

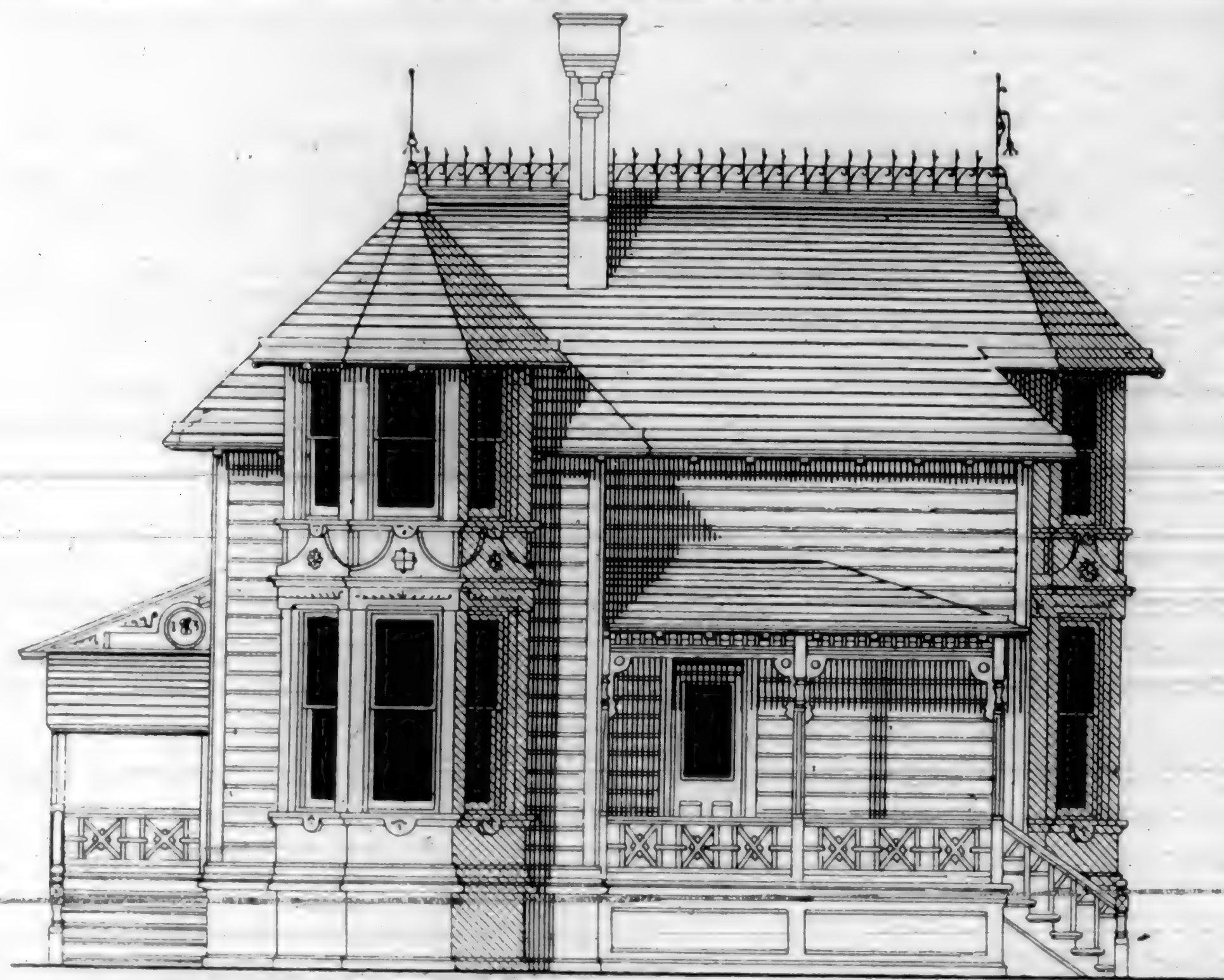


PLATE 4.—A SUBURBAN DWELLING COSTING ABOUT \$3,000.

The Other Side.

[We admit the following communication to our columns for the single purpose—as far as its references and inferences go—of showing in what manner, and to what extent skilled and unskilled labor has been and is affected by the acts and successes of the railroad companies. We leave the vexed question of regulating freights and fares—direct commissions, &c., to the tender mercies of the general press.]

STRANGE as the announcement may be to the average man, yet the fact remains that there are two sides to every question; the one idea, and one-sided creatures who foam over and fill the daily press with froth when discussing the railroad question in this State, seem to have forgotten, if in fact they ever knew this general proposition. Judging from their wild statements we are living under a tyranny worse than that of the Czar of all the Russias,—our State lying prostrate under its iron heel, and all enterprise heavily handicapped by its remorseless grasp, etc., etc., *ad infinitum*—while strange again is this fact, that the men who raise this howl of anguish, and thousands who join in it, never pay one dollar for freight or passage over this terrible road, but feeding daily at this miserable mess of prejudice, ignorance, and brainless nonsense, they gradually come to believe that they are the most down-trodden people on the earth's surface, and raising their hands in holy horror they cry, Down with the magnates (*magnates* by the way is remarkably effective), and howl all the louder in hopes that the noise may become so obnoxious to the railroad people, that they may be induced to offer them a little coin to stop their miserable wail.

Now we wish to state a few facts and ask

fair-minded men and women to give them their full weight in making up their minds on this important question. First—The large number of gentlemen employed by the great Railroad Corporation (hirelings, see daily press) include some of our most active and useful citizens, who take as much pride in the prosperity of this State as any portion of its inhabitants. And being as a rule well paid for the services they render, in return are faithful in the performance of their duties; at the same time obliging and courteous to those who transact business with the road, comparing most favorably in this respect with the working force of any Eastern corporation.

Second—The immense sums of money expended in this city and State, giving employment to thousands, encouraging home manufactures, and quietly but surely adding to the substantial prosperity of the Pacific Coast.

To call attention in detail to part of this constant outlay of money, we would cite the millions spent on the palaces on California Street Hill, the construction of which employed for several years hundreds of our best mechanics at the highest rate of wages, and whose beauty and splendor are the pride of every true citizen.

The very large expense incurred in building the California Street Cable Road, the efficient manner of its equipment and daily management; also the large amount of property enhanced in value by its construction.

The millions now being expended on the Market Street Cable system, sparing no expense to secure a roadway that shall last, run

smoothly, and be a continual source of pleasure to those who patronize it. This first-class road with all its branches will be one of the chief features of our city, its equipment and management the very best, while property all along its far-reaching lines has advanced, and will still more advance in value, giving promise of the erection of hundreds or new buildings as soon as it is completed.

The million and over spent upon the mole and new depot on the Oakland side, which is unsurpassed by any ferry company in the United States, and giving security and convenience to the thousands who use it daily.

The extensive improvements at Benicia and Port Costa, including the construction of the mammoth ferry boat *Solano*, with the slips, wharves, and landings, all of which involved a large outlay of money which also found its way into the hands of our best mechanics and laborers.

The purchase of seven thousand acres of land at Monterey, building the Hotel del Monte, laying out and beautifying the surrounding grounds, macadamizing twenty-five miles of

roads through the most picturesque portion of the county, so that all the principal points of interest can be reached by tourists with pleasure and comfort; buying the great Los Laureles Rancho with its superior water privileges from the Carmel River, constructing substantial reservoirs and conveying the water some twenty miles in iron pipes twelve, fifteen, and eighteen inches in diameter, so as to afford an abundant supply of pure water for the Hotel del Monte, the surrounding country and the well-known summer resort by the sea, Pacific Grove. Enlarging the grove, erecting new buildings, and sparing no expense to make both places the most attractive resorts on the coast; advertising them in the most thorough manner throughout the Eastern States and Europe, so that the Hotel del Monte, with its many attractions is as well known as any similar resort in the world, bringing hundreds of wealthy and enterprising men to California, thereby calling attention to the resources of this State, where such golden opportunities await all who have either capital, brains or perseverance.

In the matter of advertising alone the railroad people have done more to make the advantages of this State known than anything that has been done for years.

The great faith, good judgment, and indomitable pluck that induced the managers of this corporation to project a line across the wilds of Arizona, New Mexico, and Texas, reaching to the Mississippi and New Orleans on the Gulf, spending millions of hard coin in an investment that was open for all the capital in the

land to enter, but which lay dormant until the magic touch of our California railroad managers made it spring into life, thus making the far distant mines of silver, gold, copper and other minerals accessible to our people, and adding untold wealth to our Nation and State, making an outlet for the many products of this great commonwealth, and looking to direct communication with Europe at an early day. All this and much more being the result of the far seeing policy inaugurated by these terrible despots!!!

Thus in part only have we glanced at the great enterprises carried on so successfully during the past few years, and we leave it to all fair minded persons to consider if it is not time to give credit where it is due, and to stop this daily abuse of men who have shown such great ability to make money, and who have spent it lavishly for the improvement of the city and State where they reside.

Much more might be said, as the subject is far from being exhausted, but believing that the time is coming when the intelligent people of this State will refuse to be led any longer by a press that only cries "down with the railroad and its management," so that it can foist some favorite into power or fill its own pockets, we leave the subject, hoping that we may have said something that may hasten on the reign of justice and harmony.

Home Courtesies.

SINCE we presented the readers of this journal with its new dress, and in an enlarged form, we are more than pleased with the evidences of good-will shown to us by the editors of our California exchanges. And for the first time since we have published this journal we print a few kindly notices that have appeared in various papers, in regard to the evidences shown by us of increasing prosperity on our part. Many notices have appeared from time to time in papers published all over the Pacific Coast, but we have refrained heretofore from quoting them in our columns, and those found below are now given to show our Eastern readers the opinion entertained of us by our own co-workers in the journalistic vineyard.

The *California Architect and Building News* has become one of the handsomest periodicals on the Pacific Coast in its new make-up, and is worthy of the support of every person connected with building operations in any manner whatever. We are pleased to see it giving such unmistakable signs of success.—*Commercial Herald*.

The *California Architect and Building News* is decidedly the best publication of the kind in the West, and should be in the hands of every architect, contractor or carpenter in the country. Each number contains all the latest building news, and intelligent discussions of matters of interest to builders, besides from four to six pages of designs for buildings suitable for both city and country residences, together with ground plans and details. We have watched the progress of this excellent periodical and find that it is steadily increasing in interest and usefulness. The subscription price is but \$2.00. The publication office is 240 Montgomery Street, San Francisco.—*Fresno Republican*.

The June number of the *California Architect and Building News* is far ahead of any previous issue. It is printed upon better paper; contains some eight pages more matter; is more extensively illustrated than ever before; and in letter press is up to the highest standard of works of this class. The *ARCHITECT*, as it is familiarly known, is found in all its departments. It is carefully and judiciously edited; always truthful, clear, and unbiased in its statements. Aside from its merit as an Architectural Journal, it is also emphatically the "mechanics own paper," and richly merits the standing it has attained.—*Alameda Enquirer*.

We have received the *California Architect and Building News* for June, and we feel that it is nothing more than justice

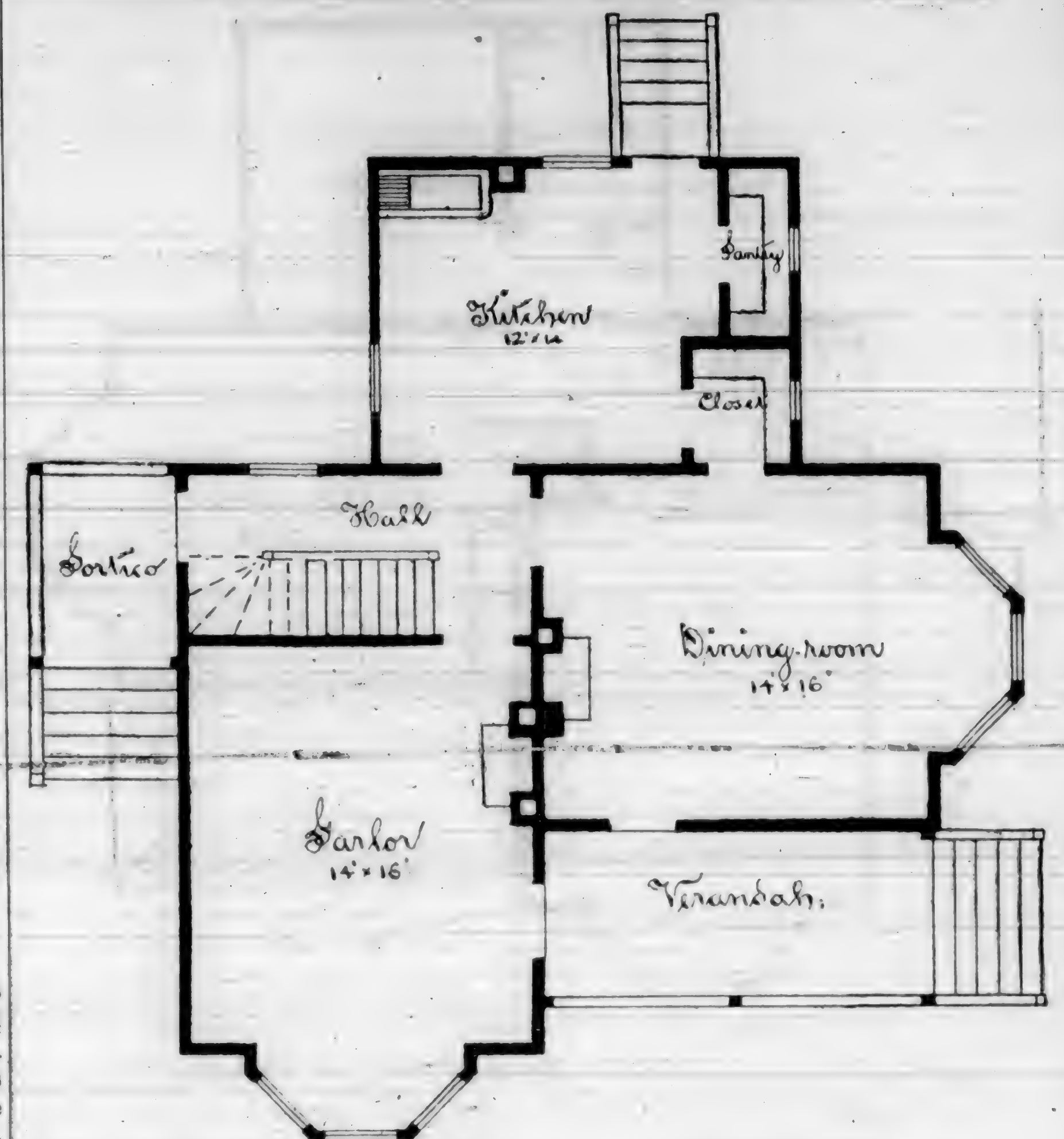


PLATE 5.—PLAN OF FIRST FLOOR, SUBURBAN DWELLING COSTING ABOUT \$3,000.

that we should call attention to the merits of the publication, and recommend it, especially to all engaged in any of the building trades, or in the supply of building materials. The *Architect* is very neatly printed and the contents such as must be of interest and value to all who build, own, or live in houses, and that includes pretty much everybody with sense enough to go in when it rains.—*Hayes Valley Advertiser*.

The *California Architect and Building News* for June comes to us with a new dress and enlarged form, an indication of its popularity and merited patronage. We wish it continued success.—*Petaluma Argus*.

EVERY carpenter and builder should subscribe for that excellent journal, the *California Architect and Building News*. The article on the pyramids in the June number was alone worth the price of subscription. The illustrations of plans for dwellings are excellent, and no carpenter can afford to miss the useful information given in each article.—*Closterdale Sentinel*.

The *California Architect and Building News* for June lies on our table. It has come out in a new dress and in an enlarged form. This monthly journal is becoming a very potent factor among our architects and those who intend to build. It is well conducted and filled with articles that are of great importance to all who are interested in the building progress of our city and State. The number before us is especially complete and interesting.—*Mission Local*.

The *California Architect and Building News* for June is on our table. It is one of the best publications of its kind in the United States, and we are glad to learn that it is meeting with success. Every architect, carpenter, and builder should subscribe for it.—*Riverside Press*.

The June number of that splendid publication, the *California Architect and Building News* has been received. Its monthly plans alone are worth more to builders than the price of subscription, while its sanitary suggestions are of value to every one.—*Watsonville Pajaronian*.

It is with pleasure that we note the great evidences of thrift and prosperity possessed by the editors of the *California Architect and Building News*, as shown by their enlarging their journal, and at the same time donning a complete new dress. The June number is especially interesting. The article on the Pyramids should be read by every one; and there

is not a mechanic in the State that should fail to subscribe, now that Part Two of the "Steel Square and its Uses" has been commenced. It is emphatically the representative of the building interests of this coast. We are especially pleased with the progress of this journal, as one of its editors for a number of years resided in this town, and we want to lay claim to our share of literary personages, whose minds have been partly trained in our beautiful village. Success and long continued prosperity to the *California Architect and Building News*.—*Healdsburg Flag*.

The June number of the *California Architect and Building News* contains the most beautiful elevations and plans we have yet seen in that journal. This journal is improving in its engravings as well as its reading matter. No live mechanic or head of family should be without a copy.—*Santa Rosa Republican*.

The *California Architect and Building News* is a monthly publication published by the S. F. Architectural Publishing Co. It is a useful publication to carpenters and builders generally, and contains well executed drawings of cottages and country residences, with plans of the different floors, besides a great deal of information to the architect, builder, and farmer. In its new dress and enlarged form it presents an appearance not excelled by any journal of its class in the United States.—*Mariposa Gazette*.

The *California Architect and Building News* is getting to be a valuable and very interesting publication and is cordially recommended to our building trades. It has lately donned a new dress, and in its typographical appearance and the ability displayed by the editors, it takes rank amongst the best of our scientific journals.—*St. Helena Star*.

Modern House Painting.

A NEW lot of this celebrated work has been received, which will be forwarded to any address upon receipt of the publisher's price, \$5.00.

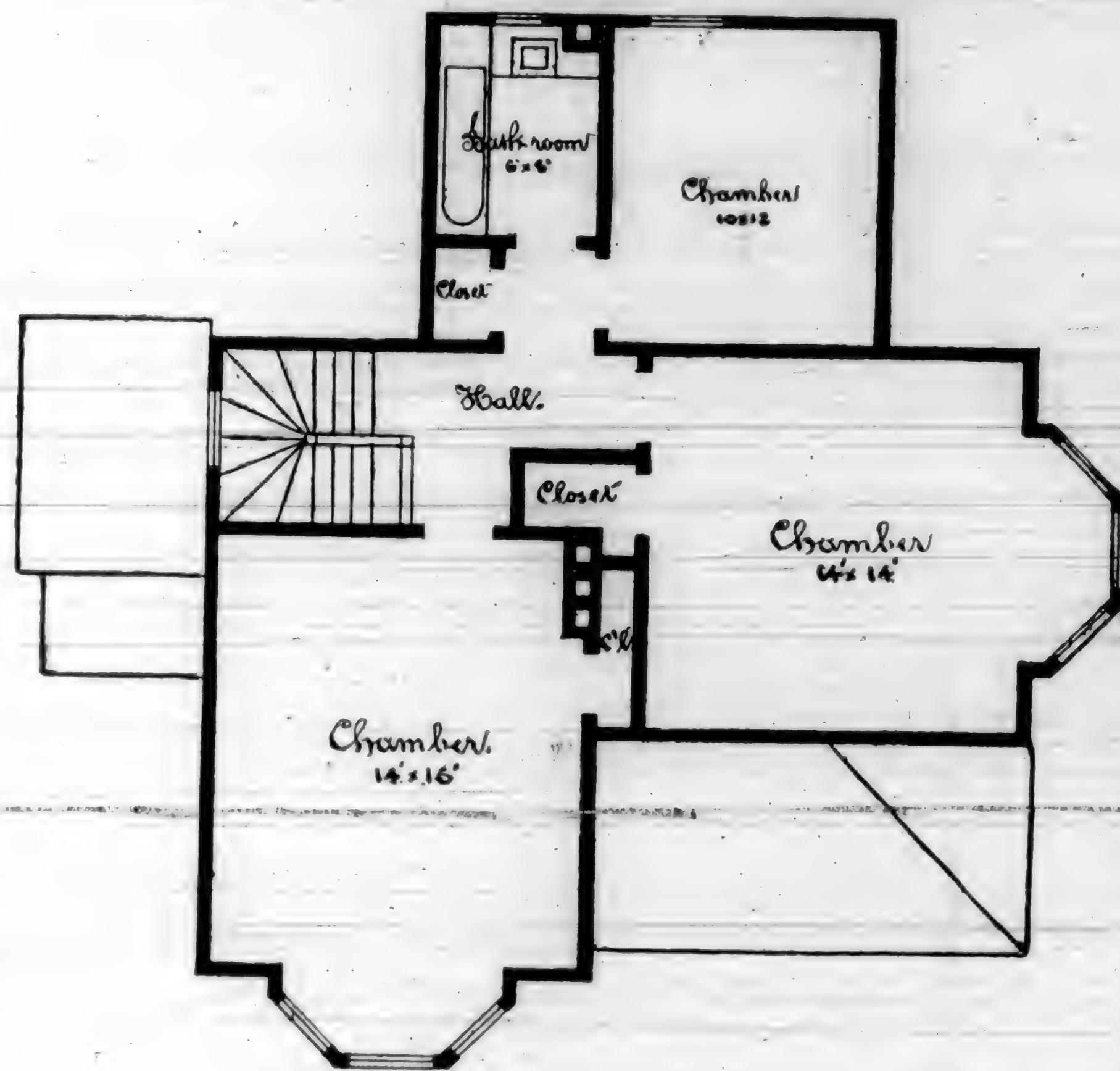


PLATE 6.—PLAN OF SECOND FLOOR, SUBURBAN DWELLING COSTING ABOUT \$3,000.

Our Illustrations.

PLATE 1 represents a design for a new building in the latest style of New York Street architecture. It was prepared expressly for this journal and is the second of a series by A. Curtis Bond.

Plates 2 & 3 represent the construction of the dam and reservoir for the new water-works to supply the Pacific Grove, Monterey, and the Hotel del Monte. The engraving marked Plate 2 was prepared by our artist from sketches taken on the ground during the progress of the work, and is very realistic of the scene at the time the view was taken.

Plates 4, 5, 6, are the plans and elevation of a neat suburban residence, the cost of which will be in the neighborhood of \$3,000.

SEWAGE PERILS.—Speaking of these, the *Popular Science News* has some very sensible remarks. It says: "The vast number of traps, valves, automatic plays, bent tubes, etc., used in houses have resulted from efforts among plumbers and inventors to meet the difficulties of the situation by the first method. It may be said that some degree of success has crowned the efforts of the mechanics to obviate sewage perils, but the success has been by no means what the gravity of the situation

demands. At present there does not appear to be a single mechanical appliance known which effectually, under all circumstances, affords immunity from the return of deleterious gases and disease germs into dwellings." But it goes on to say that a Mr. Mallett, a well-known chemist, has invented a device called a *germicide*, "which most admirably meets an important end. This device is very simple, and consists in placing behind the lid of water-closets a black-walnut box, within which is a metallic case holding a mass of crystalline chloride of zinc. This zinc is open to a gentle flow of water, which gradually dissolves it, and it flows into the bowl constantly, night and day, sterilizing the water so that no living germs can pass." This looks very much as if it met and overcame the difficulty.

THE QUEEN ANNE STYLE OVERDONE.—The Queen Anne style of architecture, which soon after it came in vogue here was exaggerated and distorted by builders of cheap houses, is naturally passing out of fashion now that it has been overdone. One of the largest structures now building is in the Italian Renaissance style, and even the architects who introduced the Queen Anne are returning to severer schools.—*N. Y. Sun.*

"FOUNDATIONS." Price, \$1.50.

Practical Manuals.

Handrailing and Staircaseing. A Complete Set of Lines for Handrails by "Square-cut System," and Full Practical Instructions for making and fixing Geometrical Staircases. By FRANK O. CRESWELL, of the Liverpool School of Science, Medalist for Geometry. With upwards of One Hundred Working Drawings. Cloth, \$1.50.

Drawing for Carpenters and Joiners. With Elementary Lessons in Freehand and Object Drawing. Containing 250 Illustrations and Drawing Copies. Cloth, \$1.75.

Drawing for Bricklayers. With the Elements of Freehand, Object, and Plan Drawing. Containing Two Double and Thirty-two Single Pages of Illustrations adapted for Architectural Drawing. Cloth, \$1.50.

Drawing for Cabinet-Makers. With Lessons in Ornamental and Object Drawing; Elementary Instruction in Water-Colored Drawing. Containing Twenty-four Single and Five Double-page Plates. Cloth, \$1.50.

Drawing for Stonemasons. With Elementary Lessons in Freehand and Object Drawing, and a concise History of Masonry. Containing six Double and Twenty-five Single Pages of Illustrations. Cloth, \$1.50.

Gothic Stonework. Containing the History and Principles of Church Architecture, and Illustrations of the Characteristic Features of each Period, the Arrangement of Ecclesiastical Edifices, etc. With Seven Double and Eighteen Single-page Plates. Cloth, \$1.50.

Building Construction, The Elements of and Architectural Drawing. With 180 Illustrations. 128 pp., cloth, \$1.25.

Linear Drawing and Practical Geometry. With about 150 Illustrations, and six Whole-page Diagrams of Working Drawings. 128 pp., cloth, \$1.25.

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Practical Perspective. With Thirty-six Double-page Illustrations. Cloth, \$1.50.

Systematic Drawing and Shading. By CHARLES RYAN. Giving Practical Lessons on Drawing. Cloth, \$1.25.

Cutting Tools Worked by Hand and Machine. By R. H. SMITH, Professor of Mechanical Engineering, Sir Joseph Mason's College Birmingham. Price, \$1.50.

These are a few of the new series of manuals published by Cassell. They are written in a plain, practical manner, and are profusely illustrated. We will send a copy of either or all of them upon receipt of the price.

Bending Wood.

THE primitive idea of wood bending was to conquer a stick when green and hold it in position, as illustrated in the making of bows. New applications of the underlying principle, and discoveries incident thereto, are constantly being made, and bending for all purposes is readily done by the aid of usually simple appliances and steaming processes.

Where it is desired to have the pieces stay in place, the heart is kept outward, the tendency of wood being to bend outward. But where a corner piece or other difficult stuff is being bent, the heart is kept inside, because admitting of more end pressure or upsetting without giving way or wrinkling. A bent piece increases in weight for its bulk according to the extent it is compressed, being much stiffer, also, than when in its natural and undisturbed state, which makes it especially desirable for carriage work. Tests that have been made with bent and sawed stuff under similar conditions have shown the former to be the stronger. By steaming wood its stiffness is increased, without reference to the bending, and it is also rendered brittle, which is sometimes enough of a characteristic to be detrimental to its quality. One kind of hickory is better for spokes or whiffletrees after it has been steamed, while another kind becomes very stiff when air-dried. Kiln-dry-

ing and steaming both cook the gum in resinous woods, and hence have a similar effect. Stiffness is the desirable quality in a spoke, felloe or whiffletree, and in hickory it is always increased by steaming. It is difficult to splinter or tear a piece of bent wood. Its fibres have become interwoven, and, without being particularly indicated on the outside, the interior becomes materially changed.

The steaming is usually done in boxes. Two or three hours is enough steaming for many ordinary purposes. Corner pieces require a whole day, and timber that is hard and tough should be steamed from 24 to 36 hours. For light panels 10 or 15 minutes steaming is sufficient, and most hard woods need only a half hour. A nice discrimination as to time is highly essential to success. By over-cooking timber the virtue can be made to depart from the toughest wood, rendering it punky and without elasticity. Live steam is not indispensable, exhaust steam being frequently used to advantage. Neither is a great quantity of steam required, partially condensed or damp steam being considered the best. A tight box with enough steam fed into it to make the wood swelter and cook is sufficient. After being bent the twisted fibre sticks as stubbornly to its new course as it did to the directions of nature. Bending is chiefly done on wheels and forms. A strap is used in numerous cases, and is indispensable in such bending as shafting, to keep the wood from slivering.—*Northwestern Lumberman.*

Incombustible Paints.

WATER-GLASS is being extensively used in the production of a paint which in addition to its durability is also a protection against fire, and as a floor paint it is especially recommended.

The surface of the floor having been well cleaned, any crevices or cracks between the boards are next luted with a thick mixture of water-glass and pulverized chalk or gypsum; then, by means of a stiff brush, a coating of water-glass, of sirup like consistency, is spread over the floor, and to this succeeds a second coating of the same, mixed with the desired color—the latter a mineral color, as the alkalies of the water-glass commonly decompose vegetable colors. This coating having become dry, other layers of the water-glass are given until the floor acquires a fine lustrous appearance. In order to insure a polished brightness, the surface is ground off a little, oiled, and thoroughly dried. A number of patents have been granted for incombustible paints in this country, and among the foreigners who have experimented with different ingredients for accomplishing this end, M. M. Vilde and Schambeck propose the following mixture for rendering wood-work incombustible:—

Pulverized glass.....	20
Pulverized porcelain.....	20
Pulverized stone.....	20
Calcined lime.....	10
Silicate of soda.....	30
	100

The solid elements must be reduced to as fine a state as possible and sifted, and then

mixed intimately with the soluble glass, thus forming a glutinous mass which may be employed as it is for painting, or may be mixed with various colors.

The addition of the lime gives a certain unctuousity to the mass for painting, while the combining of this lime with a portion of the silicic acid of the soluble glass promotes the intimate mixture of the other substances.

Although the mixture given above is recommended as being the best, the proportions of the various elements may be changed according to circumstances, except that of the soluble glass, which must remain constant. Some of the substances may also be replaced by others; but it is advisable to retain the lime. Instead of silicate of soda, the soluble glass of potash may be employed, but the former is cheaper.

The paint is laid on with a brush, in the ordinary manner and as evenly as possible, on the surface to be protected. The first coat sets immediately, and the second may be applied from six to twelve hours afterward—two coats being sufficient. This composition may also be employed with advantage for protecting iron bridges, sleepers, etc., from oxidation.—*Scientific American.*

Australian Trees.

THE giant trees of California, which have been one of the wonders of the world ever since their discovery, some twenty-five or thirty years ago, are now found to be far surpassed by certain specimens of the eucalyptus found in the mountains of southeastern Australia. The highest tree at present standing in the groves of Mariposa County is three hundred and twenty-five feet high, and this is only the largest out of a small number of specimens of a tree found nowhere else, while the Australian forests contain many thousands of greater height than this, one of them, the tallest yet measured, being four hundred and seventy-one feet from the ground to the summit. The diameter at the base of this enormous plant is eighty-one feet, so that, if it should ever be cut down, a squadron of cavalry might go through its evolutions on the stump, in place of the modest quadrille which it has given so much pleasure to the Californians to dance upon the truncated fragment of one of their great sequoias. As in California, the largest of the Australian trees are no longer standing, and a prostrate trunk has been found which measured four hundred and thirty-five feet from the roots to the place where the upper portion had been broken off by the fall. The broken tip had disappeared, but as the diameter of the trunk at the point of fracture was three feet, it is estimated, with great probability, that this indicates an additional length, for the perfect tree, of at least seventy feet, making the whole height of the plant more than five hundred feet. Concerning the time required for developing from a very minute seed a tree which would overlook the Great Pyramid, no inquiry has been made, and as the evidence of the so-called annual

rings is now known to be worthless for determining this point, we may never be able to form even an approximate estimate of the age of these giants, but the common eucalyptus has been observed to grow from seed to a height of sixty feet in ten years, and it is quite probable that a few centuries have sufficed to bring specimens planted in a favorable soil to their full development.—*American Architect and Building News.*

HAND SAWS

How to Select and How to File Them.

PRICE \$1.00.

This work is intended more particularly for operative Carpenters, Joiners, Cabinet Makers, Carriage Builders, and wood-workers generally, amateurs or professionals.

It is a complete guide for selecting, using, and filing all kinds of Hand Saws, Back Saws, Compass and Key Hole Saws, Hack and Butcher Saws; showing the Shapes, Forms, Angles, Pitches, and Sizes of saw Teeth suitable for all kinds of saws, and for all kinds of Wood, Bone, Ivory, and Metal; together with Hints and Suggestions on the choice of Files, Saw Sets, Filing Clamps, and other Matters pertaining to the Care and Management of all Classes of Hand and other Small Saws.

Illustrated by over Seventy-Five engravings. This work is edited by the author of the "Steel Square and its Uses," "Builder's Guide and Estimator's Price Book," "Practical Carpentry" etc. Being sole agents on the Pacific Coast for all the above mentioned works, we are prepared to furnish dealers and agents at publisher's prices. Single copiest post-paid upon receipt of price.

Book Notices.

LIFE OF SIR WILLIAM E. LOGAN, K. T., LL.D., F. R. S., F. G. S. First Director of the Geological Survey of Canada. By BERNARD J. HARRINGTON, B. A., Ph. D. With steel portrait and numerous woodcuts. New York: John Wiley & Sons, 15 Astor Place. 1888. Price \$2.50. 432 pages, octavo.

The principle work of Sir William Logan's life was the Geological Survey of Canada. His ability, energy, and genial qualities gained for him the esteem and affection of many of the best and most eminent men of science. Canadians especially cannot afford to forget the name of one who labored so long and so earnestly to promote the interests of their country, but others too will be grateful to the author for the compilation, which sets forth the admirable character and work of the greatest geologist. The style of the book is excellent, the account is entertaining and pleasant reading throughout, and the make-up is all that could be desired. Most of the illustrations scattered throughout the volume are copies of pen-and-ink sketches from the note-books of Sir William Logan.

THE MATERIALS OF ENGINEERING, by R. H. THURSTON, A. M., C. E., published by Wiley & Sons, New York.

This standard work is issued in three parts. Part one has already been noticed. Part two, IRON AND STEEL, has just been received. The chapters on the properties of iron and steel, and the strength of the same, are the most comprehensive to be found in any work that has, as yet, been brought to our notice. The result of the numerous tests in regard to the strength of each metal, are given in a tabulated form, and will be found much more interesting than other works of a similar character. It is beautifully illustrated, and contains 675 pages. Price of Part two, \$5.00.

Stairs.

THERE are a few people who do not "mind" running up and down two or three flights of stairs several times a day. They "get used to it" they say, but to the majority of people stairs are a positive labor and weariness without any sufficient compensation. If one could enter a fifth-story room with the same ease as he can enter the first and second story rooms, the most of us, other things being equal, would prefer a room of that altitude. The air is purer, the quiet deeper, and interruptions less frequent. In hotels and other large buildings, where there are elevators, there is comparatively slight difference in the charge for rooms of the same grade on different floors and with reason—a minute more or less in reaching one's room does not count. A flat in the upper floor of a four or five story building, containing an elevator, is often rented when the other floors are vacant, not only on account of its moderate price, but because it is high and quiet and isolated.

Of late years the minds of inventors have been turned toward the invention of an elevator which could be moved by some other power than steam, and patents have been applied for, but such has been the depression of all trade, and especially of the building interests, that there has been little encouragement for efforts in this direction. But it is certainly to be greatly desired that some cheap and facile method be devised for bringing all floors substantially to a common level, and abolishing the fatigue of climbing stairs and the evils that flow from it. This is very desirable in schools and colleges for women. There are more girls and young women disabled for life by climbing stairs while they are going to school than by any hard study they are guilty of. If their clothing was suspended from the shoulders, and not from the waist, the evil would be lessened, but even in that case it would not cease to be formidable. In many schools and colleges for girls, the pupils regularly several times a day, go up and down three or four flights of stairs to their rooms, up and down as many more to attendance in the laboratory, the art gallery, and the recitation rooms, until they are as much, if not more, exhausted by this labor as by all their other toils put together. There is certainly no objection to elevators in male colleges, but there is every reason why they should be in institutions for the other sex.

In our private houses the aim should be to have the work of the family as far as possible on one floor, and to abolish every step up and down that can in any way be dispensed with. Cellar kitchens are a nuisance and an abomination to be tolerated only in case of dire necessity. Sub-basements are a convenience if dining-room and kitchen can be on the same floor, and in our cities, where land is bought by the foot and the inch, they are a necessity. But in the country, where land is cheap, there is no economy in piling story upon story, and enforcing the continual running over flights of stairs by house-keepers and

servants in their performance of the household. A great deal of labor can be saved, and is saved, by having our houses heated by steam, and by having water in and out on every floor; but these are luxuries not within the reach of the masses of country people, who can, however, because land is less valuable in the country than the city, so build as to dispense with them with slight inconvenience.—*The Builder and Wood-worker.*

A Main Chance.

THERE never was a time more opportune than the present for the general introduction of yellow pine lumber. The dealers who desire to push its sales have a splendid opportunity to do so. A doubt regarding the value of such lumber for building purposes does not find a place in the mind of any man who understands its durability, and the difference in cost between it and white pine. It is evident, however, that there is something in the way of its general use. When the two kinds of pine come in competition, nothing is more rational than to suppose that the public would buy the cheaper, providing it will answer every purpose of the dealer. The average man has an inherent desire to buy as cheaply as possible. One objection against the general use of yellow pine arises from the builder. He is not, voluntarily, going to make a contract for working a certain kind of wood, when he can handle another with more ease. This applies more particularly to inside finishing. For bridge timber, building dimension, and other grades which are not necessary to be worked to a smooth surface, he is less particular. White pine is easily sawed and planed, and the carpenter courts the ease with which it is done. For the same reason, somewhat intensified, the wood-worker gives hemlock a wide berth. He has no affinity for its slivers. He has a kind and natural regard for his hands and tools, and he is not willing to overcome this regard for the sake of cheapening a building a few dollars.

There has been a current belief in the Northern States that yellow pine will not hold paint satisfactorily. It has been thought that any exudation of pitch would stain the paint, and to a certain extent force it off. This idea, however, has been greatly magnified. In sections of the Southern States, where little besides yellow pine is used for building purposes, there is usually heard but little complaint. Occasionally, a builder will put a coat of alcohol over the outside work, which cuts any pitch there may be on the surface, but oftener no special process is employed.

There is still another objection to yellow pine for inside work, finished in the natural color, that has sometimes arisen, that is simply the result of taste. To the eyes of some the effect is too glaring. The ones who take this exception assert that they tire of it more quickly than of a more somber-colored wood. The color is too vivid. The effect at first sight is cheering, but it is short-lived. As we remarked, this is simply a matter of taste, and

one that every man should decide for himself. Yellow pine does not stand alone in this respect, for exceptions are taken to the color of other woods. Walnut, for some, is too dark, and for others cherry is too red. If the brightness of yellow pine is a serious objection, it is one that time in part overcomes, for it will grow dark with age.

The opportunity that the yellow pine handlers have of pushing their lumber, arises from the feeling that exists between the yard dealers in white pine, and the manufacturers of it. The former are crying for cheaper lumber, and the latter are strenuously endeavoring to sustain prices. If there is a cheaper lumber than white pine that can now step in and satisfy the minds of the dealers as to price and satisfy them otherwise, its advent would be hailed with shouts.—*Northwestern Lumberman.*

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Our Prosperity.

WE return hearty thanks to one and all for the very many extremely flattering and favorable notices. Commendations and congratulations received—personal and editorial—in reference to the handsome improvements in the appearance, and in the illustrations and matter contained—more especially in the recent number of this journal. Without detracting from previous issues, its June number placed it upon equal footing with the best and most meritorious class journals published in the English language; and it has been so recognized. And while its managers have great reasons to feel proud of the success achieved, the people of the entire Pacific Coast—particularly those of San Francisco—have also reasonable ground for pleasure at seeing produced and established, without peradventure or question of failure, a publication in the building interests, alike creditable to its proprietors and the city in which it is issued.

But it should not be forgotten that the results obtained have been reached only by indomitable effort and perseverance, for in its infancy even those who wished it well feared and doubted its success. Kind expressions were not wanting; but the doleful accents of doubt were often coupled with the wish that it might succeed; and for a time its demise was a matter of monthly anticipation by many. But, as stated in its early numbers, when discouraging shadows hung about us, we entered not blindly into the undertaking, but had counted the cost and measured the strength of our arms, and to-day we enjoy the proud satisfaction of having risen above all contingencies, admired and approved by thousands, and the words of approval which now come to us from all quarters, have the clearing ring of well-wishing and unqualified confidence.

But, however gratifying and appreciable kind words may be, they are not available in the payment of the necessary cost and expense of publication, nor negotiable with grocers, butchers, bakers, clothiers and others who furnish the food and raiment, eaten and worn by those who perform the labors incident to the production of this journal monthly. Consequently, while our list of subscribers is daily increasing with pleasing rapidity, there is room for greater, and we urge our claim to universal support upon all classes of citizens, as not only those who plan and build, but those who own their residences, and those who occupy rented houses, are alike interested in the matter and subjects contained in its columns; and none should refuse or fail to lend the helping hand. San Francisco alone should give us ten thousand paying subscribers.

How Spools Are Made.

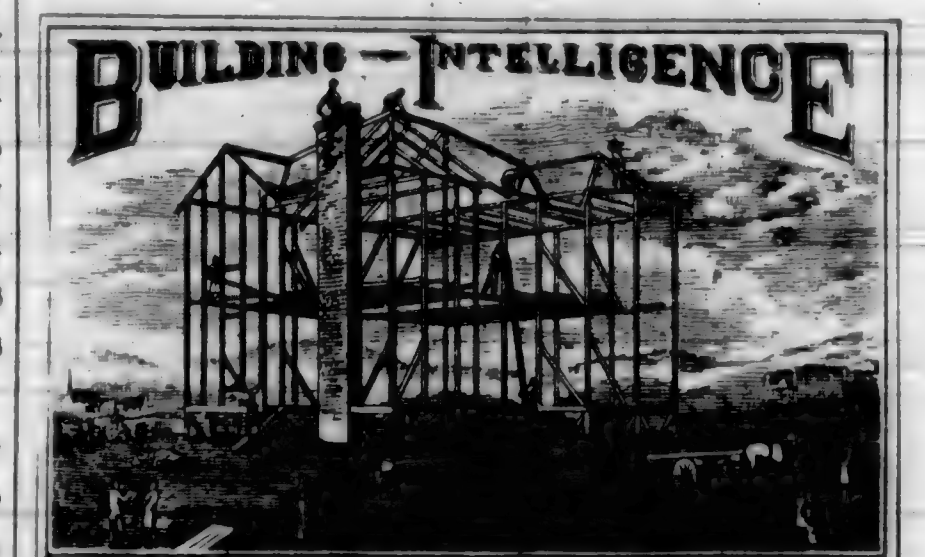
BEARING in mind an inquiry made of us some time since, we present the following interesting description of the *modus operandi* of making spools, as carried on in the extensive factory of the Searsport Spool and Block Manufacturing Company, in Searsport Village,

Maine: This company own large tracts of land in northern Maine, from which the lumber for spool-making is cut, white birch being used exclusively. The wood is first sawed into pieces four feet in length, and of nine sizes, varying by sixteenths, from an inch to an inch and a half square. It is then dried as thoroughly as it can be out of doors. Inside the factory it first goes to the "rougher," where the strips are cut into cylinders of the length of a spool, and the hole bored, the turning and boring being performed at one operation, and the cutting off, with a small circular saw, at another, all on one machine. These little cylinders drop from the rougher into a barrel, from whence they are removed to the "rollers," or revolving slat cylinders, in which the fine dirt and fuzz left by the saw and bits are removed. The pieces are then picked over by hand and all imperfect ones are sorted out to feed the ever hungry fires under the boiler.

The next process is a more thorough seasoning of the blocks in a loft, and then they go to the "reamer," where the center holes are made to the exact size required, which cannot be done by the rougher on account of the shrinking of the wood after leaving that machine. Until lately the reaming has been done by an ordinary reaming tool working in a lathe, the work being fed by hand, but a new machine has been recently put in, which will ream the spools as fast as two boys can feed them into the spouts. This reamer was made by the company's machinist, Mr. John F. Rogers, at the machine shop in the factory, from patterns made by him, he having seen a similar machine working in McGregor's factory in Lincoln, Me. The machine in use in the Searsport shop has some features which the builders claim are improvements over the original, which was imported from Scotland, it having lately been invented in that country and not yet patented in the United States. It consists of a short revolving shaft, with a reaming tool at each end, working endwise backward and forward about four inches. At each end spouts are arranged with feeding apparatus which forces the spools into the proper position to be bored, and then allows them to be dropped out into a barrel below. At each oscillation of the shaft two spools are reamed, one at each end, the machine turning out about 240 per minute.

The next machine is the "finisher," which is an attachment to an ordinary lathe, by which the spools are turned into shape at one operation, at the rate of from 1,000 to 1,500 per hour. There are eight cutting knives on this machine; one at each end, standing up perpendicular to the length of the spool, for trimming the end; one at each end, horizontally, for turning the outside of the flange; between these, two others, standing diagonally, for the inside of the flange; another, horizontally, for turning out the space between the two flanges; and a small circular chisel for cutting the finish on the top of the spool. The spools have now received their shape, and

need only the finishing touches. These are given, first by the "polishers," which are the same as the rollers described above, the friction of the spools against each other giving them the required polish. After remaining in this from four to five hours, they are again sorted by hand, and all imperfect ones removed, after which they go to the "embosser," a sort of printing machine, which stamps the number of the thread and some ornamental devices upon the head of each spool. They are then packed in stout sacks, holding from thirteen to thirty-six gross each, according to the size of the spools.—*The Manufacturer and Builder.*



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As a matter of course, those whose interests are secured and protected by the decision will approve; while those who have hitherto felt themselves safe against the defaults of contractors, by enforcing their claims against owners without regard to contract considerations, will disapprove. This is a natural sequence, as the justice and equities of all laws, as a rule, are weighed and valued by individuals in the light of personal interests; consequently there will ever be uncertain diversities of opinion; for the law approved and advocated under one set of circumstances, will, by the same parties, be rejected and opposed at other times, because of reversal of issues. Every good man claims to be a law-abiding citizen, and is so in fact when there is no sacrifice required in occupying that position; but when law and individual interest come in conflict, no man living will yield personal interests to law, if by any means it is possible to secure those interests, even though all the laws upon the statute books of the land should be sacrificed.

This, however, is certain for the present: The Supreme Court has, by its late decision, ended all speculation and controversy in reference to the Lien Law, and those who desire to make improvements can do so without fear of being called upon to pay more than the contract price.

Epidemics—Sewerage South of Market Street.

WE clip the following from the *Examiner*: "Health officer Mears is of opinion that there are no grounds for fearing an immediate introduction of cholera, yellow fever, or small-pox into San Francisco, but thinks that the city should be placed in proper sanitary condition, especially as regards the sewerage south of Market Street."

All of which may be true. We have repeatedly referred to the condition of the sewerage south of Market Street, and urged the necessity of its improvement, not only as a safeguard against epidemics, but for the general health of the people residing and doing business south of Mission Street. But how is this to be done, with the general grade of the streets as they are, taking the line of Sixth Street as a guide, with the last five blocks in from the outlets of the sewer as base, a total distance of over 2,000 feet, without any fall whatever, the established grades being: Mission Street, thirty feet; Howard Street, ten feet; Folsom Street, five feet; Harrison Street, two feet, and Bryant, Brannan, Townsend, King, Berry, and Channel Streets at zero, the greater number of the blocks being 550 feet, beside the width of crossing streets. The only apparent remedy under the circumstances is the filling in and raising of the whole district so affected to a uniform grade from the higher point—Mission Street—and making a uniform grade of thirty feet from Mission Street to the mouth of the sewers, instead of twenty feet from Mission to Howard, five feet from Howard to Folsom, three feet from Folsom to Harrison, two feet from Harrison to Bryant, and a dead

level of 2,000 feet and over from Bryant to the sewer outlet, the other corresponding streets being at the same disadvantage. To do this will now cost a considerable sum of money, which, however, would be more than compensated by the increased value of the property affected, as it is a certain thing that the property of the entire section would double in value were the filling-in done. At present, and for years past, a cloud has rested upon the whole district mentioned, and it has been in continued disfavor, owing to the state of facts recited. There is no good reason why the property south of Mission Street should not be very much more desirable than it is, the only drawback being its flatness and want of good sewerage, and consequent dampness generally; all of which can be remedied, and would have been twenty years ago had the order then passed by the city council been carried out, which order placed the grade of Folsom Street, at Sixth, seven feet higher than its present depression. But the importance and necessities for this change of grade was not so forcibly apparent then, although the cost at that time would not have been more than one-tenth what it would be at present, and the property owners in that section, failing to anticipate present conditions, they succeeded in nullifying the order, and property south of Market Street has been injured millions of dollars in depression of values and income.

If this filling-in was determined upon and put into practical execution now, even at its greater cost—owing to the number of buildings that would have to be raised, etc.—it would pay, as it would require the hills and banks of materials now occupying numerous valuable lots and whole blocks in various parts of the city, which remain from year to year ungraded because of the cost involved, grading being expensive work, owing to the great lack of convenient dumps. There is no other one project that would be more beneficial to the city of San Francisco than that suggested in this connection, as it would give employment to thousands of men and hundreds of teams, and add millions to the assessable value of property, both south of Market and that which would be increased in value by being graded off to furnish the filling-in material. Sacramento furnishes an example in the filling-in of the entire city ten feet more or less, by which the healthfulness and importance of the city was greatly improved; and there is no good reason why that part of San Francisco which might be made very desirable for both business and residence purposes should be held at its present low standard, owing to its shamefully insufficient sewerage, and the lack of enterprise on the part of those most interested to reclaim it, and make it what it is capable of being made.

MR. THEO. A. EISEN has resumed the active practice of his profession as architect, and can be found at 218 Post Street, San Francisco.

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Sensible Letter from a Lumber Dealer.

EDITOR CALIFORNIA ARCHITECT—*Dear Sir:* Much has been said from time to time by interested parties in reference to the "Mechanics' Lien Law," as to the protection it affords citizens and material men. A good deal of law and legislation has been had to try and make it what it was and is intended it should be, to wit, absolute protection. But all the brains, time, trouble, and expense heretofore bestowed upon it seems, under the late decision of the supreme authority of the State, to have gone for naught; and now, practically, the "lien law" is in the same condition it was before the adoption of the new constitution, which was at best a "trap and a snare," except as between principals. Now I think a great deal of trouble, anxiety, and not a little coin can be saved if the parties who first contribute to the "start" of a building, to wit, the lumber dealers, of which I am one, would refuse absolutely to furnish lumber to any party who they would not consider worthy of credit, independent of a possible security through the "lien law." This would have the effect of shutting off all those who now, and for many years have disgraced an honorable calling, the "contractor and builder," and reduce the number of "figurers" to those who have a respectable standing in the community and whose credit is beyond question, thus enabling them to obtain a fair price for their work, leaving them a legitimate profit, and in turn to pay a fair price to all those who in any way contribute material, brain, or muscle to the structure. In this way owners would get better work and better value for their money, because all sub-contractors would, without doubt, work with a better grace and feeling and at a lower price, knowing that their pay was absolutely safe, and removing that uncertainty that at present, to a great extent, exists; and I claim also that owners would reap many other benefits that I may point out at some future time. How many owners are there who heretofore have had to defend their property as against "liens," through no fault of their own, but through the incompetency if not the dishonesty and unreliability of their builder. And how many architects have been annoyed beyond description from the same cause. Hence I repeat that the whole fault lies with the lumber dealer; for if the contractor, or the party who sets himself up as such, could not get lumber he could not "start" his job, and would be forced to withdraw in favor of some more responsible person.

In my opinion all artisans and material men would be better off if there was no "lien law" at all, except as between principals, for, as I have hereinbefore stated, the present "lien law" is nothing more or less than a "trap and a snare" to catch unsuspecting victims.

Not desiring to impose upon your good nature by taking up too much of your valuable space in presenting my humble views, I will close. Yours respectfully,

A LUMBER DEALER.

New York Street Architecture.

A. CURTIS BOND.

THE ROMANESQUE.

THE Romanesque, corrupted from the Roman, has invaded all other styles and left them marked with its name and its peculiarities; those familiar to us to-day, the Byzantine, the Moresque, the Gothic, have all appropriated its suggestions and its patterns, until we have almost sunken the individuality of the Romanesque proper and transformed the title into an adjective descriptive of a place of the orders named.

In the early Christian styles the tendency of the Romanesque influence was toward creating tall towers, square capped and without any appreciable variation in measurement at the extreme top or bottom; in columns the greatest latitude was permitted, for not only were they frequently unlike in proportions, but the material and workmanship presented contrasts that cannot be said to have always been either picturesque or harmonious. The disposition was to have all things one-sided, unequal, illy-balanced, towering to an awkward height and then ending abruptly in a flat-looking cap.

In another instance of the Christianized Romanesque the form of the bath was adopted, a circular structure with a center dome, all of the building being embraced within the limits of the circular walls, no wings nor other projections being usual.

With the progress of events and the advance of architectural skill, the Byzantine came into existence and the Romanesque took another form as it entered into this new acquisition to the orders. The prominent features of this new form of buildings were heavy piers and spreading arches supporting a dome that rose over the center and had vaulted side spaces connecting with it. Columns were used more as ornamental and decorative features than as entering into the necessities of construction; cornices and capitals were discouraged, and in many instances they were almost entirely ignored. The church of St. Sophia at Constantinople is generally selected as being the most brilliant and authentic example of this style. It is certainly one of the most wonderful in point of extent and elaboration that has ever been constructed. It rises gradually from comparatively low arch-supported side structures, to the rotund roof of an inner row of vaults, and from these latter swells gracefully and magnificently into a dome that is nearly 200 feet above the pavement, and looks down upon an interior decoration and display of niches that made it, even in those extravagant times, an object of admiration and brilliant example for other humble but ambitious designs.

As the Byzantine made itself known and spread through Europe, its Romanesque ingredient became more and more evident, and in Armenia, for example, the Byzantine character was preserved only in the ornamentation; the shape, lines, peaked roof and towers, sur-

mounted by a shapely slanting cap, were eminently Romanesque, uninfluenced by any other styles.

In Russia, on the other hand, there was made up such a conglomerate species of architecture that almost every possible style was made a part, sharp roofs, pinnacle-like in their height and slender proportions, their outlines jagged with protruding ornaments and the apex crowned by a small ball. Towers rose in the same building, octagonal and having balconies at irregular intervals, and supporting an immense globe, shaped like a gigantic inverted bubble, with the stem pointing toward the sky and adorned with numberless chains and gilt ornaments that sparkle and

glisten to the intense delight of the superstitious crowds thronging the plaza below, and who, between the shouts of long life for their Pope and father, the Czar, paid their devotions to the painting of their saints, protected beneath these hybrid roofs and pictured by the local artists in high-top boots and attired in the costumes that we can only associate with modern civilization. The domes are painted in brilliant colors, silvered, gilded, yellow, red, or white, green or blue, with bright stars sprinkled over all, and the colors laid on in stripes, squares, circles, as the architect felt was the more effective. Such an architecture as this, while it is unquestionably unique and peculiar, lacks the tasteful attrac-



PLATE I.—DRY DOCK SAVINGS BANK.

tions of other forms of the Romanesque, and becomes almost absurd in its mass of detail and useless accessories.

From the Byzantine to the Mahometan is but a step, but the difference is noticeable. We leave a style marked by fanaticism, an ornamentation burdened by symbols, lavish in its extent and religious in its character, oppressive with its reminiscences of assumed martyrdom, or with its monograms and trade marks of saintly individuals; and yet, withal, a style that is original and becomes with closer study interesting.

The Mahometan, on the contrary, aside from its occasional introduction of passages

from the Koran—the letters of the language combining so well with the ornamentation as to appear as a part of it—with this exception, there was nothing to remind one of what is considered by many the serious affairs of life, and everything to create in the brain a lively imagination and an exaggerated sense of enjoyment.

The Mahometan Romanesque in Spain became the Moresque, whose gradual filiation through the requirements of the different countries to the restriction of street architecture in this city we showed the result of in our June number. In Turkey it displays a barren wall pierced by small windows, prompted

to this cloister-like aspect by jealous pashas and exuberant *odalisques*; in Egypt variety is given to the outward appearance by latticed bow windows clinging to the house side, and at which an occasional glimpse is had of a peeping face partly concealed by a veil, the female herself being rigidly guarded from the sight of the Caucasian race, though why it is difficult to understand, for the few samples of this particular kind of household appurtenances that I saw, in a recent visit to that country, had very few charms of features, and

their corpulency was of that pronounced type vulgarly associated by us with those Cuicuinations recently ruled out of Germany by Bismarck. In Spain the forbidding exterior was replaced by one of great beauty.

It is perhaps unnecessary to follow the thread of the Romanesque through the various stages of its modern development. It would be an interesting study, though a lengthy one, and we may some day return to the subject with illustrations of the prominent peculiarities of each stage. It has found its way into

Germany, Italy, France, and England; there is a Venetian Romanesque, an Italian, French, and Spanish, with minor branches such as the Provençal, Angiovine, Aquitanian, the Apulian, and the Pisan. The Oriental spirit is inherent in the Apulian form, and it is rich in sculptured animal figures; a Gothic tendency is found in French and Spanish.

By the time it reaches our country it becomes what we see it in our accompanying illustrations. Figure 1 is a representation of the Dry Dock Savings Bank and is as near an



PLATE 2.—DWELLING IN AMERICAN ROMANESQUE STYLE OF ARCHITECTURE.

approach to the true Romanesque as modern New York architects will tolerate. The building is of light stone with tile caps over the windows and doors; the entrance is richly sculptured, and the Gothic balcony has its roof supported by polished marble pillars. The sloping roofs are slate. The style is what is strictly known as the English Romanesque, the arches and balconies tending toward the German Byzantine; an application of the form very far from its original purpose.

Figure 2 is a more modernized American

Romanesque of really good lines and embracing English Gothic windows with Byzantine details. The building is of brick with light stone trimmings and gray slate roof. It stands at the corner of Fifty-seventh Street and Fifth Avenue, and is the residence of Mr. F. W. Stevens. The exterior is so inviting in appearance that we have intruded upon the privacy that should protect one's home and reproduce from our New York contemporary, *The Decorator and Furnisher*, an excellent view of the parlor, in which the ceilings are

heavily paneled and the walls are hung with tapestry. The mantel is a wonderful combination of embossed velvet, and the columns rising from it are of highly polished wood. With our reader's permission I will digress for a moment to show them the dining-room of this house, and my only excuse must be that it is one of the most noticeable and written about of any similar room in the city. The walls are decorated in Pompeian red and portieres of Japanese silks are suspended at the doors; stained glass windows representing the

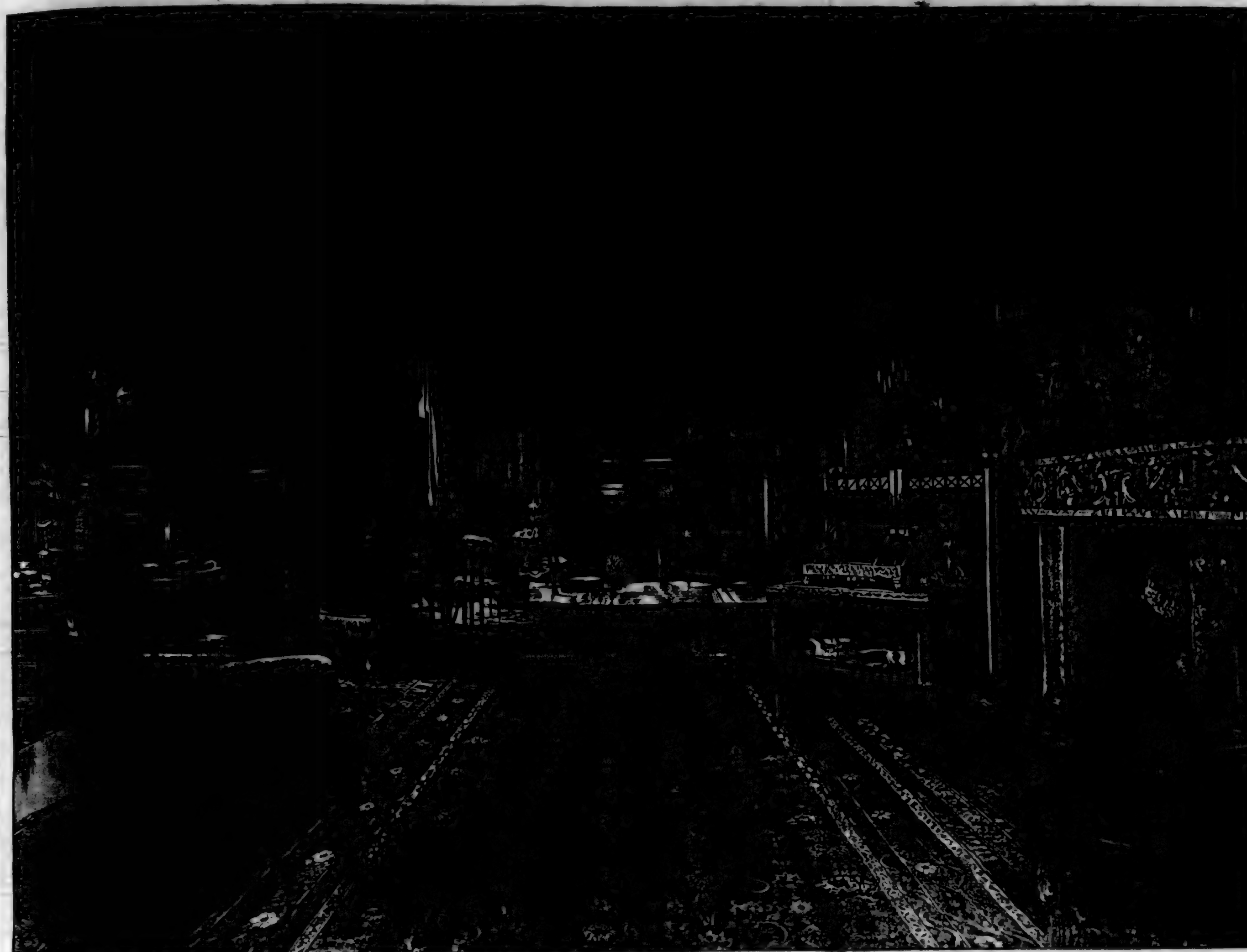


PLATE 3.—INTERIOR VIEW OF THE PARLOR IN AMERICAN ROMANESQUE DWELLING.

(From the New York Correspondent of the CALIFORNIA ARCHITECT AND BUILDING NEWS.)

seasons, and others bearing the ever-hungry goddesses, Pomona and Ceres, are six in number; mottoes suggestive of the pleasures of the table are upon the walls, and they are so arranged as to enter into the ornamental figures and form a part of them. Light is provided at night by means of candles, thus avoiding the destructive qualities of gas. I might lengthen this brief description, but feeling that I have transgressed now beyond the scope of our paper, I must put a brake to my inclinations.

As a matter of news I might call attention to the new building of the Mutual Life Insurance Company that is being put upon the ground formerly occupied by the old post-office, a miserable excuse for a Government office that will be familiar to our readers who were acquainted with New York ten years ago. The location is on Nassau Street, extending from Cedar to Liberty Streets. The old place served at various times during its career as church, riding school, dog pit, and post-

office, ending its career as a broken-down auction room and a succession of dilapidated private offices, mostly devoted to beer, billiards, and young lady type writers. The wretched structure was torn down, and as if to complete the diversity of its experiences several bodies were discovered amid its foundations. This is the site of the New Mutual Life Company's building, and the situation is in a measure worthy the labor they are putting upon it. Nassau Street is one of the busiest thoroughfares in the city and one of the narrowest streets in the country, shut in by large houses rising seven or eight or ten stories toward the sky. The Mutual can only hope to shine and be distinguished by piling story upon story until it towers above all others. And this is the idea. It is to be 190 feet tall, overloom everything about it, and hopes to fly from its lofty towers the signal flags of the weather bureau's survey, now monopolized by the Equitable Insurance Company by virtue of their extreme height, but their laurels

seem now to be endangered and bid fair to rest upon other brows. The new building is up only one story and gives but little idea of its architectural character excepting that it will be substantial rather than ornamental and less decorative than massive. The material is granite, and already there is a profusion of polished columns that is really perplexing, and the round corners of the building, if carried up its entire extent, will give a finish that will be novel and agreeable.

Dio Lewis' Monthly.

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Street, Store and Bank Fronts. Price \$4.00.

Labor Strikes.

DURING the past three months the "striking" spirit seems to have taken possession of the laboring classes in almost all lines of labor operations. The prosperities of the last three years, which have gladdened all hearts and furnished employment to all classes of skilled and unskilled labor throughout the country, has awakened and stimulated in those who plod along from year to year under the yoke of labor, enforced by necessities in the obtaining of daily bread, the determination to seek relief in fewer hours of labor, in increased compensation, and the right to regulate the methods, rules, and equities of labor, so as to relieve it of all unnecessary hardships, and secure to those obliged from force of circumstances to walk within its restricted limits, all the reliefs and comforts possible; all of which are but the natural results of a prosperous condition of affairs generally, in which the masses of mankind feel that they have common rights, and should enjoy proportionately the benefits flowing and maturing from such general prosperities.

There is in every right-minded man that lives, the desire and ambition to better his condition. This is one of the greatest incentives to human action, and the beacon light that encourages those who would otherwise settle down in the gloom of "nothing beyond." But some are more successful than others in this universal reaching after and grasping the gifts of fortune—some gathering in and securing millions, while the greater number accomplish but little more than the securement of daily bread; yet the right to possess and enjoy an equal share of this world's goods is co-equal in all, although the qualifications to this end are vastly disproportionate. Still, with the enlightenments of the present age, the daily plodding, toiling multitudes will not quietly submit to some of their own blood and race being enthroned upon altars of gold, and clothed in habiliments of luxury and wealth, while they remain dependent upon and bound down to the slavery of labor, requiring all the working hours of day and the full strength of manhood, yet yielding no more than a mere subsistence. Hence the numerous disquietudes and uprisings which vitalize into strikes, and which as a rule inflict as great injury as benefit; but the battles will be renewed from time to time, both the workers and employers utilizing the advantages of circumstances and conditions as they present and repeat themselves, under the ever-changing degrees of prosperity which surround all business activities upon land or sea.

The Inspector of Plumbing.

MR. JAMES E. SWEENEY, plumbing inspector appointed by the Board of Health under the plumbing law of this State, called at this office on the 4th inst. and expressed an earnest desire that the most cordial and friendly relationships may exist between himself, architects, owners, and contractors generally, with

whom he may be brought in contact in the course of his official duties. He unquestionably enters upon his work with an honest purpose to carry out the provisions of the law creating his appointment, and being himself a thoroughly competent and practical plumber, as we and many others in the profession can testify, it is fair to anticipate that under his watchful care plumbing frauds will be matters of the past. But it will require resolute mechanical and executive abilities and energies on his part to hold in check and prevent the numberless "nigerisms" which have hitherto prevailed, until, with a certain class, good workmanship and honest dealings have become almost obsolete considerations, bringing upon the plumbing art reproaches and mistrust. But if the gentleman named will exercise qualifications as inspector in degree and force equal to his mechanical abilities there need be no fear as to the result.

THE rules and regulations require that drawings and sketches sufficient to represent correctly the run of sewers, and sections illustrating the arrangement of the soil and waste pipes, etc., through the building, are to be filed in the office of the Board of Health; and, if found not to be correct in any particular, Mr. Sweeney will promptly correspond with or interview the architect, and suggest the necessary changes.

THE matter of payment for this extra service will rest between the architect and owner, and may be made a direct and separate charge against the owner, or the expense thereof may be stated in the plumber's specifications, and the plumber be required to pay the cost thereof to the architect. If the latter course shall be pursued, the payment may be reached without calling the special attention of the owner to the matter. It is a common thing to include, "the plumber is to pay the cost and expense of making the water service connection," and to make the charge for the extra plans a like matter of specification will serve all purposes, insure the payment thereof to the architect, and do no injustice to the owner. And it becoming a fixed item under the law, owners cannot object to the method suggested, unless he prefers to pay the amount direct, in addition to the fee agreed upon.

The Chapter Improperly Reported.

THE *Bulletin*, in its report of the meeting of San Francisco Chapter, held the 3d inst., says: "The law relating to the inspector of plumbing was discussed, and it was apparent that it did not meet with approval of the majority." This statement is misleading and erroneous, as the fair inference to be drawn from the language used is that the plumbing law passed by the last Legislature of this State, which authorizes the appointment of an inspector of plumbing, was the subject matter of debate; while in fact said law cut but an incidental figure in the discussion, which ran exclusively upon the rules and regulations adopted by the Board of Health, which was freely discussed

and criticised, all present agreeing that they were and are imperfect, inexplicit, and defective in several materially important respects. We should not notice this did it not misstate facts and misrepresent the views of members of the chapter. Whether such was the intent or not, it assumes the appearance of the *Bulletin* seeking to sustain and strengthen its repeatedly expressed opposition to the plumbing law, by making it appear that the architectural association of this city virtually indorsed our contemporary's views of the case—a something that has not been done, and will not be until experience shall demonstrate the impracticability and insufficiency of the law to regulate and correct the evils, for the correction of which the law was passed.

San Francisco Chapter, American Institute of Architects.

THE regular monthly meeting of the above chapter was held in the rooms of the Art Association on Friday evening, August 3, President John Wright presiding.

Minutes of preceding meeting were read and approved.

Mr. Pissis reported that his class was getting along finely. The regular place and time of meeting was Thursday evening, at the office of Wright & Sanders, between 8 and 9.

The several committees on incorporation of the chapter, room for the use of the class in carving, etc., reported progress and were continued.

A communication was read from the Rhode Island Chapter, A. I. A., informing this chapter that it was desirable that drawings, sketches, etc., should be received from the members of S. F. Chapter for exhibition at the National Convention of A. I. A.

The Secretary was instructed to notify the R. I. Chapter that the notice of time in which to prepare plans or sketches was too short to allow of members doing themselves justice.

N. L. Mayo was proposed for membership as student. The rules and regulations adopted by the Board of Health in regard to the new Plumbing Law were discussed. No action was taken.

Nominations of officers for ensuing term being in order, it was moved and seconded that the various officers now holding the different chairs be renominated. Amended so as to substitute H. C. Macy for Treasurer in place of the present incumbent, on account of the latter having removed his residence to Oakland. Also the Recording and Corresponding Secretary were united in one office, and G. H. Wolfe nominated for the dual place.

On motion, it was resolved that this chapter offer a premium of \$30.00, in three prizes of \$15.00, \$10.00, and \$5.00, for the best three designs for a seal for the use of this chapter, the competition to be confined strictly to the students in the profession.

CURLETT & CUTHBERTSON have removed their office to the Phelan Block, junction of Market and O'Farrell.

The Importance of Learning to Draw.

TRAINING in art is a means of education, of calling out faculties of the body and mind which would otherwise lie dormant, of opening sources of pleasure in an intelligent appreciation of works of art—people who do not understand art practically almost always admire bad things—and of giving, by means of the power of drawing, a more accurate perception of the forms of objects, and a capacity for representing and describing them in a manner far more direct and more universally intelligible than any written description can be. This practical value of drawing has been borne witness to by not a few employers of labor, who have given it as their experience that a workman who could draw and could properly understand a drawing was always more capable, more useful, and better able to carry out his instructions than one who could not. The practical value of drawing may be recognized, even apart from its operation on the understanding, in its power of promoting greater delicacy of manipulation in operations quite apart from that of drawing in itself. One of the best amateur artists of the day, as is well known, is an eminent surgeon who has declared that he first took up etching because it was a recreation which would have the effect of rendering his hand more delicate for his important professional work. One of the best remarks in regard to this result of training in drawing was given by a lady who was a candidate for a school board election, and was asked, somewhat indignantly, by one of her working-class constituents, what was the use of teaching drawing in the board schools to girls who were going into service, for instance; and why their education was not confined to things that would be useful to them in their future life? The reply given was that there was no more common complaint against female servants than about their clumsiness in handling fragile things, such as glass and china, and their continual breakage of such articles in consequence; and that a training like drawing would probably do more to render the hands more safe, careful, and sensitive to touch than any other influence that could be named. Of course, it might have been said in addition that a knowledge of drawing would give a domestic servant even greater advantages than that, in providing her with a more interesting and sensible occupation for her leisure time than reading "Penny Dreadfuls."

Probably the reform would be accelerated not a little if it were once fairly recognized that there is a practical value in the power of drawing for men who are in trade and commerce, and that it is not a mere accomplishment for ladies and gentlemen. In many schools the mistake is that drawing is only voluntary. Few school-boys are likely to do anything voluntarily in the way of work; and as drawing taught on the scientific method really is work, and not mere trifling with brush or pencil, it may be surmised that only a very strong turn for drawing on the part of the pupil, or the direct orders from home on the part of the

parents, lead to the filling up of the drawing-class. Among university men of the present day, from which class most or all of the professors at our large schools are recruited, there still linger the remains of the old superstition, that drawing should be an "extra," somewhat like dancing; an elegant accomplishment, not to be put on a level with classics and history and other serious studies. The next generation of school-masters will probably know better themselves; to those of the present generation it may be urged that drawing is a most important element in mental and bodily training, and that up to a certain point—that is to say, as far as concerns the practical handling of the pencil and the power of copying an object when seen, and of drawing in correct perspective anything which it is desired to represent—so far as this, drawing can be almost as certainly taught generally as writing, and ought to be so, as a part of every man's education. The question of artistic feeling in the higher sense is a different one. It only exists at all in a portion, perhaps, a minority, of boys; though a preliminary training in practical drawing might not infrequently bring out evidences of latent artistic taste, where it would never have shown itself or been suspected had not the capability for the expression of it first been imparted. The true solution of the problem for general schools would be a compulsory class, supplemented by a voluntary one. The elements of drawing, scientifically taught, should be as much a compulsory subject as grammar or writing; and when once this is established, we should not have the curious spectacle, which we have sometimes seen, of great publishing firms which would on no account publish bad and ungrammatically-written books, being quite willing, nevertheless, to publish books containing illustrations violating the first rudiments of the grammar of drawing and perspective, and seeing nothing to be ashamed of in this; and after the course of a few generations of compulsory teaching of drawing, people will read about the people who could not draw in the present day as we do now about barons and knights who could not write their own names.

—*Art Interchange.*

The Mound Builders.

AT the annual meeting of the Boston Society of natural History, a highly interesting statement was made by Prof. F. W. Putnam, Curator of the Peabody Museum of Harvard University, concerning his recent explorations of certain mounds in the Ohio Valley. The subject was illustrated by drawings hung upon the wall, and by photographs. These explorations, in which he was assisted by Dr. C. L. Metz, of Madisonville, Ohio, were made last year, and were restricted to one particular mound field or tract upon the borders of the Little Miami River, in Madisonville, about twenty miles from Cincinnati. It is to be regarded as one of the felicities of the event—for the work and its results constitute an event in the full significance of the

word—that, being situated so near to one of the great cities of the land, it has happened that no persons impelled by mere idle curiosity have hitherto dug into these mounds in a random way, and thus practically destroyed them in respect to their special value to the archaeologist. The excavations now made were conducted on the most approved methods of science. Nothing worthy of notice has escaped observation and record, and every relic has been carefully preserved for scientific purposes. In the brief discussion which followed the Professor's statement, one of the members of the society declared the results thus reached to be the most important discovery yet made in American archaeology. Several of these mounds were what are called "altar mounds," and in these the valuable and instructive relics were found. These, in number and variety, were sufficient in themselves, if none others had ever found, to give a very distinct—it might almost be said comprehensive—idea of the civilization of the social state of the ancient mound builders. Among other things found were articles of personal adornment, such as ear-rings of pearl and bracelets of metal. The precise advance of the art of working metals is thus disclosed. The metals had been wrought by hammering the ore. Molten work was beyond the skill, or rather the knowledge, of the artificer. The metals were iron, copper, silver, and gold. This is the first time gold has been found in the mounds. The gold, and in some instances the silver, was used for plating an inferior metal, being hammered thin and clinched at the edges. Most significant of all, perhaps, was a little statuette, which not only presented the human form in a shapely—it might almost be said artistic—contour, but showed also the ear-rings and the drapery of the waist which were fashionable in the American prehistoric times. Some of these relics must originally have come from the Florida coast, from Lake Superior and from the Rocky Mountains, indicating thus either extensive migration or intercommunication. The indications are that cremation of the dead was practiced by these natives, and that an altar mound is significant of some great sacrificial ceremony, and that these trinkets and relics, some of which pertained to the useful arts, represented an offering on the part of these people, equivalent, in comparison with our scale of values, to hundreds of thousands of dollars.—*The Mechanical News.*

THE greatest obstacle in the way of forming definite conclusions from experiments is the fact that, generally, more than one experiment is tried at the same time. Hundreds of experiments that count for nothing would have been valuable in advancing both general and specific knowledge, if between them and others with which they are compared some addition or alteration had not been made, the presumed influence upon the result leaving the latter problematical.—*American Machinist.*

Plasterer's Manual, enlarged. Price 75c.



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.

O. T. C.—A two (2) inch hole is bored in a green or unseasoned plank. When the plank becomes seasoned, will it affect the diameter of the hole, or will it still remain two inches?

Yes. The diameter of the hole will be less than two inches, and will be found to be somewhat elliptical in form, the contraction being greater across than on the lines parallel with the fiber of the wood.—W. C. S., in the *Artisan*.

Method of Obtaining Length of Rafters.

For some months past there has been quite a discussion of various plans for obtaining the length of rafters. Many of the methods presented are not desirable, for the want of accuracy. Some years ago the subject came up for discussion where I was at work, and I then prepared the following table, which is very simple and mathematically correct. Any mechanic can copy it on the back of a business card and tack it to the lid of his tool-chest, where it will always be handy for reference. The word "pitch" means such a fractional part of the width of the building. The further north you go the steeper the pitch, on account of the snow; also certain localities have pitches peculiar to that section of the country:

Pitch.	Square.	Rafter.	Brace.
1-6	4 and 12	0.527046	1.054092
5-24	5 and 12	0.541666%	1.083333
1-4	6 and 12	0.559017	1.118034
7-24	7 and 12	0.578852	1.157704
1-3	8 and 12	0.600925	1.201850
3-8	9 and 12	0.625	1.25
5-12	10 and 12	0.6508541	1.3017082
11-24	11 and 12	0.6782843	1.3565686
1-2	12 and 12	0.7071068	1.4142136

The first column indicates the pitch of the roof; the second gives the figures on the square that will cut the various pitches; the third gives the length of a rafter for a building one foot wide, and the fourth gives the length of braces for runs of the same proportion as the figures in the second column.

The manner of using the table is as follows: For any given pitch multiply the tabular number by the whole width of the building, and the product will be the length of the rafter in feet and decimals of a foot.

Example.—What is the length of a rafter of a building 18 feet wide at $\frac{1}{2}$ pitch?

Solution.— $0.600925 \times 18 = 10.81665$ feet, or 10 feet 9 13-16 inches.

Example.—What is the length of a brace having 40 x 48 inch run?

Solution.—40 x 48 inches is the same proportion as 10 x 12; hence, $1.3017082 \times 48 = 62.482$ inches, or 62 $\frac{1}{2}$ inches, always using the longest run for multiplier.

Example.—What is the length of a brace having 35 x 35 inch run?

Solution.— $1.4142136 \times 35 = 49.7474$ inches, or 49 $\frac{1}{2}$ inches.—S. R. K., in *Carpentry and Building*.

Modern House Painting. Price \$5.00.

A Handsome Illustrated Catalogue.

We have received from the Robert Mitchell Furniture Company of Cincinnati a very elaborate illustrated catalogue, containing 307 pages, of parlor and chamber sets and house and office furniture and fixtures of endless variety and in every conceivable style and design. Expense has manifestly not been spared in producing the catalogue, and those desiring elegant things in the furniture manufacturing art will do well to consult its pages, as any and everything of the character necessary to the comforts of home life, and to furnish beautiful surroundings and equipments, will be found fully illustrated.

Lessons on Hand Railing. Price \$5.00.

Workshop Virtues.

OBSERVATION is the first lesson the apprentice learns. When fresh from school he is introduced into the new world (the workshop), and he sees about him a number of men and of tools, and of the names of the latter, or their uses, he knows practically nothing. Machines, wheels and shafts, some in motion and others at rest, stare him in the face until he is somewhat bewildered and he is apt to exclaim, like the "heathen Chinese," who was viewing a marine engine for the first time, "Too muchee wheellee; make man think too muchee." After a day or two this feeling of bewilderment fades away—use becomes second nature to him. Now is the time to improve himself and awaken his faculties, if he has the will. Let him observe the various machines and processes, try to understand why one machine runs at one speed and another at a different one, and why one process is dependent upon another—in fact, make use of his powers of observation, try to remember what he sees, and consider whether he can suggest an improvement. If he can make notes at home of an evening, so much the better; he will find the habit exceeding useful. By observation, errors may be detected in work about to be executed before the blunder is actually committed, thereby saving both time and money.

In some measure all workmen are obliged to be punctual in their going to and leaving work. The bell rings or the whistle blows at fixed hours, and the workmen must be governed by these signals; but over and above these fixed

times, the habit of punctuality is a valuable one. Some factories are famous for being faithful in the fulfillment of their promises as regards time of delivery; they will work night and day to complete an order by the specified time. Others, again, are noted for their utter disregard of time.

Every foreman or manager knows how pleasant it is to deal with a workman ready at taking a new idea, or willing to try a new method of doing work. These are the men who distinguish themselves, and obtain better position than those who cannot move out of their rut of habit. So, also, a firm becomes noted for adapting itself and its resources to new trades or methods of doing work, while a firm which will not try an experiment will be pushed out in the cold in the struggle for existence. The man who knows the reason for what he does is a better man than he who only does a thing because he is told to do it a certain way. Every mechanic should understand, for example, why his drill should run faster for a small hole than for a large one, why one speed of tool is suitable for one metal and not for another.

If he is a smith, he should know why steel is worked at a lower heat than iron; what conduces to a sound weld, and why a piece of steel broken haphazard off a bar cannot be drawn to a sharp point without certain precautions. There are principles underlying every trade which is to the interest of the artisan to study, to ponder over, aye, and even to discover, for it is well known that there are principles yet undiscovered which the cultivator of the various workshop virtues may be lucky enough to fathom, with honor to himself and benefit to mankind at large.—*Mechanics*.

Stables, Fences, Out Buildings, etc. Price \$2.50.

THE KIND OF NAILS.—At first the extra cost of steel nails was one and one-half cents per pound, or \$1.50 per keg, but it has now been reduced to \$1.00. The great advantage of the steel nails is that they can be driven into hard wood as easily as an iron nail will go into a pine board. Steel nails have been driven into a white oak knot without bending. Nothing else is now used in laying hardwood floors, as they require no boring, but are driven readily. For all kinds of finish they are especially adapted, and as so much hard finish is now employed, their use must be on the increase. They are also used largely by builders, and box-makers are increasing their demand for them. Box-makers have been using the better grades of iron nails, as they desire those that can be drawn and redriven.—*Northwestern Lumberman*.

School House and Church Architecture. Price \$4.00.

Sample Copies.

Hereafter we will forward no sample copies of this Journal unless the price, twenty cents for each number, accompanies the order.

Warping of Drafting Boards.

I HAVE taken many valuable hints from *Carpentry and Building*, and I wish to contribute my mite to the general information presented. Those who have used drafting boards appreciate their liability to warp under various conditions of atmosphere. It is also pretty well known that almost fabulous prices are demanded for good drafting boards at the hands of dealers. I have discovered a method by which an ordinary drafting board can be constructed that will remain in good condition. I had some large detail drawings to make in California many years ago, and, being a carpenter, I made a board for the purpose in the quickest manner I could. I glued the joints, and, as battings suggested themselves, I employed them in its construction. The board measured about 40x80 inches in size. I dressed one side and cut three beveled-edged battings and fitted them to one-half the thickness of the board—in other words, I dovetailed them in such a manner as would allow them to slide and not interfere with the shrinkage of the board, and then went to work with my drawings. In a few days I was compelled to stop, as my board had warped three-quarters of an inch, taking the battings with it. I then grooved the under side one-half the thickness of the board at distances of two inches. The grooves run in the opposite direction to the battings, or with the grain of the board. When this was done I found that I had the most perfect drawing board I had ever used. I think others will find the suggestion advantageous.—*Palmetto, in Carpentry and Building*.

A Good Hint to Workmen.

THE old saying that "a man is taken by the coat that he wears," applies to journey-men plumbers. Show us a man that loses his self-pride as to his appearance, as a general rule he also becomes careless in the work he performs. On the other hand, a man that has a good appearing tool-bag, containing tools requisite and necessary to perform a good job of plumbing, also keeps himself clean and tidy, it is a sure indication that he can perform a good job of work. How often do we have the question put to us by our customers when ordering work done, "Will you send me that last man that done our work?" Why? "O, because he attends to his business; don't fool with the girls; goes about his work in a workmanlike manner, and don't mess and dirty the entire house up, and tear the wood-work of the whole house apart. If you can't send him I would prefer waiting a day or two until you can." Ain't this satisfactory proof to a boss? Yes; and these are the men that study their own interest as well as the bosses', and an ornament to any trade or profession.—*Plumber's Trade Journal*.

THE daily cut of the mills on Columbia River, Oregon, is 650,000 feet. About \$1,000 worth of logs are daily floated out of John Day's River. The mills of Astoria and vicinity daily cut \$150,000 worth of lumber.

A List of Registered Plumbers up to Date of This Issue.

IN accordance with the requirements of the new Plumbing Law, the following parties have been registered. It is imperative that every plumber, be he master or journeyman, shall have his name and standing registered at the office of the Inspector of Plumbing. The office is on O'Farrell Street, west of Dupont, in the same building and in connection with the Health Office. In our next issue we probably will be able to give nearly a complete list.

M stands for Master Plumber. They are required to file a bond for \$500. J stands for Journeyman:

Adams, John L., 9 Clara Street. J.
Ayers, Chas., 909 Larkin. J.
Byrne, Jas., 119 Welsh. J.
Berwick, David, 937 Mission. J.
Broad, J. F., 1222 Bush. J.
Cardiff, R. J., 319 Tehama. J.
Cusick, Jas. E., 937 Mission. J.
Connor, J. H., 528 Third. M.
Dixon, J. J., 1222 Bush. J.
Doyle, J. P., 214 $\frac{1}{2}$ Sixth. J.
Doggett, B., 116 $\frac{1}{2}$ Langton. J.
Duffy, G. F., 2096 Market. J.
Daniel, W. L., 234 Post. M.
Dunn, W. J., 37 Louisa. J.
Enright, Wm., 1115 Devisadero. M.
Ellis, T. P., 668 Mission. J.
Ford, Thos. J., 404 McAllister. J.
Flood, Jos., 753 Harrison. J.
Fritz & Kean, 130 Geary. M.
Firmin, J. E., 240 O'Farrell. M.
Gray, W. J., 1 Webster. J.
Gray, J. T., 230 Sutter. M.
Holden, C. S., 824 Green. J.
Hammond, W. T., 1027 Sutter. J.
Heath, J. F., 236 Minna. J.
Hufschmidt, H. L., 637 Clay. M.
Hildebrand, C., 181 Sixteenth. M.
Hobro, W. D., 728 Washington. M.
Johnston, Pat. J., 2008 Larkin. J.
Kelly, Frank, 1208 Green. J.
Kearns, Thos., 1813 Jessie. J.
Kerrison, R. J., 1030 Alabama. J.
Linehan, Jas., 119 Powell. J.
Lawton, J. J., 418 Fulton. J.
Layton, John, 25 Lily Ave. J.
Mitchell, M. J., 410 Waller. J.
Murray, John, 1 Hampton Place. J.
McFadden, J. J., 133 Langton. J.
McNally & Hawkins, 419 Montgomery. M.
McCormick, J. F., 313 $\frac{1}{2}$ Sutter. M.
Milne, Geo., 1209 Golden Gate Ave. M.
Powers, E. J., 213 Prospect Place. J.
Pendergast, John, San Miguel. J.
Rice, R., 107 Geary. M.
Reiley, C. J., 214 Montgomery Ave. M.
Rohr, J., 222 Minna. J.
Snook, Edgar N., 726 California. J.
Wilson, W. F., 25 Stockton. M.
Waters, Chas., 30 O'Farrell. M.

It is imperative that all plumbers should be registered, as they are not allowed to work on buildings without a permit, and the sooner the matter is attended to the better, as permits will not be granted unless the parties are registered.

The above list includes all that are registered up to the time of our going to print.

Discoloration of Brick Walls.

WITHIN late years the great popularity of brick as a building material and the great increase in the number of brick edifices which have been erected have brought into prominence a matter which could not have escaped the notice of the most casual observer, namely, the disfigurement of brick walls from a coating of white powder resembling in appearance hoar frost or mildew.

These deposits are usually formed in rainy weather, and for a long time it has been a mooted question how this substance comes to be collected, what it is, and what can be done to remove it or prevent its formation. The rains of this spring seem to have been especially favorable to the forming of these deposits, and old buildings even, which hitherto have never been defaced by this substance, have this year given up their ruddy appearance for a paler and less attractive complexion. Dr. Joseph Leidy, President of the Academy of Natural Sciences, in speaking of this subject recently said:—

"The efflorescence is simply ordinary Epsom salts or sulphate of magnesia. The sulphurous acid, which results from the burning of coal, combines in the presence of moisture with the magnesia in the mortar or from the clay in the bricks. It was decided that it emanated from the former source. The sulphate of magnesia dissolves in the water, which runs over the bricks, and, evaporating, leaves the deposit. Some walls are covered with a black substance which seems at a distance to be smoke. This is a fungus, which flourishes in damp places, and is materially different from the white sulphate." Dr. Charles M. Cresson explains in a similar way the method by which the substance is deposited on the walls, but expresses the belief that it is sulphate of potash. Edwin F. Durang, the architect, said that sulphurous acid acting on the mortar decomposes it to such an extent that chimneys had often to be rebuilt on account of it. He thought the efflorescence was sulphate of lime.—*Scientific American*.

STRAW lumber has been very much exaggerated, though it may be reckoned considerable of an invention. An Eastern enthusiast recently stated to a newspaper interviewer that there were "scores of mills in the country where paper, straw, prairie grass, and other fibrous substances are converted into straw boards, which are sold all over the country as substitutes for wood." This may be taken either as deplorable ignorance, or an ingenious statement. There is but one factory at present where straw lumber is being manufactured so as to cut any figure. Paper boards—building paper—are made all over the country, and are used to some extent in place of wood, but they are only paper, pure and simple, and lay no claim to being a substitute for lumber, and are more a substitute for plastering.—*N. W. Lumberman*.

Public Buildings. Price \$4.00.



PLATE 4.—FRONT ELEVATION OF WORKINGMAN'S COTTAGE, COSTING \$1,500.

The Board of Health and the Plumbing Law.

THE Plumbing Law, passed by the last Legislature of this State, went into practical effect on the 1st inst., under the rules and regulations adopted by the Board of Health of this city and county. Said law being the first enacted in California for the purpose of regulating and controlling the customs, methods, and execution of a special branch of mechanical works, it was to be hoped that those empowered to give it shape and vitality would have exercised all the care and practical, mechanical, and scientific intelligence necessary to its complete efficiency. And we regret that the rules and regulations adopted by the board in this case do not warrant us in stating that they are *fairly* perfect. It may be that to the learned gentlemen composing the board the whole matter contemplated by the statute was so plain and simple that they deemed it unnecessary to spend much time in framing a set of rules and regulations, and therefore paid no attention to the ambiguities, inexplicitness, and imperfectness of those adopted.

There are many reasons why this should not have been, and why an exceptionally perfect set of rules should have been provided: *First*, Plumbing laws exist in several of the Eastern States and are in practical operation, and the rules and regulations by which they have been rendered operative and efficient were available to the San Francisco board and might have been consulted. If this has been done, the result developed in the rules adopted by our Board of Health are not calculated to reflect any great amount of credit upon the rules in practice in Eastern cities.

Secondly and mainly. If, from imperfect rules and regulations, or any other cause, the

plumbing law of this State shall prove a failure, it will discourage all future legislation upon matters looking to the relief or protection of other mechanical operations. In this view of the case, all branches of mechanism are interested in the success of the law under notice; for if an effective law cannot be passed regulating plumbing and sewer works, then it is doubtful whether Legislative protection

can be thrown around any other of the mechanical arts.

We will not, however, enumerate further, nor refer in detail to the errors and deficiencies in the rules, knowing that the board, together with the gentlemen most in interest, the plumbers, are fully competent to discover and correct such mistakes as may have been made.

Artistic Homes. Price \$3.50.

Coterminous Ownership—Rights to Excavate.

PRIOR to July, 1880, the city ordinance relative to and defining the rights of owners in the excavation of their lots for the purpose of building, was generally observed in practice. Said ordinance provides (sec. 5, chap. vi, order 1281, as amended May 16, 1876) that owners about to erect buildings, etc., shall have the right to excavate to a depth of fourteen (14) feet below the curb level, without incurring any risks or responsibilities in reference to adjoining property or structures, except to serve the proper written notices. This understanding of the matter was so general that adjoining owners seldom refused to take care of and underpin the structures upon their premises. But in the July, 1880, number of this journal, we published the decision of the Supreme Court in the case of Zeile vs. Hood, which virtually set aside the city ordinance, and by, as we think, an irrational and illogical construction of sec. 832, civil code, sustained the decision of the Fourth District Court, Judge Morrison then presiding, which decision imposed upon the party excavating (Hood) the responsibility and cost of under-



PLATE 5.—SIDE ELEVATION OF WORKINGMAN'S COTTAGE.



PLATE 6.—FIRST FLOOR PLAN OF \$1,500 COTTAGE.

pinning the adjoining owner's (Zeile's) building. The decision of the higher court becoming generally known through the columns of this journal, owners of improved property have since acted upon the defensive by refusing to be put to any expense in underpinning their buildings, and those making new improvements have been compelled to bear the cost of sustaining the adjoining property, or suspend building operations. But the present Supreme Court, in the case of Aston respondent, vs. Nolar, appellant, has reversed the decision in the case of Zeile vs. Hood, and virtually restores the city ordinance, which gives to all owners the rights and privileges hereinbefore stated. This result is in exact harmony with the views expressed by us at the time of presenting the Zeile and Hood case, in which we held that "the vital point in issue had not been finally settled and determined" by the decision then referred to; and so it has proven; for the section of the code quoted is without shadow of reference to the party excavating sustaining the structures erected upon the adjoining property. (For full report of the case of Zeile vs. Hood, see this journal of July, 1880).

In plain words the case now stands thus: Every owner of real estate has the right to excavate his premises to a depth of fourteen

(14) feet below the curb level, without regard to adjoining structures, provided he shall first serve a written notice upon the owner or owners of the adjacent property, notifying him or them of the intention to, and extent of, the intended excavations. And the owners of adjoining property or buildings are required, under the decision of the Supreme Court, to take care of and underpin at their own cost

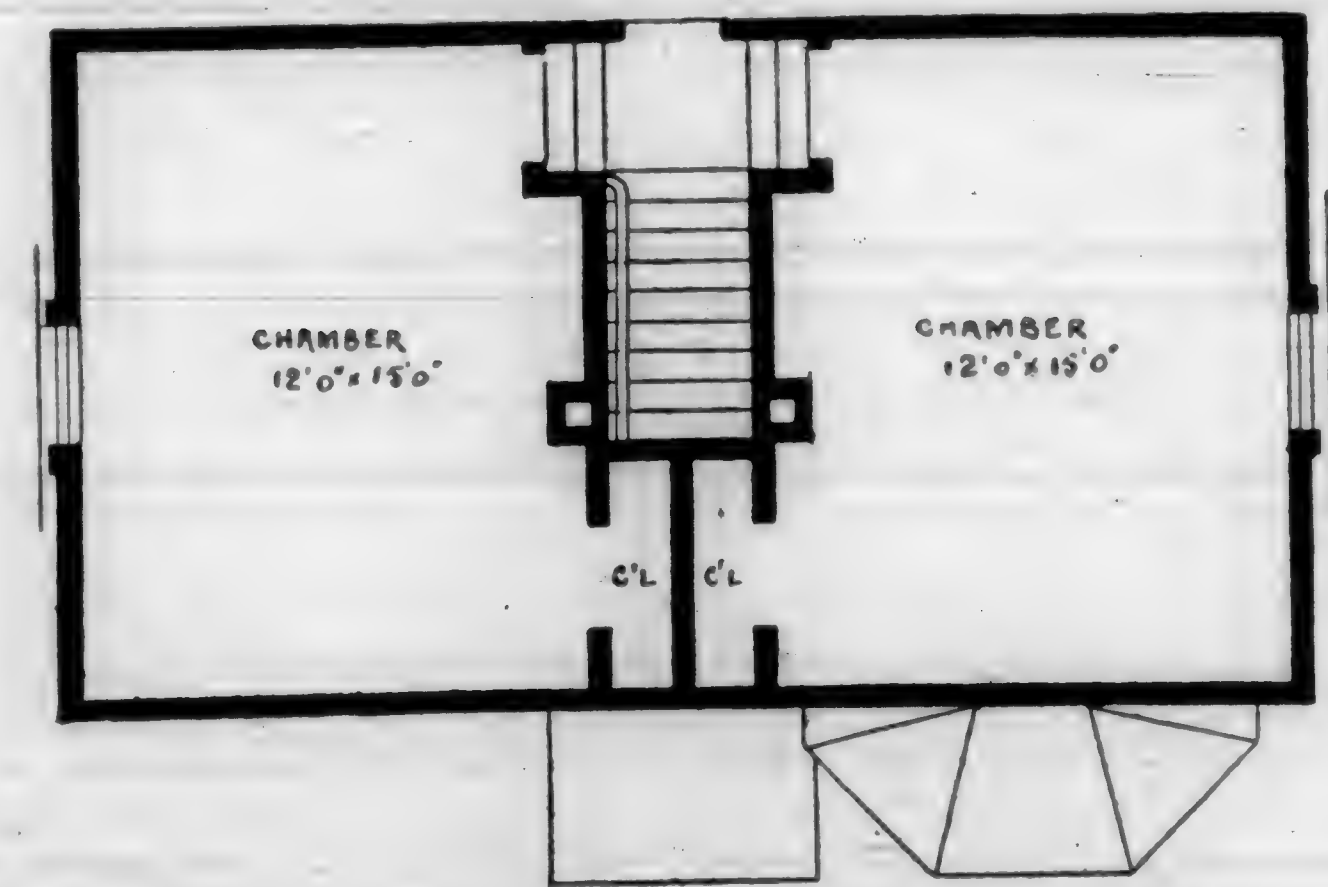


PLATE 7.—SECOND FLOOR PLAN OF \$1,500 COTTAGE.

and expense. Any doubt that may exist in the mind of any one can be set at rest by calling at the office of this journal, and examining the law and decisions bearing upon the case.

Swiss Gothic Cottage.

WE have received a supply of the above from Palliser, Palliser & Co. It is a large sheet on which are given elevation and plans of a Swiss Gothic Cottage. By an easy modification it can be built either as an eight or six room cottage. Full details are given. Price, postpaid, \$2.50.

WHAT CAUSES THE TIMBER LINE?—A writer in the New York *Independent*, says: The cause of what is known as the timber line on high mountains continues to be discussed in scientific periodicals, and the attempt continued to connect the line in some degree with mean annual temperatures. The writer of this paragraph has had the matter in mind when on these high elevations, and the explanation seemed very simple. On all these high peaks there is a continuous, though in some cases slow, descent of the soil from the summit to the base of the hill. He has never seen a case, where there was soil enough to grow a tree, that trees were not growing. As the wash from rain or melting snow will be nearly uniform in a given range, there will be of necessity some uniformity in the timber line. On Mount Washington and other high places, little plots of dark vegetable earth can often be found far above the present timber line, the remains of trees which existed before the earth was washed away. What is called the timber line seldom shows graduated sizes, as a mere matter of temperature would call for. Generally the line is formed of very small trees, and immediately scrubby plants, from the absence of deep soil, begin.

THE California Redwood Company has been formed by English lumbermen, with a capital of \$4,500,000. The object is to purchase redwood timber lands in California, and ship the product across the water.

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
Amth 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.

TO EASTERN ADVERTISERS.

OUR space is all taken with the exception of a few business cards. These we can readily fill. Do not send any more ads, as we go to print the latter end of this month.

We will do better than our promises made in last issue, as we positively print

52,500 COPIES.

In a short time Supplement No. 3 will be issued, and we will guarantee an issue of

ONE HUNDRED THOUSAND COPIES.

It would be well for our Eastern friends to communicate with us in regard to terms immediately, as we will have no trouble whatever in filling up our space. Remember: FIRST APPLICANTS SECURE CHOICEST SPACES.

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.*

ARKANSAS produces seventy different varieties of woods used in the mechanics' arts.

Detail Cottage Architecture. Price \$10.00

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.

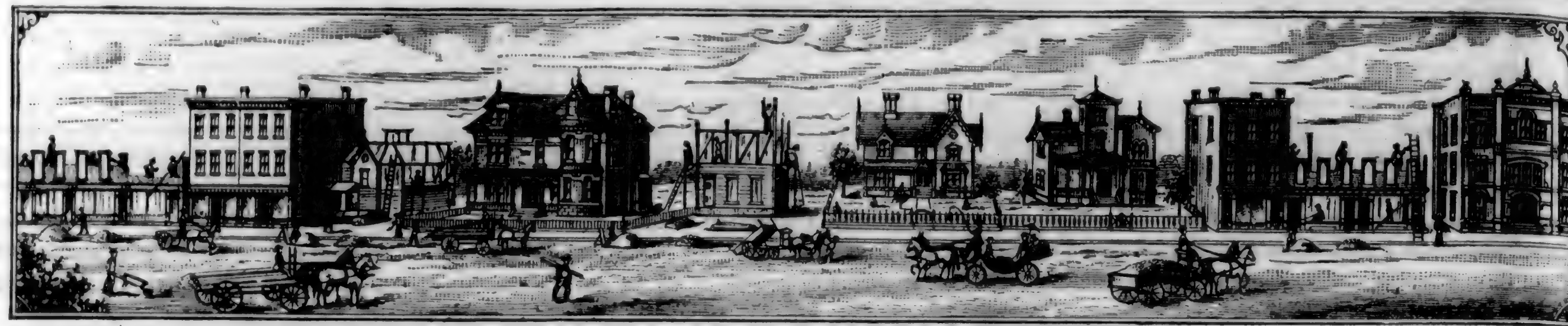
Practical Carpentry. Price \$1.00.

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. C. — 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. Mahn. \$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. — — Dinger. C. — Turner & Reese. \$1,800.

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

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. \$1,000.

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.)

The California Architect and Building News.

VOLUME IV.
NUMBER 9.

SAN FRANCISCO, SEPTEMBER, 1883.

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

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

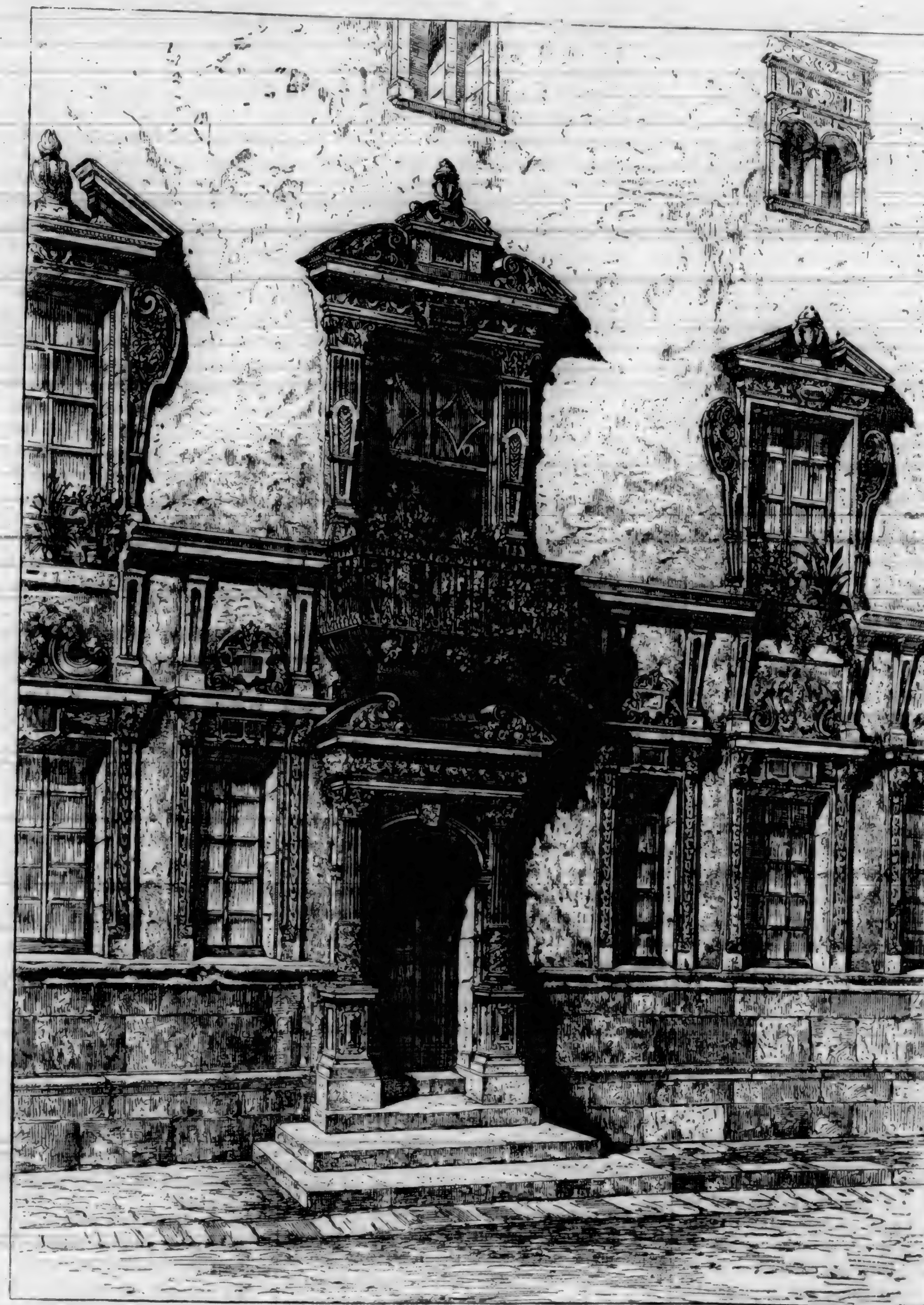


PLATE I.—ILLUSTRATION OF THE "RENAISSANCE."

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.

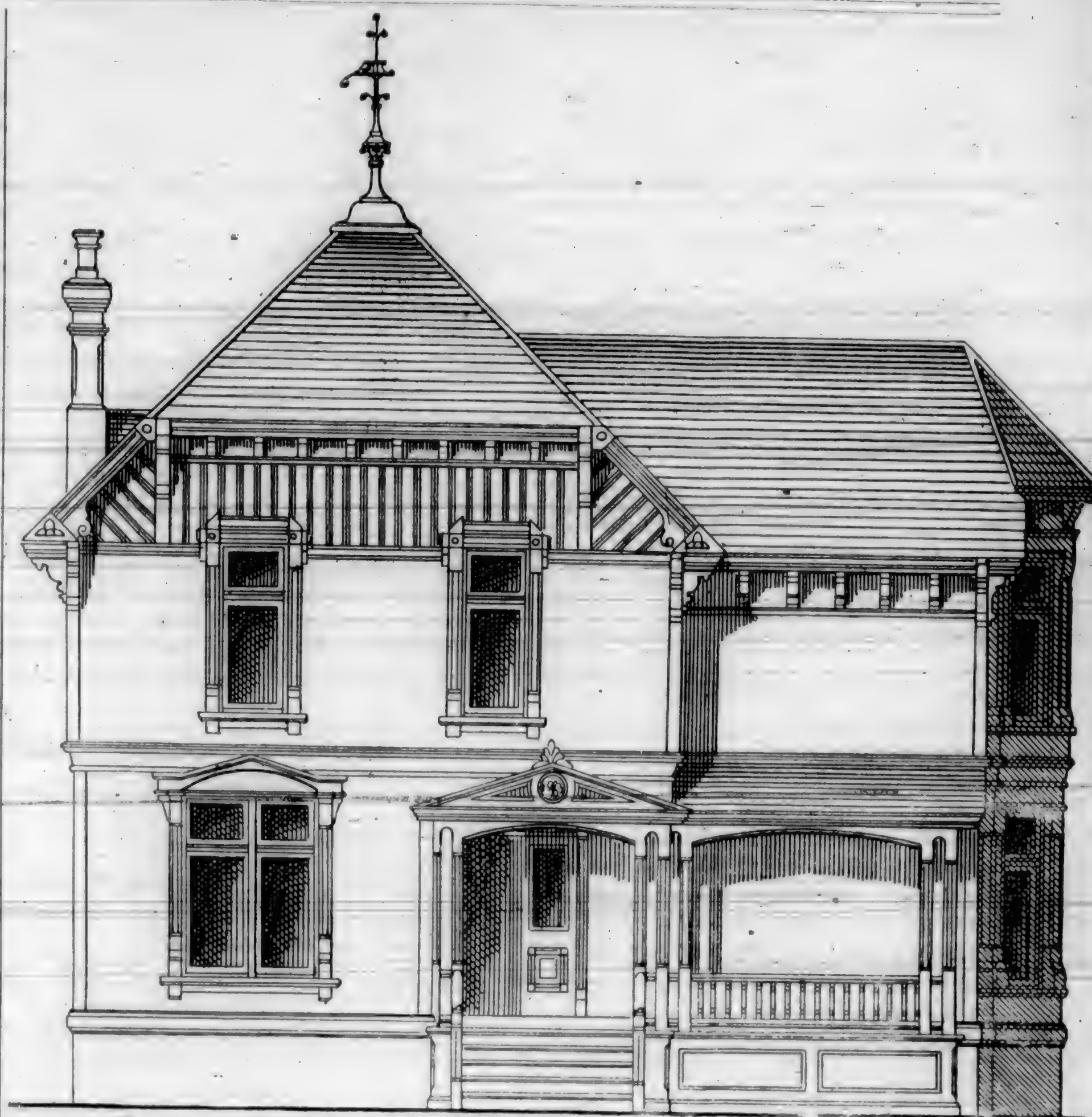


PLATE 2.—ELEVATION OF COUNTRY HOME. COST, ABOUT \$4,000.

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.

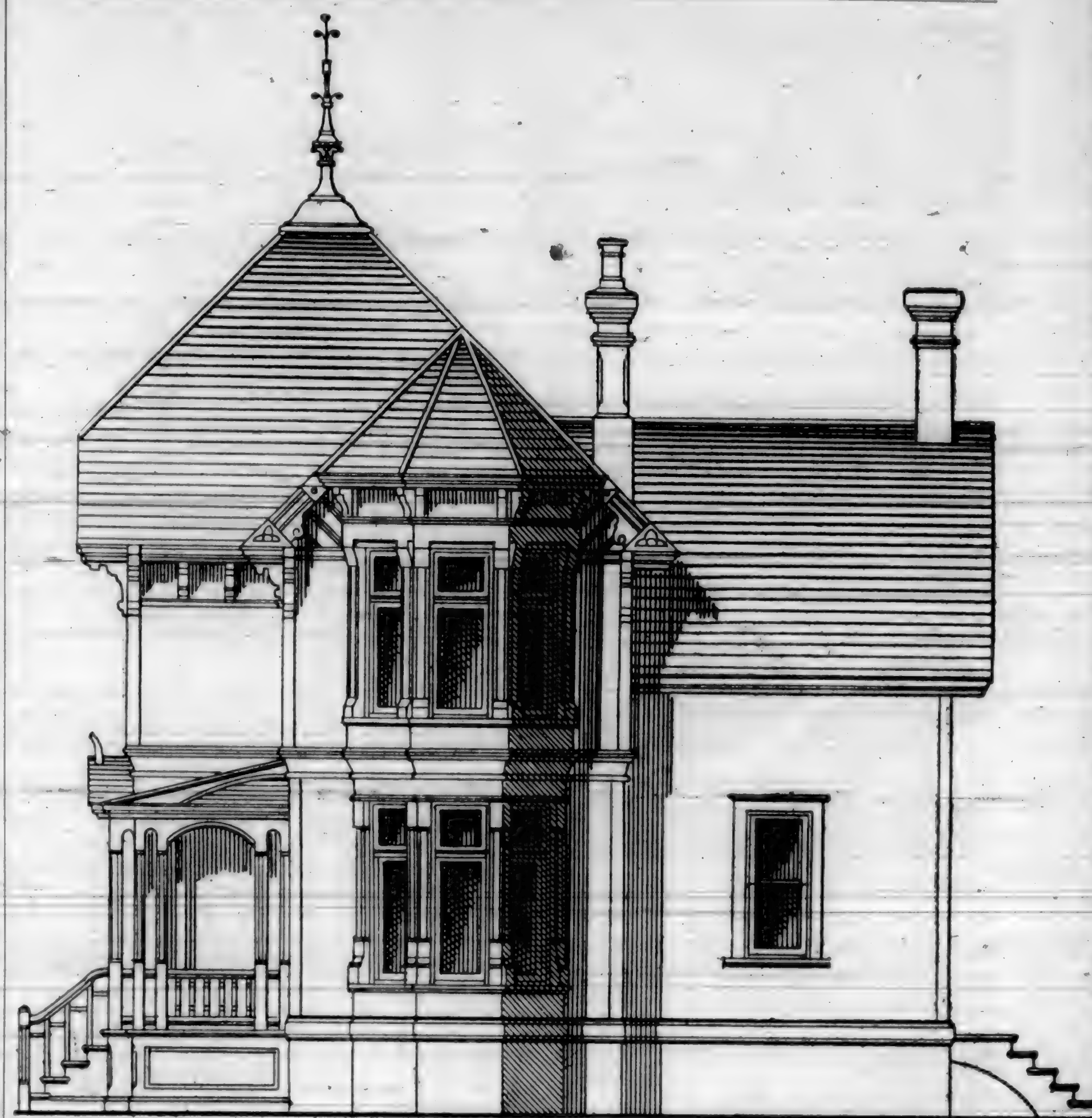


PLATE 3.—SIDE ELEVATION OF \$4,000 COUNTRY HOME.

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.

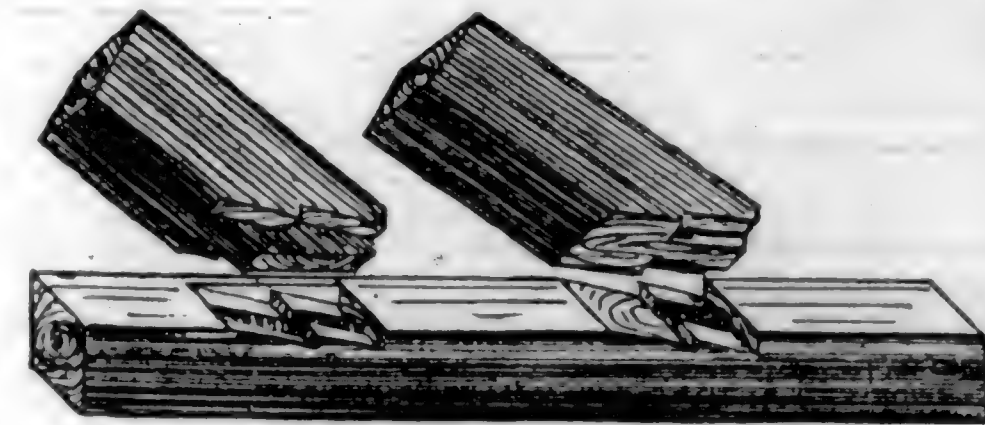
ABOUT the first inquiry made by persons contemplating building improvements, is in reference to the cost of materials; and nothing more effectually dampens the ardor of those wishing to build, than to find the material market inflated; and numerous contemplated improvements have from time to time been 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.

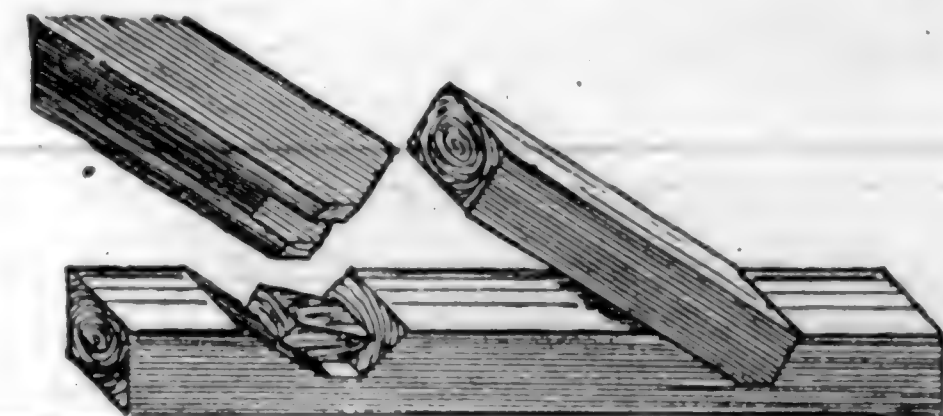


Architects, Contractors, Carpenters, and Mechanics generally are respectfully requested to furnish us items of interest for this column. We will gladly answer any and all questions pertaining to the architectural and building interests. If illustrations are necessary to explain your ideas, send us a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

EDITORS ARCHITECT: Will you please give us, in your next issue, examples for framing oblique mortises. We understand that there are new methods being used, and wish to keep up with the times. E. & L., Mission St



The above cut represents two ways in which oblique mortises are framed. They are not new, as we used the same more than a score of years, and they must have been in use more than a score before our time.



This cut shows two methods often employed. Each different one has its own champion. We have yet to learn of anything new in regard to this kind of mortise.

List of Registered Plumbers.

Adams, John L., 9 Clara Street. J.
Ayers, Chas., 909 Larkin. J.
Byrne, Jas., 119 Welsh. J.
Berwick, David, 937 Mission. J.
Blackman, M. J., 225 Hayes. M.
Bohn, John, 112 Seventh. M.
Britt, Jas. E., 1191 1-2 Harrison. J.
Broad, J. F., 1222 Bush. J.
Bush, David, 22 Post. M.
Butterworth, J. B., Larkin and Beach. M.
Cardiff, R. J., 319 Tehama. J.
Clark, Thomas, 559 Minna. J.
Cline, Wm., 2106 Fillmore. M.
Colvin, Jam. J., 1501 Broadway. J.
Connor, J. H., 528 Third. M.
Cosgrove, John, 33 Lafayette. M.
Cusick, Jas. E., 937 Mission. J.
Dallamore, Geo. C., 6 Moss. J.
Downes, Chas., 41 Second. M.
Dixon, J. J., 1222 Bush. J.
Doyle, J. P., 214 1-2 Sixth. J.
Doggett, B., 116 1-2 Langton. J.

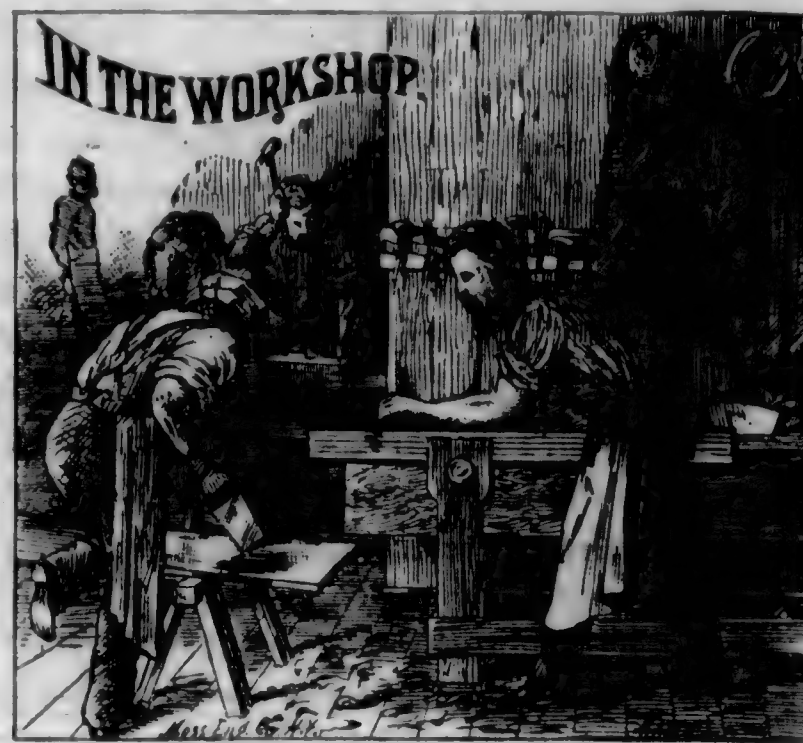
Duffy, G. F., 2096 Market. J.
Daniel, W. L., 234 Post. M.
Dunn, W. J., 37 Louisa. J.
Enright, Wm., 1115 Devisadero. M.
Ellis, T. P., 668 Mission. J.
Fellows, T. J., 6 Vernon Place. J.
Fenlow, Jeremiah, 432 Tehama. J.
Ford, Thos. J., 404 McAllister. J.
Flood, Jos., 753 Harrison. J.
Fritz & Kean, 130 Geary. M.
Firman, J. E., 240 O'Farrell. M.
Fritzpatrick, P. D., 1325 Vallejo. M.
Gray, W. J., 1 Webster. J.
Gray, J. T., 230 Sutter. M.
Guthrie, Geo., 2613 Clara. J.
Hanna, James K., 24th and Columbia. M.
Hayes, Thos., 1528 Polk. M.
Holden, C. S., 824 Green. J.
Hammond, W. T., 1027 Sutter. J.
Heath, J. F., 236 Minna. J.
Hufschmidt, H. L., 637 Clay. M.
Hildebrand, C., 181 Sixteenth. M.
Hobro, W. D., 728 Washington. M.
Johnston, Pat. J., 2008 Larkin. J.
Kelly, Frank, 1-08 Green. J.
Kearns, Thos., 1813 Jessie. J.

Kerrison, R. J., 1030 Alabama. J.
Linehan, Jas., 119 Powell. J.
Lawton, J. J., 418 Fulton. J.
Layton, John, 25 Lily Ave. J.
Lyons, John F., 109 Langton. J.
Lyons, John, 311 Lenden Ave. J.
Mahoney, James, 422 Filbert. J.
McCappary, John, 614 Stevenson. J.
McCloskey, Jas., 713 Turk. J.
Mitchell, M. J., 410 Waller. J.
Murray, John, 1 Hampton Place. J.
McFadden, J. J., 133 Langton. J.
McNally & Hawkins, 419 Montgomery. M.
McCormick, J. F., 313 1-2 Sutter. M.
Milne, Geo., 1209 Golden Gate Ave. M.
Powers, E. J., 213 Prospect Place. J.
Pendergast, John, San Miguel. J.
Rice, R., 107 Geary. M.
Reilly, C. J., 214 Montgomery Ave. M.
Rohr, J., 222 Minna. J.
Snook, Edgar N., 726 California. J.
Wilson, W. F., 25 Stockton. M.
Waters, Chas., 30 O'Farrell. M.
McNally, L., 419 Montgomery. M.
O'Neil, John P., 3 White. J.
O'Neil, J. C. B., 65 West Mission. J.
O'Neil, Dennis, 27 1-2 Ritch. J.
Plank, L., 1610 Clay. J.
Pitchard, J. A., 916 Natoma. J.

Parker, L. J., 1316 Filbert. J.
Raisch, Fred, 1519 Howard. M.
Rothman, Jacob, 7 Hopeton Terrace. J.
Robinson, Thos. F., 1133 1-2 Harrison. J.
Spinks, Charles H., 1705 Levenworth. J.
Snook, Edward, 630 Sacramento. M.
Smith, H. W., Octavia and Cedar Ave. J.
Shepard James, 110 Leidesdorff. M.
"William" " " "
Snoth, Geo. A., 630 Sacramento. M.
Symmes, Frank J., 122 and 124 Sutter. M.
Stow, Vanderlymp, 122 and 124 Sutter. M.
Snook, Wm. S., 554 Clay. M.
Snook, F. W., " " M.
Snook, G. W., " " M.
Vance, Robert A., 12 1-2 Russ. M.
Welsh, M., 2230 Pine. J.
Ward, Peter, 712 Folsom. J.
Wagner, John G., 712 Folsom. J.
Welsh, J. D., cor. Taylor and Fillmore. M.

OF INTEREST TO BUSINESS FIRMS.—The Supreme Court of California has decided that a firm cannot obtain judgment till after a full publication of the notice of co-partnership by said firm.

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



We will be pleased to receive for publication in this column items of information in regard to practical ideas connected with the mechanical part of the building trade.

(From "Steel Square and Geometrical Problems.")

To find the angle to mitre an equilateral triangle.—Set off 12 inches on the mitre-box; place the square on the points, with 6 inches on the tongue; mark from the blade for the cut required; and from the tongue for the cut to mitre a hexagon.

To find the angle to mitre a pentagon of five sides.—Place the square on the mitre-box, with 6 1/4 inches on the tongue and 12 on the blade; mark from the tongue for the cut required.

To find the angle to mitre a heptagon of seven sides.—Place the square on the mitre-box, with 5 1/4 on the tongue and 12 on the blade; mark from the tongue for the cut required.

To find the angle to mitre an octagon of eight sides.—Same as above, using 7 1/2 to 18.

The above cuts are for use in a mitre-box, and should be kept in mind by every mechanic.

THERE are several preparations to keep glue from smelling, but the following directions if followed will be better than any patent arrangements. Cut a piece of zinc the size of the bottom of the vessel in which the glue is boiled, and let it remain in the pot. When you are through using the glue, take the pot out of the one holding the water, so as to let the glue cool off as quickly as possible. Heat it only when needed. Add a few drops of oil of cloves. The best way is to make enough to last two or three days, thus always having it fresh.

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

Sample Copies.

Hereafter we will forward no sample copies of this Journal unless the price, twenty cents for each number, accompanies the order.

A MAN breathes about eighteen times a minute, and uses 3,000 cubic feet of air per hour.

Railroads—Their Values.

THEIR INFLUENCE ON THE MECHANIC ARTS.

Do any object to railroads to-day? At first thought it would hardly seem possible that one living in this age, in this generation, in a country like ours, could honestly and seriously find objection to such a convenience and blessing. But there are people in the most enlightened and moral communities that will oppose any scheme whatever—the most labor-saving, the most ameliorating, the most philanthropic, the most beneficent, the most civilizing—no matter whether it brings with it comfort, peace, or joy, there are objections to it.

We have read of a man who had spent a large part of his life in prison, who, when the doors were opened and he was offered his liberty, objected to the condition of things outside. He was not *en rapport* with society or with nature; he needed adjusting; so he left the fresh air and sunshine, the birds and flowers, and went back to his dungeon.

People objected to coal when it was first dug from the earth. It was black; it was dirty; it was not the dry, clean wood of custom. So people objected to coal oil and to gas for similar reasons; they were not the tallow candles of their mothers. They objected to labor-saving machinery when first introduced, and organized riots to throw it out of the windows of factories. It interfered with hand work. The first steamboat excited opposition at once. "It would not go; it would certainly explode; it would doubtless sink." When the Representatives of Congress, who had been induced by months of pleading to vote for means to build a boat, took the first pleasure trip on the Schuylkill River in Fitch's little steamer, they moved at the speed of four miles an hour, and the people on the banks shouted "I told you so!" and the Knickerbockers on the Hudson, in Fulton's first boat, did likewise. That was eighty years ago.

And when the railroad was suggested the croakers were no less; they had not died. It required years of the most persistent effort and crowding to start these new things and make them popular—years of the most patient showing as with children, unwearied talking, unyielding push, push, push.

A Nashville editor once said that that city solicited Congress for aid to build a post-office and a Custom House. A quarter of a century passed before they got either, needful as those things are.

One hundred years ago Watt was dreaming and studying over his tea-kettle. He watched and saw the steam puff and lift the lid and shake the tiny vessel, and the evolution of the steam engine and locomotive began then and there.

Suppose these had not been born in that dream! We, to-day, would still be struggling with the forces of nature as men had been for ages—fighting with earth, and wind, and ocean, with hills and mountains, with deserts, swamps, and forests.

The first known railroad came into being in

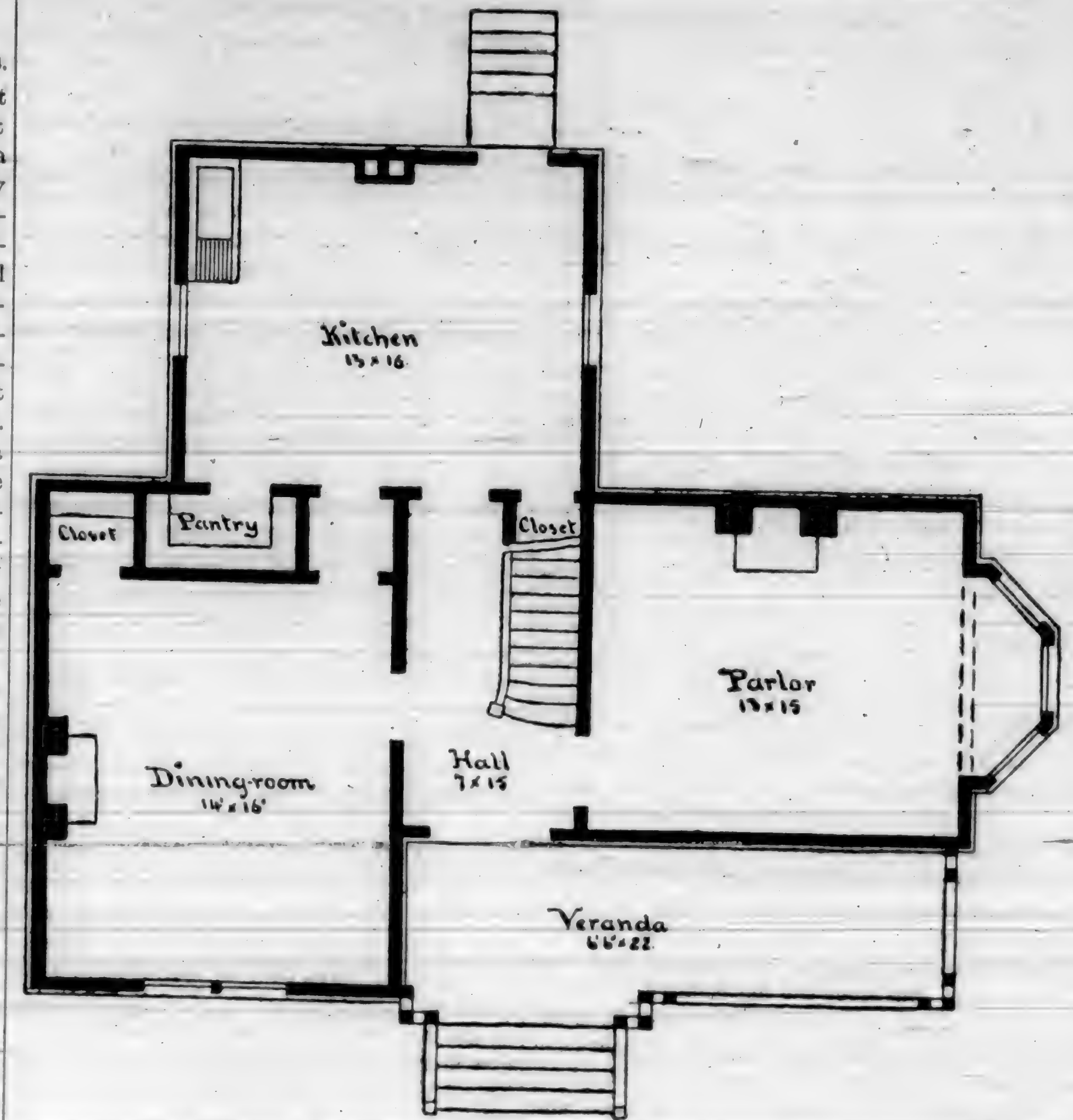


PLATE 4.—FIRST FLOOR PLAN OF \$4,000 COUNTRY HOME.

England in 1833, we think. It was not the road of to-day, by any means, but it was a beginning of the career of a great civilizer.

The first road in our country was a short one in New Jersey, if we mistake not. There was another in Massachusetts, and another in New York, all short, and not far apart in point of time. They were primitive specimens of work, doubtless, and the first cars were drawn by horses, we believe, at a speed not much greater than that of the common road.

The development in these fifty years has been wonderful, but it has been through struggle—stubborn fighting against obstacles without number; struggles with individuals and with combinations of men; with township, county, State, and the United States, in Congress; with poverty and wealth, with ignorance and intelligence, with greed and envy and the selfishness of the dog in the manger.

The sharp practice, the checkmating, the blocking of wheels, the whole conflict of opposition, has been in the face of our own interest—the people—undoubtedly, however honest may have been the objectors in it. It has delayed advance and checked development; but growth has gone on in spite of it. Some

earnest soul brooded in secret over the problem until the railway shaped itself in his mind; the purpose was formed, and with bulldog tenacity he clung to his project until he saw a mile of railroad built. Now we have 115,000 miles of good road. The speed on that first road was moderate, but now only the telegraph and the lightning excel it.

Is opposition dead? Have men changed? Project a road to-day anywhere, in any direction, and of any length, across the village or across the continent, and see if human nature has lost all the animal in it. See if the bear and the lion, and the wolf and the lamb (and the pig) will lie down together, and if a little child may lead them? No! Human nature is to-day what it was fifty years ago, — what it was ages ago,—selfish, envious, greedy. It opposes what is not its own. But energy and enterprise thrive by opposition. When a strong soul appears on the stage of action, with a purpose nursed in resolution, courage, and fortitude, opposition only stimulates it; antagonism cannot crush it, cannot drown it, cannot stifle it. Of such spirit is the genius of the nineteenth century. Daring enterprise, tireless energy, unexampled fortitude, and heroic vigor characterize the great movements of this age, and

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-

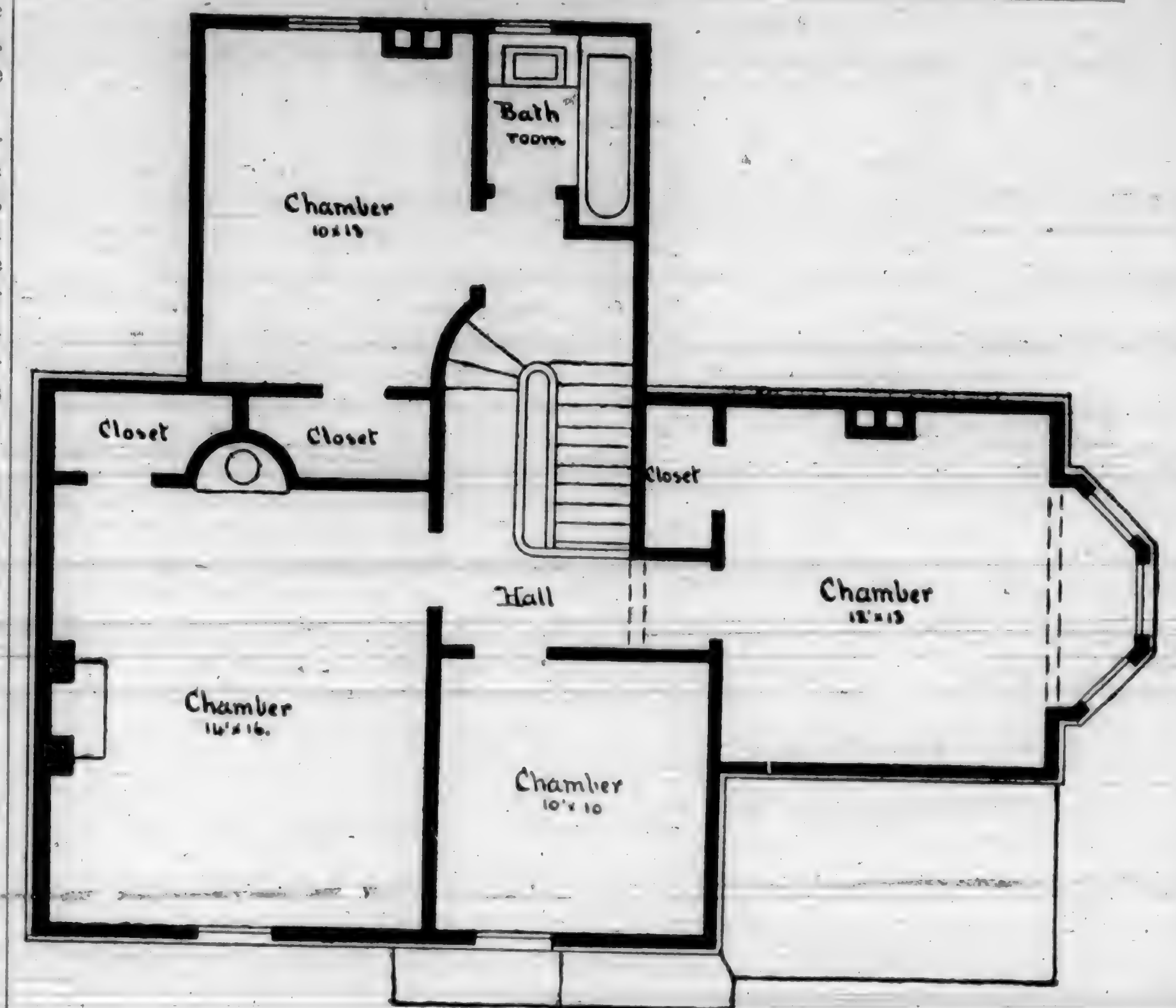


PLATE FOUR.—SECOND FLOOR PLAN OF \$4,000 COUNTRY HOME.

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.*

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

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Drawer Making.

MOST articles of furniture being fitted with drawers, the method of making, fitting, etc., forms a very important branch of cabinet making. I shall, before describing the manner adopted, make a few remarks respecting the work into which they are fitted, and other essential particulars. Drawers are most frequently placed one above the other in carcasses, being supported and separated in front by partitions. These partitions play a very important part in the structure, and one to which sufficient attention is not usually given. I shall, for the sake of illustration, assume that we are making a cabinet about twenty inches or so wide. I need not enter into details, but will suppose that it is to be constructed with two or three drawers, placed over each other in front. The ends, having been planed over, both inside and out, should be squared up. For this purpose they must be fixed together. This is done by means of a small hand screw 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.

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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.

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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.