally. As it is so common to cover the central part of the floor with a rug of some sort there is no reason why this should be made ornamental; plain, narrow strips of any smooth hard wood being all that is required. Around the edges, where the floor is supposed to be seen, a more or less ornamental border is appropriate, but as a rule the less ornament the better, or rather the less elaborate. The manufactured fancy wood floors are, as a rule, too complicated to be agreeable. They suggest puzzles and a sort of intricate but inartistic mosaic that is, to say the least, misapplied in such a position and of such materials. Wood floors are sometimes made by sawing the blocks of wood in very short pieces, and setting them endwise with the grain. Such must be laid with the utmost care, and, unless perfectly seasoned, show to the fullest extent the shrinkage. They are not liable to splinter and would be exceedingly durable, although for ordinary use in a dwelling house a well-finished wooden floor of any of the harder woods, especially covered with rugs, would probably stand the wear of fifteen or twenty generations without essential injury. There are many advantages in laying a border of finished wood around the outside of the room a quarter of an inch thicker than the center part, which is to be fitted with a carpet nailed down in the regular way; and this is likely to be preferred by those who find it inconvenient to use rugs without kicking up the corners, and who are unwilling to give up the familiar and well-established custom of regular carpets.

Among those who devote themselves to discovering sanitary faults in buildings the ordinary construction of floors comes in for a share of their disapproval. It is claimed that the cracks that are sure to appear sooner or later are constantly gathering dust and dirt from sweeping and washing, which falls between the joists, upon the lathing and plastering, and becomes a constantly increasing source of uncleanness and therefore of danger. Whoever has helped to tear down an old house or to cut holes in the floors of those that are of recent date, especially if rats and mice have inhabited the inner chambers, will not need to be told that there is an abundance of uncleanness concealed from sight. Much of this is due to the carelessness of builders who leave rubbish under the floors.—*The Builder.*

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How It Works in New York.

WHEN the plumbing law went into effect in this city and Brooklyn nearly two years ago, it was everywhere regarded as a most important departure in a novel direction in city administration. The law has now been in effect long enough to indicate its benefits. While it has not been possible to obtain exact statements of the particulars in which to-day plumbing has been improved over what it was three years ago, there is not the least doubt that a great improvement exists. It is now impossible to repeat the gross blunders which were common a few years ago. Plumbers, builders, and architects have all been forced to recognize what is essential to the planning of proper work, and it is probably true, as stated by the Health Department, that the law has gradually raised and is still raising the standard of workmanship in the great mass of houses of moderate cost.

Before this law the Health Department had practically no supervision of new work. As a result, in consequence of the fact that the great majority of houses were then, as now, built for speculation by unscrupulous men, serious sanitary defects were very common. Soil and waste pipes were not usually extended above the highest fixture; fixture traps were unventilated; joints were frequently made with putty or cement and very defective; water-closets were flushed directly from the mains; house drains were generally of earthenware, laid under the cellar floor, and often very defective; and many other practices, fraught with danger to the health of the occupants, were common.

The work of enforcing the law was at first attended with great difficulty; owners failed to submit plans and specifications, and builders failed to comply with them after they had been approved by the Board of Health. It was hard to change the prejudices of plumbers, and to make many of them see the necessity for the regulations of the Board of Health. For a time the character of the work continued nearly as bad as before the law, and it was not until the Board resorted to legal measures, and the builders began to see that the law was to be rigorously enforced, that the work showed much improvement. The successful suit of the Board in the case of the Weiher houses at Fourth Avenue and 120th Street did more perhaps to bring about a decided change for the better than any other. This was an unusually persistent and serious case of violation, in which the Board ordered the plumbing taken out and reconstructed and were sustained by the courts.

At last builders have come to see that it is for their interest to have their buildings plumbed well; they have found that it is difficult to sell or rent a building in which the plumbing had not been approved by the Board of Health. It is now a common thing for intending purchasers and money-lenders to go to the Health Department to inquire if the

plumbing of the houses they think of buying or lending money on has been approved by the Board.

Notwithstanding the great improvement in the character of the work, the number and occasionally very serious nature of the violations show the necessity for constant vigilance. During the first half of this year violations were reported in 535 houses. This by no means represents all the actual violations, for in very many cases it is only necessary for the inspector to call the attention of the plumber to the fault to have it promptly removed. On the 9th inst. there were reported in progress of construction 2,243 buildings, of which 1,023 contained plumbing on that date. The seven inspectors visit all of the latter at least once a week to inspect the work done since their last visit, and keep watch of the remainder to learn when the plumbing begins.

In justice to the plumbers of this city, it should be said that the great majority of violations are by a few men (not more than ten or twelve), who are outcasts from the trade, not members of the Master Plumbers' Society, or if members not attendants at the meetings. To the co-operation of all respectable plumbers is the success of the law very largely due.—*The Sanitary Engineer.*

How Screws Are Threaded.

SCREW threads are "originated" in the lathe usually. All lathe turning, with regular—constant—feed of the turning tool, is screw cutting, or threading; the tool cuts a spiral around a revolving cylinder.

It is evident, therefore, that by increasing the speed of the feed relative to that of the revolving cylinder, and having the point of the cutter properly shaped, a screw thread would result, instead of a paring off of the entire surface of the cylinder. All important actuating or working screws, as those for feeding on machine tools, are formed in this way, and large numbers, also, of ordinary machine screws, which when once seated are expected to remain *in situ* until the machine or implement of which they form a part is worn out.

Wood screws, as screws for fastening wood to wood, metal to wood, etc., are threaded in a similar manner, the thread being cut from the solid by a single cutter removing the material between the threads.

Large numbers of screws are threaded by dies, which may be called hollow screws, or nuts with cutting edges. These, by rotating, form the feed as well as the cutting device for threading the smooth cylindrical rod or bar. Some of these dies are worked by hand, others by power, but in either case the cut, by the modern and improved dies, is clean, and the thread is formed from the solid. The old-fashioned dies were adjustable so as to be "set up," and could be made to cut several sizes of diameters. Much of their work was done by pressure, or squeezing, and a part of the thread was "raised" instead of being cut from the solid material. There are adjustable dies

made now, but they are so formed as to do solid cutting.

There is another method of cutting threads direct from the solid, and that is by milling. It is the invention of the late Eli Horton, the chuck man of Windsor Locks, Conn. The machine is entirely automatic, the blank to be cut being rotated as in a lathe, and a rotary milling tool rotating against it at an angle adapted to the pitch of the thread desired. As the blank revolves slowly toward the cutter, the cutter revolving more rapidly forms the thread by being fed along over the blank as is the cutting tool in a lathe. The milling tool is so formed in cross section as to produce any shape of thread desired. This method is still in use by the successors of Mr. Horton to thread the steel screws of their chucks.

Threads on large cast iron screws are sometimes formed simply by being cast, and formerly there was much cheap small work of that sort in the market.

Threads may be raised by forging in dies, and some good work by this is produced. In both these cases, however, an after finish in the lathe is desirable.

For some peculiar purposes threads are formed by twisting a square or a flat bar, a common form of hand drill that has superseded the bow drill being a case in point. The stock of this drill is a bar, square in cross section, twisted, and which is rotated by sliding a loosely fitting nut rapidly back and forth over its length. A familiar instance of a screw thread of this description is the ordinary auger or bit, the cross section of which is a flattened parallelogram like a flat bar.

One peculiar method of forming screw threads remains to be mentioned. It is that of raising a thread by rolling between dies under pressure. There is a great deal of what is known as "bright wire goods" in the market, which are threaded. In many cases these threads are formed by simply rolling—one revolution, or a little more—the wire between two hardened steel plates that are corrugated spirally to form, when combined, a continuous thread. Sufficient pressure is applied during the rolling—which, however, is very rapid—to raise the metal enough from the annealed wire to make a thread. In this case the threaded portion is considerably larger than the stock or wire, at least half the depth of the thread on each side.

The threads in nuts are produced either by the "originating" method, cutting them in a lathe, by being tapped, or sometimes by being cast of soft metal, as brass, on a threaded core of hard metal, as iron or steel. But nuts are mostly threaded by tapping, running one, two, or three successive taps through them either by hand or in a power machine. Nuts of very thin material, as sheet brass for lamp tops, jar covers, etc., are formed simply by rolling between spirally corrugated rolls, a work analogous to "beading" on tin ware.—*Scientific American.*

Steel Square and its Uses. Price \$1.00.

The Influence of Natural Forms on Architecture.

NATURE has not only been the parent of our constructive and decorative art, but has fixed the sites for our ancient cities and highways. She pointed out a commanding site for a fortress or castle to defend the surrounding district. Man has taken the most easy and accessible path from the valley to arrive at the elevation. In course of time dwellings were erected on the sides of those paths, which thus became the ancient highways. And again the spiritual advisers of our forefathers would look around on Nature for a spot suitable for devotion in some lovely valley or charming elevation, surrounded with all nature's bounties, and there erect our ancient building for devotion and education, and thus form another center. Also the majestic river or sheltered spot on our coast has pointed out a site for the dwellings of men suited for their labor and enterprise: thus another center. The more we study nature the more we see her influence. She is not contracted, but casts abroad her gifts for those who seek for them. Her great principles must stand for all ages. The way we clothe them is only the fashion of the hour, so let us respect the thoughts of others and have reverence for the works of our forefathers.

There is one of nature's laws that we are very careless about, the neglect of which is causing the destruction of our stone buildings. Nature forms the stone in beds; we reverse this and make the bed the exposed face. The weather acting upon this affects the face and its bed shell off. Nature speaks very loudly to us in the appearance of our buildings. I trust we will listen to her, give attention, and stay this destruction. There is a bright future in store. Our nation is having a higher art education, and our art-workers are a more cultured people. Rapid strides have been made during the last twenty-five years. Our street architecture is more varied in design, with honest construction and decorative tone. One of our greatest living authors and art thinkers has said (I refer to Mr. Ruskin), "Do honest work, let her principles be seen. If you wish for grace and form go to the grasses, watch the opening bud and developing flower. There is nothing in life, so there is nothing in lifelessness, that has not a lesson for you to study." This is the source from which we realize pleasure in the works that have come down to us from what are called the Dark Ages. Would to Heaven we had some of their workers amongst us in this nineteenth century to stimulate us with their devotion and love for the art! It is with loving devotion that we discover her charms, examine her details, and understand her laws, thus bringing us into close sympathy with her; which, if we can realize and portray, is the secret of our art. It speaks to humanity, cheers her in desponding moments, and elevates the thoughts; no discordant sound is heard; all is beautiful and in harmony. If it influences us in our art it will help us in our contact with man to look with a smile of sympathy on his efforts, and not

with a frown of discord. We all love sympathy; it cheers us in the anxious hours of toil, and leads us to lift our souls in gratitude to the loving Hand that gave us these glorious works and endowed us with reason to analyze them.

Whatever may be our differences of opinion as to construction or decoration, I think we all try to do our utmost, so that buildings entrusted to us will speak with joyous language to a passing world, and be of such stability that when England as a nation shall not be known, when her banner as mistress of the seas is given to another, her colonies have released themselves from her grasp, and England shall be known only as a name belonging to the past, her buildings of the nineteenth century will be standing, models of the admiration of the now infant empires, and cause them to love and honor the name of Britain. But long may she continue in power, and use it with wisdom for the benefit of the civilized and uncivilized world. W. GLOVER.

Do Away with Air Shafts.

It was well enough, perhaps, for the examiner of buildings to testify at the Cambridge flat inquest that "the air shafts should have been constructed of brick, with iron shutters over the openings." It was well enough, perhaps, for the coroner's jury to recommend "that all air wells should be lined with brick or metal, thereby rendering them fire-proof." So long as air shafts are tolerated they could hardly recommend less. But why have air shafts at all? The builder of those very Cambridge flats has declared that he would never erect another tenement house excepting on a corner, because he would have to put air shafts in. Many another builder will say the same thing. It will take a little more ground and more brick to build a large tenement with narrow courts running into it, but such a building is sure to be better aired and lighted and safer from fire. To construct a brick air shaft, with iron shutters over the openings, is to largely deprive the shaft of its usefulness, and to suppose that those shutters can be left open ordinarily and closed in case of a fire is demanding too much of human nature in a time of excitement. Let the Legislature do away with air shafts altogether and require in the building law that courts shall be constructed in their stead. The Committee of Architects and Builders have learned by experience that air shafts are far more detrimental to safety than they are beneficial to health, and indeed it is questionable if they are at all beneficial to health in the long run. The committee say unreservedly that the law should insist upon courts opening directly to the air. Whatever else in the building law they may except to from their interested standpoint, we are bound to say that in this we agree with them.—*Ex.*

American House Carpenter. Price \$5.00.
Cutting Tools. Price \$2.00.
Grimshaw on Saws. Price \$4.00.
Mechanics' Geometry. Price \$5.00.

The Air of Houses.

THERE is much confusion in the minds of some people, says the *Building News* (London), with respect to the dryness or dampness of houses. An air-tight room is more or less damp, though people are generally apt to think it otherwise if there is no draught, and all the air is carefully shut out. As a general rule, we invariably find the most draughty house is the driest, as it will be generally found to be the healthiest, if not the most comfortable, in cold weather. But the air of a room, as that for an invalid, may become too dry; it may be overheated by a stove, which would become injurious to the patient. In certain cases vaporizers are now employed to give the air of the sick chamber its healthful proportion of moisture.

Mr. G. J. Symons, in a paper on meteorology, has remarked that the subject of the hygrometry of the sick room was unknown two generations ago. If, in addition to temperature, the quantity of moisture in a sick room were indicated by the hygrometer, a great deal more might be done for the invalid's comfort. It is just as easy to regulate the hygrometric condition of the sick room as its temperature, and, in many respiratory complaints, the former is even of greater importance than the latter. The hotter the air is the more water can it contain, and this condition does not appear to be apprehended by those who dwell in such rooms, or provide the means of heating and ventilating them.

Professor Tyndall found that the moisture in the air of an ordinary room absorbs fifty to seventy times as much of the radiant heat as the air does. Moisture is the regulator and conservator of the heat, and in due quantity acts like a blanket, by protecting us from a too sudden cooling or heating. The question is one, we think, worthy more attention by the sanitary builder than has been given to it. Complaints are loud against certain hot-air furnaces, as they overheat the air and render it unfit for breathing; they tend to scorch and dry the air, and to this extent they are unhealthy.

The Bulletin's Report Correct.

THE report of building improvements in San Francisco and elsewhere, appearing in the *Bulletin's* issue of July 20th, was correct, and could not have been otherwise, as the items given were taken from the columns of this journal. The withholding of proper credit in that connection is not to be wondered at, as our contemporary has a chronic ailment in that direction, and we can afford to assist it in providing matter for its readers by furnishing building intelligence for its columns.

Important to those Receiving this Journal.

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.

Locks and Keys.

THE inventive Chinese had almost constructed a Bramah lock, when Egypt herself was young, and the keys found in our tumuli and tombs show how much ingenuity was expended in the construction of these supposed safeguards in all ages. The rude savage was contented, in all probability, with a combination of knots, and, indeed, Captain Galton, in his "Art of Travel," laments the want of some form of knot which would, whilst holding tight the stores, show whether they had been tampered with or not,—thus asking for a Chubb's detector lock of sinew or string in the bush or the desert; but such a series of knots does exist, and possibly a native guide or attendant would fail to untie the famous knot which so puzzles ingenious monkeys. Alexander found it easier to cut than untie the famous Gordian knot, and many primitive locks in use, even in the British Isles, depend on a combination of string and wood, which suffice to keep out cattle if not burglars. It is to guard against the latter that modern ingenuity has been so freely expended, and it would appear really as if the latest Yale lock was only a modification of the well-known Egyptian model of some thousand years ago, and there are in existence examples of locks on the Egyptian model which have survived, and are found to answer their purpose even at the present time, and it has been suggested that with a slight modification this could be used with advantage to "lock" pictures on gallery walls, so that they could be removed in case of fire easily and rapidly. This lock was obviously invented to secure a bar of some size, and has since been used on a much smaller scale.

Some of the earliest and most perfect specimens of locks which have come down to us are padlocks and fetter-locks, some, apparently, only adapted to fasten the girdle of a lady, whilst others are ponderous enough for the heaviest chest. Examples of these are in every museum of importance. It is well known that Bramah believed his famous lock to be unpickable, because he could not pick it himself, and this has been the case with other inventors, though, perhaps, the triumph of Hobbes in 1851 in proving that the champion lock was pickable excited the most attention; but we shall not, in our desire for small keys, imitate the lock which required a species of sickle to open it, for this key has to be carried over the shoulder like the Egyptian keys which are mentioned in Isaiah and figured in the great temple of Karnac; it is in use at the present day. These sicklelike keys could only be used to move a bolt on a large gate, and when, as in many modern instances, the bar was hung in an iron frame and suspended in the center by a chain, a smaller key was required to open it, and thus gave rise to those ring keys described by Tacitus, and which answered the purpose of a signet ring as well as a key. Many of the wards of these Roman keys are so much like the ordinary

flat or French latch-key in common use a generation ago as to suggest a doubt as to their antiquity. The curious implements found in Anglo-Saxon graves, and which are supposed to be keys from their being fastened together by a ring and slung at the girdle, are, as a rule, but rude pieces of bronze without a pretense to the formation of a ward, and in this particular only do they resemble the keys of the Yale locks of to-day. They could only be used to raise the rudest form of latch.

Amongst the locks which seem to have been most popular, and which are indeed the most curious, are what are known as "puzzle locks." They are found in the shape of a bird, as in India. They are hidden in the interlaced bolt-and-belt ornamentation of an Elizabethan linen-chest, or in the form of a "letter-lock" and then they are independent of a key. The former depend on a secret spring moving the escutcheon; the latter, on a certain combination of words, which require to be remembered accurately by the person using the lock or it becomes useless to him. Some of the more modern letter-locks are very ingenious,—in fact, more ingenious than secure. A couple of centuries ago they were far more popular than they are now, and in the time of our grandfathers, and even later, these secret springs and hidden mechanism were freely used by the novelists of the Mrs. Radcliffe school. They are immortalized in Beaumont and Fletcher's play of the "Noble Gentleman," where we find,—

"A cap case for your linen and your plate,
With a strange lock that opens with AMEN."

It is a somewhat singular circumstance that the best of our modern safes have locks which closely follow the secret apparatus described by the Marquis of Worcester in his "Century of Inventions." He describes a little key, not weighing more than a shilling, which shall be capable and strong enough to bolt and unbolt "round about a great chest, an hundred bolts, through fifty staples, two in each, with a direct contrary motion, and as many more from both sides and ends, and at the same time shall fasten it to the place beyond man's natural strength to take it away." He also describes a curious escutcheon, and it was for the invention of a "secret apparatus" of this kind that the Society of Arts awarded one of their first premiums to Mr. Marshall, shortly after the commencement of their transactions, in 1784.

That there were warded keys and locks from Roman times is indisputable, and they were excellently made by the early English metal-workers. No one suspected their weakness until a century ago, and then their unreliability was proved by the easiness with which they were picked by the simplest novice in house-breaking. In vain were back-springs invented, and French tumbler locks introduced. A simple piece of twisted steel sufficed to open them all. The ponderous wooden and iron contrivances which had been trusted as locks should be trusted if they are reliable,

were found to be of little worth. The tumbler locks of Barron and of Bramah, patented as far back as 1778 and 1784 respectively, head a long list of inventors of many tumbler and wheel locks. There have been locks with master keys invented, and changeable key-locks invented for doors of safes, and other receptacles for valuables. Many of the latter are nearly perfect specimens of simplicity and security, with keys which, if not so light as those mentioned by the Marquis of Worcester, are at least sufficiently portable to be carried in the waistcoat pocket. There are specimens of many of these ancient locks in South Kensington, and in the British Museum, with keys remarkable for beauty of design as well as workmanship, showing, if another instance were needed, how well beauty can be combined with utility.—*The Builder.*

Modern Carpenter's Companion. Price \$1.25

"RIGHT-HANDEDNESS" extends very far along the animal series. Parrots hold their food by preference in the right foot, and, though we cannot speak positively, wasps, beetles, and spiders seem to use the right anterior foot most commonly.

Cottages and Villas. Price \$6.00.

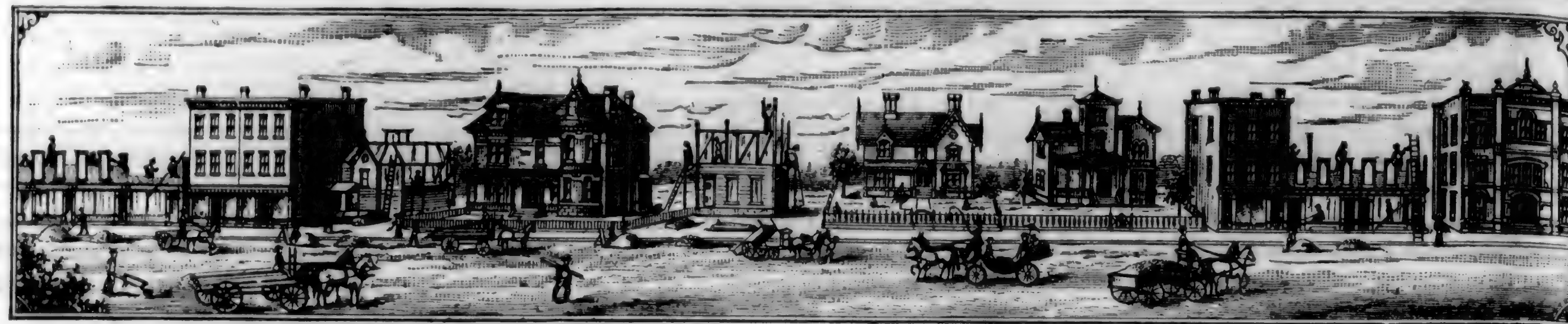
Practical Carpentry. Price \$1.00.

BUILDING INTELLIGENCE.

MISCELLANEOUS.

Saratoga.—W. C. Hamilton is erecting a two-story frame for Farrington Bros.; cost, \$6,000.
Riverside.—C. G. Whittier is erecting a three-story brick building; A. J. G. Porter, C. Seymour & Stevens, for carpenter work; Sheldon & Davis, masons; \$15,000. A one-story school house is being erected by Seymour & Stevens; A. A. W. Boggs; \$4,375.
Cloverdale.—M. E. Church, 40x80, is being built.
Rutherford.—Mrs. McComb is having a two-story frame built; C. J. C. Mixon.
St. Helena.—P. Elting is building two one-story frame; A. J. C. Mixon, two-story base and attic frame; O. G. Beringer; A. Schroeder; days' work; \$22,000.
Petaluma.—Dr. Saul is erecting a two-story frame.
Sancelito.—Additions to Yacht Club; A. Laver; C. O'Brien; \$2,000.
Cordelia.—Two-story frame; O. J. R. Morris.
Gridley.—Two-story brick; O. H. Robinson; A. J. C. Walker Bros.; \$6,000.
Yuba City.—Large frame building for cannery.
Sacramento.—Near town, R. J. Merkle is building a large hop-house; C. Carle & Croly. Near Washington, Carle & Croly are erecting a large hop-house. The same contractors are also erecting a hop-house on their own place, near Patterson's Station. At R. R. Depot the building is being enlarged for a hotel. One-story frame, Fifteenth, corner N. O. Ridgway & Lathrop; J. A. A. Cook; C. J. White; \$2,385. Two-story frame, N. between Seventh and Eighth; O. J. Roberts; C. A. Johnson; \$5,000. One-story frame, Eighteenth, corner O. O. R. J. Merkle; C. Carle & Croly.
Lincoln.—Two-story frame; O. H. Nader; A. N. D. Goodell; C. B. F. Bell.
Wheatland.—Seven-story brick for flour mill; O. Starr & Co.; A. A. Percy & Hamilton; C. Butler; \$200,000.
Merced.—Two-story frame; O. Huffman; A. W. G. Cope-land; cost, \$8,000.
Los Angeles.—Two-story brick; O. L. G. Hammond; A. Kyser & Morgan; C. L. Andrew; \$13,000. Two-story frame; O. B. Stephen; A. Kyser & Morgan; C. J. McGilvray; \$6,000.
Stockton.—Three-story and basement brick; O. State of California; A. Percy & Hamilton; C. Confer Bros.; \$138,000.
San Rafael.—Barn and carriage-house; O. A. Forbes; A. Hatherton; C. — Shaver.
Moss Landing.—Barn and carriage-house; O. — Butler; W. Wright & Sanders; C. — Jackson.
Davisville.—Yolo County. Methodist church parsonage. One-story frame. A. Babson & Seidler (Sacramento); B. W. H. Hamilton; \$1,800.
Cacheville.—Yolo County. One-story and basement. O. J. Borach; B. Mr. Marsh; \$4,000.
Plainfield.—Yolo County. One-story frame. O. John Winters; B. Pool & Sears; \$1,400.
Swingle's Station.—Yolo County. One-story frame. O. J. A. Murry; B. A. Stamp; \$1,200.
Temescal.—One-story frame. O. J. C. Ainsworth; C. E. Child; \$1,200.

(See next page.)



BUILDING INTELLIGENCE.

SAN FRANCISCO.

Sutter, cor. Jones. Additions. O. Judge O. C. Pratt. A. Wolfe & Son. C. T. H. Day. \$8,000.

Jessie, nr. Eighteenth. Two-story frame. O. T. James. A. Wolfe & Son. C. T. Mitchell. \$2,900.

O'Farrell, nr. Van Ness. Four two-story frame. O. — McDermott. A. Newsum & Gash. C. T. J. O'Brien. \$16,000.

Fifth, x Bryant and Brannan. Two-story frame. O. — Butler & Kreling. Days' work. \$4,000.

Bartlett, near Twenty-first. One-story and basement frame. O. — H. C. Patridge. Days' work. \$4,000.

Tiffany Ave., cor. Twenty-eighth. Alterations. O. — S. S. Seymour. Days' work. \$5,000.

Broadway, x Buchanan and Webster. Two-story frame. O. — Dr. R. B. Cole. A. — Newsum Bros. C. — J. Warren. \$15,000.

Folsom, corner Twenty-second. Additions. O. — H. Hahn. A. — F. Laeders. C. — W. F. Muller. \$3,800.

Green, near Taylor. Three two-story frame. O. — J. Ray. C. — Leverage. \$10,000.

Market, x Eighth and Ninth. One-story brick. O. — Dr. Simpson. Days' work. \$3,000.

Union, corner Pacific. Re-constructions. O. — Mixler. C. — D. B. Spangler. \$10,000.

Larkin, x Greenwich and Lombard. One-story frame. O. — Kayser. A. — G. E. Voelkel. C. — C. Fisher. \$2,000.

Gough, cor. Jackson. Additions. O. — C. Lutz. A. — Kirby & Son. C. — C. Ackerson. \$15,000.

Folsom, corner Main. One-story frame. O. — McCormack Bros. Days' work. \$2,500.

Clinton Park, nr. Market. One-story and basement frame. O. — S. M. Thompson. C. — J. R. Dalmas. \$1,800.

Guerrero, near Twenty-sixth. Two-story and basement frame. O. — F. G. Edwards. A. — J. Gosling. C. — F. Crowley. \$2,600.

First Avenue, x Fifteenth and Sixteenth. One three-story and one two-story frame. O. — D. Block. A. — H. Geilfuss. C. — A. G. Fitzpatrick. \$23,000.

Jackson, x Larkin and Polk. Two-story and basement frame. O. — F. A. Miller. C. — H. Mahn. \$4,500.

Powell, cor. Vallejo. Two-story frame. O. — Mowry. Days' work. \$10,000.

Fifteenth, x Market and Guerrero. Two-story frame. O. — J. McCann. \$2,000.

Fair Oaks, x Twenty-third and Twenty-fourth. Two-story frame. O. — A. B. Asher. C. — A. Klain. \$9,000.

Twenty-eighth, x Dolores and Church. One-story frame. O. — Mrs. J. Mullen. C. — W. Grace. \$1,150.

Dolores, nr. Twenty-ninth. Two-story frame. O. — and B. — Grace & Loftus. \$2,200.

Church, nr. Clipper. Two-story frame. O. — and B. — R. Bergfeld. \$2,000.

Castro, x Nineteenth and Twentieth. Two-story frame. O. — Mrs. Banning. A. — H. Geilfuss. C. — J. Brownrig. \$3,200.

Haight, x Buchanan and Webster. Two-story frame. O. — Treise. C. — R. Cook. \$4,500.

Oak, x Buchanan and Laguna. Two-story and basement stable. O. — H. Wempe. A. — Schmidt & Havens. C. — Thornhill. \$3,500.

Golden Gate Avenue, cor. Broderick. One-story and basement frame. O. — P. R. Schmidt. A. — Schmidt & Havens. C. — I. F. & J. G. Day. \$8,000.

Golden Gate Avenue, near Franklin. Three two-story frame. O. — B. Curtaz. A. — H. Geilfuss. C. — J. H. Worden. \$15,000.

California, nr. Lyon. Alterations. O. — Mr. Gutto. C. — Cook & Johnston. \$2,000.

Bay, cor. Midway. Repairs. O. — Mrs. Brower. A. — Mooser. C. — Klatt. \$1,800.

Harriett, x Howard and Folsom. Two-story frame. O. — J. F. Dume. A. — Bestor. C. — P. Laberty. \$2,600.

Bush, nr. Pierce. One-story frame. O. — and B. — P. A. Cook. \$500.

Pine, x Baker and Broderick. Seven two-story frame. O. — and B. — C. L. Hinkle. \$21,000.

Larkin, x Filbert and Green. One-story frame. O. — A. Rayer. A. — G. E. Voelkel. C. — C. Fisher. \$2,200.

Post, x Kearny and Dupont. Re-constructions. O. — Matthews. A. — Kenitzer & Raun. C. — E. Farrell. \$15,000.

Cedar Avenue, x Larkin and Polk. Two-story and basement frame. O. — Mrs. Brady. C. — H. McHugh. \$2,500.

Pine, cor. Scott. Four two-story frame. O. — Lichenstein. A. — Schmidt & Havens. C. — Smille. \$11,000.

Post, x Kearny and Dupont. Rebuilding Morton Block. Four-story brick. O. — E. Barron. A. — Gaynor. C. — Mahoney Bros. \$6,000.

Jackson, x Larkin and Polk. Two-story frame. O. — E. Rooney. A. — Townsend & Co. C. — J. Doherty. \$4,500.

Harrison, x Twenty-third and Twenty-fourth. Alterations. O. — J. Doherty. C. — T. Mitchell. \$1,500.

Twenty-first, x Mission and B. Fillet. Two-story frame. O. — Captain Ackley. A. — T. J. Welsh. C. — J. Doherty. \$4,000.

Baker, cor. Clay. Five two-story and one one-story frame. O. — G. W. Hinkle. C. — Byron Bros. \$19,000.

Greenwich, nr. Buchanan. One-story frame. O. — Mrs. K. Cantrell. Days' work. \$1,000.

Market, near East. One-story brick. O. — L. Ford. C. — A. B. Carr. \$1,500.

Fair Oaks, near Twenty-first. Two-story frame. O. — Cain. C. — J. T. Ayer. \$1,500.

Hayes, x Laguna and Octavia. Additions. O. — P. J. Corbett. A. — T. J. Welsh. C. — C. Quinn. \$4,000.

Oak, corner Franklin. Two-story frame. O. — A. F. Benard. A. — T. J. Welsh. C. — R. Doyle. \$5,000.

Guerrero, x Seventeenth and Eighteenth. Repairs. O. — — McGinn. A. — T. J. Welsh. C. — J. W. Smith. \$1,000.

Bryant, x Second and Third. Frame dwelling. O. — J. D. Sullivan. A. — T. J. Welsh. C. — J. Laherty. \$2,400.

Howard, x Fifth and Sixth. Three-story dwelling and stable. O. — Sullivan. A. — T. J. Welsh. C. — George Hansbrough. \$10,000.

Eight Avenue, nr. Point Lobos Road. One-story frame. O. — Conway. A. — T. J. Welsh. C. — J. J. Welsh. \$2,000.

Sutter, x Powell and Stockton. Two-story and basement brick. O. — Dr. Bazal. A. — A. Pissis. C. — Cate, mason. \$16,000.

Folsom, x Main and Beale. One-story brick. O. — Walldier, Fuller & Co. A. — Percy & Hamilton. C. — J. Cox. \$20,000.

Hyde, nr. Clay. Two-story and basement frame. O. — W. S. Jones. A. — Percy & Hamilton. C. — A. Jackson. \$6,000.

Howard, corner Sixteenth. Two two-story frame. O. — Mrs. Butterworth. A. — H. D. Mitchell. C. — J. B. Gonyeau. \$10,500.

Sixth, nr. Mission. Alterations. O. — C. Wilford. A. — S. Shroper. C. — T. Maxwell. \$5,000.

Ritch, nr. Townsend. Three-story frame. O. — D. Farnsworth. A. — Daley & Pierce. C. — J. W. Dawson. \$5,000.

Fulton, nr. Laguna. Alterations. O. — F. Band. A. — Daley & Pierce. C. — Byron Bros. \$1,000.

California, corner Mason. Granite wall. O. — J. G. Fair. A. — Gavnor. C. — G. D. Nagle. \$50,000.

Golden Gate Park. Re-building conservatory. A. — Newsum & Gash. C. — S. M. Hills. \$12,000.

Durant, nr. Broadway. One-story frame. O. — Mrs. Cudworth. C. — E. Whitcomb. \$1,100.

Adeline, cor. Central Ave. Additions. O. — S. B. McKee. A. — Clinton Day. C. — E. Child. \$3,000.

Webster, nr. Piedmont. Two-story additions. O. — G. W. Hume. C. — E. Child. \$8,000.

Market, x Ninth and Tenth. Two-story and basement frame. O. — Godfrey. C. — Ingerson & Gore. \$7,000.

Tenth, nr. Magnolia. Two-story and basement frame. O. — G. H. Strong. C. — E. Child. \$5,000.

Union, x Eighth and Tenth. One-story frame. O. — — Crowley. C. — P. Crinnion. \$2,000.

Broadway, cor. Seventh. Three-story and basement brick. O. — Charles Elsey. A. — Mathews & Son. C. — Burpee & Judson. \$22,000.

Sixth, nr. Brush. One and one-half story frame. O. — — Dineo. C. — Turner & Reese. \$1,800.

Vernal Heights. Two-story and basement. O. — G. E. De Golia. A. — Clinton Day. C. — E. Child. \$4,500.

BERKELEY.

Second, cor. Addison. One-story and basement frame. O. — Wheeler Cannery. C. — Overton. \$7,000.

Two-story Frame. Brackett. \$4,000.

Blake Street. One and one-half story frame. O. — Mrs. Williams. C. — Spencer. \$2,300.

Two One-story Frame. O. — Lingard. C. — C. R. Lord. \$1,800.

Walnut, cor. Virginia. One-story frame. O. — Allen. C. — A. H. Broad. \$1,600.

Blake Street. Two-story frame. O. — Lockyear. C. — A. H. Broad. \$2,500.

University Ave. One-story frame. O. — Fischell. C. — Spencer. \$1,900.

M. E. Church. Repairs. \$600.

WOODLAND.

Third Street. Two-story frame. O. — James Douglass. A. — W. H. Carson. B. — Gilbert & Son. Days' work. \$10,000.

Main, nr. Elm. Eight one-story brick stores. O. — Lowe & Hollingsworth. A. — W. H. Carson. C. — Cra't & Winne. \$7,000.

College Avenue, nr. Pendegast. One-story frame. O. — Mrs. Pendegast. C. — Glenn & White. \$1,700.

East Woodland. Additions and improvements. O. — D. Farnum. B. — W. Myers. \$1,000.

Main, nr. East. One-story frame warehouse. O. — Browning & Logan. Days' work. \$5,000.

Main Street. One-story brick. O. — E. G. Hoernlein. A. — W. H. Carson. B. — Gilbert & Son. Days' work. \$2,000.

Cross Street. Improvements. O. — Mr. Armstrong. B. — Gilbert & Son. Days' work.

Main Street. One-story frame. O. — S. Huston. B. — James Amesbury. \$1,000.

Court Street. One-story frame. O. — Mr. Mosebocker. B. — James Amesbury. \$1,400.

Third Street. One-story frame. O. — Charles Gunshaw. B. — James Amesbury. \$1,000. (See preceding page.)

ALAMEDA.

Alameda Ave., x Chestnut and Willow. One-story frame. O. — T. W. Reed. C. — Wasson & Pattiani. \$1,800.

Park Avenue. One-story frame. O. — E. F. Moblad. C. — Wasson & Pattiani. \$1,500.

Santa Clara Avenue, nr. Grand. One-story and basement. O. — S. Franks. A. — Townsend & Co. C. — A. Denke. \$3,100.

Central Ave., nr. Willow. Two-story frame. O. — Scott. C. — Gilbert & Co. \$3,000.

Chapin, x Eagle and Buena Vista Ave. One story and basement frame. O. — Ford. C. — A. Denke. \$1,800.

Alameda Ave., x Grand and Peru. One-story frame. O. — Anthony. A. — Babin & Seidler. C. — Gilbert & Co. \$2,500.

OAKLAND.

Alice, x Fourteenth and Durant. Two-story frame. O. — E. Adams. A. — C. Man. C. — W. Dahl. \$10,000.

Magnolia, nr. Eighth. Two-story and basement frame. O. — T. Wade. A. — Newsom. C. — W. S. Oille. \$6,000.

Eighth, cor. Linden. Two-story and basement frame. O. — F. Roehling. A. — C. Man. C. — W. Dahl. \$8,000.

The California Architect and Building News.

VOLUME IV.
NUMBER 9.

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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.

S. F. Chapter American Institute of Architects.

THE Chapter met in annual session on the evening of the 7th inst., President John Wright presiding. The profession of the coast was well represented. The regular order of business was suspended for the purpose of receiving a delegation from the Plumbers' Association, who were present in the capacity of an authorized committee, to discuss before the Chapter the rules and regulations adopted by the Board of Health under the plumbing law of the State, which went into effect August 1st. A Committee of Conference from the Chapter was asked for, to meet a like committee from the Plumbers' Association, to take the whole subject-matter into consideration and prepare recommendations to present to the Board of Health, amendatory of the present rules, which in several particulars do not meet with general approval, and which may be made more practical, and lessen the cost of plumbing work. The range of discussion before the Chapter reached the many points of objection to the rules, and it is believed that a committee of architects and plumbers will be able to harmonize all discordances and provide rules which, if adopted by the Board of Health, will ensure the efficient working of the plumbing law as passed by the last legislature of California. After the withdrawal of the visiting plumbers the Chapter further considered the matter, and appointed a committee of three, consisting of James E. Wolfe, Wm. Curlett, and B. E. Henriksen.

Committee on Seal of the Chapter reported that the matter had been placed in the hands of the class-teachers established by this Chapter.

Reports were then read from those having charge of the classes, and the different officers. The Secretary reported a total membership of forty-two. The Chapter was fully equipped with a fine set of books, by-laws, etc., and had money in its treasury, with not a single liability.

N. L. Mayo was appointed collector for the ensuing term.

Propositions were read from Masters Lee and Bugbee, each to become student members. Election of officers being next in order, the following gentlemen were elected:—

President, John Wright.
Vice-President, William Curlett.
Secretary, George H. Wolfe.
Treasurer, H. C. Macy.
Executive Committee, Seth Babson, Thos. J. Welsh, Geo. H. Sanders.

Election of Trustees postponed until next regular meeting.

A vote of thanks was unanimously tendered

to F. Marion Wells, Geo. H. Sanders and Albert Pissis, teachers of the various classes established by this Chapter, for their kind attention given to the pupils under their charge. Adjourned.

Review of Building Operations.

THIRD QUARTER OF 1883—AN INCREASE OF NEARLY \$2,000,000 OVER SAME TIME IN 1882.

BUILDING operations all over the coast still continue brisk, and from advices received, the coming winter will exceed in the number and value of new buildings erected, that of any similar period in the history of the State.

The following summary will convey a clear idea of the amount of work that has been done so far this year, and the good showing made in comparison with 1882.

During the first nine months of 1882 there were erected

582 BUILDINGS OF THE VALUE OF \$2,655,726.

Same period of 1883 there were erected

635 BUILDINGS OF THE VALUE OF \$4,579,878,

thus showing a gain of \$1,924,152. We have included in the above the new building at present under way for one of our largest hardware dealers, which is not reported in our Building Intelligence, the contracts as yet not all being let.

The above is a remarkably good showing, when it is taken into consideration, that during the year there have been but three buildings erected costing over \$100,000 each. Most of the buildings are private residences and flats, averaging about \$7,000 each.

We do not agree with our contemporaries that the height of the building boom has been reached; that "flats" will soon be a drug on the market, etc. The general good times in every branch of business is taken advantage of by many of our good housewives, and they are moving from the "filled ground" quarters to where they can obtain plenty of sun and fresh air, with but a nominal increase of rent.

The cable roads are gradually but surely causing a return tide from the pleasant dwelling places across the bay; and when the Mission Line shall have carried out their contemplated QUICK PASSAGE SCHEME, thus giving the residents of the large valley beyond Thirtieth Street the means to go back and forth on quick time, to almost every part of the city, we have no doubt that the cheap lands in the valley named will soon be filled up with many of those who travel back and forth across the water, for the sake of saving a few dollars by cheaper rents.

New York Street Architecture.

BY A. CURTIS BOND.

THE RENAISSANCE.

THE house shown in our illustration is that of Charles Volkmar, at Tremont, this city. It is strictly French in its construction, its appearance, and its surroundings—Parisian thoroughly, and comfortable as it is attractive. The material is brick with an outer stucco, giving it a creamy surface. There is so little to describe, exteriorly, that I must leave it to my readers' perception to picture for themselves from the representation here shown, the attractions of the spot and the inviting look of the dwelling. If a high concrete wall could be added in the imagination to the place, a wall extending around the four sides and inclosing about an acre of ground, with neat vegetable plots and flower-beds, and a goodly-sized furnace, it will give not only a first-rate idea of the residence, but likewise a capital notion of what a true French country house is—barring the furnace. Mr. Volkmar is an artist, and beyond that does a little pottery baking on his own account, so the furnace was put up by him for this purpose, and is considered quite a novelty in the way of a diversion by his neighbors, but I presume he often makes it a combination of business along with his play.

At the side of the building is a *porte cochese*, through which carriages may drive to an inclosed court yard in the center, just large enough to permit the vehicle turning. To the right of this court is a small reception room, which in a Parisian house would probably be used as the office for the concierge, or porter, and there is also the parlor and back of it the kitchen, while to the left is a billiard room and the stairs leading to the floor above. This enumeration of apartments appears to be that of an extensive house, but it must be remembered that they are all small, and the building itself not over forty feet square.

The entire house is heated by steam from a furnace in the cellar—a small furnace—and in the place of chimneys are ventilating ducts leading to the roof and opening into each room through a fancy ventilator. On the lower floor a gas burner in this ventilating tube or channel is kept burning, thus causing an upward flow of air, and carrying off the vitiated atmosphere of the apartments. This is an effective and an ingenious idea.

Upon the second floor is a large room originally intended, I presume, for another parlor, but converted to the use of a studio by Mr. Volkmar; opening from it is a small room called the library, and opening from its opposite side is the dining-room. The windows of this latter open upon a veranda or balcony, which has been very tastefully and deceptively fitted up with flowers to resemble, or rather personate, a tropical garden. It has been covered with glass, and by the clever arrangement of mirrors the appearance of quite an extensive flower garden is had from an ordinary five-foot piazza. A stair-case beginning at the door of the dining-room leads to the third floor,

which is divided in the conventional manner into three bedrooms and a bathroom.

The decoration is very simple, consisting almost exclusively of wood in its natural condition, color, etc., carved sparingly. In truth the house is not an elaborate nor an expensive one, but has the peculiarities of the French dwelling transported to America. . . . One of the most noticeable of the new buildings put up in this city is that of the Manhattan Storage Company, occupying the entire block on Lexington Avenue from Forty-first to Forty-second Streets, and extending half way through to Fourth Avenue. It is a gigantic brick affair simulating a fortress, or more perhaps after the style of the old feudal castles we are accustomed to see in illustrations of medieval times; it is 150 feet tall, and the building proper has the appearance merely of massive walls, two of them being entirely without windows or doors or openings of any description, while the others have merely an entrance for teams and visitors, two heavily barred windows looking into an office and store room, and two other equally well protected at the third story looking into another store room. All the light necessary is obtained from a well or court in the center. The main rooms, of which there are four upon each floor, are each 50x200 feet, and divided into small apartments by iron railings extending from floor to ceiling, permitting a circulation of air—something very desirable—and at the same time keeping out borrowers and those seeking relics or odd bits.

The necessity for a storage house and a good one, has been burdening New Yorkers for a number of years. There is probably no city in the world that claims so large a proportion of restless residents as this very Empire Town. Every one takes a trip to Europe, occasionally at least; the prosperous business man secures state-rooms on the most expensive line, and his whole family go with him, while his anticipated leaving is announced in the papers of the evening previous; the more modest traveler, who has perhaps left the bank very suddenly that afternoon, carefully avoids notoriety, and his name first appears in the *Police News* a week after he sailed. Whether it is the legitimate excursionist who will safely and instructively visit every capital of the continent, or whether it be the gentleman who will extend his trip only to those countries with which we have no extradition treaty, the anticipation rests with one, and the delusion with the other, that each will return to these United States at some day, so the former stores his furniture and chattels, and the latter does also if he has time. Since the burning of Morrel's storage place, about a year ago, there has not been much feeling of security among those who have found it necessary to put their goods away, and this company has taken advantage of this uncertainty, and will probably become rich. . . . Since A. T. Stewart's death there seems to have been a positive succession, of the most inexcusable mistakes made in the conduct of the affairs connected with his estate. It may perhaps be considered as a just return for Stewart's

entire disregard for every one else's interests that his business should have been absorbed by another, his property divided among a multitude of strangers, though all reputed to be nearer in relationship than their names would suggest, a relationship not generally recognized by the law nor sanctioned by the Nestors of society. The building occupying the block on Broadway between Chambers and Reade Streets was devoted at one time to Stewart's wholesale business, a business whose imports were said to be \$30,000,000 annually, a business unrivaled for many years in the country, and which aside from its foreign trade embraced several mills, cotton, linen, carpet, etc., in our Eastern States. The retail department was further up town, another entire block filled with busy clerks and shopping women, a multitude of cashiers, an army corps of small boys to carry change. Cyrus Field commenced his career as one of these "cash boys;" the firm did its own banking; all checks were made upon itself. If clerks, and bookkeepers, and cashiers, and directors had to be provided with means for sudden European trips, Mr. Stewart thought it was only fair to give the first opportunity to his own assistants. This is about the only instance of consideration for others that he is known to have exhibited. The most of his time, aside from the immediate conduct of his affairs, was occupied in establishing retail stores in small summer resorts or country places, where his competition ruined local dealers and caused innumerable bankrupts. As I said, however, all his property has lost its association with his name, and the wholesale house to which I referred has changed even its appearance, the countenance it bore during its projector's life. It has been torn apart, and dug out, and built up again, and two new stories have been added with the very singular arrangement of having the new floors stop short of the corners, which have not been raised beyond their original height. The open spaces thus left at the corners are finished with an ordinary brown tin roof, of course two stories lower than the main roof, and are absolutely repellant in their contrast with the more or less white and yellow of the marble front and aides. I am assured by the architect that he has no intention of placing towers or belfries or any other architectural eccentricity at these barren points. The building, I might add, is now to be rented in offices.

There is a moral in Stewart's career somewhere if people would only look for it; the world won't smile at a man's memory whenever his name is mentioned unless there has been something powerful mean about his life.

* * * * *

There is another New York celebrity of whom we have no reason to be proud—no more reason, I was going to say, than of Stewart, though that would be rather a hard thrust at one or the other of them, I hardly know which could take the most exception—at any rate this second character is not a favorite with any "set." He is Edward S. Stokes, a man who committed a murder as cowardly, and contemptible as any that has ever occurred in

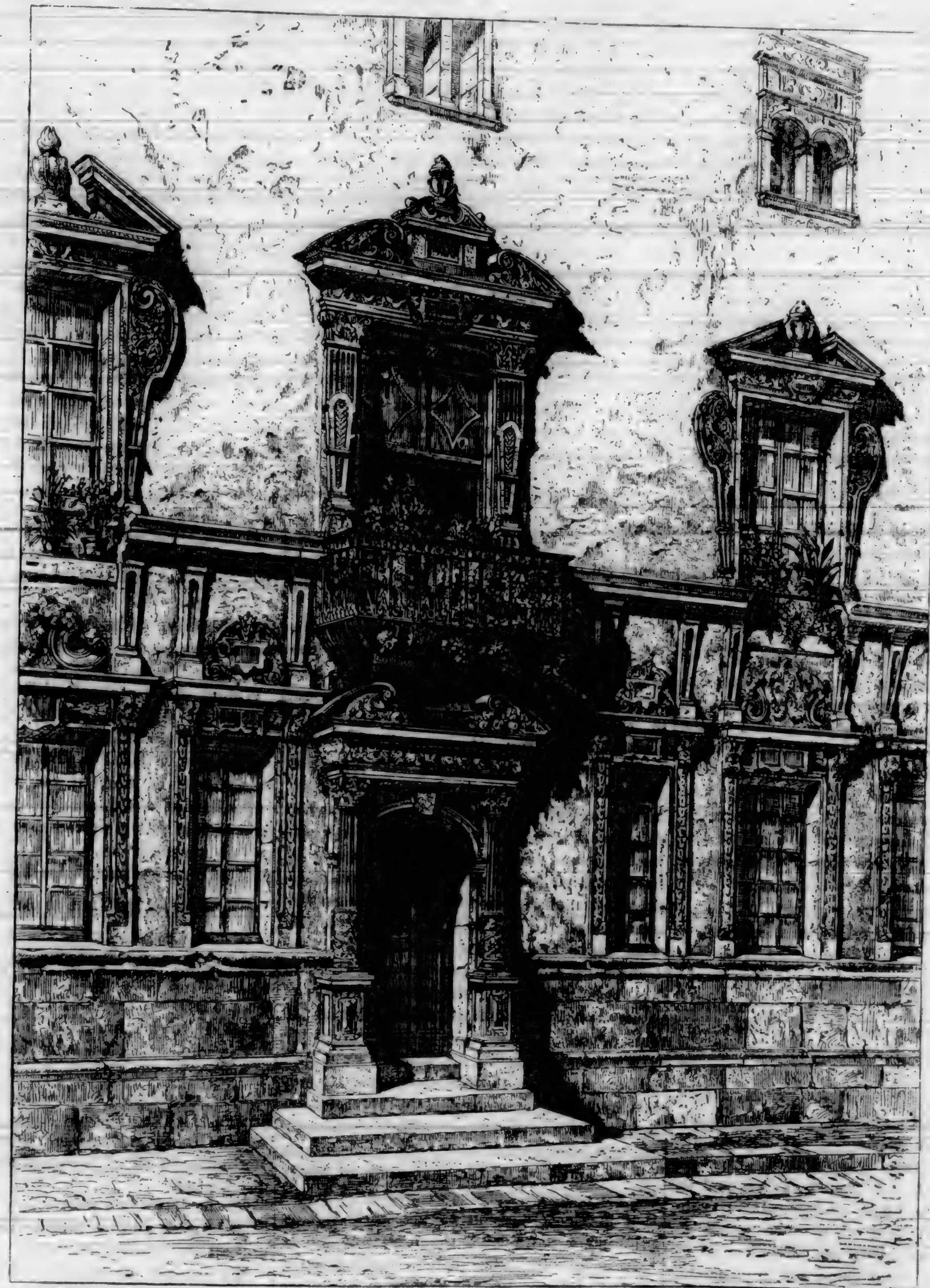


PLATE I.—ILLUSTRATION OF THE "RENAISSANCE."

this city. Stokes, as you know, served his ridiculously inadequate sentence in Sing Sing, and instead of drowning himself soon as he could after being released, he went into the hotel business here, backed, it is said, by John W. Mackay, and he has made a palace from what at one time was almost a wreck. The Hoffman House was never one of the sanctified hostleries of our city, not even one of the pleasing to look upon, but under the influence of Mackay's cash and Stokes' aesthetic taste it is now one of the most startlingly original resorts to be found. Its *clientele* is principally of a sporting tendency, devoted to the perfection and encouragement of the manly art or versed in the respective merits of individual oarsmen and trotters. Owing to this, probably, the place has made money; the bar-room particularly has been successful with its \$10,050 picture of Bourgeois of "Nymphs and Satyr" (well caricatured in a recent *Puck*); its magnificent copy of the inimitable figure of "the Diver," the marble statuette of a female lightly clothed in a mosquito net suit, and her arms extended as in the preparation for a plunge; its "Dream of Faust" one of the most beautiful and most suggestive of modern paintings, —all these attractions have done their part in bringing a trade that has enabled Stokes to build an immense addition to his house. His addition is going up on Twenty-fifth Street, directly in the rear of the main building, facing on Broadway. It is a corrugated-looking affair, nine stories tall, and every other window across the front is in a bow, a series of continuous swells, just large enough to accommodate the window, extends from the ground to the roof, and the wall surface separating these elongated bows is merely sufficient to permit a narrow window being placed therein. The material is Milwaukee brick and terra cotta, and the general appearance is dignified and pretentious. I presume the style might be called a modernized Venetian.

Low Charges for Architectural Services.

WITHIN the past month considerable comment has been indulged in by certain parties because a member of the chapter of architects in this city has consented to render architectural services for less than the charges adopted by all architectural societies—namely, five per cent. on the cost of the whole work. This upon its face appears wrong and inconsistent, and unless relieved by the circumstances of the case, is so in fact. Five per cent. is a right and proper charge, and we regret that it cannot be made a universal rule, as its adoption and observance would do much toward elevating the profession to its proper standing. But there are unprincipled men practicing the profession, who find work mainly by underbidding—offering their services at nominal rates and depending upon the perquisites for fuller compensation. And every time that owners succeed in engaging architects at unremunerative prices they pay dearly in the long run for the false economy practiced.

The facts in the case referred to are these: The names of five architects were proposed before the Board controlling the improvements in contemplation, three of whom were members of the chapter. A vote was taken upon the names submitted, which resulted in the selection of one of the three chapter members. A committee was appointed by the Board to wait upon the selected architects to ascertain what compensation would be demanded. They were plainly told that five per cent. was the right and established price, a copy of the by-laws of the chapter was handed them, in which the scale of rates is printed. To this the reply was made that much lower rates had been offered by other parties before the Board, and that the Board would not consent to pay the five per cent. Knowing that one of the outside party, or firm, had done numerous mean things to secure work, although enjoying a large practice, the architects selected stated that they would not *again* permit themselves to be beaten, and would *reluctantly* abate the regular charge, rather than allow the work to pass into hands that cared nothing for professional rules, and who had in many *well-known cases* done extraordinary things to break existing engagements between owners and other architects, to obtain work which would not have been awarded to them except through persistent doggery and strained influences of various kinds.

Beside this, when the scale of charges was adopted by the S. F. chapter,—being the same as those adopted in all chapters and architectural societies throughout the Union, in England, France, Germany, and other European countries,—it was understood that when members of the chapter were placed at a disadvantage through the *unprofessional acts of outside parties*, they should have the right to exercise their own judgment in meeting the issue. This was done in the case in hand, and while the proper rates have been departed from, the price agreed upon is greater than was offered by others in the contest. So that while the chapter member may have technically sinned against the rule, the end has been attained of defeating others who *systematically* scruple at nothing sinful to obtain work.

We repeat, five per cent. is but a right and proper charge for faithful architectural services, and if all men engaged in the profession would adhere to this, owners would as willingly pay the amount, and think better of architects for demanding fair pay, than they do under the too commonly practiced system of a portion of the profession taking work at any price offered, and doing the best they can to "get even"—the latter course tending to degrade and demoralize the profession, and place owners subject to all the circumstances attendant upon conditions of trusts unremunerated. It is an old and true maxim that insufficient compensation stimulates a disregard of strict integrity in any capacity.

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

Large Sticks of Timber.

HUNDREDS of visiting Knights Templar had an opportunity while in this city of seeing two of the largest pieces of timber that ever passed through the hands of the millmen. It was amusing to hear the remarks, and watch the various changes in the different countenances caused by a survey of probably the finest pieces of timber that were ever sawn. One piece is 144 feet long by 18 inches in size, and contains 3,456 feet of lumber. For over 100 feet there is no knot that a five-cent nickel will not cover, and in the whole piece of timber the largest knot can be covered by a half dollar. It is wonderful that a stick of timber of the size given should be so remarkably clear of knots. Its companion is of the same length, 16 inches square, and contains 2,352 feet. When it is taken into consideration that the tree from which the first mentioned piece of timber was taken was cut several feet above the ground, and that 150 feet from the cut made to fell the tree, it was of such a size as to enable the millman to saw the log so as to produce a piece of timber of the size given, one can imagine the size the butt must be, and partly comprehend the amount of labor required to handle such an immense stick.

It costs about one-half more to land on our wharves a stick of timber of the size mentioned than it does of ordinary lengths.

These pieces of timber were sawn at the Port Blakely Mills, Washington Territory, the owners being Renton, Holmes & Co., the well-known lumber merchants of this city.

A short time ago there was received in this city a stick of timber 104 feet long, 24 inches square, and almost free from knots. After its arrival here it was allowed to be on inspection for a short time, when it was taken to one of our mills and sawed into joists, as the purpose for which it was manufactured was given up and no use could be found at the time for a stick of timber of such large dimensions.

Now Is the Time to Advertise.

IN order to supply the demand for sample copies now constantly being made upon us, we will during the next four months issue ONE THOUSAND EXTRA COPIES EACH MONTH, of this Journal.

The supplement has been, so far, the means by which we have received over 500 orders for sample copies of our Journal, in most cases accompanied by twenty cents, the price per copy of our regular issue. This too when, as yet, not one-half of the supplement has been distributed.

Of the latter we printed, by actual count, 54,880 copies, and its distribution will be general all over the Pacific Coast.

We intend, in the near future, to issue Supplement No. 3, and will guarantee to print and distribute 100,000 copies.

ADVERTISERS WILL PLEASE TAKE NOTICE. The great extra demand for this journal insures your advertisement being seen by many thousands, who would otherwise, probably, never hear of the wares you seek to introduce amongst our people.

Papier Mache Floors.

A NEW style of floor decoration is now becoming desirable from its neatness and great durability. There is no liability of its becoming common from sameness of design, for the materials are of great variety, as is found in wall paper. The process for covering a papier mache floor is as follows: The floor being well nailed the holes and cracks may be filled up flush with Plaster Paris dissolved in thin glue water, leaving them even with the floor, by using a broad bladed knife. The cracks are sometimes filled with soaked papers mixed with paste to the consistency of putty and applied in the same manner. Any good flour paste will answer, and if a little alum is added will prevent the souring tendency of the paste. The floor is then sized with the paste and covered with any cheap paper, and if the flexibility is not considered sufficient, a second application is made, crossing at right angles the course of the first layer. The lower priced wall papers will do for this purpose. After this is thoroughly dry, the pattern of wall paper is cut and laid on in the same manner as upon walls. A wide dark border is then added next the base board, thus inclosing the whole in one pattern. If further decoration is desired, a center piece may be added, as also flower bouquets in the corners. When the paper is dry, a light thin coat of white glue is laid on very quickly, not allowing the brush to pass but once over the colors, for fear of disturbing them. A second coat of size is necessary to make it strong enough for the varnish. In making this size it is usually soaked in cold water for two or three hours and then heat it on the stove or add boiling water, stirring it well to insure a mixture. When the glue sized floor is dry, it is then ready for the varnish. One or more coats of turpentine furniture varnish is applied, or a coat of hard oil-finish varnish is spread over the entire floor, leaving it when dry with a bright glossy surface. The details of this process are to be followed with care, thus insuring a complete success and presenting when finished a durable and cheap papier mache carpet. This new floor covering is suited for small rooms, halls, stairs, and the kitchen even if kept well coated with varnish. This furnishes a floor perfectly water and air tight; it may be washed and scrubbed like other floor covering. To further protect these mache floors where much used an occasional coat of wax that is dissolved in turpentine should be applied either with a brush or rubber made of cloth. The wax leaves the floor smooth and wears glossy and is easily kept clean.

J. E. W. C.

A SCOTCHMAN employed to build in London used steam cranes to hoist the bricks up to the required height; and as the English workmen refused to have anything to do with a job where steam supplanted men, workmen had to be brought from Edinburgh to finish the hotel.

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

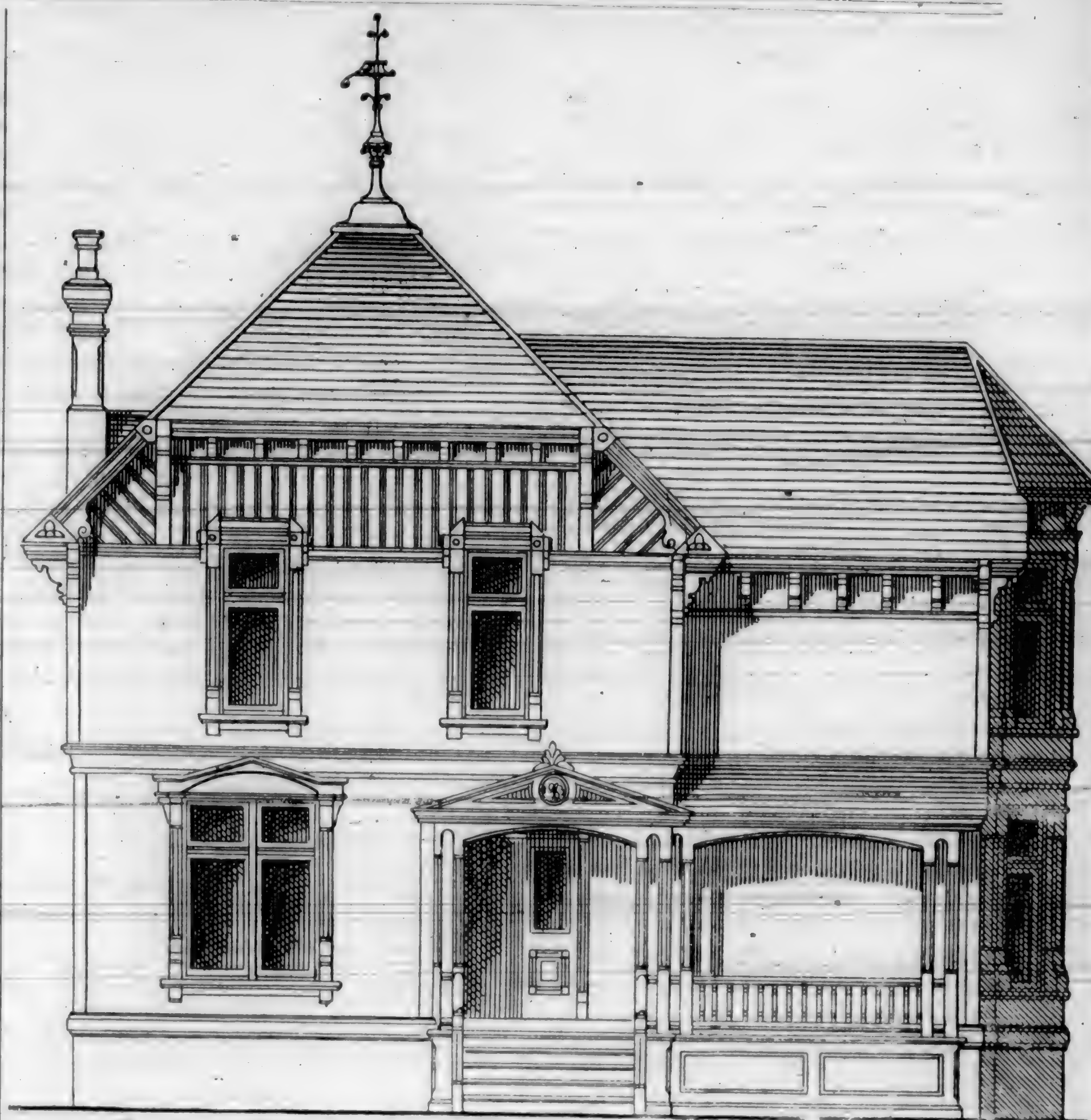


PLATE 2.—ELEVATION OF COUNTRY HOME. COST, ABOUT \$4,000.

Concerning Sanitary Science.

"ONE of the marked changes of our time is the altered position of the physician in the community. The traditional duty of the doctor is to cure disease, and disease was supposed to be a sort of malignant entity which had got into the system and could be expelled only by the most energetic and heroic remedies. Physicians were said to belong to the medical profession, as the chief business of the doctor was to prescribe medicines, which were mostly drugs. And Voltaire wittily summarized the work of the physician as an attempt to work a miracle by reconciling intemperance and health. A half century has altered the whole scope of medical study. Sanitary science profoundly affects medical theories. And the upshot of it all is that the old faith in drugs and medicines of all kinds is fast dissolving. People are everywhere learning that sunlight, pure air, good food, a proper dress, regular habits, plenty of sleep,—in short, that right living is a million times better than all the medicines of the world.

The great physicians of our time are vastly more interested in sanitary science and hygiene than in therapeutics. They are studying anew the questions pertaining to life.

They are investigating the conditions of perfect physical existence. They are giving lectures, and writing books on the great art of keeping well, of developing physical force, of building up a perfect body. The questions of drainage and ventilation, of the nutritive values of the different kinds of food, and the proper methods of cooking, of artificial exercise when it is necessary to resort to such expedients, the heating of houses, and the quantity and fashion of clothes that should be worn, are assuming an importance hitherto unknown. Everything that relates to the art of living, so as to avoid sickness and pain, and maintain the highest degree of power and enjoyment is invested with new importance. The physician is no longer 'a medicine man;' we send for him when ill, it is true, and value his curative services as highly as ever; but we would pay him a double fee to keep us well. He is a member of a health police, whose function it is to keep people from getting sick, and hold a disease at bay. And instead of killing a doctor when a patient dies, after the manner of the Emperor of China, the skill and proficiency of the physician of the future will be determined by his success in keeping his patients strong and well; and should they fall ill, he may be dismissed for a better one."—*Ex*

Important Facts in Regard to the Great Pyramid.

In our June number, 1883, we presented to our readers a diagram of the supposed manner in which the Great Pyramid was built, with an explanation of many important facts in regard to its history, and the wonderful results deduced from the measurement of its different parts.

Since that issue we have received many letters asking for explanations in regard to problems suggested by various thoughts of different readers. In order to answer such queries we present a few items in regard to the wonders of the Great Pyramid. Our readers will bear in mind that the thoughts contained in the succeeding paragraphs are but those culled from the works of those who have made the "Grand Mystery" a life study.

"If the Great Pyramid is over 4,000 years old, how is it that the stones of which it is composed do not show the same signs of disintegration that are noticed in ruins of a much more modern date?"

To answer this question we must first ask, What are the causes, natural or otherwise, that tend to decompose solid rocks? The most powerful elements are frost and rain. In parts of our own country we often have occasion to notice the mighty power of water that has been confined in clefts and seams of rocks, suddenly expanding by being frozen, and with mighty power rending rocks asunder, and at times tearing away the whole face of cliffs. In Egypt the climate is dry and sultry, and so slight is the pure decay which takes place in earthy matter that even crude or unbaked bricks, formed merely of Nile mud, have been known to last some 3,000 years; and stone blocks, of which Egypt has vast supplies and of excellent quality, have lasted longer still. So we see that frost, the greatest enemy perhaps of stone, is a minus quantity in the land of Egypt.

The Pyramid is situated in a desert of sand. How, then, can it be founded on a rock?

It is built on a rock, and one specially leveled for the purpose. The four corner-stones are let into the main rock, and the four sides of the building face exactly the four cardinal points of the compass.

In building such an immense pile of masonry, the chippings practically would amount to thousands of tons. No trace of these fragments is left. What became of them?

The Pyramid is built upon a rocky hill and much of the material used was excavated therefrom. Some writers speak of the Pyramid as being built upon two hills, the surface of which was artificially leveled. One-half of the northern section or hill has been shown to be of pyramid chips. This fact was proven by the action of nature's elements. In Egypt sudden torrents occur that sometimes make a mighty change in the face of nature. They caused channels to be cut in the vast piles of sand and chips, sometimes to the depth of

sixty to seventy feet, exposing to view the chips that were trimmed off from the stones. Near the top of the heap are chips of black and white diorite, much the same as the statue of Shafre, in Boolak. No such material is seen in any tomb, or in the Pyramid itself, except near the entrance passage. Hence the inference of an undiscovered room in the Pyramid—the muniment room for the monument.

One important fact is interesting. Many of the ruins in Egypt are covered with hieroglyphics. *Why is it that we find no signs of any in or about the Great Pyramid?* This is a question that we would like to have answered by some of our scientific men.

The Great Pyramid is really a most gigantic proof that that eventful beginning of stone architecture, by the highest and best-built structure that has ever yet been erected, shows that Divine Inspiration must have energized its builders. The material of which the Great Pyramid is composed would build a wall one foot thick, five feet high, and over 3,000 miles long. It contains more than 80,000,000 cubic feet.

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

Remarkable Invitation.

We have been favored with a copy of one of the most remarkable "invitations to architects" which has yet come under our notice, and take a certain satisfaction in giving it currency. The building to which the attention of the profession is directed is intended for the use of a cotton exchange, and the competitors are required to furnish plans, elevations, sections, diagrams of construction, full and accurate descriptions, and "full detailed bona-fide estimates" of the cost of construction of their designs. The circulars have no date, but unless our invitation was unduly belated we are forced to conclude that the competitors generally are expected to go through with the labors specified in about thirty days. This, as we need not tell those who know anything of office business, would involve very lively work on the part of an architect and his assistants, and one would suppose that a committee in such a hurry would expect to pay liberally for compliance with their wishes; so that it is with some surprise that we read a sentence near the end of the circular, announcing that "no premium is offered to competitors," and a careful search through the whole document fails to reveal any promise or suggestion whatever that those who accept this extraordinary invitation will be regarded or treated otherwise than as simple gudgeons, who do not know enough to see whether there is any bait on the hook before biting at it.

An experienced eye will be caught by another curious circumstance in the wording of the circular. In mentioning the details of the accommodation required in the building, the sizes of the rooms to be provided for are specified with a startling exactness. We read, for instance, that the basement "is to contain a

restaurant of about thirty-nine by sixty-five feet, with a room which may be used for kitchen or office; an office which may be either adapted for banking or insurance business, of about twenty-six by sixty-six feet; an office of about twenty-six by thirty-nine feet," and so on; while the story above is parcelled out with similar minuteness. By applying to these peculiar features of the invitation that Socratic questioning which is so dear to the mind no longer subject to the illusions of youth, we may perhaps convey a useful lesson to some of our readers. "How does it happen," we should first ask, "that the desirable height, width and breadth of all the principal rooms in the building have fixed themselves with such exactness in the minds of the committee?" "Evidently," we will suppose Alcibiades to answer, "because the dimensions were measured from some plan." "But if the committee has a plan already made which it thinks well of, why does it send around to architects inviting them to 'compete' in sending more plans?" "Perhaps because it thinks it might be useful to collect the ideas of other people on the subject." "Judging from all the indications, what benefit seems likely to accrue to the innocent persons disposed to exhaust themselves in efforts to furnish these ideas?" We listen in vain for a reply. "What degree of intelligence, then is to be attributed to those persons, if any, not concerned in the drawings which have obviously been already prepared, who may respond to the committee's invitation?" We leave this question for our readers to answer. — *American Architect and Building News.*

Detail Cottage and Constructive Architecture. Price \$10.00.

The Position of Architects in South America.

A CORRESPONDENT writes, from Buenos Ayres, that the professional emoluments of architects are by no means large in that part of the world, while their social position is not the same as in Europe. There is no restriction as to any one who has a mind to do so, calling himself an architect, and persons intending to build, after getting the skilled opinion, and even the designs of an architect, sometimes dispense with his services when they have secured his ideas, leaving him without remuneration. The Italian working masons are skillful in copying whatever is placed before them, and this fact is referred to as exercising an injurious effect upon the prospects of architects in South America.

Important to those Receiving this Journal.

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.

Extra Drawings Required by the Plumbing Law.

THE rules and regulations adopted by the Board of Health require that plans for the plumbing and pipe work as proposed by architects engaged in the erection of buildings, shall be filed in the office of the Board. This hitherto unrequired regulation has met with some opposition from two causes. First, it imposes extra work upon architects, which all feel should be compensated, and raises the question as to who should pay the bill. The plans and specifications for buildings, as generally understood, do not include this extra work, and it is only fair that it should be paid for by some one; and there can be no other rational conclusion reached than that the party most benefited—the owner—should bear the expense. The intent of the plumbing law, and its practical effects, if strictly enforced, is to protect owners from the many frauds which have become almost universal in plumbing circles, the better classes of plumbers having been forced to avail themselves of many of the tricks practiced by the "tinkers," to enable them to approximate the "scrubs" in prices. Consequently, perfect plumbing work was the exception, and owners failed to realize that in the intrustment of this important branch into the hands of incompetent men, because they proposed to do the work cheaply, was a very unwise, and, in the long run, a very expensive rule. And as the new law proposes to remedy the evils so long existing, owners should willingly consent to pay its small expense of preparing the extra drawings. The better and squarer way would be for architects to make, and owners to recognize, a separate charge for the extra drawings; but if this cannot be done, then we renew the proposition made in our last issue that the cost of the extra work be paid by the plumber—it being made an item in the plumbing specifications—in effect, the same as the plumber paying the Spring Valley's charges for water connection. The second objection comes from that class of architectural frauds who are ignorant of every finer point in plumbing science, and who could not, if they would, fix up a creditable set of plumbing specifications. Hence they prefer to be let alone and not required to expose their inefficiency and ignorance, preferring to enjoy undisturbed the rational logic by which they perpetuate their impositions, to wit: that those owners who engage them should be permitted, and by force of such engagements compelled to accept the character of work planned by them.

But as the new law is a good one—not perhaps as perfect and thorough as it might be—we hope to see it enforced rigidly, and trust that Mr. Sweeney, the inspector, will press its efficiency to the fullest extent. There should be no mincing of matters, but a determined and persistent effort on the part of the inspector to weed out all the bad things aimed at by the passage of the law.

Steel Square and Its Uses. Price \$1.00.

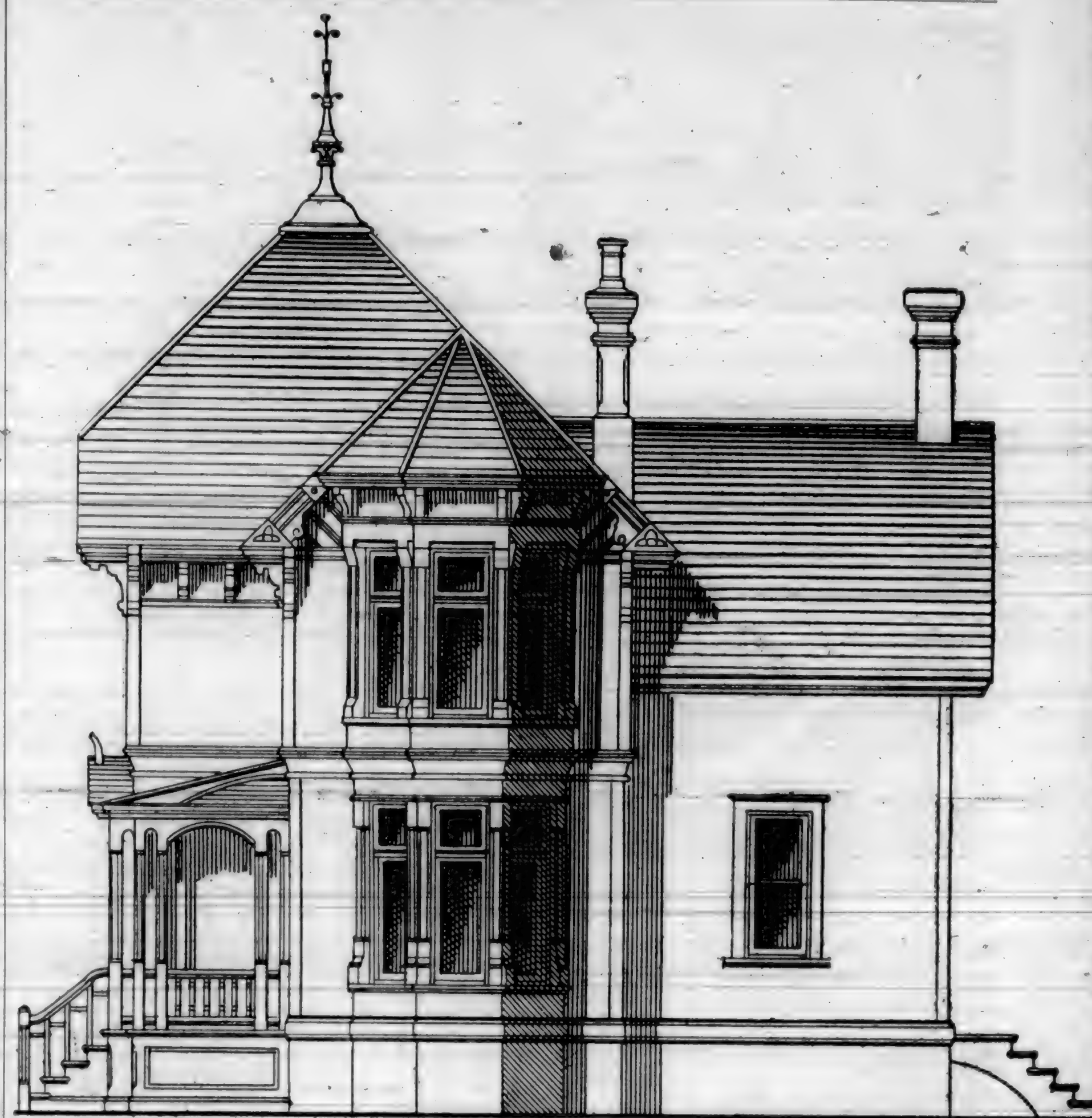


PLATE 3.—SIDE ELEVATION OF \$4,000 COUNTRY HOME.

Balance of the numbers of this year given free to all new subscribers for 1884.

All old subscribers whose time expires between the months of July and January, upon remitting us \$2.00, will be credited with the intervening months, so that their subscription may commence with January number.

Cost of Building Materials.

ABOUT the first inquiry made by persons contemplating building improvements, is in reference to the cost of materials; and nothing more effectually dampens the ardor of those wishing to build, than to find the material market inflated; and numerous contemplated improvements have from time to time been delayed for a greater or lesser period, or entirely abandoned, owing to the "high price of materials." Every advance in prices, whether in things purchased or in labor, operates as a scarecrow to timid owners, who grow pale at their own shadow when money is to be expended, or the sum of their bank account diminished; while others governed by correct business principles refuse to accede to demands bearing the impress of extortion. When prices exceed seemingly fair and legitimate rates, with no special cause for increase other than the self-evident disposition of the seller to augment existing fair and sufficient

profit, extortion looms up in the mind's eye of the buyer, who, rather than submit to the extra tax levied, is apt to institute a wait until the "market regulates itself," and prices settle down to a reasonably fair standard. There are but few men unwilling to pay right value for things obtained, and equally few who are willing to submit to exactions not warranted by rational, business facts, other than avarice on the part of those controlling the manufacture, production, or sale of things desired. Hence the building of houses is to a large extent controlled by those who, when buildings are erected, reap the greater benefits and profits resulting from the construction operations. And material men and workmen would do well, when contemplating acts or purposes calculated to add to the cost of improvements, to consider whether it is the better policy to "kill the goose that lays the golden egg," or to feed the bird and continue it in good health and vigor, and await the regular deposits as they come.

one of the greatest enterprises marking it is the development of the railroad.

What has the railroad done? Beginning as a single short thread, it has grown into a web that covers the whole country east of the Mississippi. It has almost annihilated space and distance, and has brought far places together. It has united the Atlantic seaboard and the great inland valley, which rivers could never do.

It has been said "the highways of nations are the measures of their civilization." These highways may be the ocean, or the rivers, or the valleys, but they must exist in nature or be formed by man. If men are isolated and dwell apart there can be no society, no great Governments, no development of wealth, commerce, manufactures, mechanic's arts, fine arts, letters, or general culture.

Statistics in Europe and this country show that this development is almost in direct ratio to the growth of railroads. Before 1833, when the first railroad was built in England, the exports and imports of that kingdom were at low ebb. In thirty years the increase was £400,000,000, or about fivefold, and this can be shown to be the result of railroad extension.

In our country the development would have occupied ages if colonists had followed the river valleys only, as these are all in one general direction, the system of the sea board and of the Mississippi Valley tending from north to south. No water course cuts the country from east to west. But since the net work of roads has been laid all over the country, population has poured in, and the great commercial centers of Buffalo, Rochester, Cincinnati, Cleveland, Chicago, and St. Louis have been developed, and a hundred other large towns built up.

The 115,000 miles of railroad in the United States have cost about \$5,000,000,000, equal to nearly one-tenth of the whole property value of the country, or one-fifth of the capital resulting from labor on the land. They give employment to over one and a half millions of persons, said to be about one-seventh of the whole male adult population. They pay out in wages and material about \$500,000,000 yearly, that will help support a large number of families. They move 400,000,000 tons of freight, which will employ many poor men. This freight mainly belongs to laboring classes in common, and not to any privileged class, and therefore it interests those directly.

The relations of railroads to the public are so general, constant, and intimate that it hardly needs any illustration or emphasis. The progress of the whole country is due in a large measure to railroads. The increase of exports alone in the ten years from 1870 to 1880 was nearly \$500,000,000, three-fourths of which was due to the great West and the Pacific Coast, and the products were carried East by railroad. Thus the railroad became an agent to establish the balance of trade, and really aided the Government to resume specie payment.

Individuals that dwell apart from their kind, shut out from social life, become peculiar and

narrow in their views, habits, and customs; their development is abnormal; they are oddities. So colonists in isolated districts, with no great avenues of communication with outside life, do not become a strong, vigorous, enterprising people. They are not the leaders or powers in the world. Robust, earnest minds, alive with thought will not be shut in. They will make a way out if none exists. Inter-course with people expands the soul, and enlarges our whole nature in all directions. It harmonizes thought and feeling, rubs off the corners and peculiarities of character, and produces similarity in ideas, habits, and customs. New England with its Puritan thought and customs, New York with its Dutch habits, New Jersey and Pennsylvania with their Quaker habits, and Virginia and Maryland with their English adventurer's life needed assimilation—a commingling and a union of common thought, feeling, and interests.

Inter-course promotes peace and good-will better than treaties or the Peace Society; it is a better conqueror than war. If this web of iron roads had been spread over the country a half century earlier, it is believed that the civil war would never have occurred, for when people are moving from one end of a kingdom to the other with such facility as the railroad gives, they tend to become one in thought and feeling. So the North and the South can be united better by railways than by their rivers and valleys; the Atlantic shore with the Mississippi and the lakes, only by railroads, in such union as is now demanded. The great States of the new West, the new Northwest and the new Southwest must be banded together and linked to the older East. How, except by railroads?

The eighteen hundred miles of road, completed fifteen years ago, perfected the line across the continent. Along that smooth line many of us have glided in comfort. But have we ever been sufficiently appreciative of the provision thus made by which we can so quickly and comfortably span the great spaces that lie between us and "Home, sweet home" in the far East? Have we ever sufficiently appreciated the thought and the labor that gave us this firm, smooth passage, and the lightning speed day and night, till the dear old spot was reached?

Riding on this peaceful journey, and resting, have we ever dwelt on this topic and tried to go over in detail the planning of this grand highway? In our dream have we also been with those few men in that obscure room, night upon night, week after week, and month after month? Have we heard the story from the beginning, and followed it through its stirring chapters, its lights and its shadows, its hopes and its fears, its promises and its despairing? It is an easy thing to ride and eat, read and sleep comfortably on that road of two thousand miles; but is it an easy thing for a few private business men, without fortune, to build it? Does it require any expenditure of thought and judgment? Is it thrown up on a sandy, level plain—a work that a few men can do in a few days?

Look out on the road as we travel. Moving out of these green California valleys, we begin to climb by easy, almost imperceptible grades, the low foot-hills. We pass over river and stream and the rise grows steeper and steeper. We creep on and up, until we are gliding along on the edge of dizzy cliffs, eight thousand feet above the sea level, and look down into gulfs seemingly fathomless—abysses of darkness. We have come up out of the plains of flowers on to the mountain heights of granite—the snow and the ice all around us. We plunge into the white drifts and our pride suffers and goes down—for, great as is the strength that drives us, we stick fast. We come out at length and go on down upon the cheerless desert. No greenness there—no beauty, no life—nothing but brown sand, whitened with alkali—utter desolation and barrenness everywhere.

All this in the beginning had to be thought of before a shovel was touched, a pick struck, or an axe lifted. One hundred thousand men had built the pyramids, true, but they were slaves, and bent the knee at the edict of the imperial autocrat of Egypt. "Is not this great Babylon that I have builded?" said another dictator. But here was no such power, no Croesus, no Oriental treasury; only four earnest, working men, in a plain room—all the surroundings of republican simplicity.

Newton worked patiently seventeen years on the problem of universal gravitation. This was their problem—to make a pathway across the continent, which would be like an artery bearing a living current from the life of the East to the life of the great West, which should carry and mingle the spirit and culture, the social, civil, and religious life of the East into the West, until there should be but one American life. It was a serious study, demanding much thought, time, and money. It might take seventeen years.

Columbus had grown haggard over such a problem. Looking over the ocean into the sunset, he caught glimpses of a pathway that common men could not see. By that light "that never was on land or sea," he had clear vision of a great highway, over which his soul longed to travel. He studied for years, wandering from court to court, to find means to "go west." This is but an extension of his "road to the Indies."

And how was it to be built, to be paid for? Men by the thousand to dig, to level, to blast rocks, to cut timber, to tear down hills, and fill up valleys, to bridge rivers and chasms, and tunnel mountains—this demanded patience and perseverance that are not common. As we enjoy the fruits are we not liable to be unconscious of the planting—the high purpose, the sagacity, the courage, the energy, the will that secured this comfort to us? Do we remember further that this scheme was thought out and matured in the dark days of the war, days of calamity, of poverty, bankruptcy of national credit, days of gloom, dismay, almost despair? In such a time the project was brought before Congress, and in

the face of constant opposition, obstacles whose name was legion, difficulties almost appalling, the measure was carried, the bill passed, the means provided, and the road was built.

But the secret history of this work in its details, the expenditure of vital force—the brain and nerve power—the anxiety, hope deferred, waste of energy upon utterly indifferent and lifeless bodies of men elected to advance the interests of the State, waste of energy in other directions upon the greed and craft, envy and selfishness of other bodies of men, the heart-sinking at times, when it seemed as if all was gone, and the work must stop, this has not yet been written.

This great road makes an open way and rapid transit for California, Nevada, Utah, Colorado, and Kansas into Eastern markets, and Eastern social life. The second day after its opening, one hundred chests of new tea from China made such a passage into New York as had never before been dreamed of. The report of it in China seemed like a story from the Arabian Nights.

Do we older ones remember—what the rising generation does not,—the original style of travel—the prairie schooner, the emigrant train, and journeys of three to six months—then the letter-carrier on snow-shoes, and the pony express? Do we remember the wrecks of wagons that strewn the trail in the sand, the bones of animals, and the graves of mothers and children, and of men that started in strength, the tragedies acted by Donner Lake, and in Death's Valley and Mountain Meadow? That state of things—that style of travel—with all the attaching disasters, might still be our experience to-day had not the thought and energy been exercised and developed that produced such a road.

But what is of more importance to this journal is the question, How does the building of a railroad affect the industrial interests and the mechanic arts? This can be easily illustrated. A journalist once said: "No other enterprise, probably, could be started that would so widely affect the mechanical industries as the building of a great railroad. It has been estimated that it takes the labor of 20,000 men for one working day to build and equip one mile of railway." Suppose 2,000 miles of road is built; on that estimate it will give employment to 140,000 men for 300 working days. Their work is in wood and iron—for the skilled workman. It takes that number of men out of idleness and keeps them active. They and their families must have clothing, and that requires machines and active work. They must have food, and that again requires machines and work also. A road of that length makes a new demand on the foundries and rolling mills, for say 20,000 tons of new rails and for perhaps 300,000 tons of manufactured iron in other forms for locomotives, cars, ties, bridges; these make a demand on the machine shops and nail factories, and these must call on the miners.

Not very many years ago a convention of men in the iron business was called in Penn-

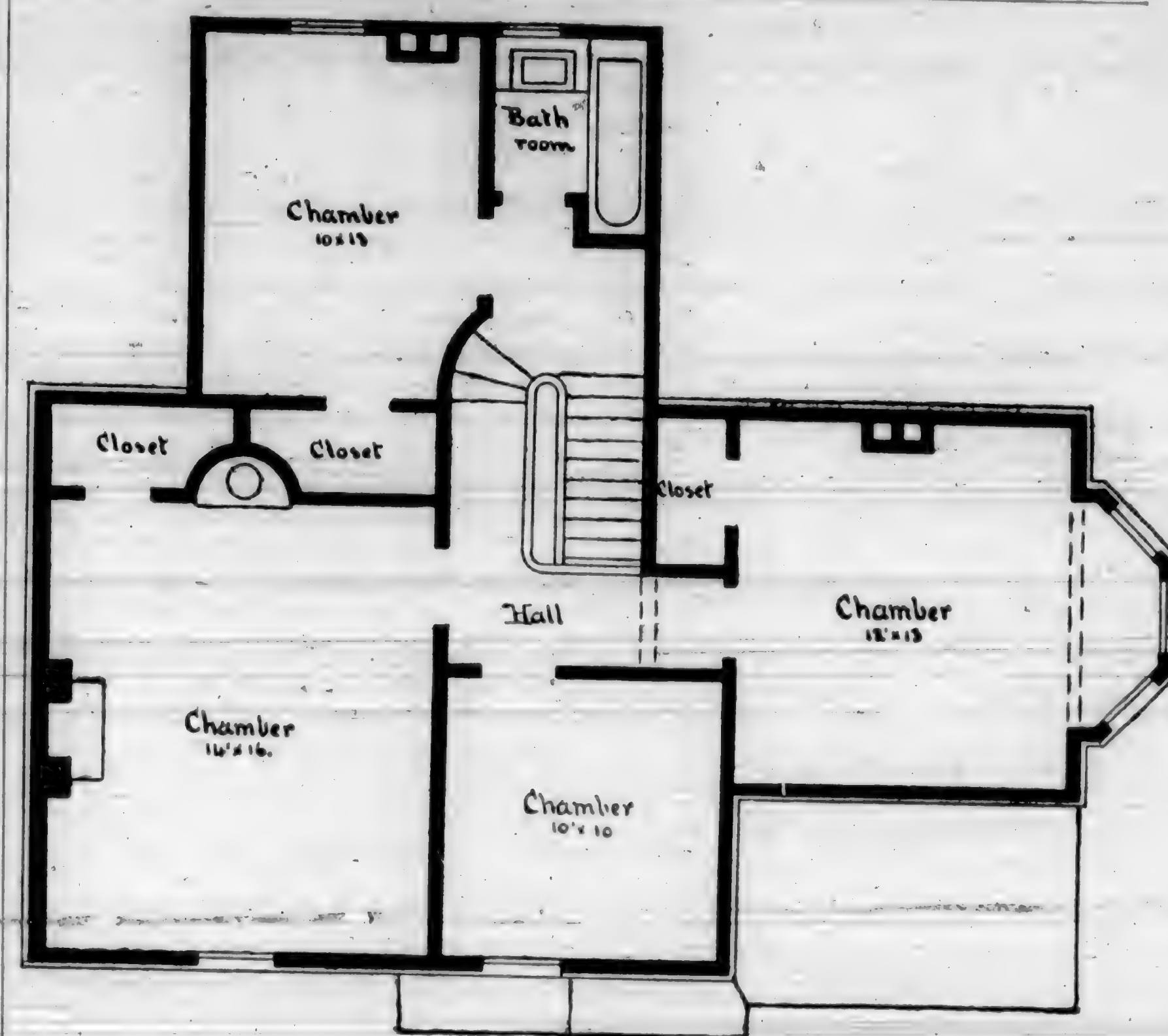


PLATE FOUR.—SECOND FLOOR PLAN OF \$4,000 COUNTRY HOME.

sylvania to consider the condition of their interests. At that meeting it was stated that nearly one-half the iron mills in the country were idle; that 300 furnaces were out of blast; that 500,000 men were out of work; and this state of things made a difference in the income of labor of \$1,000,000 per day; that their prosperity and production depended on the activity of the railroad systems in the country almost wholly, for the railroad took one-half of their entire product.

One of the prominent journals in that State took up the discussion and said: "If we wish to relieve the condition of our iron interests, let the Legislature and Congress awake to a sense of duty and give a new impetus to the debate on the bill for a railroad through the undeveloped territories." The immediate result would be that all these industries would start afresh, for there would be demands for iron in every form, and the steam whistle would scream from every rolling-mill and foundry and machine shop in the State, and locomotive works and steel works, car-wheel and car building shops would be alive with earnest and active men.

About the same time a Galveston journal uttered an unconscious prophecy, when it said: "When such a highway shall be opened across the country, the mineral wealth of Arizona, New Mexico, Texas, and Old Mexico, almost wholly undeveloped, will seek water carriage at Galveston, and where one vessel enters

now there will a dozen enter." "Our city will become a depot for all the coffee required in the great States in the West, and send away more cotton than either Mobile or New Orleans." But its prophetic eye did not see the California and Oregon wheat piled up on its wharves.

Such a great road starts all the lumber mills into operation as well as the iron mills. It uses a vast amount of lumber in all shapes, and these mills must do its bidding. Ties for tracks, lumber for stations, for depots, for bridges and trestle work, for tunnels, for workshops, for cars, for snow-sheds, is in demand, and every saw-mill and planing-mill and turning-mill is driven to its utmost capacity so long as the call is kept up.

In addition to the great stimulus that such a work gives directly, for its own uses, to the trade in iron, steel, and lumber, it opens new territory to emigration; individuals, families, colonies take possession of the land and turn it into grain farms and fruit farms, and tools of every description are demanded; the market for every implement used on a farm, in an orchard, in hydraulic mining, in quartz mining, in the great lumber-mills, and flour-mills, and all other industries is immensely enlarged and kept active. New inventions are demanded for new work, as the Little Giant in hydraulic mining, the diamond drill in quartz mining, the cable road, the devices for reducing gold, silver, and copper ores, for gathering great

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.*

Wooden and Brick Buildings, 2 vols. Price \$18.00.

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.

A NEW WORK.

Steel Square and Geometrical Problems

THIS is a revised and greatly enlarged edition of a work by the author of "Carpenter's and Builder's Assistant," "American Stair Builder's Guide," etc. It contains 108 pages, fully illustrated. Explicit directions are given for solving many of the problems that so frequently vex the mechanic, and the explanations are made in language so plain that the apprentice can as readily understand them as the master mechanic.

Price.....\$1.00, post-paid.

We have been appointed sole agents on the Pacific Coast for the above work.

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

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.

MECHANICS' GEOMETRY, OR SCIENCE OF FRAMING WITH THE AID OF CARD-BOARD MODELS—Should be in the possession of every mechanic on the Coast. Sent post-paid upon the receipt of \$5.00.
THE ARTISAN—The mechanic's own book should be studied every spare moment. Price, \$5.00.
CARPENTER AND JOINER MODERNIZED—Third edition, revised and corrected, containing new matter of interest to the carpenter, stair-builder, cabinetmaker, joiner, and mason. Price, \$7.50.
NEW ELEMENTS OF HAND-RAILING—Contains forty-one pages, thirteen of which are now for the first time presented. Price, \$7.00.
LESSONS ON HAND-RAILING FOR LEARNERS—Third edition. Price, \$5.00.
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.

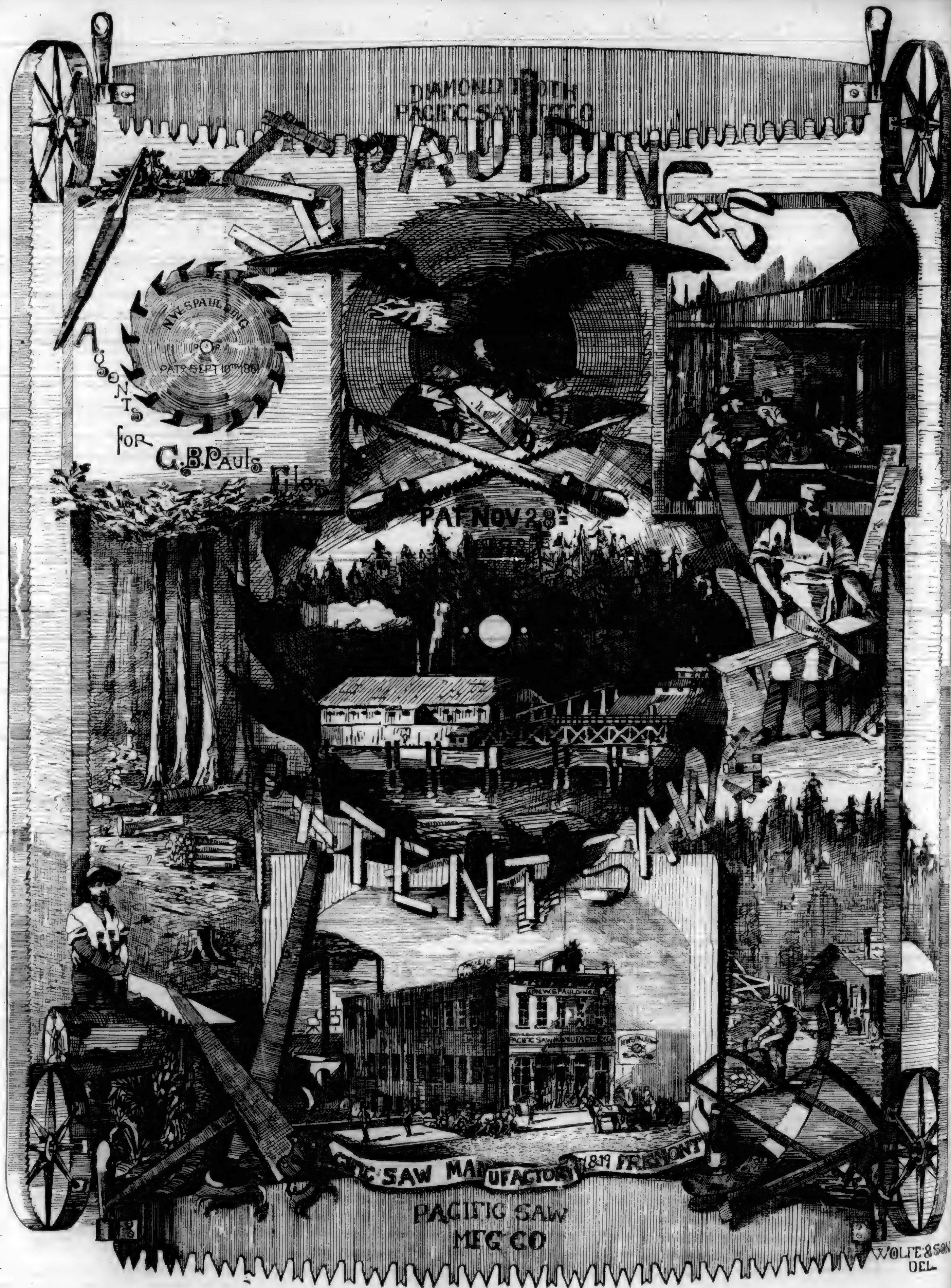
The Protection of Iron Against Rust.

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

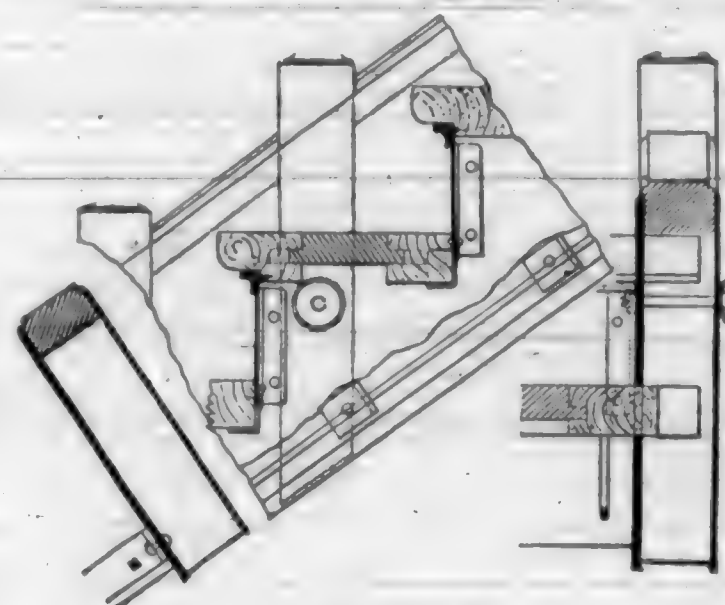


Figure 2.

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.

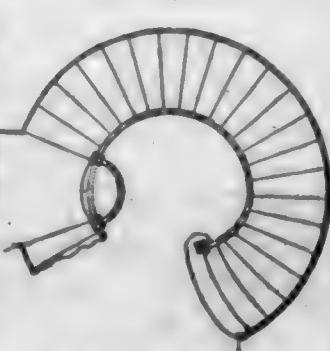


Figure 3.

The California Redwoods.

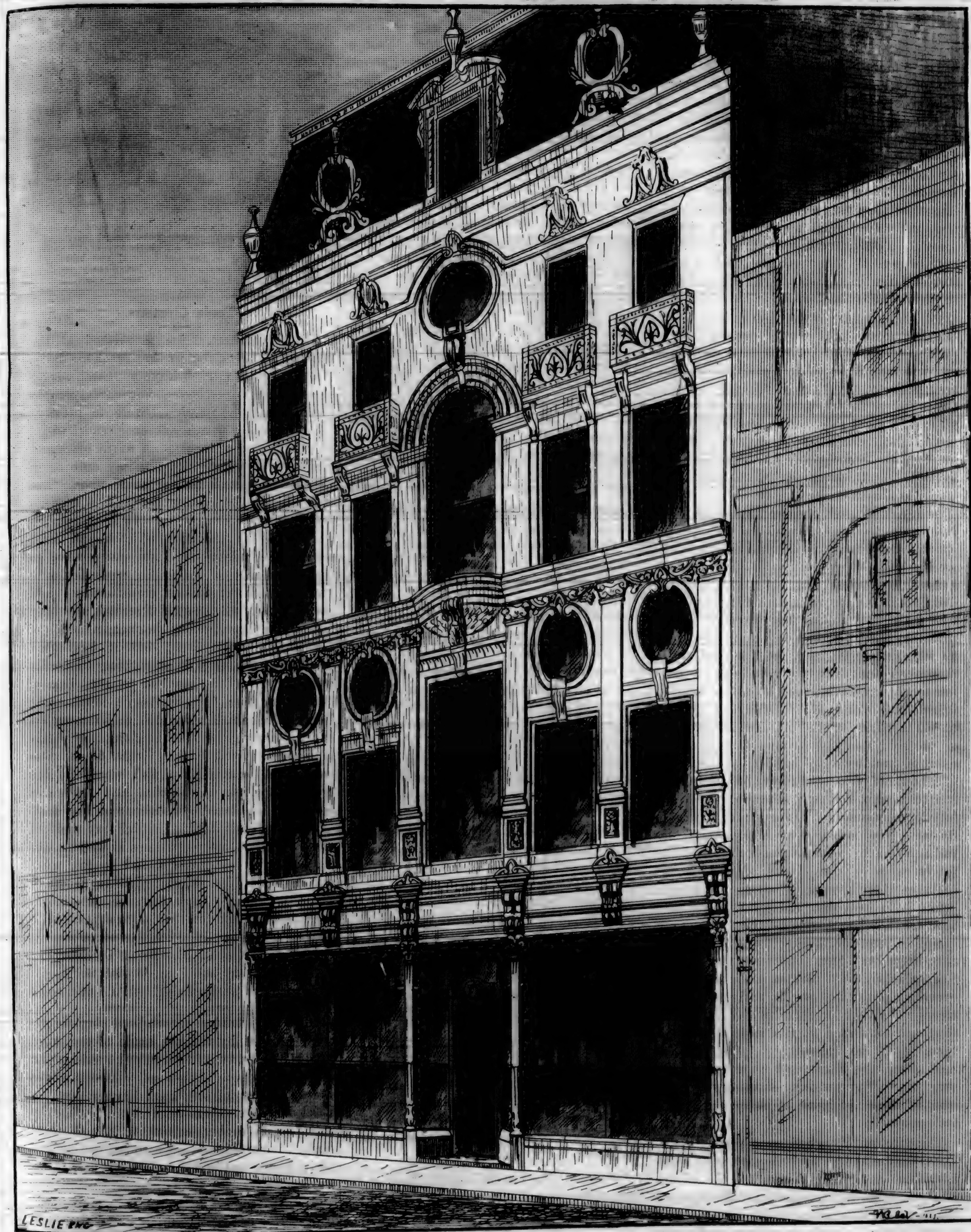
A CORRESPONDENT of the *Federal Australian* from San Francisco describes the cutting down of some of the great trees on the Pacific shore. He says:—

"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.

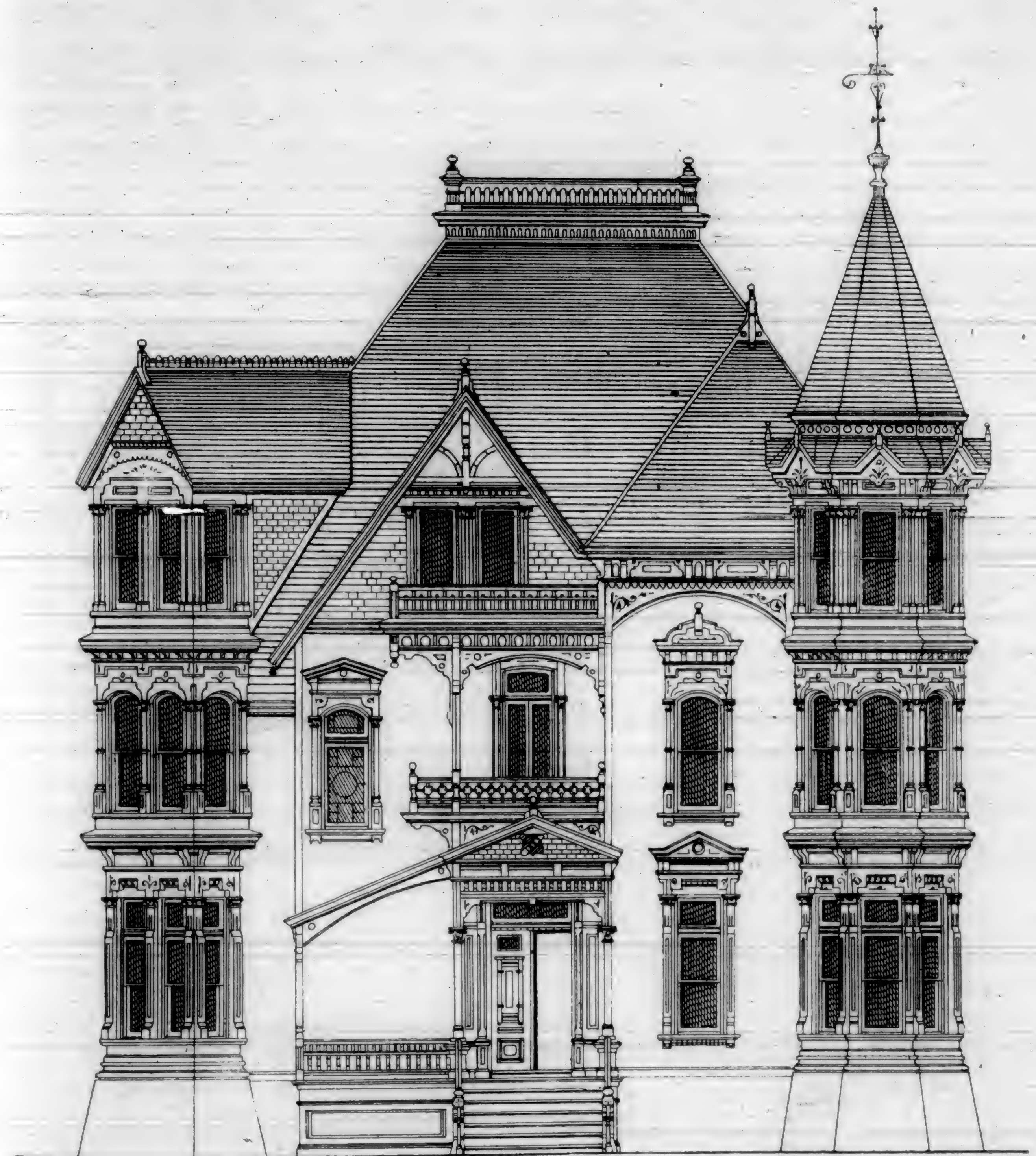


PLATE 2.—SUBURBAN RESIDENCE—COST FROM \$12,000 TO \$15,000.

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.

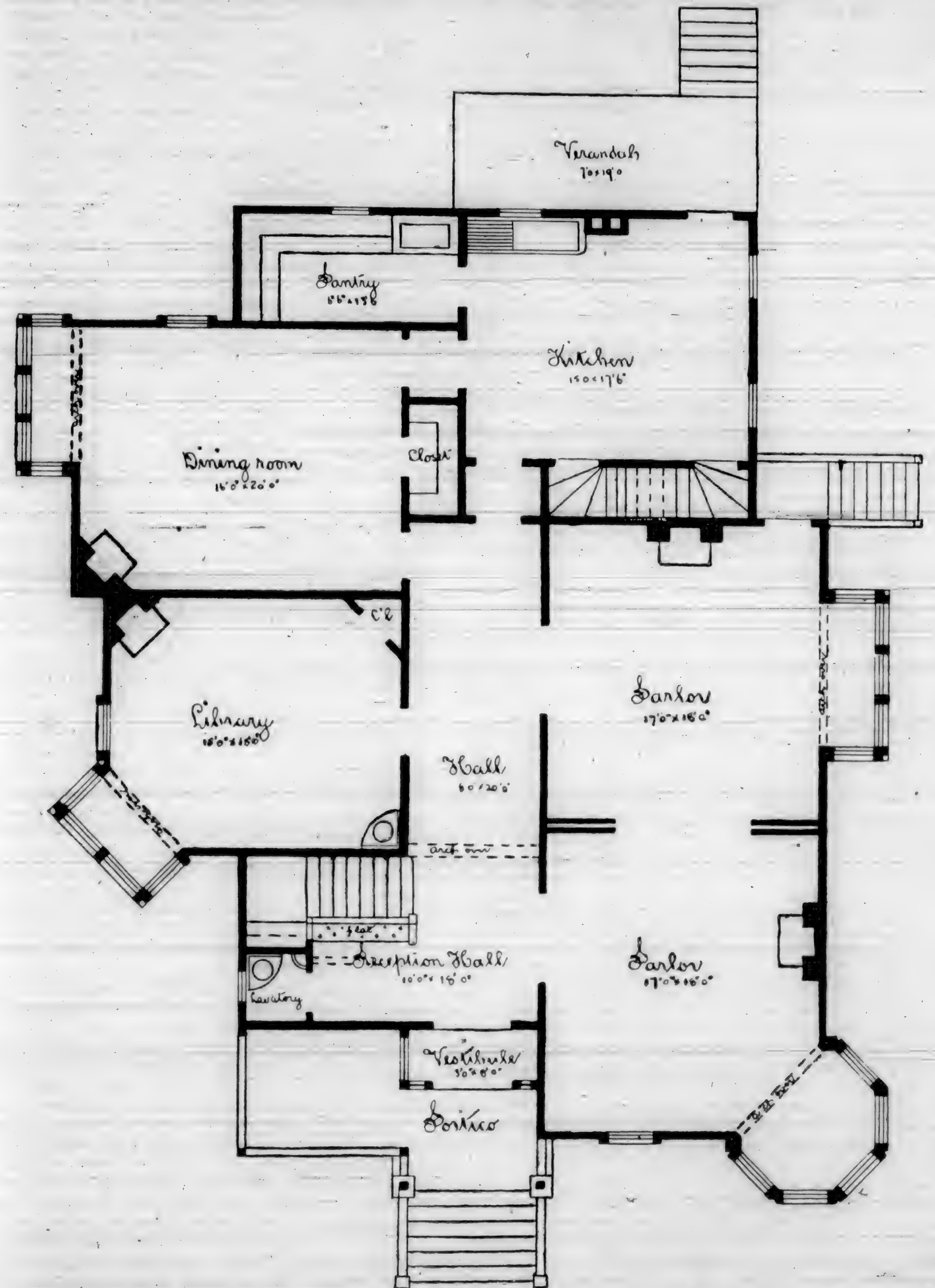


PLATE 3.—FIRST FLOOR PLAN OF SUBURBAN RESIDENCE.

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 artied 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]

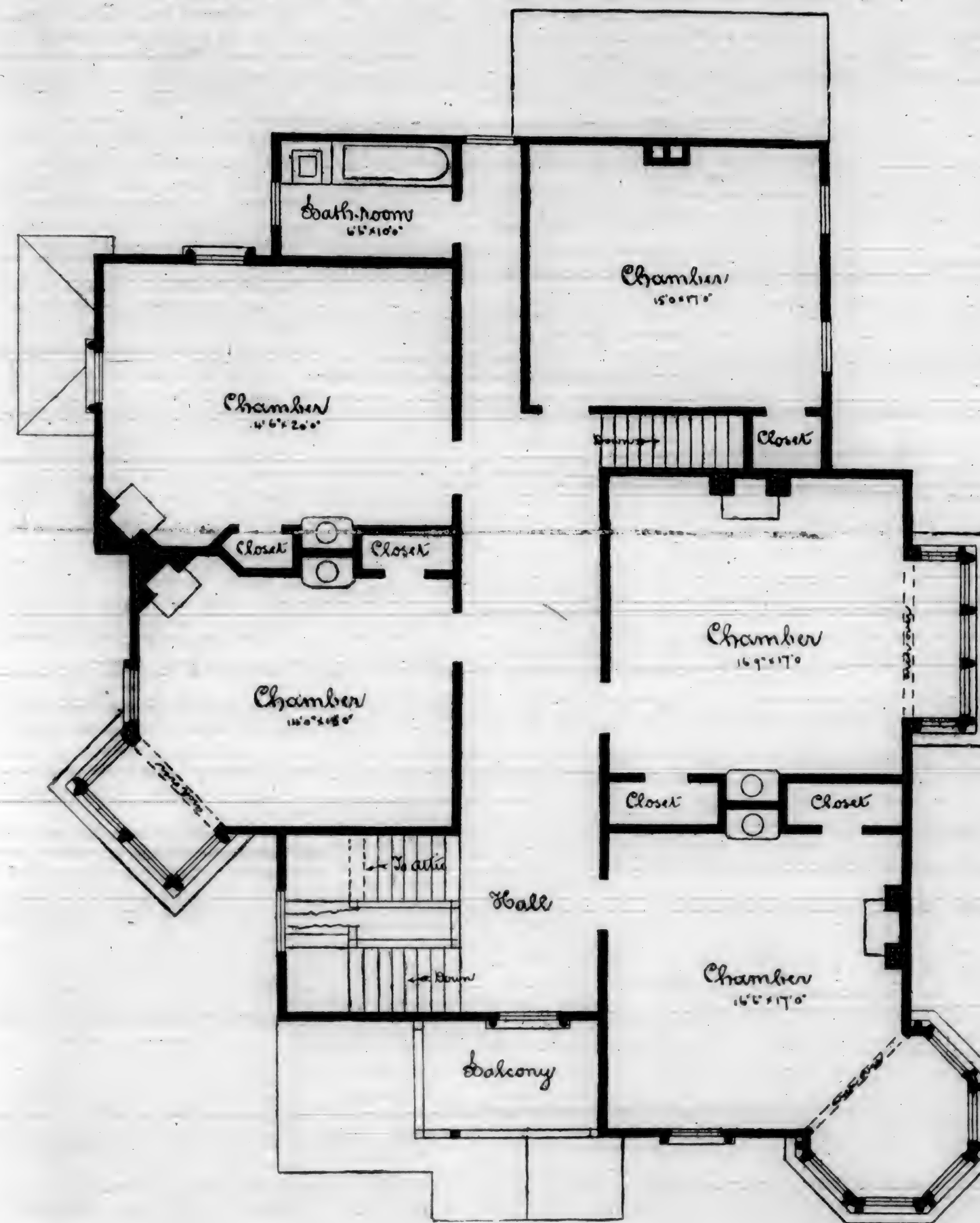


PLATE 4.—SECOND FLOOR PLAN OF SUBURBAN RESIDENCE.

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*.

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