

Mechanical Aids to Decoration.

BY A. CURTIS BOND.

MECHANISM in decoration, by which color designs and forms may be indefinitely repeated or multiplied, is always in course of progress; yet it here would seem, with all the varieties of adaptations which we witness, certain defined limits, and in numberless directions of decorative art handiwork well asserts its superiority. Yet mechanical production itself bears the stamp of intelligent purpose and constructive ingenuity, it being, so to speak, a transfer of handwork, an intermediary between the designing brain and hand, shown in the pattern and the execution. The die of the mould for molten metal and plastic material has either itself to be worked out by hand, or, if obtained by impress of relief work, the relief model has to be carved. The production and duplication of much decorative work by mechanical means is recommended by economy, in some instances by greater uniformity, but in the higher spheres of decoration, the absolute uniformity thus obtained falls far short in value of the direct work of the hand. This is evident in ornamenting in color, walls and ceilings, if the execution be skillful, as compared with stenciling. The slight variations in the ornament—for the work of the hand never absolutely repeats itself—is itself a charm, as showing greater freedom of execution, and in some instances greater delicacy of touch. Nevertheless decoration is greatly behooven to the mechanical arts for its diffusion, whether in furniture, structural surfaces, or the ornaments by which interiors are adorned.

One of the greatest novelties promised in mechanical devices, as concerns painting, is a machine consisting of a hand piece, a compressed air chamber, and an air pump, with communicating cup filled with liquid pigment, the latter filled with liquid pigment, which enables the artist to throw out a spray which, in the first instance, forms a fine line, and in the second, widens the line to the desired breadth. The skill required in the operation, the proportions to be given to the line, renders the line, which may even be thus shaded at will, something more than mechanical work.

Many devices for facilitating decorative work may be characterized as assistive. They are brought in co-operatively, and are little more than the brush to the painter. The improvement in tools merits notice here. Take, for instance, the wedge-shaped brush so useful for many purposes, previously to the manufacture of which decorative artisans had to wait the wearing down on one side of their flat brushes. Fortunes have been made by smaller devices than these, suggested primarily by individual requirements and really foreshadowed by the efforts of artificers in their practices or methods, to devise means for escaping inconveniences attached to their tools. The tools used for wood carving, and

adapted to special purposes and to different scales, have been greatly increased in number of late years. There are mechanical devices which may be regarded as completing the operations of the hand, as when, previously to applying veneer, the ornament adjusted to the pattern and already rubbed down with the veneering hammer, and affixed by glue to paper, is placed between hot boards and pressed with hand screws, which, when the glue is dry, allows the work to come out quite clear from the boards and appear as one piece of veneer, which is then ready for application.

The cowl with its screw clamps comes to the aid of the veneerer to secure a graduated pressure, commencing from the center of the piece, being an exact counterpart of curved work, and when flat employed, like the veneering hammer, for plain surfaces. The heat of the cowl quickly penetrates the thin veneer, making the glue exceedingly fluid, and the pressure applied by the clamps soon expels the greater portion of it, and causes the veneer to bed very closely to the work.

Wood carvers, in copying models, are now supplied with a marking or cutting gauge of ingenious construction by which, when once set to the required dimensions, they cannot only give all their markings the relative width, but secure depth of the ground line of the carving, and height of relief portion, or rather the excess on their own panel, so as to enable them to cut away freely, instead of timorously dealing their strokes.

The services of the lathe are particularly prominent in decorative woodwork, particularly in hand-turning. In hand-turning the tool is held by the hand, the changes of form made in the wood being dependent on the relative position or angle of the cutting edge. It is the work of an instant only to vary the relative height and angle of a hand tool to the work, converting it from a roughing to a finishing tool, or even to a scraper, which operations are often impracticable with a tool held in a side rest. With the latter the guidance is solely by the eye; with the lathe the delicate sense of feeling is appealed to, so that any variations may be made with absolute accuracy.

In the development of electricity as a motor under the system of storage, much of the preparatory work of the moulder, whether in wood or metals, will doubtless be greatly aided in the future.

Scaffold brackets is among ingenious contributions to the satisfactory execution of exterior house decorative work on walls. This work is necessarily done much better when the artisan has not to balance himself, but obtains a steady platform without unpleasant swaying. The ladder is made with large hooks at top to hang from window sills, and the platform which is transferable to any of the runs, is fastened by curved hooks attached to an environment bar both to that rung and the rung above.

Album of Mantels \$ 8.00

More Lost Arts than Fresh Discoveries.

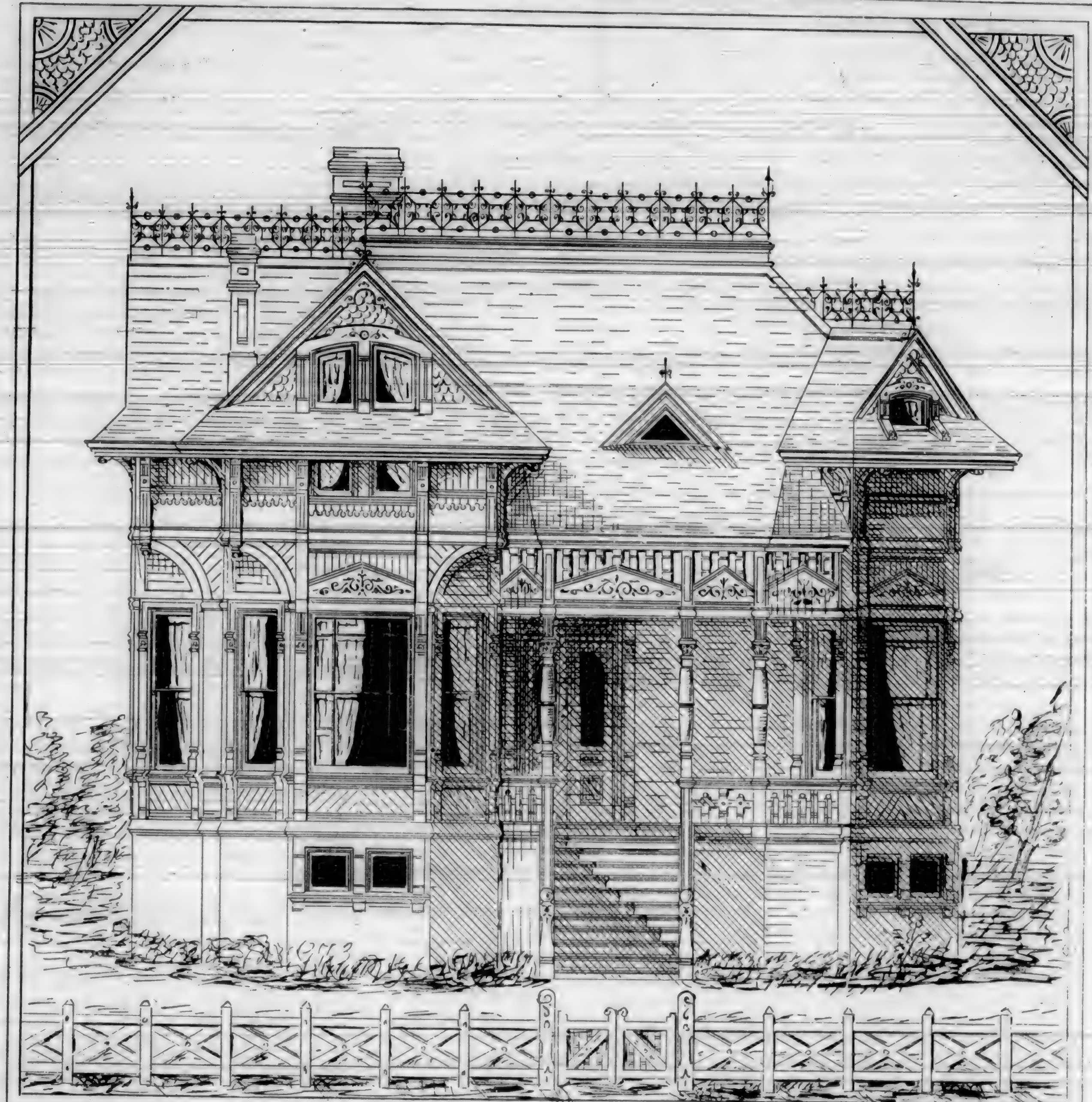
THOSE evolutionists, says the New York *Journal of Commerce*, who believe that our ancestors were fools or pigmies, will find little comfort in the fact that between the ancients and ourselves there are more lost arts than fresh discoveries. Modern chemistry has exhausted itself in the vain effort to produce a compound as useful and durable as the cement of olden times. Vitruvius, who wrote upon architecture before Christ, but whose works have only been printed within the last 450 years, speaks of *opus albarium* and *opus coronarium*, as well-known compounds, too familiar to need description. Among modern experiments are the oil cement of Adams, made of fine whiting and calcined oyster shells ground up in a mill with oil; Pashu's, called Roman cement, is made of argillaceous limestone. Bailey's cement is composed mostly of lime and sharp sand. Mastic cement (sometimes called Hamelin's) is composed of peroxide of lead and oil. The technical "stucco" is made largely of plaster of Paris and lime, and is used for interiors. The Italian stucco is chiefly lime putty, mixed with white sand or powdered marble. We presume the ancient stucco so durable was made of a peculiar sand, or of powdered marble, since the great fault of modern outside work is in the impurity of this foundation. If sand is used, it should be repeatedly washed until it will no longer discolor the purest water. The least particle of earthy matter will be brought into action in warm weather and spoil the adhesion. The wall should be oiled before the stucco is applied, and the latter should be thoroughly oiled every two or three years afterward. But our ancestors, according to the evolutionists nearer the apes than ourselves, could prepare the cement and color it after the fashion that mocks all the modern attempts at either.

Licorice Cultivation.

WHAT is there in the entire vegetable kingdom that California cannot produce? There is scarcely anything that is grown in the earth that does not find favorable soil and climate somewhere within her borders.

The cultivation of the licorice root, is one of the most recent industries of our State, and promises to be not only a successful but a very remunerative one. The experiment has been successfully tried in Sacramento County, where it is estimated that the net receipts from one acre, at thirteen cents per pound, would amount to \$2,400 from the first three years' growth. No doubt other parts of the State would be equally favorable to its growth.—*The Interior*.

It is estimated that the value of the building stone quarried in 1884 was \$19,000,000 as against \$20,000,000 in 1883; the decline being partly due to dullness of trade and partly to the increased use of other structural materials.—*Age of Steel*.



The American Institute of Architects held its annual Convention at Nashville, in October. The number present was not large—not such a representation as should have been, considering the number of practicing architects in the United States. But this fact is not to be considered as evidence of non-interest on the part of the membership, but as proof that architects generally, all over the country, are so engaged in the conduct of their business that it is inconvenient, if not practically impossible for them to leave their offices and business even for a week. As far as the "Fellow" of the Institute residing in San Fran-

cisco are concerned, every one of them would gladly have been present, but time and circumstances forbade that pleasure. But the session is reported to have been one of the most delightful character, and those who did attend were richly repaid for the loss of time and expenditures attending. The most liberal and kind courtesies were extended to the attending members in all directions; so that, aside from the fraternal pleasures and benefits of the occasion, there was a season of enjoyment which will long be remembered by those who made the sacrifice and were present at the Convention of 1885.

Ten years ago a standard car load on all first-class railroads was 20,000 pounds, the weight of the cars being about 20,500 pounds. In 1881 the load on most roads had increased to 40,000 pounds, but the weight of the car had increased to only 22,000 pounds. The master car builders of the Pennsylvania road have now adopted cars to carry 60,000 pounds; while the weight of the cars will be very little increased. Instead of hauling more than one pound of car to one pound of freight, nearly three pounds of freight can now be hauled for one pound of car. The substitution of steel for iron rails has made the change possible.

Arrest of Architects.

MESSRS. WRIGHT & SANDERS, architects of the Union Club Building, northwest corner of Post and Stockton Streets, were arrested, a short time since, for violation of the Conglomerated Code of City Ordinances, denominated "Order defining the fire limits, and regulating the construction of buildings in the city and county of San Francisco," in which is contained all matters specially and properly belonging to the supervision of the fire wardens, chief engineer of the fire department, and his assistants, and also all matters which should be under the separate control and direction of a competent "building board," "board of public work," or a qualified board called by any other name. Without discussing the merits of the Code as now in force, the facts of the case in question are these: The wrought iron, or box girders to be used in the erection of said building, were specified in harmony with the requirements of the law regulating how the girders should be made. The competition was submitted to the wrought iron workers in San Francisco, and the award of contract made to the lowest bidder, who happened to be the agents of an Eastern manufacturer. This created an interest on the part of the San Francisco manufacturers in the character of work that would be produced under the contract.

The girders finally arrived, and, while the material and workmanship employed in their construction was beyond criticism, they were not constructed as the law provides, which reads: "Wrought iron girders, if made of plate iron and of box pattern, shall have proper diaphragms placed in them at distances not exceeding five feet apart, and the riveting shall be done hot, and hammered to a proper conical head." No question was raised as to the sufficiency or strength of the girders, nor the quality of material or workmanship; but the diaphragms were spaced a greater distance apart than five feet, and the rivets were round, button, or cupped heads, instead of "proper conical heads." The matter was freely talked over among interested parties, and it was understood that arrest would follow the attempt to place the girders in position in the building; consequently, when they were lifted and seated on the walls, an arrest complaint was served on the architects, and a prohibitory injunction issued, stopping the work.

Although two weeks or more have passed since the arrest, at the time of this writing, no decision has been rendered, and the case still hangs before the Police Judge, under the charge of violating a city ordinance.

The violation is clearly technical, as it is not likely that the framer of the ordinance ever contemplated or intended any more than that all such girders should be properly made, and sufficiently strong for the purposes intended. But the law is arbitrary in its language, and should be either held as the absolute rule of practice, or be wiped from the or-

dinance book. There is no discretionary power anywhere to regulate matters of this kind; to allow, as in this case, the use of something else every whit as good as that required by the law, to be used. But if local manufacturers are held strictly to the law, even in the matter of conical head rivets "done hot," and diaphragms spaced five feet, then outsiders should be held to the same rule.

THE FIRST RAILROAD IN AMERICA.—In the course of a paper read before the Franklin Institute, bearing the title "Transportation Facilities of the Past and Present," Mr. Barne Le Van corrects the commonly received statement that the Granite Railroad, built at Quincy, Mass., in 1827, by Gridley Bryant, for transporting stone for the Bunker Hill Monument from the granite quarries of Quincy, was the first railroad built in the United States. On this point he presents interesting testimony to prove that, far from being the first, the Granite Railroad was really only the fourth in order of precedence in the United States. We quote from that portion of the paper relating to the subject, with the simple comment that the statements made by the author are of considerable importance from the standpoint of historic accuracy: "Railroads were also first introduced in Pennsylvania. In September, 1809, the first experimental track in the United States was laid out by John Thompson (the father of John Edgar Thompson, who was afterwards the president of the Pennsylvania Railroad Company), civil engineer, of Delaware County, Pa., and constructed under his direction, by Somerville, a Scotch millwright for Thomas Leiper, of Philadelphia. It was sixty yards (one hundred and eighty feet) in length, and graded one and one-half inches to the yard. The gauge was four feet and the sleepers eight feet apart. The experiment with a loaded car was so successful that Leiper in the same year caused the first practical railroad in the United States to be constructed for the transportation of stone from his quarries on Crum Creek to his landing on Ridley Creek, in Delaware County, Pa., a distance of about one mile. It continued in use for nineteen years. Some of the original foundations, consisting of rock in which holes were drilled, and afterward plugged with wood to receive the spikes for holding the sleepers in place, may be seen to this day."—*Exchange.*

There are twenty window glass factories in Pittsburgh, with 276 pots, making 838,400 boxes, at \$3.00 per box. The glass trade is fairly active in all branches. Flint glass works are everywhere running to their full capacity.

Most of the private structures in Russia are built of wood, and it is estimated that the bulk of them burn down every seven or eight years. There is said to be always twenty fires, at least, in different parts of the empire.

Cumming's Details..... \$6.00

Side-Walk Ordinances.

MR. FARWELL of the present Board of Supervisors has for several months seemed to have had "side-walks on the brain." Consequently he has proposed and introduced several orders, more than one of which has been passed by a majority vote of the Board and gone to the mayor for an expression of his opinion, with the result—veto every time; and as often the veto has been sustained; except that the last passed by the Board in October, and vetoed by the mayor, was finally passed by a vote of ten to two over the veto.

The issues and merits of the case may be thus stated: That the first side-walks laid in San Francisco were of wood, that being the only available material in the early days of the city's existence for the purpose. For several years there were no other than wooden side-walks in use, except occasional isolated cases of brick construction. But the brick obtainable failed to serve a good purpose, owing to unequal hardness and durability—the softer wearing away more rapidly, leaving as many pot holes in a side-walk of five hundred square feet as there are small-pox pits in the face of a man who has passed through a bad case of that disease. The late Mr. Lick of Lick Observatory renowned, went further, and obtained pressed brick, such as those used in the facings of buildings, but they proved to be no more durable than the common article, and brick side-walks were passed as impractical. Time and service proved that side-walks of wood construction were also but temporary expedients, as the friction and wear and tear on the surface wore away the fibers of the wood rapidly, causing unevenness, and where knotty pieces were used, the softer parts would wear away around the knots, leaving disagreeable lumps for people to stumble over and sometimes sprain an ankle. Beside this, the sleepers and underside of the planking would soon rot, thereby destroying the hold of the spikes used in securing the planking, and, as a consequence, the spikes would work their way upward, and protrude above the planking, thus forming a rake-like surface for pedestrians to practice toe stumping, and ladies to hook the lower parts of their garments and tear them; and thousands of devout female worshipers have gone to the house of prayer full of indignation at the annoyance of having torn their skirts by catching them on a nail in the side-walk, or, perhaps, the sudden jerk carrying away the pin and string fastenings at the waist and letting more of the under-clothing drop in the street than was agreeable to a lady. During the past ten or fifteen years, however, greater care has been exercised in laying plank side-walks; the surface of the planking more generally being surfaced, larger timbers being used for the sleepers, and the spikes being set in with nail sets. The next to appear for public approval was the

ASPHALTUM SIDE-WALKS. And tens of thousands of feet were laid, both in the business localities and residence quar-

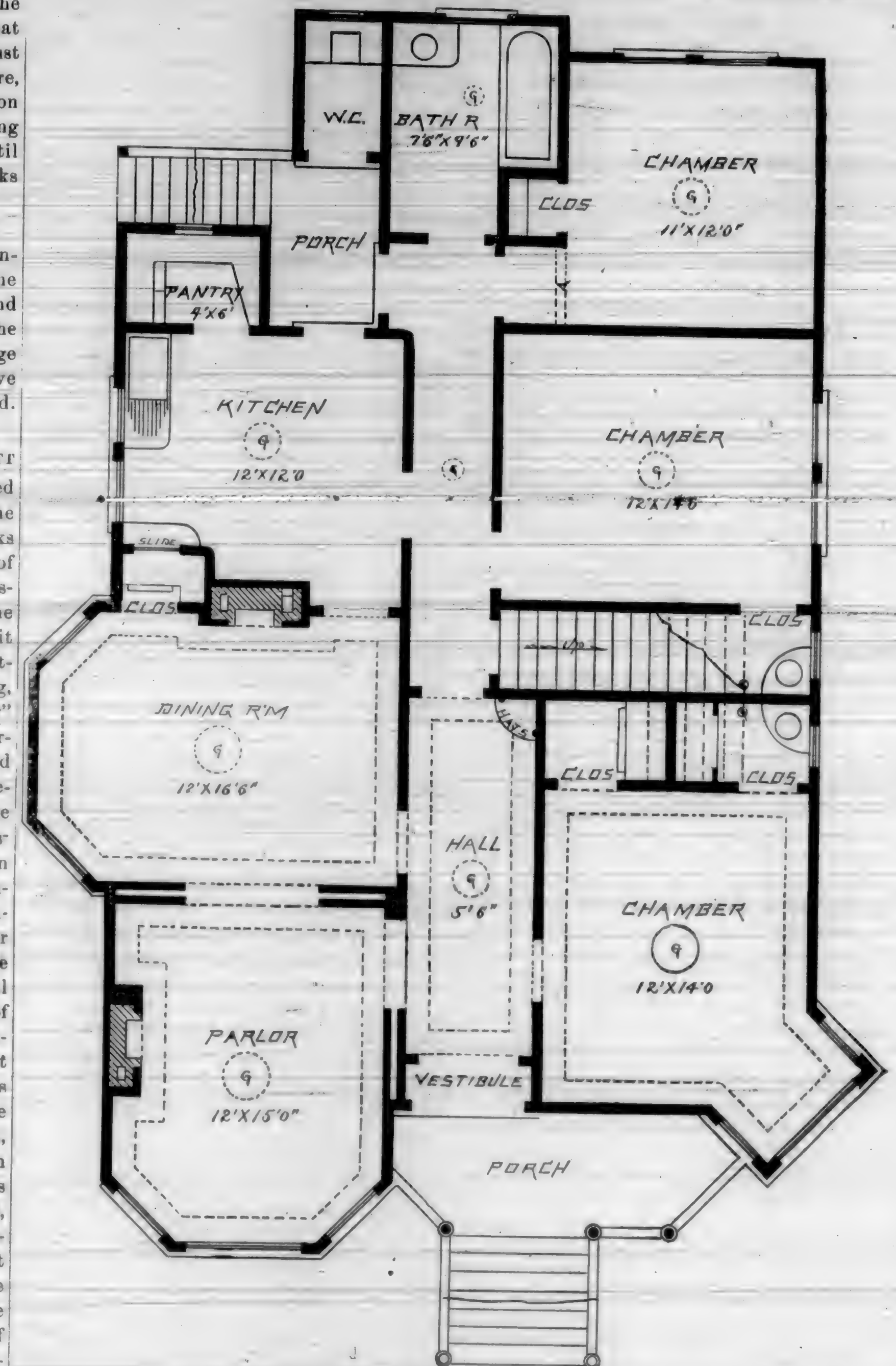
ters. These gave great satisfaction over the wooden constructions; but time proved that even the asphaltum material failed to be just the thing, as exposure to the atmosphere, evaporation, and ordinary wear and tear soon developed defects, such as softening during warm days, cracking, disintegration, etc., until at the present time but few asphalt side-walks are laid. The next in order was the

PATENT STONE OR CONCRETE SIDE-WALK. Which, during the past ten years, has maintained great popularity, and stands to-day the most appreciated of side-walk materials; and is generally adopted by all who can afford the difference in cost over wood. A very large number of the wooden constructions have been torn up, and the patent stone substituted. The conflict between

SUPERVISOR FARWELL AND MAYOR BARTLETT is, the supervisor has aimed and introduced municipal legislation, to hereafter inhibit the construction of any more wooden side-walks within certain limits, and to compel the use of "natural stone, artificial stone, flagging, asphaltum, concrete, or bituminous rock." The mayor on the other hand, seems to think it possible with such a law in force, for importers and dealers in cement, asphaltum, flagging, etc., to "put up a job," and "make a corner" in the materials contemplated by Mr. Farwell's order, and so force property owners and the city to pay exorbitant prices for side-walk work. He further argues in favor of the lumber trade, claiming that there is no present prospect for another lumber combination such as has heretofore at times ruled the lumber market and shoved the price of rough lumber, which is now selling at fifteen dollars per thousand feet, up to twenty-five dollars. The public should be satisfied with the careful forethought of his excellency in the matter of guarding the common interests against the exactions of greedy and soulless monopolies, but the quality, sanitary and pleasurable features of the case seem to be ignored; that the more durable side-walks, as compared with wood, are far more protective of health, and much more agreeable to travel over. The innuendoes of "a cat in the meal bag" is freely hinted, and may exist, but this is a speculative presumption without proof; still it is a fact that the Patent stone is the only one of those named as allowable, likely to be used, and the whole matter simmers down to the question of a corner in cement, to prove the mayor's position correct. Owners can use either of several other kinds of side-walk, but nobody wants them, and entering them in the list of usables, is an appearance without substance.

Revival of Trade.

PREDICTIONS are freely made that the coming fall and winter months will witness a substantial revival of trade. Indications of this nature are observed almost daily, in all parts of the country, and are eagerly recorded by the newspapers, the public hunger for that sort of information having been sharpened by



months and years of enforced abstinence. The history of mercantile and manufacturing business in this country presents a series of reactions, and the pendulum is thought to have swung in this case as far in the direction of low prices and stagnant trade as it can go. Manifestly, therefore, any change that is in store for us is likely to be for the better. But we think it improbable, and not only improbable but undesirable, that any new "boom" of the 1880 pattern will be experienced in the near future. If there should be a gradual and healthy recovery in our industries, chiefly

distinguished by the absence of reckless speculation and intemperate railroad-building, it would be sufficient cause for thankfulness; and for such a change we may indulge a confident hope.

Boston has more apartment houses than any other two cities in the country. New York excepted, and of the most of them it may be said that if the evil one himself had been consulted they could not have been arranged with less regard for the health and comfort of the occupants.—*Boston Post.*

How to Decorate.

Odd pieces of furniture are still used more extensively than matched sets, and for a parlor we would suggest the following pieces: A couple of easy chairs, and occasional chairs, a divan, cabinet, fancy table, and a mantel mirror, with side shelves for the bric-a-brac.

When dining-room furniture is of oak, golden brown draperies and upholstery are very handsome and appropriate.

A library should be made as home like and pleasant as possible. Old pieces of pottery or china, metal work, ivories, glass and such other objects of art manufacture display good taste.

Brass decorations are used very extensively for bedrooms, iron and other metals for hall and vestibule.

No modern house is complete without a Louis Seize room, and the following suggestions will produce the effect desired: The woodwork is painted in a cream tint and a detail picked out in gold; the walls are draped with blue satin and the frieze has light garlands in relief, and small medallions in gold on ivory ground; add a few spindle legged pieces of furniture in gold with pale-tinted satins or light garlanded stuff, and some Dresden china bric-a-brac.

In furnishing bedrooms everything should convey a cool and pleasant appearance; the floors covered with fancy matting which may now be procured in the most beautiful designs and soft colorings; the draperies should be light and airy; if you have a canopy bed, cream white Madras will look remarkably well lined with pale blue silesia; for the bedspread, pillow-shams, bureau trimmings, and drapery for top and side of canopy, trim with lace or the pretty tassel fringe which comes for the purpose.

Sideboards of either massive oak, extensively carved, or hand-carved mahogany are very pretty and desirable for our dining-rooms.

Leather leads itself in so many ways to easy decoration that cabinets and other articles of furniture are covered with it.—*American Inventor*.

SOME COMICAL BUT COSTLY BLUNDERS.—Mistakes are expensive sometimes. A New Yorker had a lot seventy-five feet wide, intending to build four houses of equal fronts on it, and one of the middle ones first. He employed a firm of surveyors to locate the house, and they located it so that the remaining space on one side was only ten feet wide. The error was not discovered until the house was done, the proprietor having no time, probably, for such trifles. Then he sued the surveyors for damages, but they won a verdict on the ground that their plan was accepted and paid for as satisfactory, although it located the corner-stone nine feet farther in one direction than was intended. This mistake was rather more serious than that played upon a resident in a brown-stone front in Forty-seventh Street, who returned from business one

night to find the entire stoop of his house in ruins, the heavy stonework having been pulled to the ground. His wife said a man had come with orders to demolish, and had done so. Although she did not know enough to command a halt for explanation, she did observe the name on the wagons. The indignant citizen took measures to prosecute, when it was found that the employer of the men had ordered them to go to the same number in Forty-eighth Street, instead of to Forty-seventh. He had learned of the mistake and had contracted to have the wrong stoop rebuilt, and he was surprised to learn that the work had not been done. These incidents of metropolitan life show that mistakes are there regarded with very little concern, those responsible not even taking the trouble to apologize or even explain. The same amount of pains spent in doing a job well that is spent in getting the job to do would pay.—*Springfield Republican*.

The Better Bridges.

A VERY pretty fight is in progress in Japan over the question of American vs. English bridges. Early in the year Prof. J. A. Waddell, of the University of Tokio, published an elaborate work in two volumes, for the purpose of pointing out to the civil and mechanical engineers of Japan the superiority of American to English types of bridges, and the mistake of the Japanese in following the practice of the latter. On account of defects, which the author points out in detail, the author concludes that "the trouble with English bridges, and consequently with those of this country (Japan), is that they are designed by railroad engineers, who have not made a special study of bridge designing, and are therefore incompetent to do the work intrusted to them." On the other hand the author points out in detail his reasons for the assertion: "That the United States leads the world in bridge building is a fact undisputed even in Europe." Professor Waddell's book set several bridge engineers to writing letters to the *Japan Mail*, in which the statement that American engineers now lead the world in designing bridge work is called in question. Professor Waddell replies in a very pungent letter, and, taking up his opponent's arguments, answers them in detail. He remarks that actual inspection of English bridge work in Japan shows a quality of workmanship that is even worse than the cheapest highway bridges of America. One case mentioned, a railway bridge, has its bottom cords so warped that "the floor beams bear on both sides of the same;" shims of $\frac{1}{8}$ and $\frac{1}{4}$ -inch iron are freely used, and there are open joints in the top cord that paint will not hide.—*Age of Steel*.

So rapid is the transmission of the electric current along the lines of the telegraph wire that, supposing it were possible to carry the wires eight times around the earth, it would occupy but one second of time.—*Doidge's Annual*.

An English Plan of Ventilation.

THE following description of Dr. Hogg's plan of ventilating and warming dwellings is taken from an account in the *London Lancet*. It is one of those which are more ingenious than practical, and just complicated enough to please the English: "According to this, none of the windows are to be opened; and there is but one fire-place,—that in the kitchen. Underneath the hall a large passage is used as the intake of fresh air, where it can be cooled in summer by ice or water-spray; while in winter it is warmed by hot steam pipes, economically heated by a small coke stove. The air then passes up into the hall, from which it is separated only by an iron trellis-work, and travels into every room of the house by apertures made in the skirtings and cornices. In the ceiling of each room there are one or two openings, and exhaust shafts leading to the foul-air chamber in the roof of the house, the exhaust suction being produced by a large shaft, which runs from the foul-air chamber down to the back of the kitchen fire, where the heat of the boiler and the fire suffice to attract the air. From the back of the kitchen fire, in the basement of the house, the air again travels up, a square brick shaft or chimney conveying it through the roof and into the open. In the center of this shaft is a circular metallic flue, which carries away the smoke of the kitchen fire; and this flue, always more or less heated, stimulates the current of air."—*Sanitary News*.

A Rapidly Growing Health Evil.

IT is not generally known that coal oil and gasoline stoves rapidly vitiate the air of a room for breathing purposes by the development of large quantities of carbonic dioxide. How much longer must this continue before manufacturers of such goods will obviate this new danger by inventing some form of hood and pipe for conveying this poisonous gas to the outside atmosphere? Volumes have been written concerning the ventilation of homes, and the injury that arises, especially to children and the infirm, from crowding too many people together in closed apartments, and now, with the introduction of oil and gasoline stoves in the household, a new difficulty presents itself which is not easily remedied in the endeavor to provide for health and comfort. These stoves are frequently found with several large burners in full blast, in small kitchens hardly large enough to contain air to supply the healthful requirements of one person.

Evils of this kind, where they are widely spread, must have a terrible effect upon the strength of a population who breathe every day such an atmosphere, and, thus far, we have seen no remedy. It is certainly a question for grave consideration, and whoever takes the problem in hand at once, and provides a means, at low cost, to obviate this nuisance, will confer a great blessing upon thousands who are innocently undermining their health.—*American Inventor*.

The bustling, hurrying man, as a matter of fact, is a poor worker. Too much of his steam power is expended in kicking up the dust. The habit of hurrying and being in a hurry, is fatal to good work, and diminishes the amount of work a good man can do. The men who accomplish most never seem in a hurry, no matter how much they have to do. They are not troubled for lack of time, for they make the most of the minutes by working in a methodical manner, finishing each job properly, and not expending their nerve force in bustle.—*Exchange*.

The value of well-conducted trade journals to the interest they represent, is becoming more apparent every day. They are the best possible means of communication between members of the trade, and for that reason no business man can afford to ignore them. The live manufacturer or jobber desires to keep his name constantly before the trade, and in no better way can he do it than through an advertisement in this trade Journal.

BOOK NOTICES.

Principles of Economy in the Design of Metallic Bridges. By C. B. Bender; Wiley & Sons, N. Y., publishers. A new book of 195 pages, 6x10 inches, with elaborate and comprehensive plates and diagrams additional. The subject matter is handled with ability and thoroughness.

Steam Engine Catechism, 1885. By Robert Grimshaw, President James Watts Association, received. A handy little work of 149 pages, on matters suggested by its title—engines, and steam in its ten thousand applications as a motive power. It will be found useful to young engineers, interesting to older heads, and convenient for examination boards. Price, \$1.00.

The Principles of House Drainage is the title of a well-written book of 125 pages, 5x8 inches, comprising the substance of three lectures delivered by J. Pickering Putnam, before the Suffolk District Medical Society, and the Boston Society of Architects, at the Massachusetts Institute of Technology. Traps, Siphonage, Ventilation, Evaporation, Wastes, Drains, and the material features involved in sanitary science, are all handled and discussed in clear and intelligent language. Published by Ticknor & Co., and for sale at office of this Journal.

Architectural Studies.—Store Fronts and Interior Details, edited by F. A. Wright, architect, and published by W. T. Comstock, New York. Sent by mail to any part of the world free of postage. Price, \$1.00 each part or number. Part No. 2 contains twelve neatly produced plates, with numerous scale details.

Sanitary House Inspection. "Hints and helps regarding the choice of a healthy home in city or country." By William Paul Gerhard, C. E. Published by Wiley & Sons, New York. Contains 145 pages of thoughtfully considered and well-written matter, which should be read by all interested in the subjects treated.

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Amateur Carpenters.

It is an excellent thing for any man, whatever his business in life may be, to acquire a fair degree of mechanical skill and familiarity with tools and machinery. Such knowledge never comes amiss, even if its possessor is so fortunate as to be under no necessity of ever using it as a means of livelihood; just as a thorough practical acquaintance with the minutest details of housekeeping is valuable to any woman, though she may be surrounded by luxury all her life and have a servant to wait on her at every turn.

But it does not follow, by any manner of means, that an amateur or half-trained workman is profitable to his employer, even at half price, or at any price. Experiments of that kind are oftener made, it would seem, in the various branches of carpenter work than in most other trades—for the reason, probably, that it is easier and more common to pick up in a desultory way a superficial knowledge of carpentry than of other callings which do not in fact require so much skill and judgment for their thorough mastery. To become a good carpenter, capable of estimating a job fairly and performing it honestly, is a matter not of a few weeks or months, but of years of diligent and conscientious work. And while the temptation is very great, in awarding the contract for a job, to give it to the lowest bidder without due regard to the probability of getting the worth of one's money, it is generally found that a single lesson of that kind is sufficient. In a broad sense the rule that "the best is the

cheapest" holds good in carpenter work as in nearly everything else.

A vigorous protest against the employment of what it calls "saw and hatchet carpenters," is made by the *Southern Lumberman*, which imputes to them not only want of skill but want of honesty as well. As an illustration, it mentions a building contract which one of that class of carpenters offer to take for \$500, while the material alone came to \$570. Somebody was badly cheated, of course, and probably the lumber-dealer, the workmen and the owner of the building all suffered more or less. Incompetency and false pretense in all trades and professions should be steadily discouraged; and the only way to put an effectual check upon them is to give the preference invariably to the trained workman, who has earned and can rightfully wear the title he claims.—*Mechanical News*.

Mr. Stanley says the length of the Congo is 2,100 miles, and the Mississippi and the Nile together would scarcely equal its tribute of water to the ocean. From the mouth of the river a steamer drawing 15 feet can steam up 110 miles, at which point a land journey of 52 miles has to be taken, on account of rapids. Then another steaming or rowing voyage of 88 miles occurs, which is succeeded by a land journey of 95 miles. After that it is possible to steam up another 1,060 miles.

Natural gas is being found in many sections of the United States, Los Angeles, California, being in the list, with fair prospects of a good thing on hand.

Disposing of Dead Bodies.

THE latest method proposed for disposing of the dead strikes one a little curiously at first, but, after a little consideration it seems not to be a very bad idea. It is a proposal by a Mr. Pratt, an Englishman, to the effect that the bodies of the dead, instead of being buried in earth or cremated, should be encased in caskets and placed in a concrete slab, seven feet long by three feet six inches wide, having a place in the center large enough to receive the coffin. Soft concrete should then be mixed and filled in around the casket, and a concrete slab six inches thick be placed on top. The sarcophagi should then be banded heavily with iron, and, as fast as they accumulate, they should be built into a sea-wall to protect the coast of England from the ever recurring devastations of the sea. The blocks would all be of the same size, regardless of the size of the casket. In the case of infant burial, two or more could be confined in one block of concrete. This is really the first scheme which has been brought forth by which the bodies of the dead could be utilized to any good purpose. It is a good suggestion from an economist's point of view, as it provides coast defenses and a revenue at the same time. The idea is respectfully referred to the Committee of the House of Representatives on Rivers and Harbors. Thus, in the revised words of an ancient rhymester,

A good man's bones when dead and turned to clay,
May build a wall to keep the sea away.
—Sanitary News.

A BLACK ENAMEL FOR IRON.—*Le Gen* of Paris says: For the last few years, many efforts have been made by different processes and various materials to protect iron and give it a brilliant black coating. Recently M. Puscher, of Nuremberg, has described a very simple process whereby he claims to cover iron with a black coating similar to enamel, and very much more evenly and regularly distributed, as it is not laid upon the metal with a brush or any similar tool. M. Puscher places in a vessel about eighteen inches high sufficient finely-powdered coal to cover the bottom to the depth of about three-quarters of an inch, and over this at a height of about one inch is placed a grating which carries the objects to be treated. The vessel is then covered and luted down tightly, and placed upon a brisk fire. The vessel is at once filled with steam, which soon evaporates, and is then charged with bituminous vapor. The firing is kept up for about half an hour, so that the bottom of the vessel is dull red; after which it is removed, and, when cool, opened. The residue of the coal is found in the form of coke, and the objects placed upon the grating, which have been at a fairly high temperature for a considerable time, are found to be covered with a black coating having all the appearances of enamel but of extreme tenacity and a considerable degree of elasticity. It is claimed that objects thus treated may be bent and exposed to great variations of temperature without in the least affecting the coating deposited on their surfaces.

Rosewood.

ROSEWOOD trees are found in South America and in the East Indies and neighboring islands. There are half a dozen kinds. The name is not taken from the color of the wood, as is generally supposed, but by reason of rose-like fragrance which it possesses when first cut. Some of the trees grow so large that planks four feet broad and ten feet in length can be cut from them. The broad planks are principally used to make tops for piano-fortes. The rosewood tree is remarkable for its beauty. Such is its value in manufactures as an ornamental wood, that some of the forests where it once grew abundantly have now scarcely a single specimen. New plantations have been set out, so that the supply will not be exhausted. —*Lumber Trade Journal*.

California redwood, particularly in the shape of dimension shingles, seems to be gaining ground in the Chicago and adjoining markets. They are largely used in suburban residences, not only on the roofs, but to take the place of siding. Their rich color makes them admirably adapted to this use without the addition of paint. Only recently the supply in Chicago was entirely exhausted, and users were obliged to wait for the arrival of consignments. There is also considerable demand for finishing lumber, and redwood is seen in a good many places where two or three years ago it would not have been thought of. —*Northwestern Lumberman*.

Experienced lumbermen have always held that timber cut in the spring was not durable for building purposes. Recent scientific investigations sustain this belief. It is shown that the richer the wood is in sulphuric acid and potassium the more likely it is to rot and mould. Wood cut in the spring contains eight times as much of the former and five times as much of the latter as wood cut in the winter.

Better times are predicted, generally, in all lines of trade and manufacture. Mills and manufactories that have been entirely idle, or working on half or three quarters, are coming to run full hours. This is pleasurable to contemplate, and would be more so if there were assurances of permanency. But experience proves that when the ball begins to roll, there is such haste and anxiety to make it go faster that it gets beyond control and soon collapses; i. e., eagerness to create demand beyond natural requirements, forcing sales and flooding and glutting the markets.

Notwithstanding the general complainings of "dull times" in California, matters have gone on fairly prosperously, and the future outlook is good, and hopeful expressions are freely repeated in business circles.

Sir Christopher Wren retired from public life at eighty-six; and after that he spent five years in literary, astronomical, and religious enjoyment.

Unfair Treatment of Contractors.

THERE seems to be some misapprehension on the part of the owners of projected buildings as to the limitation of their rights in the invitation and acceptance of competitive bids from contractors. It is but just that the lowest tender by a responsible bidder should be accepted, and personal friendship between owner and contractor, political or religious affiliation or business connection should be no cause for unfair discrimination.

In cases coming under our notice all of these causes have worked in determining the acceptance of tenders on the part of owners, contrary to the advice and against the will of their architects. In one case the owner attempted to excuse his acceptance of the higher bid upon the ground that "he had business relations with the bidder." In another he "had intended from the first that the accepted bidders should do the work, and only desired the other bids as a means of comparison of prices." In the first case the architect threw up the commission rather than be a party to such injustice; and in the second the owner was compelled to pay the lowest bidder for his time and trouble, under threat of the same loss of service.

Such action is, we take it, often caused by a lack of knowledge of the expense of time and labor required in making estimates, rather than by a willingness to take unfair advantage. We commend the honorable action of the two architects cited to their colleagues in the profession when like contingencies arise.

If any one thinks that the final denudation of our pine lands is an impossibility, let him take a trip over the Wisconsin Valley division of the Chicago, Milwaukee, & St. Paul railroad. When he has strained his eyes over a stretch of 80 miles of country, which, almost the entire distance, is a fire-swept waste of small, dead pines, with scattering live trees here and there, and an occasional "clump" of green, fair-sized timber, he will admit that here, at least, the available pine has been nearly exhausted; for almost every section of this vast area has been cut over, and all the pine large enough for lumber taken off. This is in Wisconsin, not Michigan, it must be remembered. A journey through the Black River region of the same State brings to view a like devastation of pine. As it has required only about thirty years of cutting to strip this territory, with a limited consumptive demand in the first years of the slaughter, we can well conclude that in less than thirty years from the present, very little available pine will be left in either Michigan or Wisconsin.

"Now, Johnnie," said the teacher, "if your father borrows \$100 and promises to pay \$10 a week, how much will he owe in seven weeks?" "One hundred dollars," said Johnnie. "I'm afraid you don't know your lesson very well," remarked the teacher. "I may not know my lesson very well," Johnnie frankly acknowledged, "but I know my father."

Street Architecture, New York.

WITHOUT objecting in the least to the conclusions of the writer in the *Record and Guide*, we are disposed to think that the decline in picturesque city architecture has been due much less to the unremunerative character of investments in oriels and turrets than to the change in the municipal regulations in regard to building, which now forbid any of those encroachments on the street lines, in the way of projections and bays, which once did so much to break up the monotony of the street facades. It is not easy for the best architect to give picturesqueness to a flat four-story front, twenty-five feet wide, and the praiseworthy efforts which are often made by the owners on a given street, to persuade all who build on the street to set their houses far enough back from the street line to allow of pleasant bays and oriels in the reserved space, are usually thwarted by the obstinacy of some "hog," to give him the title which his neighbors generally bestow upon him, who insists on thrusting the clumsy square mass of his own house into the space which it was decided to keep open. For this reason, more than any other, the New York architects have returned to something like the monotonous flatness of design of twenty years ago; but it is due to them to say that they have found means to deal with their severe restrictions in ways which are often surprisingly clever. Not to mention particular instances, the professional visitor to the upper portion of New York is now constantly struck by successful devices for securing shadow in the middle of flat fronts, as well as by most interesting examples of facades in which no relief is attempted, which give him, we think, quite as much pleasure as the mingled compositions and caricatures of Fifty-seventh Street; and although we are willing to go even farther than the *Record and Guide* in assuring owners and architects who are disposed to adorn the unrestricted districts with beautiful detached houses, like those of Hamstead and Chelsea, or like the little detached "hotels" which cover the new and fashionable part of Paris, that the taste for such habitations is already prevalent enough in New York to ensure success to those who cater to it wisely, we trust that the beginning of the work of improvement, if not also the end of it, may be intrusted to architects who can temper the exuberance of their fancy with a little discretion. —*American Architect and Building News*.

Moscow has an enormous new cathedral, built in the Græco-Byzantine style, which covers 73,000 square feet, and has cost \$12,000,000. It has five cupolas, on which 900 pounds of gold were used as embellishment, and thirteen bells, the largest as big again as the "Great Paul" in London. The largest door weighs thirteen tons, and cost \$310,000. The marble in the building cost \$1,500,000.

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A New Phase in the Chinese Question—A Bold Strike against White Labor.

THE Mongolian cigar-makers then in the employ of Koenigsberger, Falk & Mayer, made a bold move on the 23d of October, and called a new deal, demanding the discharge of every white man engaged with them in the making of cigars.

This is the first high-handed break that the Celestials have attempted, aimed directly against white labor; and although it was a bad move for them, and a fortunate one for the white men, it is, nevertheless, a large straw that shows which way the wind blows; i. e., what the Chinese would do if they could, and what they will do when and as often as opportunity permits—in isolated cases; and what they will do *en masse* should they ever be able to gain the points they, as a people, are playing for. It was bad enough that men of our own race and tongue should be humiliated to work side by side, or within the same walls, with creatures who, possessing the power, would trample in the dust and persecute with relentless severity and hate, and drive to penury and want, through unequal competition; but when they, upon American soil, raise the hand of open rebellion, assume an aggressive attitude, and demand the humiliation of those upon whose labor rights they are infringing, it is not to be wondered at that the working people as a whole are alive to the occasion, and greatly agitated; for in this first move there is a warning that should be heeded. It is only one instance, but it is as the ripple that precedes the storm, should they as a people strengthen and advance their present foothold, and become sufficiently numerous in the United States, with unrestricted liberty under our laws, to monopolize—as they will—all avenues of labor, and crowd every interest of the working and middle classes to an extent that will pauperize millions who otherwise might raise themselves, by their labor, to positions and conditions of comfort and moderate affluence.

All the thin-skinned sentimentalism that is prated in behalf of the "poor persecuted Chinamen," is all bosh—a waste of sympathy,—even if it is indorsed by Rev. Henry Ward Beecher, and others like him, who have themselves committed some very considerable errors of judgment, if not in acts in other directions. It may be well enough in a Christianizing sense, where a few can be held under "evangelizing" and "regenerating" influences, but it won't do as an immigrating, labor, and business proposition.

The proofs of the "nature of the beast" are too well established all along the Pacific Coast to need confirmation by further recitals, and this testimony is distributing itself in many other cities and States, to such an extent and of such character that the comparatively few Chinamen now on this continent are attracting very large attention, and eyes that have been blind, refusing to see what the people of this western coast have seen for years, are be-

ginning to open and discover that there is a very important question to settle in this matter of Chinese hording and swarming upon American soil.

There is a great deal said about coolieism; but it matters not whether they come as coolies or free men, their presence is equally objectionable; perhaps more so as free agents, as then absolute personal interests would likely stimulate, rather than modify their ambitions, and augment rather than lessen their natural animosities toward the white race; adding zest and determination to their purposes of monopolizing, centralizing and controlling, until Chinese work-shops and manufactories worked by Chinese coolies or free men, as the case may be, will be located in every State, city, town, and manufacturing district upon the continent.

These assertions are not mere speculative presumptions, but are rational, reasonable, natural, common-sense probabilities,—conclusions clearly deducible from the practical experiences and contacts so far had with the people in question, who, as found in California, are a cunning, unscrupulous, treacherous and unprincipled race, in whom the shadow of truthfulness does not exist, when either falsehood or perjury can be utilized to advantage.

The firm named have wisely concluded to drop out all Mongolian help in the future, and employ white labor only. This is all very well as far as it goes, and is as it should be; but doing so will not deprive the heathen strikers of the knowledge they have gained, nor the mechanical art acquired in the manufacture of cigars, and, as it was of old, the race being mixed in with our own people are likely not only to be a "thorn in the side" of the working classes for all time, but manufacturers also will hereafter have increased cause to regret that they have educated a race against whom they cannot compete, upon any terms at present recognized as fair and equal.

Mortar for sewer work in all cases should be capable of setting in water. Portland cement and liae limes make good hydraulic mortar. The proportions of cement, or of lime to sand, should not exceed two and a half of clean, sharp sand to one, by measure, of ground Portland cement or liae lime. If clean furnace ashes or slag are available, there may be two of sand and one-half of ashes or slag, the whole to be mixed in a revolving pan, each panful to have twenty minutes' grinding. When mortar is used with bricks, the bed and joints should be spread thick and full over the entire area of both bed and joint, leaving less than one-eighth of an inch in thickness of mortar. In four cubic yards of completed brickwork there should be not less than one cubic yard of mortar incorporated. In making mortar or concrete, it will be of the utmost importance to use clean materials and to preserve them clean. The water used for wetting bricks and for mixing concrete and mortar must be free from silt. Concrete and mortar should also be used on clean surfaces. —*Sir R. Rawlinson, C. E.*

Healthful—Height of Stories.

THE *Sanitary News* quotes from the proceedings of the Sanitary Institute of Great Britain some sensible remarks by Mr. John Honeyman upon the advantages of low ceilings for the rooms of the smaller class of houses. In Mr. Honeyman's opinion, the popular notion that high ceilings are conducive to the healthfulness of rooms is erroneous. It is true that a room with a high ceiling contains a larger cube of air, and, supposing the atmosphere of such a room to be perfectly pure to begin with, a man could exist longer in it before dying of suffocation than he could in a low room. Here, however, the sanitary advantages of the high room end; and ventilation, properly so called, that is, the constant change of the atmosphere, goes on, as most architects know, more satisfactorily in a room with a low ceiling than a high one. If the windows and doors extend nearly to the ceiling, as will usually be the case if the room is not more than eight feet high, the leakage of air which goes on to a very great extent around them, keeps all parts of the atmosphere of the room in motion, instead of moving the lower portion only, leaving an inverted lake of foul and hot air undisturbed under the ceiling, as is always the case where high rooms, inhabited in winter, depend for the movement of the air in them upon openings placed at some distance below the ceiling. To have the currents of fresh air circulate only in the lower part of the room, leaving the upper portion of the air in it unaffected, is practically a much worse way of ventilating the room than, with the same movement of the air, to cut off the upper stagnant portion of it by a low ceiling; for the stagnant atmospheric lake under the high ceiling, although motionless, keeps actively at work, under the law of the diffusion of gases, fouling the fresh currents which circulate beneath it; while, with low rooms and high windows, no accumulation of stagnant air can exist, the hot and foul atmospheric strata being swept constantly from the ceiling by the currents, just as dust is swept from the floor by a broom. Indirectly, moreover, the low ceiling improves the healthfulness of the room by its economy of heat. In a lofty room the poor man's stove expends a large amount of its energy in warming the ceiling, and the floor of the tenement overhead, without doing its owner any good whatever. It is only necessary to sit on top of a step-ladder for a while in a high room artificially warmed, to be convinced, without reference to a thermometer, that the temperature next the ceiling is, in all ordinary cases, far higher than that of the remaining air in the room. If the ceiling is not more than eight feet high or so, with windows to the top, diffusion co-operates with the atmospheric currents to bring the warm air at the ceiling down where it can be felt by the people in the room, while the cool drafts which blow in above the windows and doors, striking first upon the ceiling close by, carry off

from it by convection a very considerable amount of heat, for the further comfort of the poor tenant's family. Saving thus a large part of the heat from the stove, which would otherwise be wasted, the proprietor of the room is less disposed to convert his room into an air-tight box, by stopping up all the crevices around the windows and doors with weather-strips or rags, and even if he begins, from force of habit, to do so, the currents from the upper part of the windows and doors are, if they strike on or near the ceiling, so quickly modified in temperature as not to be felt as cold drafts; and this source of fresh air is left unmolested. In practice, we believe that most persons accustomed to observe the condition of air in inhabited places will agree that where similar means are provided for supplying and withdrawing air, such as a register and a fire-place, low rooms are, as a rule, decidedly fresher than high ones. In many cases a lofty room, supplied with pure warm air from a register, and ventilated by an open fire, will be found very oppressive, apparently from the influence of the large volume of stagnant air in the upper portion; while low, old-fashioned rooms with fire-places are almost always fresh and pleasant.—*American Architect and Building News*.

It is surprising to note how frequently one meets engineers, especially those in practical charge of engines, who have an idea that the function of the steam jacket is to prevent radiation of heat from the cylinder to the atmosphere, and regard its purpose in the same light as they do that of felting and lagging. In our last issue we briefly pointed out its true mission, and need not repeat it here. But this not uncommon fallacy of considering it as a non-conducting device instead of as a supply of heat for the entering and expanding steam, is worthy of special mention. We know of a naval engineer in Government service, who, much to the discomfort of his assistants, insisted on having the highest attainable temperature in the engine room, closing up all doors and windows, his directions being reinforced by the explanation: "What's the use of a steam jacket to prevent the radiation of heat from the cylinder, if the temperature of the room is not in the eighties or nineties?" And this view is cropping out constantly, in many other ways, as when exhaust steam, or steam of a pressure much reduced below that corresponding to the initial pressure of steam, is let into the jackets. If a steam jacket is to be of any practical use, the temperature of the steam it contains must at least equal that of the steam entering the cylinder. A queer and expensive kind of non-conducting device, indeed, in which the radiating surface is increased beyond that of the cylinder itself, and in which steam specially drawn from the boiler is the means.—*American Engineer*.

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The revival of business is not confined to this country alone, as recent reports from Europe, and more especially from the British Islands, indicate renewed and hopeful activity in manufactures and commerce, though the newly aroused spirit of enterprise can hardly be characterized as a boom. In these days of rapid communications, the people of all civilized countries are affected by much the same causes; but it is hardly possible for general life or general torpidity to prevail in one country while the opposite conditions continue in others.—*Western Architect and Builder*.

The postal laws seem to have been framed in some particulars expressly to oppress monthly publications for the benefit of weeklies. Take the case of the *Architect and Builder*, for instance. It costs two cents per copy to deliver it in this city, while the same paper is delivered at the residences and offices of California and New York subscribers for one cent per pound. All weeklies are delivered in the city of publication or anywhere else in the United States at one cent a pound. The absurdity of such an arrangement as this must be apparent to any one capable of a moment's reflection. In the case of monthly magazines the injustice is even more marked, as in the instance of *Harper's Magazine* as compared with the *Iron Age*. The weight of each is about the same, yet the latter is delivered to New York City subscribers for one cent a pound, because it is a weekly, while it costs two cents a copy, or about five cents a pound, to deliver *Harper's*. There is a general disposition upon the part of the monthlies to bring this matter to the attention of Congress and demand a more equitable distribution of postal burdens.—*Western Architect and Builder*.

"I'll tell you a good thing," said the Iowa dealer from Fort Dodge who came in "just to have a chat." "It illustrates how green a drummer sometimes is. A man from Wisconsin, say Oconto, for instance, sold a yard man in our town a load of cedar posts. There were 633 posts all told; the price was 10 cents apiece, and the amount \$63.30. The freight bill was \$69.42, which our lumber dealer paid. He then asked the Wisconsin post dealers to remit him the difference, \$6.12, and they would be square. The Wisconsin men went to talking about the pay for their posts, but our townsman said he owed them nothing, but that on the other hand they owed him. He had bought the posts delivered. An attorney was consulted by the Wisconsin gentlemen, but he told them they had no case. The drummer, I suppose, knew a cedar post when he saw it, but it probably did not occur to him that the railroad make any charge for hauling."—*North-western Lumberman*.

"Michael Angelo preserved his creative genius even to extreme old age; there is a device said to have been invented by him, of an old man represented in a go-cart, with an hour-glass upon it; and the inscription *Ancora impar!*—Yet I am learning."

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We want Live, Energetic, and Capable Agents in every county in the United States and Canada, to sell a patent article of great merit, on its merits. An article having a large sale, paying over 100 per cent profit, having no competition, and on which the agent is protected in the exclusive sale by a deed given for each and every county he may secure from us. With all these advantages to our agents, and the fact that it is an article that can be sold to every house owner, it might not be necessary to make an "EXTRAORDINARY OFFER" to secure good agents at once, but we have concluded to make it to show, not only our confidence in the merits of our invention, but in its salability by any agent that will handle it with energy. Our agents now at work are making from \$150 to \$600 a month clear, and this fact makes it safe for us to make our offer to all who are out of employment. Any agent that will give our business a thirty days' trial and fail to clear at least \$100 in this time, ABOVE ALL EXPENSES, can return all goods unsold to us and we will refund the money paid for them. Any agent or general agent who would like ten or more counties and work them through sub-agents for ninety days, and fail to clear at least \$750, ABOVE ALL EXPENSES, can return all unsold and get their money back. No other employer of agents ever dared to make such offers, nor would we if we did not know that we have agents now making more than double the amount we guaranteed; and but two sales a day would give a profit of over \$125 a month, and that one of our agents took eighteen orders in one day. Our large descriptive circulars explain our offer fully, and these we wish to send to every one out of employment who will send us three one-cent stamps for postage. Send at once and secure the agency in time for the boom, and go to work on the terms named in our extraordinary offer. We would like to have the address of all the agents, sewing machine solicitors, and carpenters in the country, and ask any reader of this paper who reads this offer, to send us at once the name and address of all such they know. Address at once, or you will lose the best chance ever offered to those out of employment to make money. RENNER MANUFACTURING CO., 116 Smithfield St., Pittsburg, Pa.

S. F. Chapter of Architects.

OWING to the inclement state of the weather, but few members were present at the regular meeting of the Chapter on the 6th inst. No business was transacted. The next meeting will occur Friday, December 4, when it is hoped a goodly number will be present.

Fresh vegetables are so common here, and can be had so cheaply, that they actually become "monotonous," and hardly cause remark. All the year round the Chinese vegetable peddlers manage to raise them, and four or five crops in the same year is nothing unusual. Our Eastern friends can come here any time in the winter and find fresh vegetables on the tables, which they are only accustomed to see in the hot summer months.—*Rural Californian*.

Don't Fail to Write.

SHOULD this paper be received by any subscriber who does not want it, or beyond the time he intends to pay for it, let him not fail to write us direct to stop it. A postal card (costing him one cent only) will suffice. 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, or some irresponsible party requested to stop it, we shall positively demand payment for the time it is sent.

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BELOW will be found a list of the members composing this Exchange. Boxes are provided for each member, so that architects, owners, or others desiring the services of any particular member, or those having boxes who are not members, and yet whose business is directly connected with that of the Exchange, can readily secure the attendance of the party sought, by leaving a note in the respective boxes. BRADY, O. E., President, 822 Valencia St., Box 22. BUTLER, THOMAS, 593 Ash Ave., Treasurer. " 28. BOWERS, T. N., Oakland, 804 Castro St. " 49. BENDER, JACOB, 1009 Clay St. " 73. BECK, J., 10 Eleventh St. " 12. CAIN, R. K., 213 Page St. " 61. CALVERT, JOHN, 812 Hyde St. " 16. COX, JOHN, 608 Jones St. " 18. CLAWSON, L. E., 129 Oak St. " 2. DUNBAR, WM., 27 Eleventh St. " 14. DOWNS, JOHN, 269 Minna St. " 18. DUNPHY, ED., 1006 Bryant St. " 34. FERRIS, CRAWFORD, 9 Bourbon St. " 20. GLENN, JAS., 432 Clementina St. " 57. HANAVAN, JOHN H., 1711 Jessie St. " 15. HOCK, T., 422 Golden Gate Ave. " 60. HOFF, J., 516 Kearny St. " 6. HIGGINS, ROBERT, 1724 Jessie St. " 13. HUGHES, JOHN, 310 Seventeenth St. " 21. JORDAN, D., 911 Webster St. " 59. KNEEDLER, G. W., 1013 Vallejo St. " 51. KINCAID, J. E., 2219 Pacific Ave. " 45. LIEBERT, J. G., 330 Oak St. " 32. LOANE, F. M., 1512 Golden Gate Ave. " 38. MITCHELL, ROBERT, 807 Turk St. " 26. MCCARTHY, JOHN, 2509 Folsom St. " 7. MCGOWAN, MATT., 614 Linden Ave. " 17. McDERMOTT, JOHN, 124 10th St. " 33. McGUIRE, JOHN, 212 Grove St. " 74. MULCAHY, JAS., 612 Larkin St. " 33. NAGLE, GEO. D., 427 Montgomery St. " 24. O'CONNOR, J. J., 648 Minna St. " 19. O'BRIEN, D. J., 323 Dupont St. " 31. O'SULLIVAN, F., 432 9th St. " 35. RICHARDSON, GEO., 513 Ellis St. " 39. RICHARDSON, M. B., 624 Shotwell St. " 1. RILEY, J. F., 166 Perry St., Secretary. " 38. ROBERTS, S. N., 54 3d St. " 55. STEVENS, W. E., cor. Larkin and Market Sts. " 46. SCHOENMAKER, C., 323 Chestnut St. " 62. WAGNER, J., Potrero Ave. bet. 22d & 23d Sts. " 3. WORRELL, C. R., 888 17th St. " 5. WATERSON, G. T., 638 Market St. " 64. YOUNG, LEWIS " 49.

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ROBERTS & DAVIS, Sacramento Brick. Box 36. REMILLARD BRICK CO. " 23. PATENT BRICK CO. " 29. PETERSON, T. W. & Co., San Jose, Brick Co. " 68.

PATENT CHIMNEYS.

STEVENS, W. E., Patent Chimney. Box 46. BROWELL, J., Patent Chimneys. " 71. CLAWSON, L. E., Patent Chimneys. " 2.

MISCELLANEOUS.

DAVIS & COWELL, Lime and Cement. Box 43. WHITTIER, JAS. E., Asphaltum. " 41. McCLURE, P. L., Grader and Waterman. " 30. STBLEY, L. B., Teamster. " 40. WARREN, CHAS., Grader. " 37. BUCKMAN, A. E., Grader. " 42. KELSO, JOHN, Grader. " 76. ENGLISH W. D. & Co., Graders. " 70. BUTTERWORTH, T. C., Glazier. " 48. HARNEY & SON, Street Contractors. " 54.

Staining Wood.

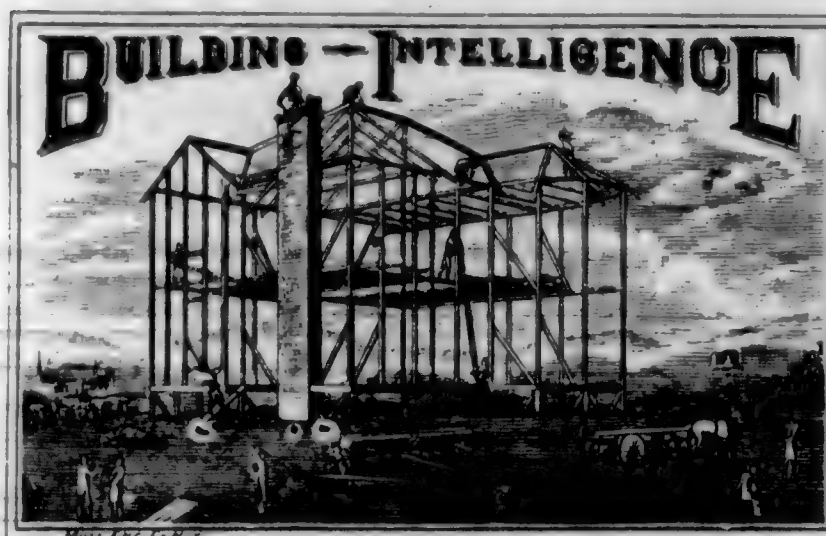
On staining wood a writer in an exchange gives the following directions:—

A good mahogany color may be had by dissolving maroon lake in water, adding a piece of potash about as large as a walnut to a quart of water, plenty of the color. This will give a good mahogany imitation on any wood and can be used to darken the mahogany if so desired. Oak or ash may be stained brown by using linseed oil and benzine half and half, and burnt umber or Vandyke brown incorporated with this. Maple can be stained green-gray by using copperas in water; oak will also be changed to a dark-green blue through the same agency, the effect on ash being various shades of olive green. Ammonia applied to oak produces the bronze olive tint now used so much by architects. Staining by the fumes of ammonia results in all shades from light olive to the rich, deep brown of extreme age. This method is considered the best for imparting to oak or mahogany the appearance of age, and for those wishing to avail themselves of an easy, clean, and certain means of gaining the result, fumigating offers no serious obstacle to its accomplishment, the articles necessary being easy of acquirement and at small expense.

Procure for your use a box sufficiently large to receive the article; any well-made packing-box will be suitable, providing the joints or seams are close. Next get some strong full-strength liquid ammonia, not the diluted article of the druggist, pour some in a shallow receptacle—such, for instance, as a deep plate—place this in the bottom of the box, so that the fumes will rise and surround the object to be stained; close the box securely, so that the fumes will be confined as much as possible. When the article is small, of course the box need not be large—the smaller the better, for then you will not require so much ammonia. You can see how the staining progresses by wetting a portion from time to time; otherwise the change of color would not be perceptible. All that now is necessary is to leave the ammonia to do the work, remembering that the longer the exposure the darker the hue will be.

ABOUT SCREWS.—In an article on the manufacture of screws in Rhode Island the *Providence Journal* says: "It is interesting to note that, while the manufacture of wood screws probably originated in Westphalia, Germany, and was subsequently carried on in Eastern France and England before its introduction into this country, American inventors have supplied the machinery that is now universally employed. The popular feeling that the gimlet-point screw is a modern invention is erroneous. The American Screw Company have in their possession sample cards of French screws, pointed, though not so perfectly made as at present, which were brought from France early in the present century; and from an old piano now at Northampton, made about the year 1750, screws have been taken showing the same feature. Patents have been issued on gimlet-pointed screws, but they covered only a peculiar form of point. The gimlet is said to have been invented by Daedalus, a Greek.

Shavings and Saw-dust. \$1.50
Lumberman's Hand-Book. 2.00
Practical Geometry. 1.00
Architects' Companion. 2.50
Plaster, How to Make It. 1.00



A
Alabama, cor. Twenty-fifth
Catholic Church.
O. Rev. P. Casey.
A. H. J. Finch.
C. J. Bin-t; J. Wagner.
brick work.
\$24,500.

B
Bryant, nr. Seventh. Two-
story frame.
O. G. Fink.
C. J. Kinsman.
\$3,000.
Bryant, cor. Dora. Two-
story frame.
O. and B. J. H. Worden.
Day's work.
\$6,000.
Bush, nr. Scott. Two-story
frame.
O. G. Edward.
C. N. W. Stecker.
\$2,000.
Bush, nr. Lyon. One and
one-half story frame.
O. and B. D. F. Mc
Graw.
Day's work.
\$1,500.
Baker, nr. Bush. Addi-
tions.
O. S. Edmonds.
C. D. F. McGraw.
\$1,000.
Bush, bet. Devisadero and
Boedrick. Three one-story
frames.
O. S. Gilmore.
C. J. Drury.
\$6,000.
Bush, bet. Mason and Tay-
lor. Additions.
O. W. S. Gage.
A. H. C. Macy.
C. G. R. Lang.
\$8,000.
Battery, bet. Pine and
Bush. Additions.
A. McDougal & Son.
C. A. G. Fitzpatrick.
\$11,000.
Bartlett, nr. Twenty-se-
cond. Alterations.
O. B. Curbaz.
A. H. Gellfuss.
C. W. Plums.
\$1,000.
Bartlett, nr. Twenty-first.
One-story frame.
O. N. W. Cole.
A. G. H. Miller.
Day's work.
\$3,000.

C
Clay, bet. Scott and Devis-
adero. Two-story frame.
O. E. W. Ferguson.
A. Eisen & Pierce.
C. W. H. Whilby.
\$400.
California, bet. Pierce and
Steiner. Two-story stable.
O. H. Schroder.
A. J. Marquis.
Day's work.
\$200.
Cumberland, nr. Nine-
teenth. Additions.
O. J. T. Swift.
Day's work.
\$1,000.
California, bet. Fillmore
and Steiner. Additions.
O. St. Paul's Episcopal
Church.
A. Pierce & Hamilton.
C. J. H. McKay.
\$2,000.
California, cor. Webster.
Five two-story frames.
O. and B. Hinkle Bros.
Day's work.
\$17,500.

**Church, cor. Duncan. Two-
story frame.
O. H. McGuire.
A. M. J. Welch.
C. M. Loftus.
\$2,800.**

D
Dolores, nr. Twenty-third.
One-story frame.
O. A. McNab.
C. F. W. Kern.
\$2,500.
Dolores, nr. Twenty-third.
Additions.
O. J. Wall.
Day's work.
\$800.

E
Eighth, cor. Harrison. One-
story frame.
O. Thos. L. Kaen.
C. Thos. Merry.
\$600.
Eleventh, bet. Natoma and
Howard. One-story frame.
A. F. Rash.
C. J. McCann.
\$1,500.
Eleventh, cor. Minna. Al-
terations.
O. and B. P. Connell.
Day's work.
\$1,200.
Eureka, bet. Eighteenth
and Nineteenth. Two one-
story frames.
O. and B. P. O'Ruke.
Day's work.
\$1,600.

F
Fillmore, bet. Sutter and
Post. Two-story frame.
O. B. Bates.
A. S. & J. C. Newsom.
C. J. Rehman.
\$4,000.
Fifteenth, nr. Noe. Frame
stable.
O. J. J. McDonald.
Day's work.
\$800.
First, cor. Harrison. Two
two-story frames.
O. and B. W. Keenan.
Day's work.
\$2,400.
Fourth, cor. Bryant. Three-
story frame.
O. A. H. Liebenburg.
A. J. Lenzen & Son.
C. A. Washburn.
\$4,000.
Fifteenth, cor. Church. Ad-
ditions.
O. J. W. Hammerton.
C. S. McDuffee.
\$750.
Fair Oaks, bet. Eighteenth
and Nineteenth. Two-story
frame.
O. W. Dunlap.
A. Schmidt & Havens.
C. D. B. Spangler.
\$2,700.
Filbert, nr. Jones. Two-
story frame.
O. R. Williams.
C. A. H. Taylor.
\$3,000.

G
Guerrero, nr. Clinton Park.
Two-story frame.
O. A. Hansen.
C. C. E. Dunshee.
\$2,500.
Gregory, nr. Second. Two-
story frame.
O. P. Lastrange.
Day's work.
\$1,000.
Guerrero, nr. Twenty-
fifth. Two-story frame barn.
O. R. Gray.
Day's work.
\$750.

H
Hyde, No. 814. Additions.
O. J. H. A. Folkers.
A. Schmidt & Havens.
C. Connelly & Beards-
lee.
\$3,000.
Haight, cor. Steiner. Two-
story frame.
O. J. W. Winter.
A. J. Gash.
C. J. L. Binet.
\$5,000.
Hattie, bet. Seventeenth
and Eighteenth. Two-story
frame.
O. J. Buckley.
Day's work.
\$3,000.
Haight, nr. Lott. One-story
frame.
A. R. A. Vanc.
C. G. R. Lang.
\$2,700.
Hunt, between Third and
Fourth. Two-story frame.
O. R. Surifer.
A. M. P. Schetal.
C. L. D. Frachete.
\$2,800.
Howard, bet. First and
Second. Three-story frame.
O. J. Burke.
A. W. C. Jordan.
C. C. Doherty.
\$4,500.

I
Jackson, bet. Van Ness and
Park. Additions.
O. Capt. Hanlon.
C. Thos. J. O'Brien.
\$1,500.

J
Liberty, near Guerrero.
Two-story frame.
O. H. Gilmore.
C. G. Lang.
\$4,000.
Langdon, nr. Bryant. Ad-
ditions.
O. T. McBride.
Day's work.
\$800.
Lott, cor. Turk. One-story
cottage.
O. C. Lutz.
A. Geo. H. Miller.
C. A. N. Nelson.
\$1,800.
Linden Avenue, nr. Bu-
chanan. One and one-half-
story frame.
O. M. Williams.
A. Townsend & Wyne-
ken.
C. Geo. Hussey.
\$1,300.
Lombard, bet. Jones and
Leavenworth. Two-story
frame.
O. Miss Ella L. McCarthy.
A. George H. Miller.
C. John Doherty.
\$6,000.

M
Mason, nr. Broadway. Al-
terations.
O. W. McCoy.
A. T. D. & J. J. Newsom.
C. R. Beal.
\$3,500.
Mission, bet. Sixteenth and
Seventeenth. Additions.
O. Joe Beane.
C. G. R. Lang.
\$1,500.
Mission, opp. St. Mary's
College. Two-story frame.
O. J. E. Rising.
A. M. J. Welch.
C. A. Klahn.
\$5,000.
Mission, nr. Twenty-first.
Two-story frame.
O. Maier & Unrath.
C. J. Bamber.
\$4,000.
Mission, nr. New Mont-
gomery. Four-story brick.
O. H. Warden.
A. Pissis & Moore.
C. S. T. French; brick
work, G. Richardson.
\$22,000.
Market, nr. Sanchez. Two-
story frame.
O. R. B. Page.
A. Geo. H. Miller.
C. Doyle & Son.
\$3,600.

N
N Street, bet. Fifteenth
and Sixteenth Avenue, So.
San Francisco. Frame
Roman Catholic Church.
O. Rev. T. Fitzpatrick.
A. John J. Clark.
C. J. G. Adams.
\$20,000.
Noe, nr. Eighteenth. One-
story frame.
O. W. M. Granahan.
Day's work.
\$1,500.
Noe, bet. Fifteenth and Six-
teenth. One-story frame.
O. T. C. Conny.
A. Schmidt & Havens.
C. R. P. Traxler.
\$2,000.

O
O'Farrell, bet. Fillmore
and Steiner. Two-story
frame.
O. A. Levy.
A. McDougal & Son.
C. R. Currie.
\$800.
Octavia, nr. Union. One-
story frame.
O. W. Eastman.
A. S. & J. C. Newsom.
C. D. B. Spangler.
\$2,500.
Octavia, nr. Post. Two-
story frame.
O. C. Otten.
A. T. J. Welch.
C. J. W. Fish.
\$3,000.

P
Plymouth, nr. Mission.
One-story frame.
O. Andrew Eckert.
Day's work.
\$1,700.
Page, cor. Buchanan. Three-
story frame.
O. A. W. Scott.
A. C. Day.
C. A. Flood.
\$22,000.

Q
Quinn, nr. Valencia. Two-
story frame cottage.
O. Jas. Humphreys.
Day's work.
\$1,000.

R
Richland Avenue, nr.
Mission. One-story frame.
O. J. Drew.
C. J. L. McLaughlin.
\$900.

S
Sixteenth, nr. Castro. One-
story frame.
O. and B. J. Conlan.
\$1,000.
Steiner, bet. California and
Pine. Two-story frame.
O. Mrs. Mary Eaton.
A. T. D. & J. J. Newsom.
C. R. Beal.
\$5,000.
Seventeenth, nr. Collins-
wood. One-story frame.
O. F. Sears.
C. E. M. Hunter.
\$1,800.
Sanchez, nr. Ford. One-
story frame.
O. H. Echelmier.
A. Salfeld & John.
C. J. Klein.
\$2,500.
Shotwell, bet. Seventeenth
and Eighteenth. One-story
frame.
O. J. W. Williams.
C. A. Comack.
\$1,000.
Sixteenth, nr. Castro. One-
story frame.
O. W. Griffin.
Day's work.
\$1,500.
Sixteenth, near Sanchez.
Two-story frame.
O. F. W. Flatner.
C. C. Christy.
\$4,000.
Sanchez, near Sixteenth.
Two-story frame.
O. N. Atkinson.
Day's work.
\$3,000.

**Scott, bet. Bush and Sutter.
Two-story frame.
O. Mrs. H. M. Solomons.
A. W. G. Copeland.
C. Treadwell & Thomp-
son.
\$3,000.**

**Steiner, nr. Turk. Two-
story frame.
O. S. R. Bitcher.
A. Townsend & Wyne-
ken.
C. R. Chandler.
\$2,400.**

**Steiner, nr. Fulton. Two-
story frame.
O. A. Wissel.
A. A. C. Lutgens.
C. C. Mason.
\$4,500.**

T
Tennessee, near Solano.
Two-story frame.
O. F. Lester.
C. C. E. Dunshee.
\$3,500.
Tenth Avenue, nr. Point
Lobos Avenue. Two-story
frame.
O. P. H. Loul.
A. F. Hillert.
C. C. Fisher.
\$2,000.
Twenty-first, bet. Mission
and Capp. Two two-story
frames.
O. C. H. Lienthal.
A. H. Geil uss.
C. F. Klatt.
\$3,000.

**Third, near King. Boat
house.
O. South End Boat Club.
A. A. C. Lutgens.
C. E. & F. J. Owens.
\$1,700.**

**Townsend, bet. Fourth
and Fifth. Brick ware-
house.
O. Whittier, Fuller & Co.
A. Wright & Sanders.
C. B. Mitchell.
\$10,000.**

**Twenty-third, bet. Shot-
well and Howard. One-story
frame.
O. and B. J. D. Rogers.
\$1,800.**

**Treat Avenue, nr. Twen-
ty-fourth. Two-story frame.
O. C. Wheeling.
A. W. Mosier.
C. B. Pfarrer.
\$2,600.**

**Twenty-seventh, corner
Church. Alterations.
O. J. F. Musaner.
Day's work.
\$700.**

**Twenty-seventh, near
Church. Alterations.
O. A. Cash.
Day's work.
\$1,000.**

**York, cor. Twentieth. One-
story frame.
O. S. Lang.
Day's work.
\$1,000.**

OAKLAND.
MARKET, bet. Fourth and Fifth—1-story fr
dwel; cost, \$1,500; o, W. Harrington; c, M.
Jackson.
FOURTH, bet. Jefferson and Grove—1-story fr
dwel; cost, \$1,600; o, W. Sagehorn; a, Chas.
Mau; c, J. G. Dorrell.
MARKET, nr. Twentieth—1-story ctg; cost, \$1,300;
o, H. Renton; c, J. G. Dorrell.
FOURTH, cor. Jefferson—2 1-story ctgs; cost,
\$3,000; o, D. Moran; c, D. Markel.
FIFTH, bet. Broadway and Franklin—2 2-story
ctgs; cost, \$2,500; o, Barnett Bros.; c, D. Markel.
TWELFTH, cor. Adeline—1-story fr dwel; cost,
\$2,500; o, Mrs. Durst; a, Chas. Mau; c, A. Herbst.
TENTH, se cor. Center—Addition; cost, \$1,200;
o, Dr. W. M. Brown; c, J. C. Johnson.
CHESTNUT, w s, bet. Fourteenth and Sixteenth—
3 1-story fr dwells; cost, \$5,000; o, S. Carle; a,
Jas. Seadler; day's work.
EIGHTEENTH, ne cor. Chestnut—2-story fr
dwel; cost, \$5,000; o, Everett Nickerson; c,
Z. P. Nickerson.
FILBERT, e s, bet. Fourteenth and Sixteenth—2-
story fr dwel; cost, \$5,000; o, G. W. Babcock;
a, S. & J. C. Newsom; day's work.
FILBERT, w s, bet. Fourteenth and Sixteenth—2-
story fr dwel; cost, \$4,000; o, Dr. Pelton; a, W.
Davidson; c, E. Childs.

FILBERT, cor. Twelfth—1-story school house;
cost, \$3,500; o, Miss Horton; c, W. Whilby.
THIRTEENTH, cor. Washington—3-story fr dwel;
cost, \$10,000; o, H. Matthews; a, O. Hansen; c,
H. J. Hansen.
SAN PABLO AVENUE, cor. Sixteenth—Additions;
cost, \$3,500; o, J. Garrint; c, W. A. Griffith.
SIXTH, bet. Broadway and Franklin—2-story fr
dwel; cost, \$4,000; o, W. Davis; c, W. A.
Griffith.
SIXTEENTH, nr. San Pablo ave—3 1-story ctgs;
cost, \$3,000; o, J. Garrint; c, Griffin & Griffith.
GROVE, nr. Fourteenth—2-story fr dwel; cost,
\$3,500; o, Mrs. L. H. Campbell; c, W. H.
Bailey.
SEWARD, cor. CAMPBELL—2-story fr convent;
cost, \$6,500; o, Father McNally; c, Maloney
& Shay.
HIGHLAND PARK—1-story fr dwel; cost, \$3,000;
o, J. Pinet; a, Dailey & Fraun; c, R. Stephens.

EAST OAKLAND.

TWENTY-FIRST, cor. Twenty-first ave—Addi-
tions; cost, \$300; o, George Wheeler; c, Farnham
& Hodge.
EAST TENTH, cor. Fourth ave—7 1-story and
bunt fr dwells; cost, \$10,000; o, G. C. Wooster;
c, Z. P. Nickerson.
THIRD AVENUE, cor. Tenth—Alterations and ad-
ditions; cost, \$10,000; o, California Jute Mill Co;
c, S. J. Hubb, carpenter work; Remillard Brick
Co., brick work.
EAST FOURTEENTH, nr. Thirteenth ave—3 1-
story fr dwells; cost, \$2,300; o, and b, Louis
Dulcich.
FIFTEENTH, nr. Sixteenth ave—Catholic Church;
cost, \$20,000; o, Catholic Church Parish; a, B. J.
Clunch; c, G. A. Embury.
FOURTEENTH, bet. Sixteenth and Seventeenth
ave—1-story fr dwel; cost, \$1,000; o, Thos.
O'Donnell; c, G. W. Palmer.
FOURTEENTH, bet. Seventeenth and Eighteenth
ave—2-story fr dwel; cost, \$2,100; o, Brown &
Schmidt; c, A. Herbst.
THIRD AVENUE, nr. Twelfth—1-story fr dwel;
cost, \$1,800; o, G. Calberg; a, D. Gallagher; c,
Farnham & Hodge.
NINTH AVENUE, cor. Eleventh—4 1-story
fr dwel; cost, \$6,500; o, J. F. Cummings; c,
Farnham & Hodge.

ALAMEDA.

PARK AVENUE, nr. Encinal—1-story fr dwel;
cost, \$1,500; o, Dr. Bronson; c, Farnham &
Hodge.
SANTACLAARA AVENUE, s s, nr. Walnut—2-story
fr dwel; cost, \$2,000; o, Capt. Thompson; c,
C. Foster.
SANTA CLARA AVENUE, n s, nr. Walnut—1-
story fr dwel; cost, \$3,000; o, A. Queenshoffer;
c, P. Christensen.
SANTA CLARA AVENUE, n s, nr. Willow—2-
story fr dwel; cost, \$6,000; o, and b, Reed &
Ranlett.
CHESTNUT, nr. Railroad ave—2-story fr dwel;
cost, \$3,000; o, E. Gerald; c, J. M. Reynolds.
BENTON, w s, nr. Railroad ave—2-story fr dwel;
cost, \$2,000; o, and b, F. A. Blanchard.

BENTON, w s, nr. Railroad ave—1-story fr dwel;
cost, \$1,000; o, and b, J. T. McKenney.

BERKELEY.

SHATTUCK AVENUE, nr. R. R. depot—2 1-
story fr dwells; cost, \$2,000; o, M. A. Barker; c,
I. A. Boynton.
BANCROFT WAY, nr. Harmon's Seminary—2-
story fr dwel; cost, \$4,000; o, W. Keith; a,
W. W. Goodrich; c, H. McCrackin.
BANCROFT WAY—1-story fr dwel; cost, \$1,400;
o, H. Kelley; c, A. Kachieschang.

NORTH BERKELEY.

BERRYMAN'S TRACT—Fr school house; cost,
\$2,500; o, H. Berryman; a, O. Hansen; day's
work.
BERRYMAN'S TRACT—1-story fr dwel; cost,
\$2,900; o, Mrs. Cheney; a, O. Hansen; c, H. J.
Hansen.

SACRAMENTO.

J STREET, bet. Eighth and Ninth—3-story and
basement hotel; cost, \$14,650; o, A. Coolot; a,
N. D. Goodell; c, Siller Bros.
G STREET, bet. Eighteenth and Nineteenth—Im-
provements; cost, \$500; o, C. H. Gilman; a, N.
D. Goodell; c, C. Ruggles.

SAN JOSE.

SECOND, cor. Williams—2 2-story fr dwells; cost,
\$4,900; o, Martin Luther; a, Theodore Lenzen;
c, A. C. Mathewson.
THIRD, cor. San Salvador—1-story fr dwel, br
basement; cost, \$5,000; c, E. A. Van Dalsen.
1-story fr in the suburbs; cost, \$2,600; o, S. F.
Lieb; a, Jacob Lenzen & Son.

SOQUEL.

2-story fr dwel; cost, \$3,000; o, A. Getzschman;
a, Theodore Lenzen.

STOCKTON.

Cost, \$10,000; o, California Paper Co.; a, C.
Day; c, A. Flood.

SAN PABLO STATION.

2 1-story ctgs; cost, \$3,000; o, DeRome & White;
a, S. & J. C. Newsom; c, Wilcox & Graves.
1-story ctg; cost, \$1,600; o, J. Latimer; c, I. A.
Boynton.

SAN RAFAEL.

2-story fr dwel; cost, \$7,000; o, C. Fish; a, C.
Giddes; c, English & Gore.
2-story fr dwel; cost, \$6,000; o, Mr. Page; a, C.
Day; c, — Chisholm.

NAPA.

2-story fr dwel; cost, \$4,000; o, Senator J. F.
Miller; a, J. Marquis; day's work.

WOODLAND.

MAIN—3 2-story br stores; cost, \$10,500; o, Dr.
White; a, T. J. Welch; c, C. B. Sumner & D. S.
Scott.

MAIN, cor. Elm—2-story br store; cost, \$3,000; o,
Prior & Gibson; c, Glenn & White.
FIRST—1-story fr dwel; cost, \$2,000; o, C. W.
Thomas; a, and b, W. H. Carson.

FIRST—1-story fr dwel; cost, \$2,000; o, J. M.
Miller; c, C. C. Keedy.
LINCOLN AVENUE—1-story fr improvement;
cost, \$1,000; o, Irving Porter; c, Glenn & White.
LINCOLN AVENUE—1-story fr dwel; cost, \$1-
000; o, C. M. Foster; day's work.

GRAFTON—1-story fr dwel; cost, \$1,000; o,
Benjamin Hennigen; b, B. E. Jackson.
WESCOTT—1-story fr dwel; cost, \$1,500; o,
Thomas Boots; day's work.

EAST AVENUE—1-story fr dwel; cost, \$2,000;
o, Napoleon Cox; b, S. Clevenger.

EAST AVENUE—1 1-story br stores and 12-story
br store; cost, \$5,500; o, and c, W. H. Winnie.
1-story fr dwel; cost, \$1,000; o, John Murry;
b, Charles Roberts.

1-story fr dwel; cost, \$1,000; o, John Thompson;
day's work.

2-story fr dwel; cost, \$1,500; o, Thomas Lange-
nour; c, Glenn & White.

1-story fr dwel; cost, \$1,000; o, John Rupert;
day's work.

MONTICELLO.

1-story fr school house; cost, \$1,600; c, Richie &
Ward.

BLACK'S STATION.

1-story fr dwel; cost, \$2,100; o, J. F. Dillon; a,
W. H. Carson; c, Glenn & White.

1-story fr dwel; cost, \$1,500; o, E. A. Rusing;
c, M. Cummings.

CACHEVILLE.

2-story fr dwel; cost, \$4,500; o, A. Griffith;
a, and c, W. H. Winne.

1-story fr dwel; cost, \$3,500; o, J. D. Reid; day's
work.

DUNNIGAN.

2-story fr dwel; cost, \$12,000; o, J. N. Decker;
a, Jacob S. Morris; c, Welch & Morris.

DAVISVILLE.

2-story fr dry house and packing establishment;
cost, \$2,500; o, Eugene Gould; day's work.

1-story fr dwel; cost, \$1,400; o, John Rowe;
day's work.

1-story fr dwel; cost, \$1,200; o, and b, Chris
Branagan.

MADISON.

2-story fr carriage house; cost, \$1,000; o, Ed.
Archer; c, Charles Reardon.

KNIGHT'S LANDING.

2-story fr dwel; cost, \$4,000; o, Peter Ossen-
bruggen; day's work.

2-story br dwel; cost, \$5,000; o, William Ogden,
day's work.

WINTERS.

MAIN—1-story br store; cost, \$2,500; o, Henry
Crane; day's work.

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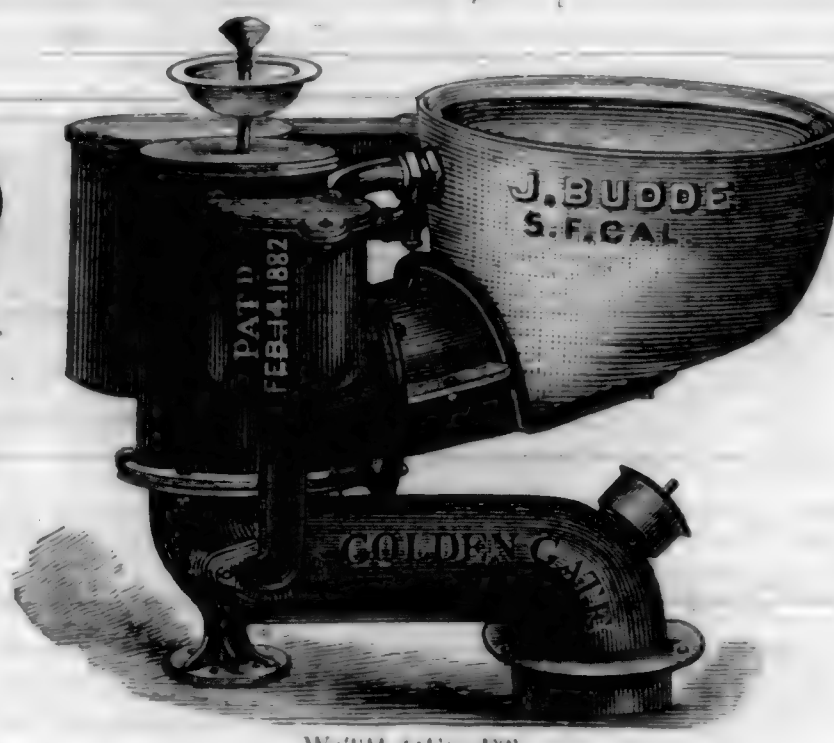
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2. It has a real sanitary overflow, a copper float attached to a bell of the same metal resting on face of the brass overflow pipe, operated by the rising of the water in the closets above its level, thus absolutely preventing any escape of sewer gas, even the closets being without water.
3. It has no dead corner, consequently no foul water will be left in the closet after the lifting of the handle. A constant rush out of the flood chambers will keep the closet and trap perfectly clean.

This Closet takes the lead; it has been sold since February, 1885, in large quantities to the best satisfaction.

THE COMBINATION HOPPER.

This hopper is constructed to take 2-inch pipes, one to the right and one to the left, and a 4-inch lead in the center. It has a movable strainer on top to take the surface water. The lower part of the hopper with side outlet is to be connected with the sewer pipe, either right or left. The upper part is independent from the lower, and is made to swivel, therefore it will suit either position of pipe. This hopper can be used only for surface, for waste, or for leader; either inlet will be stopped up with iron caps if so desired.

PACIFIC PAN CLOSET.

This Closet is superior to all others, every working part and bolt being made of brass, closet and valve extra heavy casting. Particular attention is called to No. 4. This Closet has an oval basin fastened to the cover by brass clamps and bolts. No breaking of putty joints required to renew a pan. The loosening of two large brass nuts will separate cover with basin from the receiver. It has a heavy nickel plated cup and pull and solid brass rod.

These Closets have been in use since February, 1883. Plumbers and wholesale dealers give them the best recommendation.

Square Slop Hopper. Square Waste Hopper. Basket Hopper.
Basket Hoppers are made in one piece with Movable Strainer.

Side View, Combination Hopper.

No. 126 FIRST STREET. SAN FRANCISCO, CAL.



No. 4.

The California Architect and Building News.

VOLUME VI.
NUMBER 12.

SAN FRANCISCO, DECEMBER, 1885.

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Single Copies, 20 Cents.

THE CALIFORNIA ARCHITECT AND BUILDING NEWS.

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Annual Building Report for 1885.

In the accompanying review for the year's transactions in building operations, ending with the present issue, will be found a full, corrected summary for the twelve months last past.

Although it would have been more pleasing to be able to confirm and verify each separate monthly report as made, yet, finding some discrepancies in figures, we prefer correction, so as to make the yearly statement from December 15, 1884, to December 15, 1885, as nearly faultless as possible. Our purpose is to be correct in every representation made, and departures from this will in all cases be unintentional. Sometimes the information received is misleading; others, whose special affairs are sought to be represented, have to be relied upon for facts, and in some cases erroneous statements are made. But all possible care will be exercised to equalize this, and present reliable reports each month.

Report for month ending December 15, 1885, is as follows: 66 frames, value, \$176,000; 14 alterations, value, \$23,830. No. of buildings, 80; total value, \$199,830.

The above report is the smallest in amount made during 1885, and \$238,915 less than reported for the corresponding month of last year. But the totals for the entire year show a gain of \$741,192, as follows, by the corrected figures for this year:—

First six months in 1885, ending June 15	\$4,267,375
Second six months in 1885, ending December 15	2,776,624

Total for twelve months	\$7,043,999
Total for the twelve months of 1884	6,202,807

Gain in 1885	\$841,192
--------------	-----------

	FRAME BUILDINGS.	BRICK BUILDINGS.	ALTERATIONS, ETC.	TOTAL BLD'GS.	TOTALS MONTHLY.
January	62 \$ 236,850	2 \$ 314,000	9 \$ 39,300	73	\$ 590,150
February	102 433,400	7 141,000	12 34,450	121	608,850
March	84 318,600	4 433,000	9 17,150	97	768,750
Totals, 1st quarter	248 \$ 988,850	13 \$ 888,000	30 \$ 90,900	291	\$1,967,750
April	148 \$ 651,450	2 \$ 430,000	18 \$ 50,000	168	\$1,131,450
May	129 510,715	2 10,900	16 44,650	147	566,265
June	126 463,100	2 72,000	20 60,810	148	601,910
Totals, 2d quarter	403 \$1,631,265	6 \$512,900	54 \$155,460	463	\$2,299,625
Total for first six months					1,967,750
July	74 \$ 281,310	2 \$110,000	20 \$ 66,100	96	\$4,267,375
August	75 263,650	3 80,000	17 46,500	95	\$ 457,110
September	119 528,650	7 143,500	43 113,550	169	395,150
Totals, 3d quarter	268 \$1,078,610	12 \$333,500	80 \$226,150	360	\$1,638,260
October	113 \$ 407,539	4 \$100,200	40 \$ 71,375	157	\$ 579,114
November	81 280,650	3 38,000	19 40,750	106	359,400
December	66 176,000	..	14 23,850	80	199,850
Totals 4th quarter	263 \$ 864,189	7 \$138,200	73 \$135,975	343	\$1,138,364
Total for second six months					1,638,260
" first six months					\$2,776,624
" for twelve months					4,267,375
					\$7,043,999

The foregoing tabulation, as corrective of the monthly reports, shows as follows:—

		MONTHLY REPORTS AS CORRECTED.		MONTHLY REPORTS AS PUBLISHED.		IN EXCESS OF FACTS.		LESS THAN FACTS.	
		No.		No.		No.		No.	
January	73	\$	590,150	73	\$	602,585	\$	12,435	\$
February	121		608,850	121		660,397		51,547	
March	97		768,750	94		806,279		37,529	3
April	168		1,131,450	178		1,221,045	10	89,595	
May	147		566,265	127		577,843		11,578	20
June	148		601,910	148		588,410			
July	96		437,410	99		412,050	3		13,500
August	95		395,150	83		347,600			45,360
September	169		785,700	169		746,100			12
October	157		579,114	156		582,914			39,600
November	106		359,400	107		365,700			1
December	80		199,850	80		199,850			1

NUMBER OF ENGAGEMENTS FOR 1885.	
1,182 Frame buildings.....	\$4,562,914
38 Brick ".....	1,872,600
237 Alterations.....	608,485
1,457.....	\$7,043,999
NUMBER OF ENGAGEMENTS FOR 1884.	
905 Frames.....	\$4,112,201
25 Brick.....	1,536,645
197 Alterations.....	553,961

1,127.....	\$6,202,807
IN 1883.....	
803 Engagements.....	\$5,261,689
IN 1882.....	
785 Engagements.....	\$3,896,212
IN 1881.....	
533 Engagements.....	\$3,790,732
IN 1880.....	
397 Engagements.....	\$1,754,435

By the foregoing it will be noticed that in the five months prior to the June issue, the reports as published overstated the actual engagements \$202,684; the four months next following shows a discrepancy, less than actual engagements, of \$146,010, and in October and November exceeds to the amount of \$10,100. But deducting the under from the over statement the error balances amounts to an average of less than \$4,722 per month, in the correct gross sum of \$7,043,999.

In the future we hope to, and shall use all due and reasonable care to avoid error of statement in building reports, and in all other connections.

Building Report for 1886.

It being the intention to issue this Journal, on and after January, 1886, on the fifth day of each month, instead of the fifteenth; and the building report in the present issue, including all information in this department, up to the tenth of the present month, the January number will contain the building intelligence of but two-thirds of a month, instead of a full month. Thereafter, the information will be special to each month, from first to last day, instead of from fifteenth to fifteenth.

The great error of overstating and exaggerating for effect sake, will be carefully guarded against. No good can come from perversion of facts in this or any other connection, nor is it honest journalism to represent things to be, which have no existence in fact.

Mr. M. J. Marion will contribute articles to this Journal regularly, commencing with the January number. Mr. M. is extensively known upon this coast, in New York, and many of the Eastern cities, as a geometrician of marked skill and ability, and our readers may anticipate much that will be instructive and useful, particularly in the difficult problems involved in the construction of roofs, domes, groined arches, stair work, and the innumerable intricacies classified under the head of geometrical demonstrations.

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Strength of Brick Walls.

THE question of strength of brick walls is often discussed, and differences of opinions expressed. The following is one of the rules given: For first-class buildings, with good workmanship, the general average should not exceed a greater number of feet in height than three times the thickness of wall in inches, and the length not to exceed double the height, without lateral supports of walls, buttresses, etc., as follows, for safety:—

THICKNESS.	SAFE HEIGHT.	LENGTH.
8½-inch walls.....	25 feet.....	50 feet
13 " ".....	40 ".....	80 "
17 " ".....	55 ".....	110 "
22 " ".....	66 ".....	130 "
26 " ".....	78 ".....	150 "

Where the lengths must exceed these proportions, as in depots, warehouses, etc., the thickness should be increased, or lateral braces instituted as frequently as practical.

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Building Superintendence. By T. M. Clark, published by J. R. Osgood & Co., Boston. A valuable work of 336 pages. Every builder and architect should have one in his library. Price, \$3.00.

San Francisco Chapter of Architects.

THE regular monthly meeting was held the 4th inst, President Curlett in the Chair, B. E. Henriksen, Secretary. After reading and approval of minutes, the Secretary presented the certificate of incorporation of the Chapter, duly signed by the Secretary of State, with the seal of the commonwealth affixed, and neatly framed.

Reports from the various committees were considered and acted upon. That having the matter of "fire ordinances" in hand was requested to proceed as rapidly as possible, as the subject is considered one of material importance, alike to architects and owners.

Mr. J. M. Curtis was elected Treasurer for the current year.

A circular from the Master Painters' Association was presented, and received with favor by all architects present.

A committee, consisting of Messrs. J. E. Wolfe, John Wright, B. E. Henriksen, Wm. Curlett, and J. B. Whittemore, was appointed to consider the unspeakably grand bequests of the honorable Senator, Leland Stanford, and report thereon.

A paper was then read by a member upon the lien law of California, in which was specially noticed the clause requiring the filing of all contracts with the County Recorder prior to the commencement of contemplated works. Its illegality, insufficiency for the purposes contemplated by the manipulations of the act; its immoral, unjust, and pernicious effects, were dwelt upon. The expressions of all present were in harmony with the sentiments of the paper read.

Mr. H. C. Macy was appointed by the Chair to lead the discussion at the January meeting of the Chapter, upon the subject of sewerage and drainage.

At a late hour the session ended, all present being well pleased with proceedings, the only regret being that more members were not present to reap the benefits of the occasion.

Building Improvements in New York.

THE Real Estate Record says: "By the end of the year 1885, about 3,400 houses will be finished or under way in this city (New York), the cost of which will be nearly \$46,000,000. In Brooklyn there are about 4,000 new structures, which will cost about \$20,000,000. In addition to these, about 12,000 houses, valued at not far from eighty millions, have been started during the year in localities adjacent to New York and Brooklyn, whose population does business in these cities."

Grimshaw on Saws, with Supplement, by Robert Grimshaw. A book of 278 pages, neat and clear in typographical execution, and full of facts and figures in relation to saws. The number and variety of its illustrations add greatly to its interest. It contains a large amount of valuable information. Thos. W. Hartley & Son, publishers' agents.

A Manual of Industrial Drawings for Carpenters and Other Wood-workers, by W. F. Decker, instructor in drawings in the University of Minnesota. Published by W. F. Comstock, N. Y. Price, \$2.00. Sent by mail free of postage to any part of the world. To be had at the office of this Journal at publishers' price. An excellent, practical book.

Not Guilty—Complaint Dismissed.

IN last issue of this Journal, the arrest of Messrs. Wright & Sanders, architects, for violation of the fire ordinance of San Francisco, was noticed, and the facts substantially stated. Since then the merits of the case have been tested before a jury, in Police Court No. 2, Messrs. Rix & Firth, contractors for furnishing the box girders in issue, being the defendants, which resulted in a verdict of not guilty, upon the following grounds:—

It was shown, first, that when the fire law, under which the arrests were made, was framed and made part of the city ordinances, the only plates easily obtainable in San Francisco for the manufacture of box girders were in lengths of ten to twelve feet each. Consequently, they had of necessity to be built and made with butt joints and laps. To compensate for this, the law was made to compel a diaphragm at each five feet, the ordinance making no provision for any substitution, even of a better kind; and the girders causing the arrests, although made of plates full length without piecing or lapping, were subject to the same technical regulations in their construction, i. e., diaphragms at each five feet. The ordinance also requires that "the riveting shall be done hot, and hammered [hence, hand riveted] to a proper conical head." The girders under arrest were hydraulic, riveted to cupped or button heads. And, it being shown that the riveting adopted was equally as good, if not in fact better than the conical heads, particularly as the only restriction in that respect is "proper conical heads," leaving the real strength value contingent upon the judgment of the maker, or the caprice of the fire department inspector, the jury considered the issue upon that point as insufficient to sustain the charge.

Secondly, it was shown that the girders in dispute were well made, with all the plate parts in full length without joints, and the diaphragms sufficient in size, spaces, and number for all practical purposes, and that the riveting, being done by hydraulic pressure, was better than hammered work by hand. The jury failed to realize more than an immaterial, technical violation of an ordinance which greatly needs change and amendment in this and numerous other particulars. A verdict of not guilty being rendered in the case named, the charge against Wright & Sanders, the architects, and the owner of the property, was dismissed.

When American establishments can furnish locomotives in Australia for \$2,000 each less than the price at which work not so satisfactory can be obtained in England, and in a much shorter time, as was recently done, our manufacturers certainly ought to be encouraged to compete actively for business in that great continent.—*Railway News.*

Shoppell's Modern Houses, issued quarterly, at \$1.00 per number, or \$3.00 per annum; 72 pages, 11x14 inches, well filled with plans and designs for suburban and country houses.

The Building Outlook for 1886.

MUCH interest is expressed in the probable building operations for the coming year. The closing monthly report for 1885 shows a large decrease as compared with the preceding month, but this fact is no criterion for judging the future.

The number of buildings erected within the last twelve months is shown to be large, and by many the falling off has been expected and prognosticated for months back. The decline cannot, however, be denominated as a "bad break," but a natural letting up—an easement for reflection and preparation, to be followed by a speedy revival of extensive operations.

Of course, no one can tell, nor approximate with any degree of certainty, the extent of future activities; but this can be stated as foreshadowing the probabilities of the future,—a splendid feeling of confidence and hope prevails in all directions. The timely rains, beautiful weather, encouraging prospects for abundant harvests, fair trade and traffic generally, the few houses and buildings to rent in desirable localities,—all serve to encourage large expectations for the future. Several large brick buildings are prominently talked of, and from probabilities almost reduced to certainties, we are justified in stating that the number of bricks in prospect to be laid in 1886 will double those used during the current year. There are also a sufficient number of plans for frame structures, now ready or preparing in architects' offices, to give a handsome commencement during the early months of the coming year.

Materials of all kinds are cheap—seldom, if ever, more so—with no present prospect of an early increase in prices. Labor is abundant, and contractors anxious for work. Although the number and gross amount of failures during the past year have been greater than should have been, they are far less than in some former years. But conditions in this particular are improving. Material men are scarcely as reckless as they used to be in encouraging unknown, untried, and doubtful parties. The responsibilities of contractors, as a class, is improving; as owners are realizing that the employment of reliable men is by far the better method, even at slight advance, which in the long run is true economy, as such a course insures better work and buildings, and often saves immediate coin, as work let to the refuse class often involves costs and outlays far greater than the difference in amount of bids between good and ungood contractors.

Whatever may be in store for us, to be developed as time rolls by, this one thing is eminently true,—that the spirit of great buoyancy prevails generally, and expressions of confidence in what is to be, are almost universal.

The Los Angeles "Herald" says that a large bed of choice potter's clay has been discovered in the Temescal Mountains, about sixteen miles from the California Southern Railroad.

A Needed Remodeling Commission.

IN view of the incompleteness and insufficiency of the present fire ordinances as affecting the construction of buildings in San Francisco, a board consisting of competent architects and civil and mechanical engineers, should be appointed by the Board of Supervisors, to prune and remodel the present, and provide an intelligent building law in harmony with the necessities involved in the erection of buildings in this city. Such a board ought to be able to prepare a very perfect code of ordinances, as all the principal Eastern cities are well provided in this regard—some of them of very recent date, and copies of such laws can be had to guide deliberations, and lead to a consummation entirely satisfactory to architects, property owners, and the fire department. We do not wish to be understood as seeking to reflect adversely upon the fire wardens, or the officials of the fire department, each and all of whom are doubtless performing their trusts and duties conscientiously, under the laws and ordinances as they now stand. But it is difficult for even good and honest officials to fulfill their duties satisfactorily, when the laws by which they are governed are defective, inexplicit, and insufficient. And the fact that the present ordinances are so, frequently gives rise to issues which might be provided for and regulated in a more perfect and comprehensive fire law.

PROSPEROUS INDICATIONS.—The copious rains that have fallen in California and adjacent States and Territories, since the 14th of November, have spread a general feeling of confidence in all directions; and among all classes, as by their coming, all doubts and fears as to a bountiful harvest have been dispelled, and predictions—perhaps the child of hope—are to the effect that the year 1886 will be one of very great prosperity. With nothing occurring to change the present outlook, it is fair to calculate on lively times for the incoming year. As a matter of course, with abundant harvests of cereals, fruits, and vintages, the building interests will be stimulated, and a continuance of brisk times is sure to follow.

Florence, the actor, tells the following concerning Morse: "I can remember," he said, "years and years ago, going to a dinner down in Fourteenth Street, given to Morse, the telegraph inventor. He was an elegant old gentleman, but when he got on his legs to talk he was awful long-winded. I had a friend with me. We listened to Morse's speech, while he predicted great things for electricity. I remember that he predicted, too, that some day men would be able to talk over the wires for distances of fifty miles, and that every ship that left harbor for an ocean voyage would be connected with the land by wires. When he got that far, my friend said, 'What rot,' and we went out. I have often remembered how foolish his talk sounded to me. Yet it has been all realized, except as regards ships at sea. I believe even that will come about some day."—*Electric Review.*

California Redwood in London.

THE (London) *Timber Trades Journal*, in commenting upon the growing scarcity of fine quality wood for high-class joinery work, and referring to "redwood in the Chicago market," among other things quotes from a contemporary:—

Chicago, a town of little note twenty years ago, has now become one of the largest cities of the Northwest; situated in the center of teeming forests and fertile plains, on the banks of the vast lakes and their tributaries, it became the great store-house for timber, and farm produce as well. The forests in its immediate vicinity soon became exhausted, but abundance of pine, spruce, and hemlock, with other varieties, continued, and still continue to pour down the various rivers of which it forms the connecting point. Yellow pine, for many years, and still, an abundant commodity, was rising in price, as Chicago grew, and the higher or finer grades are now at a considerable premium on the values of other descriptions. To supply this apparent scarcity the Canadian forests became contributors to the Chicago market, and yet the calls were for more.

This is probably why the dealers are looking in the direction of the Californian forests for a supply of fine lumber to meet the growing wants, and by an abundant stock check the upward tendency of high class wood that is now so glaringly in contrast to the commoner grades.

Will the Californian wood do this? At present, from the remarks of our contemporary, sufficient redwood is not brought on the market to make it take a recognized place, and till the supply is of a regular character, with enough yarded to be relied on, no encouragement is given to the demand. Supposing the requisite stock is available in Chicago, or elsewhere, when the high values of the upper grades are so marked, we fail to see how the sequoia can supply the place of pine. The woods are essentially different. They hardly have a single attribute in common between them, beyond the absence of knots and sap. First quality pine, such as we see shipped at Montreal and Quebec, is a peculiarly, silky, soft wood, with a capability of being worked up to an even surface as smooth as glass, by the mere action of sand-papering.

Sequoia will not always show this smoothness; in fact, it is rather noticeable for its grain and dark color, another feature that removes it out of the path of pine. Pine is used for patternwork, and its whiteness is an advantage in making pencil marks, but the Californian wood is as dark as cedar, and the figure on it would be a decided objection to pattern-makers. Another thing, it is much heavier than first pine, sequoia being relatively 108.9; pine, 100. There are uses to which second quality and the other grades of pine are applied, the place of which sequoia could well supply, but its present price puts it quite out of the reach of consumers.

The London *Journal* adds:—

"We differ with our American contemporary, who only thinks that the Californian redwood will come into competition with the higher grades; probably the high price led him to take this view. As stated, we think it will never make headway, at any rate in this market, until it can be put in at a price that will come within the range of ordinary building woods."

"If sequoia intrinsically is as meritorious as the best grades of the deals supplied from Montreal and Quebec, with which it is to directly compete, when offered under the hammer it should go as freely. Of course it has the disadvantage of being strange to many in the trade."

OLD NEW YORK FIRE-PLACES.—On "Monday, October ye second," just 181 years ago, a Boston lady undertook a journey to New York City, an account of which was published in 1825, from a diary in the author's own handwriting, "being a faithful record of Madam Knight's adventures over 'that tract of country where she traveled about a fortnight, on horseback, under the direction of a hired guide.'" Madam seems to have been much pleased with New York, where she made many acquaintances amongst the good women of the city, "who courteously invited me to their houses, and generously entertained me." And her description of the city at that time is well worth reading. She says: "The Citty of New York is a pleasant, well compacted place, situated on a Commodious River, which is a fine harbor for shipping. The Buildings, Brick Generally, very stately and high, though not altogether like ours in Boston. The Bricks in some of the houses are of divers Coullers and laid in Checkers, being glazed look very agreeable. The inside of them are neat to admiration, the wooden-work, for only the walls are plastered, and the Sumers and Gist are plained and kept very white scow'd as so is all the partitions if made of Bords. The fire-places have no Jambs (as ours have) But the Backs run flush with the walls and the Hearth is of Tyles and is as far out into the Room at the Ends as before the fire, which is Generally Five foot in the Low'r rooms, and the piece over where the mantle tree should be is made as ours with Joyner's work, and as I suppose is fastened to iron rods inside. The House where the Vendue was, had Chimney Corners like ours and they and the hearths were laid with the finest tile that I ever see, and the stair-cases laid all with white tile which is very clean, and so are the walls of the Kitchen which had a brick floor. They were making Great preparations to Receive their Governor, Lord Carnbury from the Jerseys, and for that End raised the Militia to Gard him on shore to the fort."—*Weekly Statement*.

A Manual of Industrial Drawings for Carpenters. An excellent work, full of instruction. 176 pages, 6x9 inches, neatly bound. Price, \$2.00.

Not Published in Personal Interest.

EVERY fair-minded reader must have noticed the fact, and admit, that the conduct of this Journal has been absolutely free from any and all special reference that could be construed as being of *personal interest*, i. e., using its columns for the advancement of the professional interests of its proprietor. There has never appeared a single article or allusion which has given special prominence to our architectural department, more than has been freely accorded to each and all brother architects; and the same courtesies would have been cheerfully extended to every member of the profession presenting like opportunities, not excepting those of "spiteful turn of mind, who seem to be best pleased, and more in their natural element, when extolling and praising their own abilities, and aspersing, denouncing, and misjudging others. Sorry that this is so, but this Journal will not be affected by it, but will continue to live, prosper, and become more permanent with each year of its existence, nor change its course, whether it receives the frowns or smiles of those who from misjudgment, or motives of envy, jealousy, or otherwise, antagonize their feelings and withhold patronage.

We do not covet a single unkind thought from any one, and shall not intentionally provoke any, yet we do not expect to be able to skim along so closely to the line of perfection as to hope to be able to shape a course to the satisfaction of all. The best that any man can do will not be good in the eyes of every one. Humanity in some is exacting and merciless toward others, although none are exempt from human frailties, weaknesses, and faults. Still we shall do the best we can, hoping to receive all the encouragements our earnest efforts shall deserve, and as much more as our generous readers and the public may, in the magnanimity of their hearts and natures, see fit to bestow.

We have received from George Stinson & Co., of Portland, Maine, the well-known art publishers, a magnificent, full length, steel engraving of General Grant. It is after Anderson's celebrated photograph, which was made while the General was still in full vigor, and represents him in his sturdy, manly strength, as the people wish to remember him. It is, undoubtedly, the best portrait ever made of the General.

Messrs. Stinson & Co. are in need of agents for several important, popular, new publications, and offer inducements that should be heeded by those in need of profitable work. Those who write to them will receive, free, full particulars.

LEAD PIPE.—The Romans appear to have been acquainted with the use of leaden pipe, although they had not the appliances for fabricating any of large dimensions, or sufficiently strong to withstand pressure from the fountain head. In the museum at Cherchel is a piece of lead piping made by rolling a sheet of metal, turning the edge over, and then running molten lead along the joints.

Qualified and Competent Foremen.

EXPERIENCE proves that the right man in the right place, as foreman, to manage and direct operations in the erection of building, and in all kinds of mechanical works, is of the highest importance to all concerned—contractor, architect, and owner as well. To the contractor in two important respects: first, financially, as the profit or loss results are very materially affected by the right and proper management of the workmen, so as to obtain from them the full, reasonable, and right amount of service within the hours of labor. This can be done by a competent head man, without the workmen experiencing a sense of having been "driven"—urged beyond a fair application of his working abilities. The influence exerted upon a gang of men by a respectful, yet persevering and exacting leader, is great. Men worthy the name of mechanics will follow cheerfully when led by one capable of rightly filling the position of foreman, with a right understanding of human nature as found and developed among "gangs of men," and knowing how to sympathize or rebuke as may become necessary. While the good foreman needs to be firm, determined, and ever on the alert, the exercise of good judgment is of the highest importance, and a certain degree of patience is indispensable, for the purpose of pacifying and controlling, where petulance and harshness might vex and excite the inferior passions, and promote idleness and disinterestedness, to the financial disadvantage of the contractor. Secondly, if the foreman is not in every way qualified for the position, so as to be respected and promptly obeyed by the workmen, they become careless as to the quantity of work done, with more interest in pay-day, and the expected sum of wages at the end of the week, than anything else, while under the better condition of things individual interest is felt in the progress of the work each day, with pay-day as a known certainty when the week shall end.

To architects the good foreman is the all-important man—much more so in his place than the contractor himself, as the proper understanding and correct carrying out of the plans and specifications, as a rule, are intrusted to him. Mistakes are made or avoided according to the capabilities of the foreman, who is expected to lay out and dictate all measurements, and order and direct every department of the work. With a competent man, an architect's duties become infinitely more easy and pleasant, as the professional cares and anxieties are greatly modified when the management is in right hands, both as to quality of workmanship in general construction, and neatness and completeness in the finish. And to the owner, although perhaps ignorant of the numerous possibilities attending the erection of a building, the good foreman is all important, as the results for which he pays are materially affected by the qualifications of the man who directs the mechanical operations. It is possible for a foreman to do many mean

things, and incorporate defects, and hide them even from the closest scrutiny of the architect, to the injury of the owner's interests.

Eastern Competition in Wrought Iron Work.

THE facts brought out in connection with the "box girders" made East and shipped to San Francisco for use in the Union Club Building, and elsewhere noticed in this issue, are strongly suggestive, alike to "wrought iron workers," owners of property, tradesmen, general dealers, and business men. To wrought iron workers as suggesting the necessity for more complete and perfect arrangements, machinery, and appliances, enabling the handling, shaping, and dressing of heavy girders and all other description of works, to advantage, and doing all that can be done in any other part of the United States, as cheaply and as well, barring differences in cost of labor, and even overcoming that to a large extent, if not entirely.

A material difficulty in this connection exists in the fact that the number of shops and firms operating in this line are far too numerous for this city, except in extremely brisk times; that while there are two or three fairly equipped establishments, sufficient in appointments to supply all ordinary demands, or, in fact, anything that might be required of them in wrought iron work, there is no one firm or establishment of comparative "gigantic proportions" capable of taking hold of any work offered and defying all outside competition.

The freightage and handling expenses of plate iron in long lengths certainly should not be any greater, if so great, as that of heavy, manufactured girders. In this regard, the advantages should be on the side of our local workers, with which, as a fact, leaves all the advantages possessed abroad, in the more complete methods of working, and any difference that may be in labor and incidentals.

As far as owners are concerned, they have a partial right to do as they please in such case, that right being limited only to the extent of the personal obligation resting upon every man who has accumulated property in a community, to assist in strengthening and sustaining the surroundings, which give increased value to property; and every intelligent man must understand and admit that the retention and circulation of money within a community adds value to its real estate, as well as increased personal wealth,—considerations which largely or altogether regulate rental incomes; consequently it must be adjudged that they are more selfish than wise who spend their money in distant places that cannot, in the nature of things, be expected to return any direct or indirect advantage to the payor, beyond the primary savings in first cost.

Tradesmen, general dealers, and business

men are alike interested in the effects and results of every contract let to parties doing business outside the State of California, in that it removes money from local circulation, to other parts of the country, whence no return can be had or expected. The tradesman in our midst cannot spend that which he should have, but has not because sent to other parts, and the dealer and business man is short in his receipts just whatever of coin might and would have resulted to local trade in purchases that might have been indulged in, had the contract moneys been retained within local bounds and circulated among the working men and others in San Francisco.

The conclusion of argument in such cases must therefore be, that in the construction of building, it is right, wise, and best that every dollar paid by owners should pass into the hands of parties residing and doing business in, and having abiding interest in the welfare and prosperity of, this city and State. This proposition is sustained by every right, consistent, and self-preservative view of the case; and every contract let direct or through agencies, to parties or firms in other States, for materials or things manufactured that might be obtained in San Francisco, is, so far as its influence extends, a public injury.

Hard Wood Lumber.

THE progress of hard wood lumber manufacture has been steadily westward. New York and Pennsylvania were once the principal hard wood producing States. Then Ohio was invaded and largely stripped of its available timber. The Indiana forests have been exploited and nearly exhausted, and coming square up against the great savannas of the Mississippi Valley, which extend, practically unbroken, to the Rocky Mountains, the westward movement was checked. The stream was divided, one part turning to the north, into Michigan and Wisconsin, while the other and larger part has trended toward the southwest, extending into Kentucky, Tennessee, Mississippi, southern Missouri, Arkansas, and Indian Territory. These two divisions of the hard wood industry are for a long time to come to be competitors in the markets of the north, though the southern belt has some most valuable woods which the northern has not.—*The Wood-Worker*.

Masinissa, who died 148 B. C., deservedly occupies a conspicuous place in Roman history. Although a barbarian, he was free from the crime so common among uncivilized tribes. Fearless in war, generous in disposition, a good statesman, and firm in loyalty to his Roman allies during an unusually long life, Masinissa may fairly be considered the hero of Numidia. Like all his race, he drank nothing but water, and, at the age of ninety, was able to jump on his horse bare-backed. He left forty-four children.

Architectural Organizations.

WITHIN the past few years the interest in architectural associations in all the more rapidly improving sections of the country has greatly increased, and in the parts where architects are most active in this direction, there seems to be more life and progressive activities. The influence of such organizations is to drive out the narrower conceits of the mind and to develop more enlarged and broader views as to personal relationship and professional courtesies and practices.

That "there is nothing new under the sun" may be a verified truism in a general sense, as to principles and material things, but no one mind is so full of absolute knowledge as to be justified in claiming universal information upon all subjects, nor perfect understanding of all details of but few, if any. Hence, all unities and co-operations designed and calculated to harmonize views and sentiments, correct errors, and lead to right conclusions must be fruitful in good results.

The age is one of progression. The bound from the common conditions of forty years ago to those of the present day is grand and wonderful to contemplate. And in this mighty advance and overturning the science of architecture has shared a part and made its record, whether for the better or worse would require hundreds of pages to discuss in full. But this is certain, that those who permit themselves to drift and strand upon the barren rocks and ledges of absolutely selfish purposes and individualism, must expect to perish in their self-imposed and dreary isolation.

Skipper—Contractors, and Other Things.

ALL sections of the country seem to be more or less cursed with that class of unprincipled creatures known as "skippers," i. e., fellows who enter into contract obligations at any price, high, low, good or bad, as the case may be, so that they can secure to themselves the opportunity to handle and pocket coin, paying it out only as far and fast as may be necessary to mature other payments in greater amount than the aggregate of the sums paid out, until the chances to make other "hauls" are exhausted; then comes the *finale*,—the boss gone to parts unknown—skipped, leaving everybody to do the best thing possible under the circumstances. If a few of such rascals could be caught and strung up by the neck as an example, the morals of the contracting business would certainly be improved, and the world not be the least set back by the sudden disappearance of a score or two of such men.

There is a case related where one of the kind in New York contracted the erection of a lot of buildings, hiring and working a large force of journeymen, who, at the end of two weeks, were creditors for wages in the sum of nearly \$2,000, but the should-be payor, the contractor, was nowhere to be found—had "skipped"—and, when the owners were interviewed by the workmen, they were informed

that all moneys due had been collected by the absent one. The matter being referred to the Carpenter's Union, and a transfer of the indebtedness made to a delegate, a lien suit will be commenced to test the validity and soundness of the protective law, and trade interests generally will watch the result anxiously.

The Trade Unions in the Eastern cities are very diligent and exacting as to the strict observance of the rules adopted. The combination appears to be solid, and will likely so remain, so long as fairly brisk times continue; the only likely decline will result, if at all, under a general let down in activities, so as to bring about that wretched condition of things which has in former years spread want and privation among the laboring classes, and, in isolated cases, actual starvation. It is well and proper that men should combine for the purpose of determining and protecting mutual business rights and interests, but it is wise to temper prosperity with a great deal of good judgment and deliberation. Much more is permanently affected by a wise, moderate, yet solid and defensible course. When advantages are rendered tyrannical and oppressive, they invoke and excite prejudices and opposition, and when the occasion presents itself, retaliation ensues. That which is most to be desired is a right understanding between labor and capital—a harmonizing of the two material factors, so that each will feel its proper dependence upon the other, and neither seek to oppress.

"None Such"

Is the significant name of a ventilator and chimney top advertised by Kneass & Co., 29 Taylor Street, and which is very highly recommended, as, "No trouble to get up a good fire;" "Does all that is claimed for it;" "A thorough ventilator," etc.

It is so constructed by flanges and openings that the slightest currents of air from without and from any point, up or down, cause a vacuum and an upward and outward current of heated or foul air from within, doing all that any apparatus placed in open air for a ventilator can do, and more, because direct currents of air pass through it in greater volume than any other yet invented; therefore it is more powerful in operation, and is so constructed that the current of air from without passes through it and off in such a way that it is impossible to have a back draft.

It has no movable parts and cannot get out of order; no squeaking of rusty machinery; it is worth its cost simply to keep out the dampness when used as a chimney top.

The largest body of fresh water on the globe is Lake Superior, 400 miles long, 160 miles wide at its greatest breadth, and having an area of 32,000 square miles. Its mean depth is 900 feet, and its greatest depth is said to be about 200 fathoms. Its surface is about 635 feet above the level of the sea.

San Francisco's Sewerage.

THE universal and continuous outcry that the sewerage of this city is bad, is fully justified by the facts of the case. In some respects they are about, if not absolutely, the very worst to be found in any city upon earth's surface, with anything like equal, natural drainage advantages. Nature, or the power that caused the hills to raise their tops high above, the lower lands, left in the main but very few acres of level ground within the city's site the altitudes of the many hills varying from more than three hundred feet down to the bay-washed shores. In three directions,—north, south, and east,—the water-sheds and courses were originally exceedingly fine, and if even fairly clever civil engineering had been practiced in the establishment of street grades, and consequently the grades of sewers, our present dilemma would have been avoided. It is only fair, however, to remark here that the "established grades" are those foisted upon the city by a modifying board of civil engineers, who, for reasons, set aside the "original surveys" as made by Mr. Milo Hoadley, which utilized and equalized the cuts and fills; to produce that splendid system of inclines and grades which, if they had been carried into effect, would have made San Francisco's sewerage unsurpassed by any other city in the world.

The difficulties surrounding the case are irremedial, except the partial reliefs obtained by flushing and cleaning, which, unless constantly employed, afford but temporary and momentary remedy, unless, further, the wiser and only entirely correct and effective course, advocated by this Journal years ago, is adopted and carried out, i. e., to MAKE the grades of the sewers such as will meet the requirements and necessities of the case. There is a natural law or principle involved in this matter, which is absolutely arbitrary, and will not change to accommodate human views. It is all supreme nonsense and folly to say or think that sewers will run free, and clear themselves, when the lower portions lie at dead level for a distance of from 1,000 to 2,000 feet, particularly with the discharge or outlet end submerged below the surface of the waters of the bay, into which they empty, as is the case in this city. The debris from the higher parts is washed down to the level sections, where the more solid matter lodges and remains, settling and forming a dam, the lighter substances passing off in solution; and it needs only the exercise of the most ordinary intelligence to understand that, under such conditions, choked sewers are inevitable.

Had the suggestions made in this Journal five years ago been carried into practical effect, to wit: Take the grade of Dupont Street at California, with its eighty-six feet elevation, or modify that by raising Kearny Street ten feet, or even adopting the altitude of Kearny at California Street, thirty-five feet, as the high point of grade toward the sewer outlets, and following the same regulation corre-

spondingly around the other portions of the city, filling in and making a uniform slope in all directions; while the expense would have been very large, the benefits would likewise have been immense; and the cost much less than it would be to-day; and it will cost less if done now than at any future time, as every new building erected adds to the difficulties. The answer to this may be, It is a preposterous, monstrous proposition. The reply is, Be it so; it is nevertheless the only effectual means of remedying the most fearful, local, permanent evil and curse existing in San Francisco, and such it will continue to be until the heavy cost method of correcting the evil is adopted. Artificial means have been, and will continue to be, applied, but the ever-recurring results will be the same, no clean and clear sewers enjoyed, until the natural laws of gravitation are observed.

Master Painters' Association.

THE regular monthly meeting of the Association was held at its hall, 121 Eddy Street, on Tuesday evening, 1st inst., President Gallagher in the chair; Thos. Noble, Secretary.

Resolutions of condolence to the family of the late member, David Kanary, were adopted and ordered spread upon the minutes.

Report of committee on cards with sign signet, for the special use of the members, was adopted.

A communication from a member, J. F. Sullivan, containing resolutions and offer of co-operation by the master painters, with architects, owners and contractors, to check and prevent the numerous innovations upon the use of pure paint materials and good workmanship, was read and adopted. A committee of four, consisting of Messrs. Sullivan and Donovan, of San Francisco, and Messrs. Kress and Weissell, of Alameda County, was appointed to confer with architects upon the subject matter of the communication.

A vote of thanks was tendered the editor and proprietor of the CALIFORNIA ARCHITECT AND BUILDING NEWS for favorable notice of the proceedings and purposes of the Association.

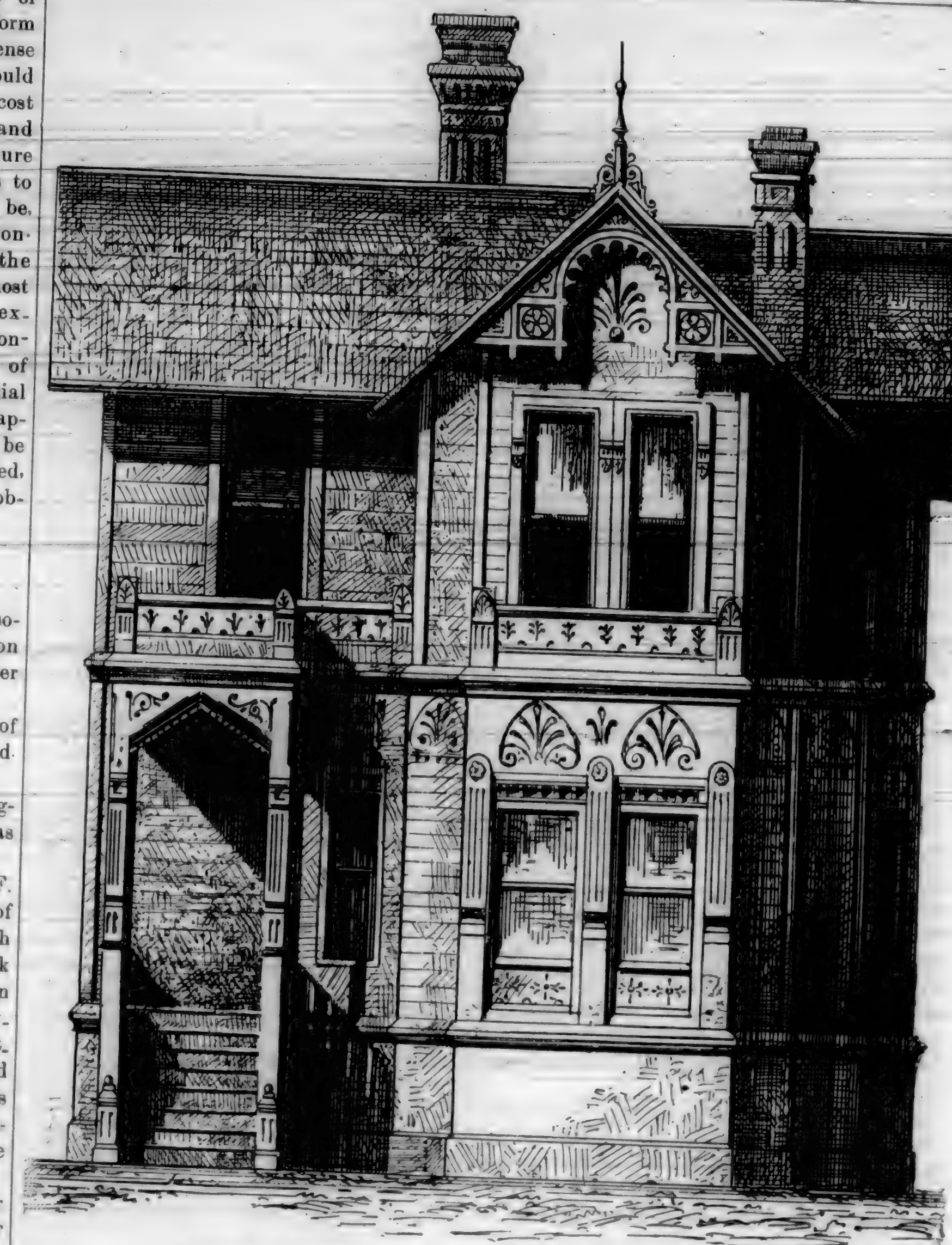
The resolutions offered by Mr. Sullivan, and adopted, read:—

To all parties interested in the building interests in the city and county of San Francisco,—architects, owners and contractors.

WHEREAS, The Master Painters' Association of the Pacific Coast being informed and knowing that adulterated paint materials, containing none of the elements of pure lead and oil paint, are manipulated and passed off as genuine in quality, and inferior workmanship imposed upon architects, owners and contractors by parties assuming to be practical painters, and

WHEREAS, It is the purpose and desire of the responsible portion of the craft, under the title of the "Master Painters' Association," to expose and prevent, as far as possible, a continuance and repetition of such wrong and demoralizing practices, therefore, be it

Resolved, That said Master Painters' Association tender its services, as an organiza-



FRONT ELEVATION OF A SUBURBAN DWELLING.—PLATE I.

tion, to owners, architects, and contractors, by competent expert representatives, duly appointed, to detect and expose all such improper practices in the future.

To accomplish this desired purpose, said Association requests that all owners, architects, and contractors who may become satisfied that wrongs are being practiced in the painting work of any building or works, to report the case to the Executive Committee of the Association at its rooms, 121 Eddy Street, second floor, whereupon said Executive Committee will forthwith designate two competent members of the Association to investigate the facts of the case, and report to the Executive Committee the result of their investigations, whereupon said Executive Committee will report the facts to the owner, architect, or contractor in interest.

Resolved, That it is not proposed to assume any dictation or control, or in the least interfere with the architects' duties, but simply to ascertain the true state of the case connected

with the painting work, and report accordingly.

Resolved, That neither owner, architect or contractor be charged for such expert services.

A NEW BUILDING MATERIAL.—A mixture of cork, silica and lime is coming into extensive use in Germany. It has the advantage of keeping out heat and cold, and is also claimed to be an excellent preventive of damp and defense of sound. It is substantial, light and durable, and seems to be especially adapted for ceiling and wall lining.

Kansas lands, in the last ten years, have yielded products valued at the enormous aggregate of \$1,046,262,264. Yet it is one of the youngest of the States. In 1883 the corn crop was nearly double that of any other State. It stands fifth in the amount of wheat grown.

Architectural Competitions in Disfavor.

THE general expression of architects in all parts of the country, as received through all journals published in the interest of architectural sciences, is very decidedly against the practice of plain competition. By all the better class of educated architects, it is regarded as demoralizing and unprofessional in character; a bartering away of professional skill at values fixed by men who seek to obtain a large amount of architectural work and service for an exceedingly small amount of money.

A most glaring wrong and injustice is shown by the fact that, in no case of competition, are the services and labors one-tenth part compensated, as a whole, induced by the invitations, sometimes studiously seductive, very generally thoroughly deceptive, in that representations are made, calculated upon fair interpretation of the language used, to impress the minds of men not posted in such matters, with the belief that a square deal is proposed; while in fact the arrangements and understandings are all well matured, if not absolutely completed with some preferred architect.

We will not go so far as to assert and charge that where committees are appointed by respectable bodies for the purpose of procuring plans, or boards of trustees, that all the members in either case are alike guilty and responsible for the numerous *bad things done*; but there is always one or more of the influential members who have friends to serve, or who, for other considerations, become very active, and manipulate influences by which they virtually control the whole matter, so that any or all parties not in such special influential favor, only waste time and skill, and secure to themselves disappointed hopes and expectations.

In other cases, the competition propositions are based upon fixed purposes and intent to beat some one; to find some fool willing to be little professional compensation to the rates of wages paid ordinary journeymen, house carpenters or brick masons. But such plan hunters sometimes pick up a boomerang, in the shape of badly damaged property, by bad planning and worse construction. And this fact is very certain, that, to include all plans made in competition during the past ten years, placing values thereon according to schedule rates, then add up all the monies paid as premiums, and all the regular fees received by architects, and divide the amount pro ratio among the plan-makers, and the result would not reach more than *one-tenth of one per cent* on the original estimated costs. If this is not demoralization, then that commolity is difficult of access.

The *Building Trade Journal* remarks on this subject: "This practice has been more fruitful than any or all others put together, in disappointments and loss to owners, by placing the erection of important work in the hands of inexperienced draughtsmen, or reckless, wire-pulling practitioners. It has resulted in a vast amount of bad building all over the country. Said a witty journalist: 'I always won-

der, when a new Court House is finished, that the people of the county do not hang the architect the first thing.'"

The president of a corporation employed a competition architect to design a building that cost \$100,000 more than the estimate (that is one of the tricks), which resulted in a large crop of litigation wherein the owner explicitly testified in court to numberless defects in plans, and finally remarked to one of the profession, "I do not think much of you architects any way." (Of course he judged all by the scrub type he had employed.) The apt reply was: "No wonder, considering the kind you patronize."

"But in regard to the general practice of architectural competitions, the impression is strangely prevalent that it cannot be overthrown; that it has always existed and always will; that it is the blood, so to speak, and cannot be cast out. Never was there a more unfounded delusion among a body of liberally educated men. So far from being a practice which has always existed, it is, with rare exceptions, an innovation of quite recent date. All the traditions of the profession, all its records of great achievement, are almost uniformly against it. Which of the notable buildings of the Middle Ages, the world-famed cathedrals, abbeys, castles, mansions, from the thirteenth century down to our own day, were designed in competition? How many of the great works of Michael Angelo, Bramante, Sansovino, Bernini, Scamozzi, the San Gallos, Palladio, Schenkel, Klenze, Labrouste, Duc, Duban, Sir Christopher Wren, Sir William Chambers, or any other of the great names of architectural history were obtained in a competition scramble? If these matchless monuments could be designed with a perfection and grace the world will never cease to admire; how can American architects maintain that a County Court House, or a club-house, or even an exposition building, cannot be properly planned without competition? The example of Brunelleschi with the Duomo of Florence, is often quoted in favor of competition, but this was an exceptional instance, and only proves the rule against the habit. If Brunelleschi was a competition architect, why was this the only instance of the kind in his work? Moreover, what achievements has the practice of competition to cite which will at all compare with these great works which have been designed without it? What record, indeed, of any kind can be shown for competitions except of great expectations and signal disappointments, of buildings which are architectural abortions, of intrigues, corruptions, scandals, and litigation?"

"The craze for competition is not an ancient and venerable custom which cannot be disturbed. In England it dates chiefly from the building of the new Houses of Parliament; in France, from the year 1860. All the great advances of the profession were made before it arose to disturb their peace—since then it has wrought only mischief."

"Nor is it true that competition is 'in the

blood,' nor that it is a feature of modern civilization, nor that, because it is 'the life of trade,' it is anything but ruinous to a profession. Competition is essentially unprofessional, and is endured at all only among architects. It is not found among lawyers, doctors, artists, civil engineers, nor in any of the other professions."

Many of the leading authorities among architects have already expressed their unequivocal condemnation of architectural competitions *in toto*. At the Convention of the American Institute of Architects in New York, in 1867, President Upjohn, one of the oldest and most eminent architects in this country, thus warned the profession against them:—

"I feel as if I should not fully discharge my duty to my younger professional brethren, if, after my extensive opportunities, and long experience, I should omit all allusion to a subject, the effects of which have, according to my observation, produced much evil, and only evil, to the profession. I allude to competition—a general competition—a sorry subject for architects. It burns the fingers of all those who meddle with it; it is a chronic infatuation, an *ignis fatuus*, a Will-o'-the-Wisp."

Now, my good friends, this species of infatuation (I can call it by no better name) should be shunned. I pray you to let general competition alone. Avoid it as an unclean thing, which can produce only heart-burning and disappointment; and, by abstaining, you will give it its death-blow."

Vice-President Hatfield and others have said: "Competition is a barrier to progress, second only to professional exclusiveness."

"Can that which engenders jealousy, false representations, misunderstandings, bitterness, dishonest propositions, and evil wishes be promotive of good, either to architects or architecture?"

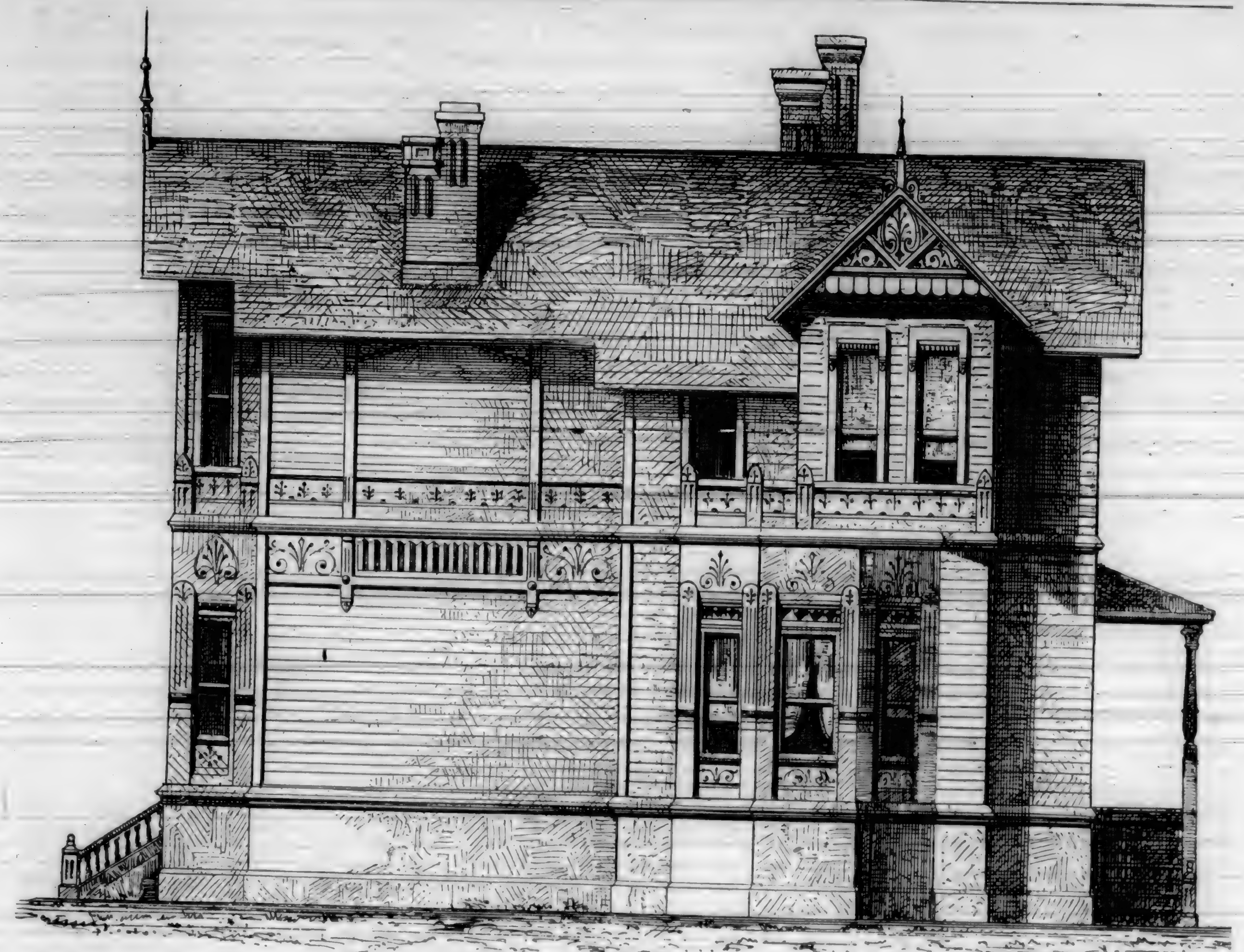
"By competition as now managed, we see that an unscrupulous competitor endeavors to rise by treading upon his fellow competitors."

"Those who allow themselves to be ensnared into its toils, soon lose their self-respect."

"Theoretically, competition is a fair method of estimating reputation, but practically it has been in nearly every case a failure."

The Toledo Court House, to cost \$500,000, was wisely given to a local architect without competition.

CRUSHING RESISTANCE OF BRICK.—Walls laid up of good, hard-burned bricks, in mortar composed of good lime and sharp sand, will resist a pressure of 1,500 pounds per square inch, or 216,000 pounds per square foot, at which figures it would require 1,600 feet high of 12-inch wall to crush the bottom courses, allowing 135 pounds as the weight of each cubic foot. Walls laid up in same quality of brick and mortar, with one-third Portland cement added, will resist 2,500 pounds per square inch, or 360,000 pounds per square foot, which would require a height of wall 2,700 feet to crush the bottom bricks.



SIDE ELEVATION OF A SUBURBAN DWELLING.—PLATE 2.

German and American Tools in the British Colonies.

A CORRESPONDENT writing from Auckland, New Zealand, to the *Sheffield Independent*, records the surprise he felt at finding American and German cutlery and hardware so generally adopted throughout the colony. He says that saws of all kinds, axes, carpenters' claw hammers, bench axes, adzes, garden tools, hay and manure forks, braces, etc., of American manufacture, are preferred to Sheffield goods. The American file manufacturers are coming to the front apiece, and unless the Sheffield makers put better steel into their mill saws and saw files, they will soon lose this trade. The imports of German and American cutlery, too, are largely on the increase. A much better price can be got for American articles than for Sheffield goods. A workman will give 7s. 9d. for an American hand saw rather than 5s. for an English one; 3s. 6d. to 4s. for a claw hammer rather than 1s. 6d. for English; 8s. for an American ax rather than 6s. for English. There is not much difference in quality between English and American

manufacturers; if there is any it is in favor of England, but in style and finish there is no comparison, the American being far ahead. Workmen say the Sheffield tools are so heavy and unmanageable that they soon get tired in using them, while American implements are so designed that a greater amount of work can be got through with much less fatigue. Another great factor in introducing American goods is the handy manner in which they are packed, card board or light wooden boxes being used, which are much more convenient than paper parcels. A storekeeper can show an American article in a moment, but an English one has to be denuded of two or three wrappers before it can be shown, and to save time and trouble the American article is first shown.—*American Inventor*.

DECORATED CEILINGS.—Interior decorations are being much more generally adopted. Plain white walls, without any reliefs, used to satisfy, but the improved tastes of the age call for a departure, and nothing adds more to general effect than a neatly, if not richly decorated ceiling.

Our Illustrations.

We present in this issue the elevations (plates 1 and 2) and plans (plates 3 and 4) of a medium-sized suburban dwelling. From the main hall on the first floor a direct entrance is afforded to the parlor, dining-room, and kitchen. An easy flight of stairs leads to the second floor, where the chambers, bath-room, and water-closet are situated, the latter being conveniently located off the hall. Plate 5 shows another arrangement of the first floor whereby one more room may be added if desired. The elevations are at once neat and attractive without being very expensive.

A lady on Marlboro Street who had summoned a plumber to remove a defunct rat from the wall, recently received a bill in which one item read: "To hunting up a smell and repairing it, \$4.00."

A Muskegon firm proposes to cut 115,000,000 shingles this season—more than any mill in the county has ever cut heretofore.

One Chinaman—Three Whites.

THIS is an approximately fair and safe proposition, in this way: each Chinaman engaged in manufacturing operations, whether as employer or employed, occupies the place of a white worker or manufacturer, and each white worker, as a rule, and as an average, represents not less than three in family, consequently every ten thousand Mongolians employed excludes thirty thousand of the white race thus inflicting privation and wrong upon the number so excluded, and imposing upon the communities or places wherein such exclusion exists, all the loss of acceptable population and trade transactions that result in such cases.

The Chinaman buys nothing from white sources that can be avoided; sells all that he can to white consumers; lives upon the products of China land, or those produced by China tillage and serving upon our own soil; saves all the money possible from his resources, and sends or takes his accumulations of coin to the flowery land of his birth, leaving, as the true record of his sojourn upon American soil, the fact that he added nothing to the wealth or morals of the country, but skinned out and carried away all that was possible to him.

The white man, on the other hand, if prudent, careful, and successful, saves his earnings, and invests them in a home, or, perchance, in other houses and lands, and so adds to the general prosperities. Or, should he not be of the thrifty kind, securing a home or other prosperities, still he spends and circulates his earnings, thereby adding greater prosperity to general business, and wealth to the scenes of his labors. Hence it may with propriety be said that one Chinaman equals three whites, based upon present existencies, and, if viewed in the light of posterity, the comparison is increased beyond calculation, for, in the one case, there is a continual waste and injury, while, in the other, a perpetual growth and benefit ensuing down through generations. From this standpoint of facts, which cannot be assailed or controverted, it is proper to say that Chinamen, as a rule, are human leeches upon the interests of any country or community, outside of their own, tolerating them, ever extracting, and drawing from, and inflicting moral and commercial injury. Every act, thought, impulse, and feeling of their natures are supremely selfish—personally and nationally.

The Dome of St. Paul's, London, is 370 feet high, and its weight 17 tons per square foot of base.

The Dome of St. Peter's, Rome, is 430 feet altitude, and 14.7 tons pressure per square foot of base.

The Merchant's Shot Tower, Baltimore, Maryland, built of brick, is 246 feet high, and pressure at base, 61½ tons per square foot.

Science of Architecture.

(Special for this Journal. By F. Hillert, Architect and Mechanical Engineer.) (Continued.)

A SPECIAL attention is required for an arrangement to dampen or moisten the entering air. The reproach made against the air heating, that the air is "dried out," is perfectly unfounded. By the heating of the air, the same becomes relatively drier, but it is immaterial if the same is heated in a room to 20° by a separate oven, or by any other means; the effect will be the same. That air heating acts more as a drier than any other system is mainly due to the high ventilation connected with air heating, and therefore is an artificial dampening with this, as with any other system required, when a powerful ventilating arrangement is connected with

HOT WATER HEATING.

According to the temperature to which the water, by special arrangement of the system can be heated, there is, accordingly (1) low pressure or water heating, warming the water to 100°; (2) high pressure or hot water heating, warming the water up to 200°; (3) middle pressure heating, warming the water up to 120°.

I. LOW PRESSURE OR WATER HEATING.

The main component parts of the water-heating system are: The apparatus for heating the water (heating boiler), which is placed in the lowest part of the building, and is of a suitable construction to economize the fuel; the lowest position is selected to obtain a quicker circulation of the water, the equilibrium of the same being disturbed by the different temperature, causing a circulation of the water columns in the distribution and return pipes; to the heating boiler are attached the conducting pipes, connected with the heating body (heaters) placed in the rooms to be heated, and the return conducting pipe fastened to the heater, taking the water therefrom down to the heating oven, completing the circulation (by the different temperature) of the water; and, lastly, the expansion vessel and the air-conducting pipes.

In regard to the horizontal expansion of the system, the heating boiler should, if possible, be placed in the middle of the arrangement, when, by it, the capacity of expansion of the system in horizontal direction is conditioned. Under a medium proportion (for not too high or too low a column of water), the maximum of horizontal extension of the system can be taken about 200 meters.

The calculations for the warm-water heating boiler are not only made for the consideration of the needed transmission heat for the rooms to be warmed, but also in regard to the time required in which, from the commencement of the daily firing up, the heating of the higher rooms is accomplished. This time depends, besides on the transmission to the rooms, on the amount of the water contained in the system. The same is, for the decision on the size of the boiler, on the highest measured, by

three hours. The quantity or the amount of water in the whole heating system is measured by the kind of building, on the uniformity of the heat to be distributed in the rooms, requiring a large reserve of heat or heat-supplying capacity of the system; consequently, the more water boiler and heaters must contain.

We can assume that 1 square meter direct heating surface can extract 10,000 units of heat hourly from the fire gases, to be transferred to the water for heating purposes. In shape the boilers can vary; the best are the smoke or tubular boilers, but the latter only when the flames strikes square on the tubes, and is not conducted parallel to the same.

The disposition to be made for the conducting of pipes can be arranged in a double manner, namely, the warm water can be conducted direct up to the highest point, and thence in a horizontal direction for distribution to the different separate places needed; the string of pipes, therefore, should not be above 60 to 80 meters long, measured from the boiler; or the horizontal disposition can be made below the lower floor, and thence the warm water in ascending is conducted to the places for use. The last arrangement deserves a preference for small extensions, but it cannot always, for want of space in the building to be executed.

The horizontal pipes are run covered, and are protected from cooling off by being served with non-conducting material; the vertical pipes can run in recesses, etc., of the walls and be secreted; to keep tight joints, the same must be screw joints. The conduit of the pipes starts at the highest point of the boiler, must ascend continuously to the highest point of the arrangement, respectively, of the heaters, and from them descend continuously, to enter the lowest point of the boiler.

The bore of the pipes is determined in a practical manner, by taking for each square meter heating surface for the ascend and descend pipes an average section of 0.7 to 0.89 square meter (0.10 to 0.11 square inch), and for the main ascend and descend—back conduit—pipes 0.6 to 0.7 of the whole surface of the heating body.

The air accumulated in the system escapes to the highest point, and is collected and conducted to the expansion vessel and discharged by air cocks, etc. The material applied for the conducting pipes is copper or iron; the latter is recommendable for many instances; wrought iron is preferable to cast iron; lead should never be used, nor leaded joints be made. For pipes of small diameter screw joints are to be recommended; for larger pipes, joints made with flanges, with a rubber ring inserted between them.

The heating bodies have the purpose to abstract the heat required from the water to warm the room, by being transmitted to the surrounding air. For the calculation of the size of the heating bodies, the following formulas can be applied; they have been given before, but for convenience and comment are repeated:—

$$M = 124.72 K a t (\sqrt{T-t} - 1) + 0.552 K_1 (T-t)^{1.328}$$

M is the emitted heat per hour per square meter surface; K, a coefficient depending on the condition of the surface of the heating body, and has for common use the following values:—

Polished brass, 0.258	Polished black
Copper, 0.160	sheet iron, 0.450
Zinc, 0.240	Roasted sheet iron, 3.36
Tin, 0.215	New raw iron, 3.17
Common iron, 2.77	Roasted " 3.36

K is a coefficient depending on the form and extension of the surface, and has the value for a spherical surface of radius r.

$$K_1 = 1.778 + \frac{0.13}{r}$$

For a horizontal circular cylinder of radius r.

$$K = 2.058 + \frac{0.0382}{r}$$

For a vertical circular cylinder of the radius r and the height h

$$K_1 = (0.726 + \frac{0.0345}{\sqrt{r}}) (2.43 + \frac{0.8758}{\sqrt{h}})$$

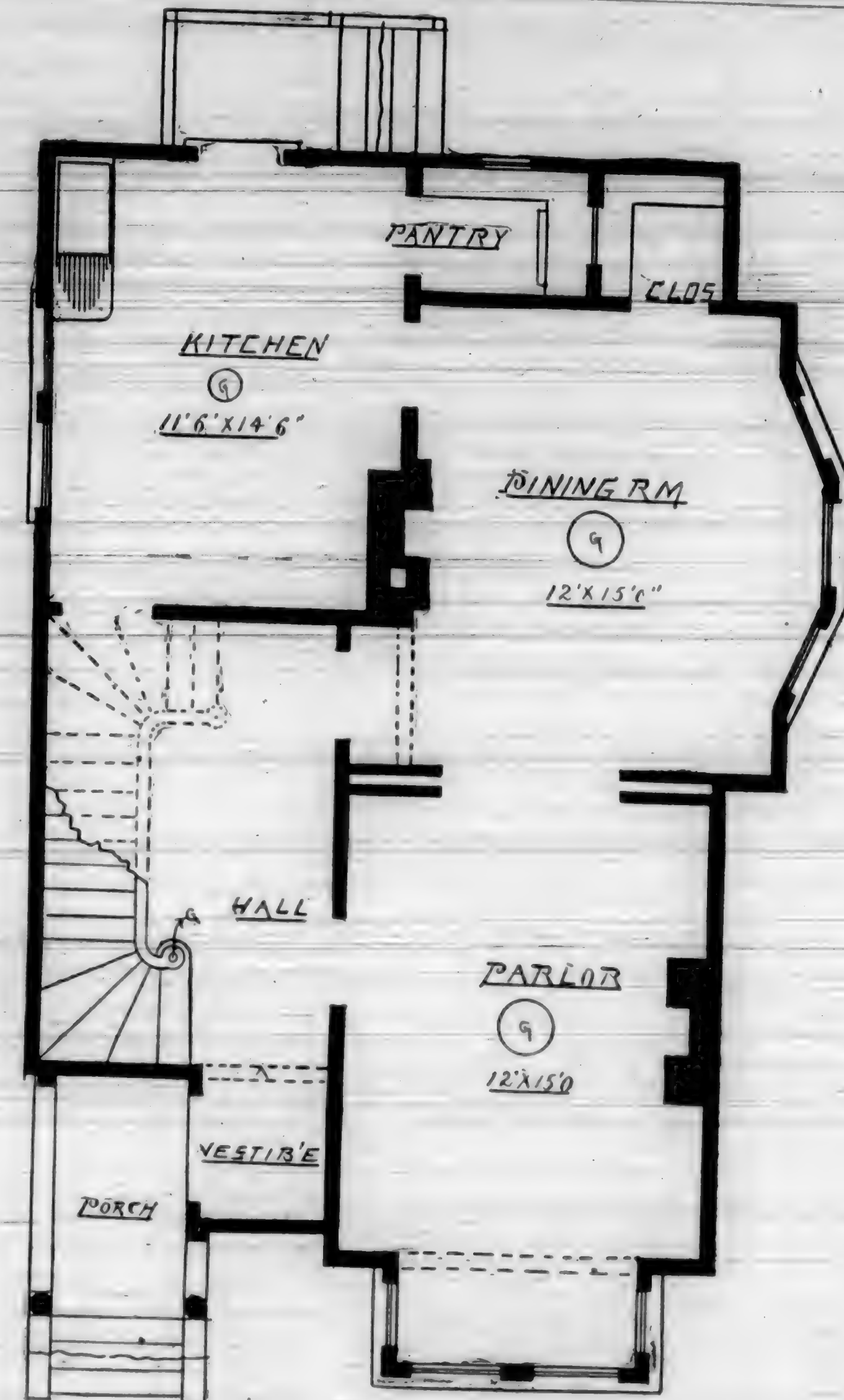
T is the temperature of the heat-delivering surface; t, the temperature of the heat-absorbing air; a, a constant = 1.0077.

From the above formulas we learn that the form and extension of the heating body, and the condition of the surface of the same, bears a large influence on the emission of heat. It is necessary for the execution of an arrangement to decide approximately, according to the form and condition of the heater, the different temperature the water obtains in the different stories of the building, for the emission of heat in heater, and afterwards to calculate the proportionate sized corrector. For the first approximate projection and estimate of cost we can take, that the heating body, for an equal-sized and equi-distanced heat-accumulating and heat-distributing surface, is capable to give over, on the average, for 1 square meter per hour 300 units of heat to the atmospheric air of the room.

In form heaters are different; a full, round water body, upright or horizontal pipes, put together and to be an ornament to the room they are placed in.

The disposition and placing of the heater in the room is rather free; large heaters are placed in the corners, smaller ones—register—in niches, under window sills. Care must be taken that the radiating heat emitted is made useful, and that by closing up with screens, etc., the air circulation is not impeded.

In connection with the heater a stop-cock must be put in, to stop the circulation as a whole or in part, by which a regulation of the temperature can be effected. The flue boilers and the conducting pipes should be constructed so strong as to stand a test, before setting the arrangement in use, of five atmospheric pressure. The expansion vessel serves to take the increase of volume of water by expansion, which is 0.003 of its volume for 1° C. The vessel must have a space not only to take this increase in volume, but, besides, for a constant quantity of water of 100 mms. (4") high above the bottom (for the settlement of any sediment) and a volume of 100 to 200 minims



FIRST FLOOR PLAN SUBURBAN DWELLING. PLATE 3.

(4" to 8") high as a surplus of height, serving against over-boiling caused by the rising steam bubbles.

Self-evidently the expansion vessel has an overflow and discharge to regulate the state of water to the height desired. The expansion vessel fulfills, besides the purpose of discharging the air and steam from the arrangement, the control of the height of water in the system. The same is located above the highest point of a string of pipes, and is connected with it by a branch pipe. It is not closed, and can therefore keep the water in the heating boiler by that much over 100° heated, equivalent to the pressure of this column of water resting in the boiler; and this is the characteristic sign of the low pressure heating system.

II. HIGH PRESSURE OR HOT WATER HEATING.

The important component parts of the ar-

angement are: (a) the heating oven or the fire coil; (b) the conduit of pipes; (c) the expansion apparatus.

(a) The fire coil consists of a coil of pipe of 34 mms. (1 5/16") outside, and 23 mms. (3/4") inside diameter (tested for 250 atmospheric pressure). The construction of the fire-oven and the form of the fire coil are very variable. The main consideration is, that the best abstraction of the heat from the fuel is obtained, which, besides other things, conditions that the heating oven must be a countercurrent apparatus. The length of pipe for the fire coil is decided by the quantity of heat required for the rooms to be heated. For calculation it can be taken that one running meter (3.18 ft.) of pipe of the above make can take up easily 500 units of heat, to be delivered to the water in the coil. In this approximate, the losses of

heat, the beginning and high heating are included.

Many fire coils can be interwoven one between the other, to be cleaned from a common hearth, and be connected in such a way that the water in the first coil, after passing the rooms to be heated, can enter the second coil from below, then the third, etc., and, after passing the rooms from the last coil, can enter the first coil below, to repeat the circulation of the water over again.

The fire coil, with its conduits of pipes, is called a system; the whole length of the same should not exceed 180 meters (575 feet); the shorter the better.

The conducting pipe is of the same caliber as the fire coil, starts at the upper end of the latter, passes through the rooms to be heated, and connects again, on its backward conduit, with the lower end of the fire coil.

For the circulation of the water in the pipe it is of advantage to conduct the hot water in the same to the highest point of the arrangement, and only on the return to the boiler is it passed into the heating coil of the heater placed in the rooms for the abstraction of the heat. The heating coil can be placed in a convenient position in the room, or in channels covered with grating.

Since a hot water heating apparatus consists only in an uninterrupted line of pipes, the heated water in the circulating coil must pass all the rooms. By the insertion of a three-way cock the water in the run can be connected with the heating coil, or the same may be closed and the water turned into the cock-run. The disconnection of one room increases the heating capacity of the others.

The heat emission capacity of the pipes is calculated by the formula for water heating; approximately, can be taken on an average that in a system the emission of heat per one meter of pipe is 95 to 100 units, the room having a temperature of 20°. The distribution of pipes must be done, not according to the mean value, but according to the value of emission for one unit of length for the whole length of pipe, where the whole length of the system, height of air circulation, horizontal extension, the turns and bends of the conduit, are to be considered.

The tightening of joints is executed by making universal joints with right and left threads; no tightening it off by other means must be used.

Before putting the arrangement to use, the system must be tested under a pressure of 150 atmospheres.

The filling up of the system with water is done from the lowest point, which must be done carefully, and all air expelled from the cistern before being heated, avoiding explosion of the fire coil.

As much as 200 tons of terra-cotta have been used in the Potter Building, New York. The building is 165 feet high and has eleven stories and two stories below the surface. The fronts of the first and second stories are of cast iron.

Fall of a Solid Stone Staircase.

A VERY unusual building accident happened in an interior town of France, some months ago, which illustrates anew the importance of employing competent and careful architects in the erection of public buildings, and of the exercise of constant care in constructions which are commonly supposed to be especially substantial. In the eulogies so often met with, of the superiority of European buildings to those of this country in regard to solidity of construction, we are frequently told of the stairways, which are built of solid stone, and which are at once assumed to be absolutely secure from danger. Yet it was precisely such a stair of solid stone steps, built into the solid walls of the Court House, in the small city of Thiers, France, which gave way suddenly when filled with people, and caused the shocking death of twenty-four victims, and the maiming and wounding of one hundred and fifty more. The particulars are briefly these: The stairs were very wide, and each step, consisting of a single stone, was imbedded in the wall of the building at its outer end, while the other end, by a sort of dovetail construction well understood by stone masons, rested upon the step below without other support. There was a light iron balustrade to guard this side of the stairs. An interesting trial was in progress in the court room on the second floor, and early in the morning a large crowd had gathered in the building awaiting the opening of the upper doors. Of these, it is estimated that as many as five hundred had gathered on the stone stairway. There being some delay in the resumption of the proceedings, the crowd on the stairway began to manifest its impatience by stamping. Suddenly there was a crashing sound under their feet and the whole stair gave way and sank into the pit below, with all the crowd of men, women, and children who were on it and under it. It is seldom that a more distressingly painful accident occurs, even in this land of reckless building. While few people realize the fact, it is nevertheless true that the lives of a community are almost, or quite, as completely in the care of the architects they employ, as of their physicians—with this very serious difference, that, while a doctor's mistake seldom costs more than one life at a time, a single slip of an incompetent or cheap architect may result in the slaughter of hundreds of innocent victims. There is one other difference, that, while most intelligent people are prudently shy of cheap doctors, many of them think that when an architect is wanted, any Bohemian who can make an excuse for a plan, and who will work for a day laborer's pay is good enough for them.—*The Building Trade Journal*.

The latest door-knob device we have noticed is one operated by pressing on a button in the center of the knob, similar to the ordinary electric button, but the knob itself remains stationary.

Ancient Cisterns and Cements.

SOME few miles west of Bougie are the scattered remains of the ancient Tubusuptus, the modern Tiklat. The side is strewn with Roman stone. The walls of the great cisterns are still standing, consisting of 15 galleries, each being 116 feet by 13 feet 9 inches, and about 20 feet deep. The dividing walls are 2 feet 9 inches thick, built of rubble, but carefully constructed. These great reservoirs are a peculiar feature in North Africa, being found, some in fairly perfect condition, on the outskirts, or frequently within the walls of nearly every town. Those at Carthage, for instance, known as the smaller cisterns, to distinguish them from the larger series, which may be assigned to Punic times, are even now in good preservation, although built with small and irregular-shaped stone. The hardness of the mortar here, as elsewhere, is very noticeable; and the cement lining, known as *opus signinum* extremely thin, and made of crockery shards, is of so hard a texture as to be broken with great difficulty. The secret of mortar composition appears to have passed from the Romans to the Arabs, who still employ the same ingredients in the construction of arches, terraces, and cisterns. The composition appears to be one part sand, two parts wood ashes, and three of lime. After being thoroughly incorporated, the mixture is beaten for three days and nights with wooden mallets, sprinkling a little water, and at times adding a small quantity of oil, till the whole becomes of due consistency. In the jointings of pipes, also, the Arabs follow the method of the Romans, beating together two, and lime with oil, and without water. The composition speedily assumes the hardness of stone and is impervious to water.

Owing to the shutting down of Western nail mills, pending the settlement of the wages question, nails have become scarce, and the price has advanced. Eastern nail mills are taking advantage of the situation to do a rushing business. One mill recently had to decline an order for 50,000 kegs.—*American Machinist*.

A building was in process of erection opposite a public building in Washington City. One of the clerks who had been looking out of the window for some time, said to another clerk who was reading a newspaper:—

"I have been watching that workman over there for half an hour, and he has not done a lick of work in all that time. I wonder what he gets paid for?"

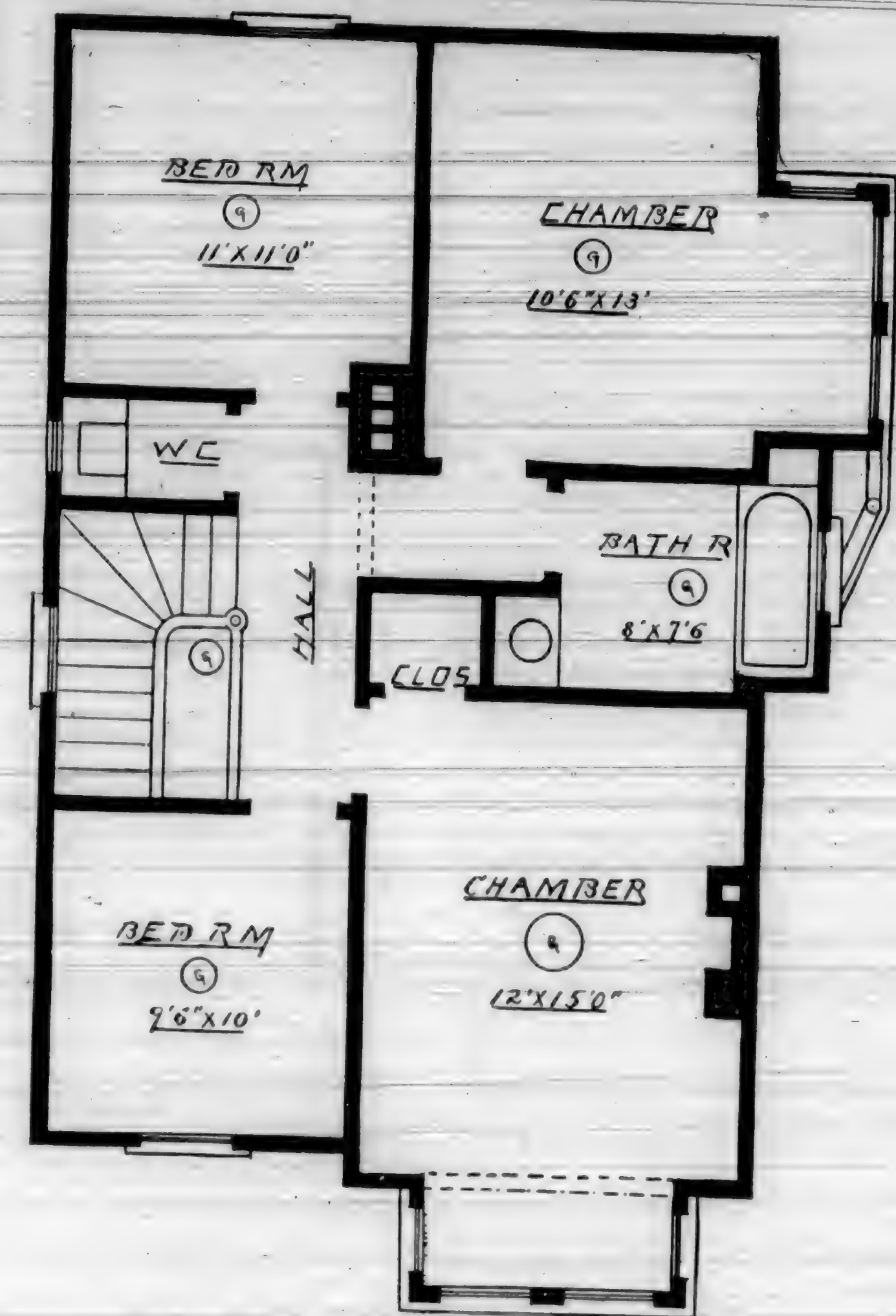
Just about the same time the workman remarked to a fellow workman:—

"Just look at that government clerk over there. He hasn't done anything except look out of the window for the last half-hour. No wonder the country is going to the dogs."—*The Wood-Worker*.

To darken light mahogany and cherry, bichromate of potash dissolved in water is excellent, and gives it the appearance of age.

Porcelain Portrait Oil Painting.

FIRST, procure the portrait that you wish to print (a bust cabinet picture of the head and shoulders is the best), and lay it in a dish, on pan of soft water, and let it soak until the thin paper that the photo is taken on will remove easily from the card on which it is pasted. Now procure a piece of glass the size of the paper removed and with flour paste (strained through a cloth) paste it on the glass, the print side down; now hold the glass in one hand and with the fingers of the other rub on the back of the print, commencing at the head of the portrait and rub around and around until you reach the edge of the glass, rubbing out all blisters and surplus paste. When the paste is thoroughly dry, take a piece of fine sandpaper or emerypaper and sandpaper as much of the paper from the back of the print as you possibly can, without cutting through the print to the glass on which it is pasted. Now procure a little Cosmoline from your druggist, and rub this over the back of the print and hold it over a stove and warm it in, until you make the photo transparent so that you can see it as well from the back of the glass as you can from the front. Now it is ready to commence painting: procure two or three small camel's hair brushes with hair about one-eighth of an inch long and about as large around as a knitting needle. First mix a little white lead with boiled oil, two parts, and Japan dryer, one part (use oil and dryer to mix all of your colors with), with your small brush and a little of the white paint just make a little dot on the small white spot that is found in the sight of the eye of the photo (this is called the high light); mix a little black and paint the sight of the eye around the little white spot that you have made; if the eyes are blue black, brown, or gray, mix a little paint as near the color of the eye as possible and paint the rim or circle that surrounds the sight of the eye with it; now mix a little vermilion red and white together and paint the lips. If there is any jewelry represented in the photo, paint it yellow. Now procure another piece of glass the same size as the one you have and clean it off well; now cut four pieces of blotting paper each one-eighth of an inch wide and two inches long, paste one of these on each edge of the glass, the same side that your photo is pasted on; paste the top of these papers and lay on your other glass so that the edges are even; cut four strips of writing paper about three-fourths of an inch wide and two inches long, paste one of these and stick it to the upper glass allowing about one-third of its width to lap on the glass, press it closely over the ends of the glass and lap the remainder on the under glass; paste one on each end of the glasses. This will bind the two glasses together. Royal Glue for sticking and binding the glasses together is recommended. Now with a little white paint paint on the back of the (in painting hold the glass toward the light) last glass the white of the eyes; mix a little burnt Sienna and Naples yellow and white together,



SECOND FLOOR PLAN OF A SUBURBAN DWELLING.—PLATE 4.

making a flesh color, paint all the flesh that is shown in the photo. With a little vermilion red paint the cheeks right on top of the flesh color just put on and rub this with your brush until it shows to suit your taste from the front of the glasses. Now mix up colors to match the hair or beard and clothing, and paint them. Paint the background any color to suit your taste. When done, if the colors do not suit, you can rub them off with a rag, and mix and try again. When completed place in a velvet frame and you will have one of the nicest oil paintings you ever saw.

A singular building operation is now in progress in Boston, where the old Masonic Temple, recently occupied by the United States Court, is in process of being replaced by a modern dry goods store. The structure stands at the corner of two of the principal streets, one of which, after the usual Boston fashion, had been widened through its whole length, except at the corner in question, where, either on account of the ownership of

the land by the United States, or by reason of the cost of altering the old building, the city authorities had been unable or unwilling to change the original line. As the building thus projected three or four feet into the street, constituting a disagreeable obstruction, the new owners, who bought the property from the United States, reflected that if they were themselves to demolish the old Temple, which was perfectly useless to them, the city government, seeing the land cleared, would probably seize the opportunity, while there was no building on it, to condemn enough of it to complete the widening of the street. Although they would, of course, be compensated for the land taken, the reduction in the size of the intended store would be a serious detriment to their business, while the very widening of the street would deprive them of the benefit of that advertising which a store prominent enough to block the way in a crowded thoroughfare always gets; and they resolved to manage their building operations in such a way that there should be constantly on the

land a structure so large and costly that the city authorities would hesitate before incurring the expense of demolishing it. With this idea the work was begun by piercing the walls of the old Temple near the ground, and inserting needles, with shores outside and inside sufficient to take the whole weight of the superstructure; and removing the foundations, to replace them by the foundations for the new building. As these approached the sidewalk level, it became necessary to commence the second and more hazardous portion of the undertaking, which consisted in raising the Temple about fifteen feet, so as to allow the work of the new building to be carried on under it. Boston is somewhat noted for the skill of its building-movers, and although the old Temple was by no means a credit, in point of construction, to the masons who built it, having walls of rather incoherent rubble, faced with the "saw-tooth work" which pleased the unscientific fancy of our grandfathers, the contractor in this case contrived, by putting timbers across the windows, and tying them together, to convert the shell of the building into a reasonably rigid box, under which were placed 300 jack-screws, resting on the piles of timbers, which by this time had replaced the shores. The work of lifting was then intrusted to six men, whose duty it was to go steadily around the building, giving each screw, as they reached it, a quarter-turn. When the screws had been turned to their full length, about fourteen inches, more timbers were inserted, and the screws were reset for another lift. So far, the work has gone on with perfect success, and by the time the old Temple has ceased to be of service in protecting its owners against the economical city authorities, the new building will be far enough advanced to take its place.—*American Architect and Building News.*

Book Learning.

PROFESSOR HUXLEY says: "I do not say that knowledge is not an extremely good thing; but if a man is to make a good workman, or to do anything in practical life, you must give him an education that fits him for the conditions of life with which he has to deal, and you will give him an education by filling his head with a number of intellectual abstractions, or even by giving him the largest acquaintance with scientific principles. And I think it is a profound mistake, considering the career to which the majority of artisans or persons in that class of life are necessarily bound, ever to take them out of the wholesome discipline of practical contact with the realities of life, for the mere sake of giving to them a greater or less amount of knowledge. A man who is inclined to do so may always pick up knowledge, and he may do so at the same time that he is getting his education, in the highest sense of the word, out of his contact with the realities of his daily life; but if you make a book-worm of him, if you take him away from all that contact with reality

and turn him back afterwards into it, he has lost touch of life. I have had to do with mankind in many stations in life, and it seems to me that what is wanted in a foreman is a man of energy, punctuality, business habits, and power of dealing with men, all of which things are not to be got out of books or laboratory work. These qualifications are the most essential qualifications in a foreman, and what you want besides in such a man is not book learning, but an intelligence sufficiently trained to be able to deal with new conditions, and an amount of knowledge sufficient to enable him to know where to go and find more if he wants it."

Facts Worth Knowing.

A CUBIT is 2 feet.
A pace is 3 feet.
A fathom is 6 feet.
A span is 10½ inches.
A palm is three inches.
A great cubit is 11 feet.
A league is 3 miles.
There are 2,750 languages.
Oats, 35 pounds per bushel.
Bran, 35 pounds per bushel.
Barley, 48 pounds per bushel.
A day's journey is 33⅓ miles.
Two persons die every second.
Sound moves 743 miles per hour.
A square mile contains 640 acres.

A storm blows 36 miles per hour.
Coarse salt, 85 pounds per bushel.
A tub of butter weighs 84 pounds.
Buckwheat, 52 pounds per bushel.
The average human life is 31 years.
A barrel of rice weighs 600 pounds.
An acre contains 4,840 square yards.
A firkin of butter weighs 56 pounds.
A barrel of flour weighs 196 pounds.
A barrel of pork weighs 200 pounds.
Slow rivers flow five miles an hour.
Timothy seed, 45 pounds per bushel.
A hurricane moves 80 miles per hour.
A rifle ball moves 1,000 miles per hour.
Rapid rivers flow seven miles per hour.
A hand (horse measure) is four inches.
Electricity moves 288,000 miles per hour.
The first lucifer match was made in 1829.
Gold was discovered in California in 1848.
The first horse railroad was built in 1826-27.
A mile is 5,280 feet, or 1,760 yards in length.
Corn, rye, and flaxseed, 56 pounds per bushel.
The first steamboat plied the Hudson in 1807.
A moderate wind blows 7 miles an hour.
Wheat, beans, and clover seed, 60 pounds per bushel.
The first use of a locomotive in this country was in 1829.
The first almanac was printed by George Von Purbach, in 1640.
The first steam engine on this continent was brought from England in 1753.—*American Inventor.*



ADDITIONAL PLAN, FOR FIRST STORY, SUBURBAN DWELLING.—PLATE 5.

The Boston Society of Architects have held council in the matter of more nearly equalizing the rates of professional compensation, by increasing charges on all work costing less than \$10,000. The proposition is a fair and just one, as the expense of preparing plans, specifications, and details for buildings of moderate cost very nearly equals those costing more than the sum named; and the work of superintending is but little greater in the more costly than in the cheaper class buildings. Certainly the expense to an architect in preparing plans, specifications, and details for three separate and distinct buildings, costing an aggregate of \$20,000, is very much greater than those for a single building costing the same sum, and the value of time consumed in superintending the three, is infinitely more than for the single building. Consequently at five per cent in both cases, the compensation in that of the three would fall, comparatively, far below that of the single building. And five per cent being no more than should be paid by owners in any case, the regular fee of five per cent would be a hardship upon the architect.

The responsibilities and duties of architects are greatly undervalued, and the importance to owners of securing the services of a competent, experienced, and qualified man, overlooked. The miserable idea of economizing in the matter of architectural services, is a mistake that has caused thousands of owners to regret their folly. And it is a firmly established fact that the practical damages sustained by owners, to more or less valuable property through this sort of false economy, amounts to millions of dollars each decade of time. The shortages in rentals, loss of time in renting, the inferiority of the class of renters, and the diminished selling value of the property, on account of wretched planning and bad construction, in buildings planned by and erected under the superintendence of second to tenth rate architectural pretenders, in thousands of cases, amount yearly to several times more than would have paid the full schedules to competent architects. The owner who, for one moment, permits the consideration of economy to intervene in the selection of an architect, does a very unwise thing.

POLISH FOR MARBLE.—One-half ounce of magnesia; two ounces oxalic acid; one pint of warm rain-water. Use a white woolen cloth.

METHOD OF DEADENING SOUNDS IN BUILDINGS.—General M. C. Meigs, writes to the *Sanitary Engineer* as follows in reference to an article on deadening the sounds from water-closets, which appeared in a late issue: "I have found it impossible to make myself heard by a person on the other side of a large window, double glazed, interval between panes seven-eighths of an inch. Glass is very elastic, and should, I suppose, therefore, be a good sound-conductor. But the voice cannot be heard through two sheets of ordinary French window-glass separated by seven-eighths of an inch of air. In this, I think, may be found a hint for shutting off sound."

LEAD POISONING FROM A PAINTED WATER TANK.—Dr. Bartley, chemist to the Brooklyn Board of Health, reports an interesting case of lead poisoning which was caused by using water from a tank on shipboard, which had been painted nine months before with red lead.

The case was that of a Norwegian vessel which reached the port of New York with all the officers and crew more or less seriously ill from lead poisoning. They were removed to the Long Island College Hospital, where one of them subsequently was seized with convulsions and died. The curious element in this case is the fact that the water tank, which had been painted while the vessel was at Copenhagen, should have been used without any evil consequences during several voyages, having been several times filled at certain ports at which the vessel stopped. It was only after having the tank refilled at Cadiz, and after having proceeded on her voyage for some time, that the symptoms of sickness began to manifest themselves, when one after another of the crew sickened, until all were affected, with the result previously mentioned. Meantime the vessel had touched at several South American ports, where the tank had been again refilled several times. No less than nine months, as above mentioned, had elapsed between the time of painting the tank and the first outbreak of the malady, the tank in the interval having been in constant use.

To account for this anomalous circumstance, Dr. Bartley supposes that the first few times the tank was filled, it was with hard water—containing carbonates—the result being the formation of an insoluble film of carbonate on the surface, which protected the lead beneath from solution and the water from contamination. Later a softer water was probably used—containing nitrates and nitrites—which are known to have a marked influence on the corrosion of lead pipes, and which would act in a similar manner upon the lead paint. The circumstance is instructive, as exhibiting very strikingly the danger of using lead paints for such a purpose as that herein described.—*Manufacturer and Builder.*

OLDEST HABITATIONS IN AMERICA.—Major Powell, Chief of the Geological Survey, who has been about a month in the field, has discovered in New Mexico, near California Mountain, what he pronounces to be the oldest human habitation upon the American continent. The mountains in this vicinity are covered with huge beds of lava, in which the prehistoric man and his comrades excavated square rooms, which were lined with a species of plaster made from the lava, and in these rooms were found various evidence of quite an advanced civilization, among them a species of cloth made of woven hair, and a large number of pieces of pottery. In the sides of the rooms cupboards and shelves were excavated. In one room, sticking out of the bare face of the wall, was a small branch of a tree. When this was pulled out, it was found

that there was a hollow space behind the wall. Colonel J. H. Stephenson, Major Powell's assistant, broke this with a pick and found a little concealed niche, in which was a small carved figure resembling a man done up in a closely woven fabric, which with the touch of the hand turned to dust. It was blackened and crisp, like the mummy clothes of Egypt. In all, some sixty groups of these lava villages were found, there being twenty houses in each group. The evidences of civilization were similar, but removed by their crudity and evident want of skill a good deal from the articles found in the cliff houses which have been so fully written up in the reports of the geological surveys.—*Santa Fe New Mexican.*

DISCOVERY OF A ROMAN RACE-COURSE AT NANTES.—Archaeological researches have recently revealed in the neighborhood of Nantes the existence of a race-course of presumably Roman origin. The foundations of the hippodrome occupy an area of about 223 by 174 meters. Further discovery has been made in the vicinity, of an ancient roadway leading to the Loire, near the banks of which river traces of a number of villas prove the existence of a buried city, inasmuch as a theater capable of accommodating 4,000 persons has been brought to the light of day. A quantity of ornaments, jewels, and pottery has been recovered among the ruins. Thus far the absence of coins has frustrated the endeavors of savants engaged in unearthing the relics to establish the epoch of this most-recently-found city of the Roman occupation.—*New York Evening Post.*

BROWN STAIN FOR WOOD.—A brown stain for wood for the imitation of oak, walnut, and cherry-tree wood is obtained by thinning ordinary tincture of iodine with alcohol, more or less being added of the latter according as a lighter or darker shade of brown is desired. The stain should be applied with a broad brush or a rag. After it has dried, the work should be polished. It is possible, however, to dispense with ordinary French polish by adding white shellac to the stain. One or the other of these processes of polishing is indispensable to give permanency of stain.

Nothing definite has yet been reached regarding a proposed cable street railway at Washington, D. C. The route embraces the central, southeastern, and northeastern sections of the city. It will be a cable road about seven miles long, and the estimated cost is \$536,000. The road is to begin from the Bank of Washington, and will take in the museum, the Soldiers' Home, the new Catholic University, Glenwood Cemetery, Government Printing Office, the jail, workhouse, the Congressional Cemetery, the navy yard, etc. The commissioners were favorably impressed with the measures proposed by the company at a recent meeting.

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Market, bet. Seventh and Eighth. Two-story frame. O. J. J. Donovan. Day's work. \$1,000.	Sacramento, bet. Fillmore and Seaver. One-story and basement frame. O. Mrs. J. W. Cherry. A. B. M. D. & Son. C. Casabianca & P. Azier. \$3,000.
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Mission, nr. Twenty-first. Two-story frame. O. Peter Unrath. A. Daley & Praun. C. J. Bamber. \$4,000.	Twenty-third, cor. Chattanooga & Adams. O. M. F. Gale. Day's work. \$800.
Nineteenth, cor. Church. Two-story frame. O. Geo. L. Long. A. J. T. Kidd. C. A. Jackson. \$1,400.	Taylor, nr. Broadway. Additions. O. H. McCoy. A. T. D. & J. J. Newsom. C. W. Hall. \$3,000.
Noe, nr. Eighteenth. One-story frame. O. F. Jonetti. Day's work. \$1,200.	Twenty-fourth, bet. Mission and Capp. Two-story frame. O. and B. A. Roberts. Day's work. \$2,000.
Pine, cor. Scott. Two-story and basement frame. O. Mrs. Caro Morse. A. J. H. Littlefield. C. Bateman Bros. \$4,700.	Twenty-fourth, nr. Mission. Two-story frame. O. and B. A. Roberts. Day's work. \$2,500.
Pine, nr. Buchanan. Two-story frame. O. C. H. Syk s. C. A. Ackerson. \$3,000.	Valencia, nr. Sixteenth. Additions. O. H. Carroll. Day's work. \$900.
Pierce, cor. Golden Gate ave. Two-story frame. O. Susan McGlunn. A. T. J. Welch. C. E. & F. J. Owens. \$3,500.	Vanderwater, nr. Mason. Two-story frame. O. Joe Cuneo. Day's work. \$1,500.
Page, between Devisadero and Broderick. Two-story frame. O. S. D. Sweetzer. A. Townsend & Wyneken. C. A. H. Plummer. \$5,000.	Valencia, nr. Sixteenth. Additions. O. J. T. Farrell. Day's work. \$600.
Stockton, nr. Montgomery Avenue. Two-story frame. O. Mrs. A. Mann. C. J. E. Alexander. \$2,500.	Walnut, nr. Sacramento. Two-story frame. O. H. Bank. C. Crawford & Marshall. \$2,000.

OAKLAND.

SIXTH, cor. Broadway—2-story fr; cost, \$5,000; o. H. Davis; a. Curlett & Cuthbertson; c. W. A. Griffith.	SEVENTH, nr. Washington—3-story brick; cost, \$10,000; o. Bucknath; a. Matthews & Son; c. Remillard Brick Co.
WASHINGTON, nr. Seventh—3-story brick; cost, \$25,000; o. S. Hancock; a. J. Marquis; supt, C. W. Crmsby.	FRANKLIN, cor. Sixth—3 1-story ctygs; cost, \$5,000; o. W. Collins; a. C. Mau; c. J. Todd.
SEVENTH, cor. Castro—2-story fr; cost, \$3,200; o. J. Rackliffe; c. J. E. Kane.	THIRTEENTH, bet. Clay and Jefferson—Additions; cost, \$2,250; o. H. Brussil; c. Peter Ahern.
HIGHLAND PARK—1 1/2-story fr; cost, \$3,500; o. N. R. Johnson; c. A. W. Pattiani & Co.	TWELFTH, nr. Grove—1-story fr; cost, \$3,000; o. F. H. Smith; c. A. W. Pattiani & Co.
SAN PABLO CROSSING—1-story cty; cost, \$2,000; o. H. Westphal; c. A. W. Pattiani & Co.	UNION, nr. Eighth—2-story fr; cost, \$2,300; o. and b. J. W. Armstrong; day's work.
CENTER, nr. Tenth—1-story cty; cost, \$2,000; o. Miss Mary J. Watson; c. J. C. Johnson.	FOURTEENTH, cor. Harrison—2-story fr; cost, \$3,000; o. Katie Fitzgerald; c. J. Spencer.
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TWELFTH, cor. Harrison—Additions; cost, \$1,500; o. A. C. Dietz; c. J. A. Benham.	TELEGRAPH AVENUE, cor. William—Alterations and additions; cost, \$2,000; o. F. Delger; day's work.
FREDERICK, nr. San Pablo Avenue—2-story fr; cost, \$3,600; o. Mrs. Dellehante; a. Matthews & Son; c. Jas. Toohig.	EIGHTH, cor. Adeline—2-story fr; cost, \$4,000; o. J. P. Riley; a. Chas. Mau; c. Jas. Toohig.
TWENTY-SIXTH, nr. Market—1 1/2-story fr; cost, \$1,200; o. M. Carroll; c. W. H. Griffin.	TWENTY-SIXTH, nr. Market—1-story cty; cost, \$1,000; o. H. L. Wallace; c. R. A. Pritchard.
TWENTY-SIXTH, bet. San Pablo ave and Market—1-story cty; cost, \$1,000; o. C. E. Powell; c. J. C. S. Whalin.	SAN PABLO AVENUE, cor. Thirty-fourth—2-story fr; cost, \$3,000; o. Dr. Young; c. R. Jackson.
PERALTA, nr. Union—Additions; cost, \$1,000; o. David Demmorest; c. Dorrell & Smith.	HOLLIS, nr. B—Additions; cost, \$600; o. A. C. Bryan; day's work.
UNION, cor. Peralta—1-story fr; cost, \$500; o. and b. Jas. Harmon; day's work.	SIXTEENTH, nr. Park—1 1/2-story fr cty; cost, \$1,600; o. and b. A. R. Dow; day's work.

ALAMEDA.

DWIGHT WAY, nr. Cottage ave—2-story fr; cost, \$2,770; o. C. F. Wilkinson; c. A. W. Pattiani & Co.	SANTA CLARA AVE, bet. Walnut and Willow—1-story cty; cost, \$2,000; o. C. Thompson; c. C. H. Foster.
SANTA CLARA AVE, nr. Webb—2 2-story ctygs; cost, \$6,000; o. W. Hess; a. Geo. E. Voelkel; c. A. Knapp.	MORTON, nr. Central avenue—1-story cty; cost, \$4,000; o. H. Stark; c. C. Shaner.

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SAN FRANCISCO, October 26, 1885.

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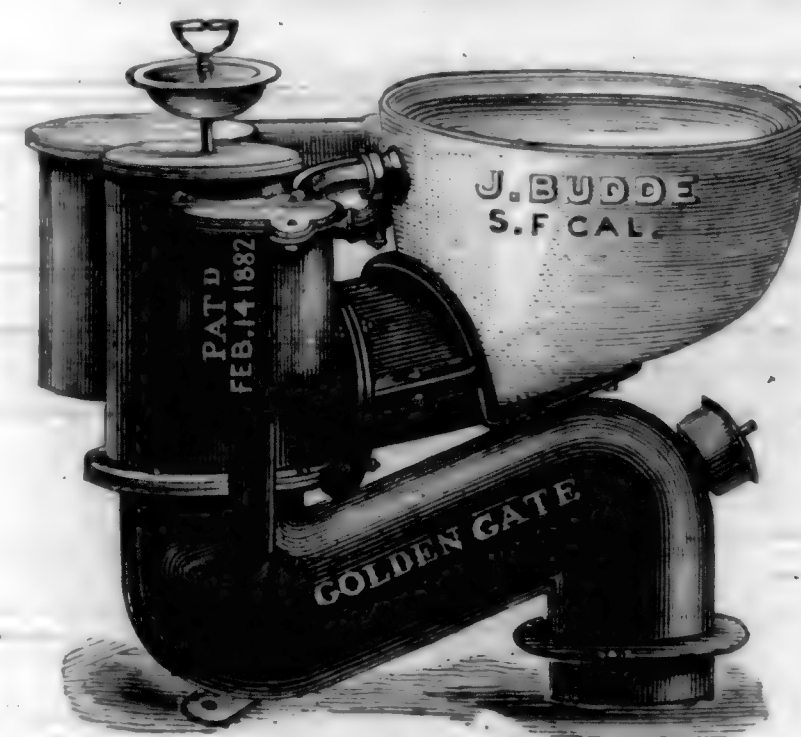
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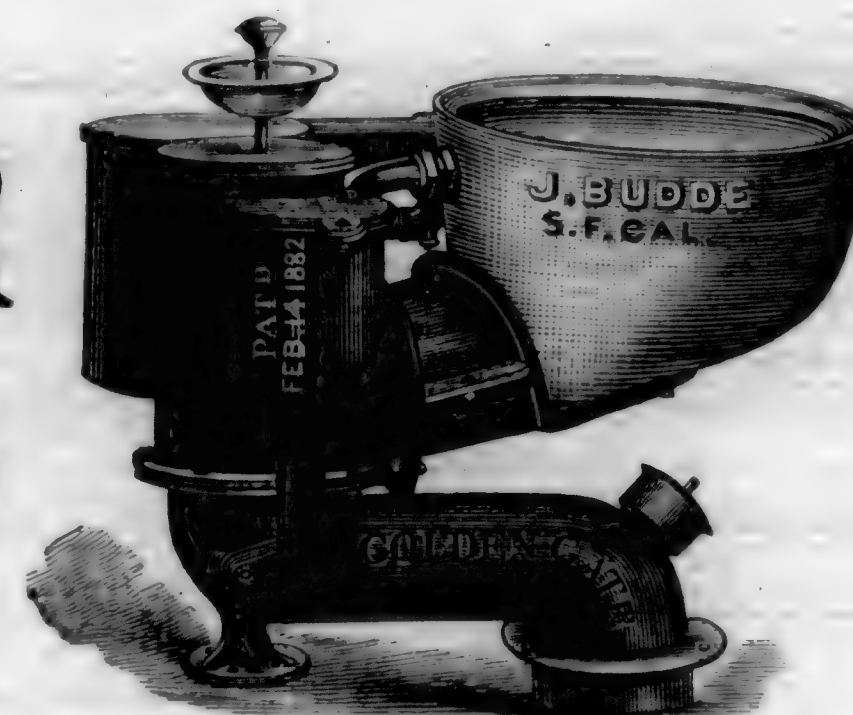
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WATER CLOSETS



WITH TRAP.



WITH OFFSET.

The Golden Gate Plug Closet.

This Closet is the best of its kind, having been so far constructed, it has the following advantages:—

1. It has a simple, strong valve, suitable for any pressure.
2. It has a real sanitary overflow, a copper float attached to a bell of the same metal resting on face of the brass overflow pipe, operated by the rising of the water in the closets above its level, thus absolutely preventing any escape of sewer gas, even the closets being without water.
3. It has no dead corner, consequently no foul water will be left in the closet after the lifting of the handle. A constant rush out of the flood chambers will keep the closet and trap perfectly clean.

This Closet takes the lead; it has been sold since February, 1885, in large quantities to the best satisfaction.

THE COMBINATION HOPPER.

This hopper is constructed to take 2 1/2 inch pipes, one to the right and one to the left and a 4 inch leader in the center. It has also a movable strainer on top to take the surface water. The lower part of the hopper with side outlet is to be connected with the sewer pipe, either right or left. The upper part is independent from the lower, and is made to swivel, therefore it will suit either position of pipe. This hopper can be used only for surface, for waste, or for leader; either inlet will be stopped up with iron caps if so desired.

PACIFIC PAN CLOSET.

This Closet is superior to all others, every working part and bolt being made of brass, closet and valve extra heavy casting. Particular attention is called to No. 4. This Closet has an oval basin fastened to the cover by brass clamps and bolts. No breaking of putty joints required to renew a pan. The loosening of two large brass nuts will separate cover with basin from the receiver. It has a heavy nickel plated cup and pull and solid brass rod. These Closets have been in use since February, 1885. Plumbers and wholesale dealers give them the best recommendation.



Square Slop Hopper. Square Waste Hopper. Basket Hopper.

Basket Hoppers are made in one piece with Movable Strainer.

Side View, Combination Hopper. No. 126 FIRST STREET, SAN FRANCISCO, CAL.



No. 4.

TITLE THE CALIFORNIA ARCHITECT AND
BUILDING NEWS

FORMERLY THE CALIFORNIA ARCHITECT AND
AUTHOR BUILDING REVIEW
FORMERLY THE QUARTERLY ARCHITECTURAL
REVIEW

VOLUME VII

DATE 1886

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THE CALIFORNIA ARCHITECT AND BUILDING NEWS.

VOLUME VII.

ENTERED AT POST-OFFICE, SAN FRANCISCO, AS SECOND-CLASS MAIL MATTER. ESTABLISHED JANUARY, 1870.

NUMBER 1.

THE California Architect & Building News.

A MONTHLY JOURNAL.

Devoted to Architecture, Decorating, and Furnishing.

PRICE, \$2.00 PER ANNUM.

The official organ of the Pacific Coast Association of Architects. Published by the SAN FRANCISCO ARCHITECTURAL PUBLISHING CO. No. 240 MONTGOMERY STREET, Rooms 11, 12, 13.

Subscribers will please notify us promptly of any failure to receive this journal, and also of any change in their address.

Advertisements inserted at reasonable rates.

SAN FRANCISCO, JANUARY 5, 1886.

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WHOSE who labor to make human actions harmonize, find great difficulty in piecing them together and causing them to assume the same gloss; for in general they contradict each other in so strange a way that it seems impossible that they should have issued from the same workshop.—*Montaigne*.

WHEN we truly and earnestly aspire to be, that in some sense we are; the mere aspiration, by changing the frame of the mind, for the moment realizes itself.—*Mrs. Jameson*.

ONE principal point of good breeding is to suit our behavior to the three degrees of men—our superiors, our equals, and those below us.—*Swift*.

RECTITUDE is the first law of the gentleman: When he says "Yes," it is law; and he dares to say the valiant "No," at the fitting season. The man of rectitude will not be bribed, it is only the low minded that sell themselves.—*Smiles*.

SCIENCE has been well defined to be knowledge reduced to order; that is, knowledge so classified and arranged as to be easily remembered, readily referred to, and advantageously applied.—*C. Davies*.

The Year Begins Well.

SUMMARY OF BUILDING INTELLIGENCE FOR JANUARY, 1886.

62 Frames, total cost	\$265,150
4 Brick	247,000
13 Alterations and additions	111,100

79 Total cost

FOR SAME MONTH IN 1885.

62 Frames, total cost	\$236,850
2 Brick, "	314,000
9 Alterations and additions	39,300

73 Total cost

Less errors in published statement, Jan., 1885

Correct totals for January, 1885

By the above it will be seen that the building activities for the month ending with present issue leads the same period of 1885 by \$45,535.

Its Seventh Volume.

WITH present issue commences the seventh volume of this journal as a monthly, and its eighth, including the quarterly of 1879. As will be noticed, the enlargement, commencing with present number, increases the length of the book two inches, thus adding 576 inches of additional printed matter each month, the number of pages being as heretofore, thirty-two.

Early in its history it was recognized, and by action of San Francisco Chapter confirmed as the official organ of the profession on the Pacific Coast, which enviable recognition it continues to enjoy, and no effort in the future, within possibilities, shall be wanting in rendering it worthy of that distinction.

Situated as we are, far distant from the great principal centers of commerce, manufacturing, building, and other great interests and enterprises of the country, and at the extreme westerly terminus of communication across the American Continent, with not a foot of territory between us and the setting sun, short of the shores beyond the broad waters of the Pacific Ocean, other than the intervening islands; with mountain ranges and vast spreading, barren plains, separating us from advantages at easy command to all our Eastern contemporaries; with entire lack, or high cost of many facilities and things necessary in making up an acceptable journal, its great success is phenomenal.

Sir F. Buxton has well said: "The longer I live, the more I am certain that the great difference between men—between the feeble and the powerful, the great and the insignificant—is energy, invincible determination, a purpose once fixed, and death or victory. That quality will do anything that can be done in the world, and no talent, no circumstances, no opportunities, will make a two-legged creature a man without it."

It was the spirit of the above quotation that influenced the founding of *this*, the first journal published upon the Pacific Coast, in the interest of architectural and building sciences, and that too under the most forbidding and unpropitious circumstances and conditions, within and without—has sustained it, lo, these seven years, and will be its inspiration in the years to come.

Whatever of abilities or talent may have been lacking in the past, there has been no absence of honest purposes and desires. The great ambition has been to establish permanently, a class publication devoted to the interests represented in this journal, and such has been accomplished to an extent magnificently beyond the expectation of thousands who, in the days of its beginning, doubted the possibility of permanency. But it has been done, and all things considered, fairly if not handsomely done, and, although "the future is a great land, a man cannot go around it in a day, cannot measure it with a bound, cannot bind its harvests into a single sheaf, and is wider than the vision, and has no end," its hopes inspire and its promises encourage earnest, persevering effort, the fullest developing possible of which the patrons of this journal may expect to realize during the year just entered upon, of which the present issue is the representative number.

Wishing happiness and prosperity to one and all of our kind readers, we ask a return of the consideration, in a renewal and continuation of subscription and advertising patronage, and the generous support that has heretofore come to us from all quarters.

Lien Law Decision as to Proper Time of Filing Lien.

THE Supreme Court of California has rendered an important decision in the case of Perry, Woodworth & Co. vs. Brainard, which definitely settles a feature of the lien law which has been a subject of innumerable disputes, some holding that the maturity of claim, by delivery of materials, or the completion of a sub-contract was sufficient without regard to the completion of the building or works; an error also entertained by lawyers not well posted in this department of legal practice, as was manifestly the case with the legal minds who advised and misled the plaintiffs in the above action to file a lien

prior to the proper time, and then further inducing their clients to reject the common-sense and logical decision of the Superior Court Judge, and still further advise an appeal to the court of last resort, only to meet defeat and heavy cost, which in such cases are generally considerably weighty.

The decision of the lower court was that the lien sought to be enforced by the action had been filed *prior to the completion of the building*, and was therefore prematurely filed. Such being the case, judgment was rendered in favor of the defendant and against the lienors. This not being satisfactory, the case was appealed to the Supreme Court, which tribunal confirmed the judgment of the Superior Court.

In support of the decision, Justice Ross—Justices Myrick, McKee, Sharpstein, and Thornton concurring—quotes from the lien law: "Every original contractor within sixty days after completion of his contract, and every person save the original contractor, claiming the benefits of this Chapter, must, within *thirty days after the completion of any building, improvement, or structure, or after the completion of the alteration or repairs thereof, or the performance of any labor in a mining claim, file for record*," etc., and make the "within thirty days after completion," the groundwork of the decision. Other cases of similar import are mentioned, denying the existence of "privity of contract between the owner of the building and the sub-contractor, but the sub-contractor's rights are based simply and solely upon his contract made with the contractor."

The decision further says, by the contract, the owner agrees to pay a certain sum and "this sum is a fund which may be held under the statute for the payment, *so far as it will go*, of all the various sub-contractors, for work and materials furnished by them to the contractor, who is the principal and head of all; and all the parties entitled to payment or contribution out of this fund should be able to reach the fund and get their *proportionate shares*." "One contractor ought not to be able to reach this fund and appropriate it to the extent of his claim before another sub-contractor should reach it, for if the fund *should not be sufficient* to pay the claims of all the sub-contractors, then each should be paid only a *proportionate share thereof*." "The amount of all the claims of all sub-contractors can be ascertained only after all the work and materials have been furnished, and after the building has been completed, so far as the contractor is required to complete the same; for the whole of the work may in fact be done by sub-contractors only, or the last item of work performed or materials furnished may be performed or furnished by a sub-contractor. The building in such a case will be completed by a sub-contractor, and the sub-contractor completing the building or furnishing the last item of work or materials therefor, is entitled to his proportionate share of the general fund, equally with the sub-contractor who furnished the first item of work or materials, or any intermediate portion thereof."

Building Prospects—1886.

AS a matter of course, all statements reaching beyond the present hour, are more or less speculative and hypothetical. But well trained human judgment may safely venture to step a little beyond the limits that hold the future in abeyance, and surmise the probabilities that are to be. The past and present are the measures by which the future may be measured and weighed, and upon which results yet unborn may reasonably be predicated and predicted.

There have been but few years since the organization of this State, in which all the conditions have been more favorable at the commencement of the year, for general prosperity throughout the State.

Timely and abundant rains have gladdened all hearts, in cities and country districts, and the common feeling everywhere prevailing is buoyant and cheerful. Large crops and harvestings are confidently anticipated, and the promise of abundance in all directions seems assured. As a natural sequence, confidence and hope abound in all circles of active life, and the opening of the year 1886 is full of prospective blessings.

Among the prominent good influences affecting and producing this desired state of things, is the turn matters have taken in regard to the Chinese labor question. The monster evil had settled down in our midst, taken strong root, and was fast sending its tendrils into every field of labor, trade, and commerce, until it became bold and defiant, and put forth its shoots in an arrogant strike, demanding the discharge of white men, and asserting the Mongolian right to control at least the cigar manufacturing trade. The serfs and slaves of the six companies felt that they

had their fingers firmly fixed upon the throat of labor, with power to crush out all opposition, and master the situation. But the daring, aggressive move made was a grand mistake against the invaders of labor rights, and resulted in the overthrow of a gigantic Mongolian combination. And the outlook to-day for Chinese labor is more gloomy to them than it has been at any period in the history of the State.

The feeling inspired by the results in this connection is of the most pleasing character, and one of the immediate effects is the substitution of several hundred of our own race, some of them with families, as permanent, congenial fellow-citizens, instead of a like number of human beings having no sympathy with the laws, institutions, or welfare of our common country, beyond the mercenary purposes and perversions ever present with that people.

These facts in this connection are material only so far as they bear an influence upon the future of San Francisco, which they do in this wise: that every white person added to population, as against a Chinaman, is a gain in a general sense, as each individual so added becomes a consumer of American product, while the Chinaman spends nothing that can be saved and carried away to his foreign home.

But the more desirable feature of the case is the influences that flow from this improved condition of things; the healthful feeling incited, not only among the working people, but among employers and manufacturers, who feel a relief in the break that has been made, which foreshadows a redemption from the thralldom that has rested upon them, and the prospect of freedom from that cruel competition which so sternly threatened destruction to honest white effort in legitimate pursuits.

Following the movement of the cigar-makers will be the other branches of manufacture, so much demoralized by the invading hordes of Chinamen. The boot and shoe trade, from men and women's fine work, down to common slippers, is largely in the hands of Chinese operatives, and together with many other branches of manufacture, demands the pruning knife of reformation. And as one by one, the white men, girls, and boys reassert their rights to perform such labor, and purify the present polluted streams of operations, a more healthful state of affairs will arise, and, with the Mongolians gone, a bettered condition of things will come to pass, and brighter skies will span the heavens of manufacture and labor upon the Pacific Coast, and lead to numerous building improvements.

All this foreshadows the better future, and points to increased wealth among the working classes, and increased demands for white men's homes. Aside from all this, with the large amount of building done during the past five years, there are comparatively few houses to rent. This fact presents encouragement, and with the low price of all kinds of building materials, and the abundant supply of mechanical labor, it is fair to anticipate a prosperous year in building pursuits.

Without committing the unwarranted error indulged in by some of our daily contemporaries, of inflating prospects by statements of "contemplated work," much of which, as published, not likely of consummation, we may state the assured fact that a goodly number of plans are in preparation in architects' offices, and the outlook for spring is good.

Royal Institute of British Architects.

THE journal of proceedings is regularly received at this office, and contains much of interest, as showing the earnest interest taken by the members in matters pertaining to architectural sciences. The fact cannot be successfully controverted that all such organizations, properly conducted, are a source of special profit to every active member, of general benefit to the profession, and from which the building community derives great advantage.

Stand by the California Journal; Besieged But Not Dismayed.

WITHIN the past sixty days, the Pacific Coast cities and towns, especially San Francisco, have been *fairly flooded* with thousands of sample copies of Eastern class journals. They have been sent from every section of the United States where such journals are published, done up in best possible style, and with every attention to appearances, so as to render them attractive, and catch subscribers.

A host against one. Singly and alone, we are called upon to combat this mighty avalanche of competition—this well-drilled and equipped host of competitors, who come not with modest mien awaiting a welcome, but with bold effrontery and aggressive strides, entering not only workshops, offices and business places of all kinds, but private residences, soliciting

patronage and support, and seeking to allure to their subscription net all who can be reached through the devices incorporated in Christmas numbers.

Unparalleled efforts. The number of Eastern journals represented this year, and the mass of sample copies distributed, exceeds, ten times over, those of any former year, from which it is fair to infer that heretofore California has been considered an unpropitious field, or the recognized great success of the CALIFORNIA ARCHITECT AND BUILDING NEWS has influenced a changed sentiment toward this coast among our contemporaries, who, after having failed for so many years to adequately supply the wants of the Pacific States in class literature, are now generously willing to divide with us the crop produced from our planting.

Overdoing. If each succeeding year from the present time shall continue to develop corresponding increase, enlargement and improvement in class journals, that has characterized the past five years, a full decade of years will not have passed ere their patrons will receive monthly issues as large as Webster's Unabridged.

Don't understand. Eastern contemporaries may not be able to comprehend the situation, because their pathways lie through much larger and broader fields, where competition is scattered through scores of adjacent States; but the dumping down in San Francisco of several tons of "sample copies," makes a very decided impression upon the "sample copy" market, and floods it. But "he that wrestles with us strengthens our nerves, and sharpens our skill; our opponent is our helper." So we consider it, and not only propose to hold our own in the face of the avalanche of interlopers, but to so far excel them in supplying a journal specially adapted to this coast, that their presence will be *eminently immaterial*.

Support the home journal. Every individual in any manner identified with, or interested in building matters, whether as architect, owner, contractor, material men or otherwise, should subscribe for this journal.

The Cohesive Strength of Stone.

IN all cases which have come within my notice, the stone possessing the least cohesive strength, or that which will crush with less pressure than any other, is nevertheless strong enough, when once fixed, for almost all practical purposes. No architectural members have to sustain greater pressure, in proportion to their size, than the mullions of large Gothic windows. The tracery in the great north window of Westminster Hall is now executed in Bath stone, which is remarkable for having the least cohesive strength of all the specimens experimented upon and described in the report on the stone for the new House of Parliament. Some of the mullions of that window are less than 9 inches wide and more than 50 feet high, sustaining not only their own weight, but also the whole of the tracery beneath the arch.

The eastern window of Carlisle Cathedral, built of a friable red sandstone, is 50 feet high; the mullions are smaller and the tracery much heavier than in that at Westminster, yet in neither of these examples are there any symptoms of crushing. The cohesive strength of stones is never more severely tested than during their conversion by workmen from the rough state to being fixed in their final situation in a building. During these operations, iron levers, jacks, lewis, and various other implements, are applied, frequently without judgment, and with but little regard to the mechanical violence which a stone will bear; therefore, it may be considered a useful practical rule that, however soft a stone may be, if it resists the liability of damage until out of the mason's hands, there can be little doubt of its possessing sufficient cohesive strength for any kind of architectural work.—C. H. Smith.

A Graphic Illustration of Roof Framing.

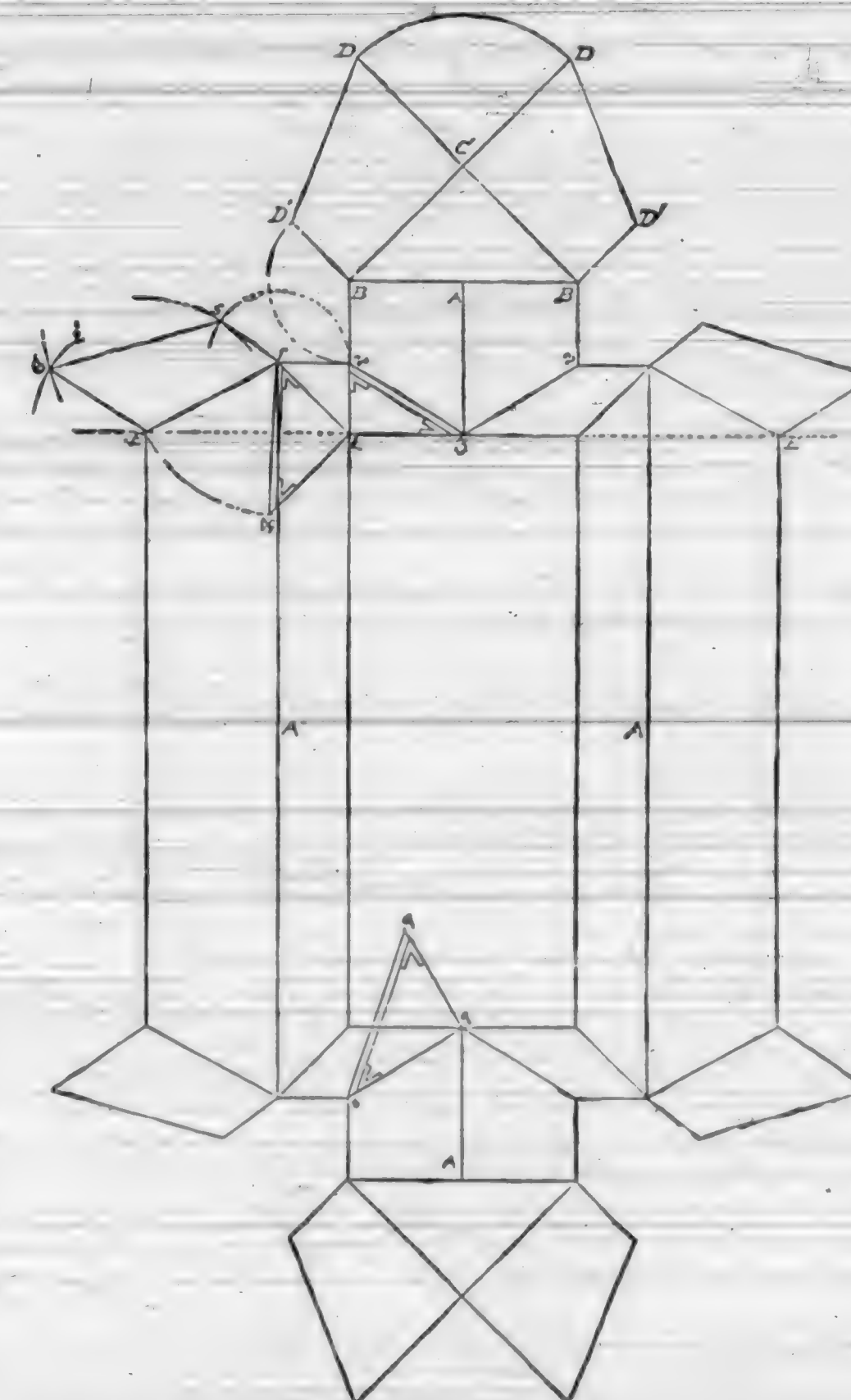
THE following article introduces to the readers of this journal a contributor well and favorably known upon this coast, and in many of the Eastern cities, as one possessing special abilities in the delineation and exemplification of acute and difficult geometrical, mathematical, and mechanical problems, in domes, roof framing, ground arches, and structural works generally. His monthly contributions will prove instructive and valuable to every architect and mechanic.—Ed.]

A GRAPHIC DESCRIPTION AND ILLUSTRATION OF THE METHOD OF STANDING HIP AND VALLEY RAFTERS IN POSITION OVER GROUND PLANS.

Although the science of roof framing and kindred mechanical sciences have for generations received the attention of hundreds of able minds, its simplification is still a matter to be more fully

developed. Innumerable methods have been introduced, many of which possess merit, and must be regarded as good. The object of the present and succeeding articles is not to set aside any of the good things done in the same line, but to still further assist in rendering plain, and simplifying, to the clear understanding of the most ordinary mechanical intellect, the matters treated upon.

The method of determining the length and cuts of the members of a structure, by the aid of "graphic" diagrams, is practical, accurate, and reliable, and commends itself especially to the student of architectural, engineering, and mechanical sciences. By its simplicity and conclusiveness, and the absence of technical phrases and algebraic symbols, the uneducated and less learned cannot fail, with but little study and application, to understand and comprehend its intricacies.



The usual process of calculation when applied in detail, becomes laborious and wearisome even to the professional mind. Hence the ease and accuracy with which the general result is reached by the graphic method, commends itself even to the less cultured, as superior to any system that requires long calculations and mental effort. The method of graphic diagrams offers better facilities—those denied by the more complicated principles—and enables the reaching of results by a simpler and less difficult process.

Explanation: Draw ground plan, A A A A; draw the elevation, B C B; square out from the back of the common rafter, B C, both sides, C D and B D, as shown; take B 2 in the compass, describe the curve, 2 D; cutting line, B-D. Now take the distance A 3, line from face of gable to line of deck on the level; set compass to the distance A 3, and stand in C with it, describing the curve, cutting the lines squared from the back of common rafters, at D D; connect D D; now we have the length of valley rafter to stand in position over 2 3.

Now to get the length of timbers and cuts in the deck of the building, continue the deck lines, E E; make a seat line, 1 1; square up to 4; 1 to 4 is the height of elevation; 4 1 is the length of deck rafter; take the distance 1 4, and describe curve, cutting deck line at E; 1 E is the length of rafter to stand in position over 1 1. Now we come to the more difficult part of the cuts to be found. Examine the ground plan, and connect the line 2 1, and square up to 3; make 1 3 equal to the height of the elevation; now take 2 3 in the compass, and stand in E with it; describe the curve, X X, from E; now take another compass, and take the distance 1 2, and from 1 describe from 2; cutting curve,

X X, from E, the point now found, 5, is an important one, as it finds the direction and lean of timber when in position.

Now to find the point 6 is all that is needed to get at all of the cuts and lengths of timbers; move to the other end of plan; draw line, 7 8; square up to 9, 7 9 being the height of elevation; connect 8 9, and take it in the compass; come back to 5; stand in 5; describe curve, cutting at 6; now take the distance 1 3 in the compass, and stand at E and draw the curve 2 2; when they cut at 6, connect E 6; then 6 E is the distance that will lay level in position over 1 3 in the ground plan. Repeat that same rule on the four corners, and cut all around the outside edges; hinge and stand up, and you will have a model showing every timber in position. Weaken with the back of a knife or compass, on each hinge line, and stand up on the ground plan line; cut all around the outside of the figure, and there can be no possible mistake. In the next diagram another form of roof will be treated. Models in card-board, illustrating the foregoing, can be seen at the office of this journal.

M. J. MARION.

Mr. Garrett's Porch.

IN our November issue we gave a brief account of the unfortunate litigation between Messrs. Robert Garrett, President of the Baltimore and Ohio Railroad, and his neighbor, Henry Jones, the mill ionaire merchant of that city, by which the latter has sought to prevent Mr. Garrett's erection of a certain porch in front of his palatial residence, now building on Mt. Vernon Place; and we remarked upon the ambiguities and puerile contradictions which are so apt to characterize our building ordinances. The latest intelligence is that Mr. Jones has announced, that in case his suit fails to stop the erection of Mr. Garrett's porch, he will relieve himself of its obnoxious proximity by moving out of his own residence, which he will then donate to the Colored Orphans' Association of Baltimore for use as an asylum for their dusky proteges. Here's a "how-d'y-e-do," unquestionably, of a very pronounced type, and one that affects not only Messrs. Jones and Garrett, but all the other residents of this especially aristocratic section of Baltimore. It suggests remark upon the great desirability of so amending our legislation against nuisances as to protect public-spirited citizens, who have erected costly homes, from wanton spoliation by the recklessness or malice of a neighboring owner. It is plainly a crying outrage if all the other residents in Mt. Vernon Square must have the value of their investments in that section, amounting to many hundreds of thousands of dollars, imperiled by a quarrel between neighbors Jones and Garrett, in which the neighbors have no part and which they are helpless to control. It is a well-understood principle that no man has a right to use his property so as unnecessarily to injure that of his neighbor, and in all cities there are laws which in this view prohibit the erection of slaughter houses, rendering establishments, and other unhealthful nuisances.

But the law fails to recognize the fact that there are many erections which cannot be strictly defined as injurious to health, which yet destroy the value of adjacent property just as completely. Such is the case above cited. If Mr. Jones establishes his colored orphan asylum next to Mr. Garrett, the result cannot fail to be a disastrous depreciation in all the property on Mt. Vernon Square. In St. Louis, recently, a livery stable proprietor drove a profitable trade for several years by purchasing lots in a choice residence section and advertising his purpose to build a stable there. In a number of cases he was bought off only by the payment of a large bonus from the adjacent property owners, whereupon Mr. Russell would immediately select another lot and repeat the transaction. For a while this fellow established a sort of reign of terror among property holders in the finer parts of the city and earned the title of "livery stable fiend," and he recently had an imitator in Chicago. Of course we cannot here outline the necessary enactment to protect the community from such outrages, but it will doubtless provide for a considerable enlargement of the definition of the term nuisance so as to cover injury to property as well as to health.—*Inland Architect and Builder.*

TOUGHENING TIMBER.—An exchange says: It is claimed that by a new process white-wood can be made so tough as to require a cold chisel to split it. The result is obtained by steaming the timber and submitting it to end pressure, technically "upsetting" it, thus compressing the cells and fibers into one compact mass. It is the opinion of those who have experimented with the process that wood can be compressed 75 per cent, and that some timber which is now considered unfit for use in such work as carriage building, could be made valuable by this means.

Real Estate Transactions, 1885.

NOTHING more clearly indicates the degree of prosperity prevailing in any city or locality than the number of real estate transactions, and the prices paid for building lots and land, under a well-balanced market uninfluenced by either depressed or excited conditions.

The real estate circular furnishes the following items of facts: Sales in 1884, 3,874; value, \$13,374,207. In 1885, 3,650; value, \$13,250,000. City hall lots have increased in value, twenty per cent within twelve months, the present prices being from \$850 to \$1,000 per front foot, for a depth of one hundred feet. The cable road street-cars have been instrumental in retarding increase in values in the older districts of the city, and increasing those in the outlying sections, where, a few years ago, and until the extension of the cable roads, they remained at nominal prices. The difference in time required to reach localities ten blocks beyond the old limits is a matter of small consequence, requiring less than one minute per block.

Two years ago a lengthy article appeared in this journal, advising the immediate improvement of all lots on Market Street, inside of Ninth Street, with substantial first-class buildings. If this had been done, there would now be clustered around the city hall center, the natural centering point in this city for large retail stores for generations, if not for all time, one hundred or more prosperous business firms. All this is destined to be at a not remote period. The pioneers in this direction are the new Odd Fellows' Hall, with its fine stores, and the Murphy Building now occupied by one of the most enterprising and progressive dry goods firms in the city. The three-quarter million dollars spent in the erection of these two edifices simply reflect the character of future improvements in that neighborhood; in fact, those who own property having a market value of \$1,000 to \$1,500 per front foot, cannot afford to do less than erect very fine, first-class structures.

Mr. Magee, of the *Circular*, most excellent authority in all matters connected with real estate, says: "All of Market Street, as far out as Valencia, would now be fine retail store property, if the owners would only build suitable stores on their land. The city hall lots should have been built on five years ago." So it was strongly urged and argued by us two years ago, and we appreciate endorsement from Mr. Magee, even at the present time.

It is but a matter of time when this will be done, and business pushed solid out to Ninth Street. "Out to Valencia Street," about four blocks further westerly, might properly be improved with frame structures to last a few years and then give way to more permanent buildings.

Business for architects. The foregoing foreshadows future prospects for architects. Even the older portions of the city present a large field of work to be done in the removal of old and worn-out buildings, and the substitution of new edifices of greater or less cost; in addition to which will be all the growth in residence improvements which follows business enlargement and progression, and the erection of large brick buildings on principal streets, will necessarily stimulate improvements on all cross and adjacent streets, and in neighborhoods where some must locate to obtain lower rent rates.

Fall of a Brick Wall—One Man Killed.

WHILE the December number of this journal was being worked off, a rather sad affair happened on Seventh Street, in the city of Oakland, resulting in the death of a human being, who was standing idly upon what proved to be a fatal spot.

A brick building, twenty-two feet frontage, and three stories in height, was in course of construction, and so far advanced as to be up to the level of the third-floor joist. A cast-iron girder was placed at the proper point to provide for the store front openings. About the girder, and resting thereon, were the two side wings or sections of brick-work, the center portion of the front wall being omitted to provide for building a bay-window through each story, twelve feet wide.

Without any sign or warning, the iron girder dropped to the ground floor, and with it fell in a mass all brick work resting on the casting, and a portion of the westerly wall, the easterly wall being a party wall. The man killed was standing directly under the girder and front wall, at the time of the occurrence, and was badly crushed.

There are two reasonable accountings for the let-down: one, that the girder was defective, and yielded under the superincumbent weight placed upon it; the other, that the

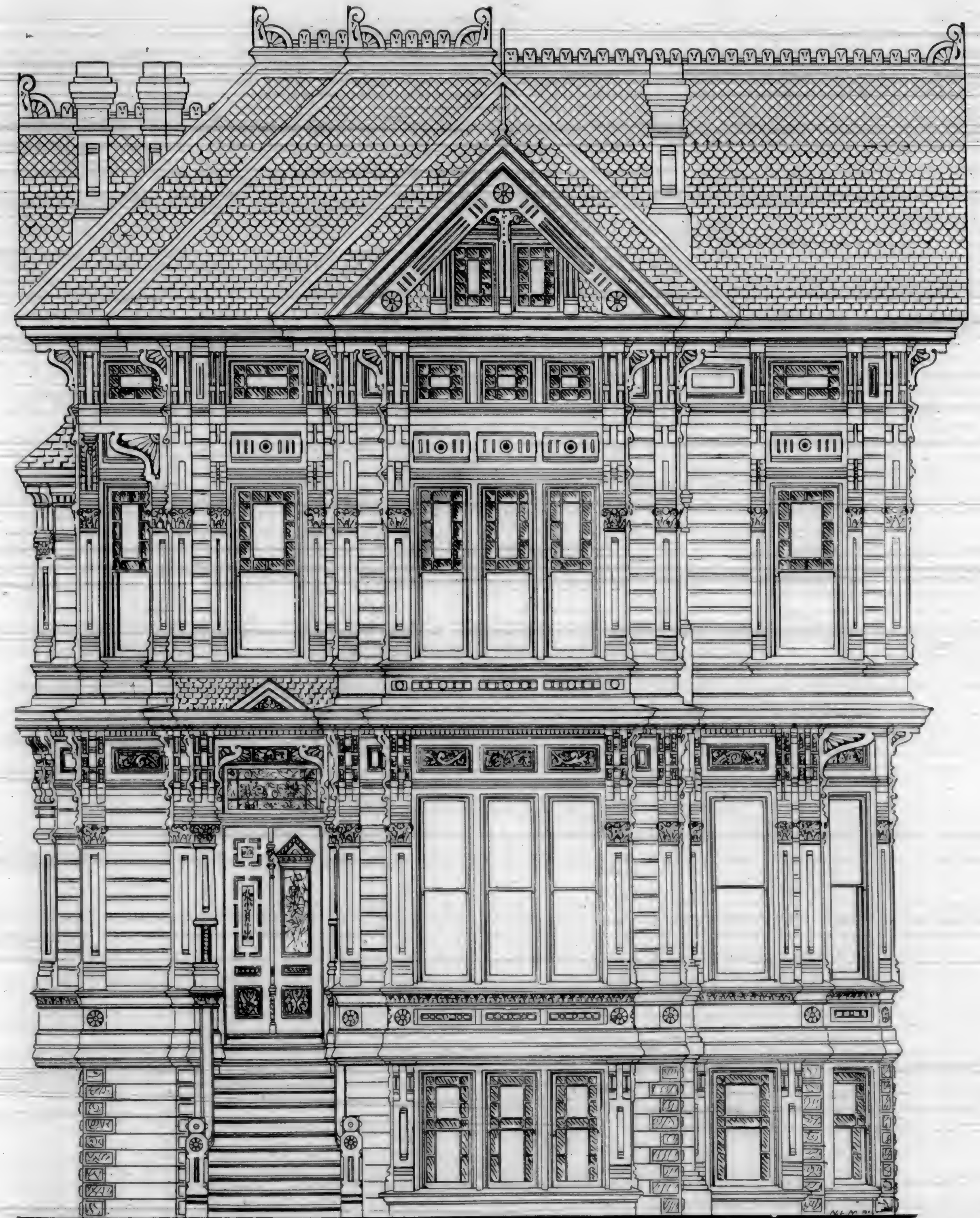


PLATE I.—FRONT ELEVATION.

brick seating on which the westerly end of the girder rested, gave way, owing to the soaked condition of the bricks from the heavy rains, and the soft mortar in the joints, the cement in which had not set sufficiently to produce any hardening effect. The wall that fell, facing the heavy rains then so copious and continuous, very naturally kept the new brick work very tender, and added greatly to the general weight; and it is altogether likely that the secret of the tumble was in these suggestions.

The girder was defective, in that there was a flaw in the bottom plate, which, although 14x14 inch, was rendered of no value by the flaw. But the center rib, 1x24 inch, with a top or crown flange, 1x5 inches, was more than sufficient to carry safely all the load imposed, with no more than five feet of front wall at the sides of the building.

S. F. Chapter of Architects.

OWING to the regular meeting night falling on New Year's, no session was held for the month of January. It is to be hoped that the members of the profession will re-double their interest in the Chapter work the current year. There are possible results which should call forth the united energies and efforts of every architect upon the Pacific Coast.

Commending and friendly intercourse is necessary to a healthful life, and every hour spent in developing that which may be attained by fraternal association is as seed sown in good ground.

Self-preservation, if no higher purpose, should induce every reputable practicing architect to unite in right effort to preserve the integrity of the profession, which of late years has suffered so much from the innovations of the scale bugs, teredos and other ruinous and destructive professional insects.

P. S. A called meeting of the Chapter was held on the 8th, but being out of the regular order of time, but few were present. After reading of minutes, ordering payment of bills, and receiving the application of Mr. Seadler, of Sacramento, to become a fellow, the Chapter adjourned to meet the first Friday in February.

Nature and Art in Arboriculture.

IT does not need the arguments of Hazlitt to convince anybody who will give five minutes' consideration to the subject," remarks the *Daily News* of Monday last, "that we have no source but nature from which to borrow ideas of real beauty, and nature never yet gave us a single example of a flower-bed laid out with geometrical figures, or a flowery bank cut up by zigzags and straight lines. Nature abhors a straight line almost as much as she does a vacuum, and all her operations in woods and fields are a perpetual protest against formal regularity. No doubt, it is our right and our privilege to prune and pinch, to tie and train 'the growth of the luxuriant year,' and if we insist upon it, nature will fall into line, but only under protest. We may plant and prune as we please, but if we want really beautiful effects, we must, after all, be guided by the principles on which nature works in all her loveliest achievements. 'The art itself is nature,' as Shakespeare profoundly expresses it, and we must conform to nature's laws, or all the beauty we shall attain to will be of a bad and bastard type, however much we may admire it for a time. It will be but of the type which Pope so neatly satirizes when he speaks of the garden where grove nods at grove, each alley has a brother, and half the platform just reflects the other. This is the journeyman artificer's style of garden planning—the cunning of the compass and the straight edge. We have had enough of this sort of thing and are tiring of it. What we want is a new style, in which the freedom and irregularity of nature are combined with the neatness and order that should characterize the garden plot—the order which is Heaven's first law, not the order which delights in clipping shrubs into exact spheres, which always will have tulips planted in beautiful straight lines, and exactly so many inches apart, and which year after year has, for the sake, we suppose, of a neat and orderly appearance, nipped and clipped all our embankment planes into sprouting scaffold poles, utterly destroying the natural characteristics of these fine free-growing trees. The 'mixed border,' as at present managed, is not altogether satisfactory, though it is pretty safe to predict that it will be in the direction of the mixed border combined, perhaps, with the massing of color shown in the formal beds that future developments of flower-gardening will be effected. We have in some of our parks and public gardens many an odd corner in which nature and art are combined with exquisite effect; but as yet these odd corners are the minor features of our public gardening, and stars and garters, stripes, circles, squares, gridirons, bootjacks, and hot-cross buns, are still predominant, and very often they are worked out in colors that

strike the cultivated eye as the squeak of an ungreased wheel assails the ear. Now is the time to brood over these things, and plan something better for the ensuing year."—*Timber*.

Science of Architecture.

(Special for this Journal. By F. HILLERY, Architect and Mechanical Engineer.)
(Continued.)

THE purpose of the expansion apparatus is to take the increased volume of water, increased by the expansion capacity of heat. For the size of the apparatus, see the same for water heating, which is located at the highest point of the arrangement. Since the water is heated to 200° *celsius*, the highest point must be closed. By reason of this condition the expansion apparatus is a pipe closed and filled with air (expansion pipe), or is a suction and compressing valve (expansion valve) surrounded and closed in by the expansion reservoir.

The expansion pipes have a width of 60 to 70 mm. ($2\frac{3}{8}$ to $2\frac{1}{2}$ "), and its length is from $\frac{1}{16}$ to $\frac{1}{8}$ of the whole string of pipes. The expansion pressure valve must be so loaded by weight (inclosed in the reservoir) that at a pressure of about 15° atmospheric the same opens, and the expanded water by heat flows into the reservoir; the expansion suction valve at the cooling of the arrangement permits the water (contracted in the pipe) to run in and fill up the system from the reservoir.

III. MEAN OR MIDDLE PRESSURE WATER HEATING.

This system can be deducted from the warm (low pressure) water as well as from the hot (high pressure) heating.

From a warm water (low pressure) heating arrangement a middle pressure heating can be made, when, as in the high pressure heating, the highest point of the pipe is closed by a pressure valve, furnishing the possibility of heating the water above 100°.

From a high pressure heating apparatus we obtain a mean pressure heating arrangement, so soon as the first is calculated, that the required heat in the room is so arranged that the water in the fire-coil is not heated above 120°.

The advantage which the warm water middle pressure heating apparatus has over the warm water low pressure arrangement is in the somewhat smaller first cost. The disadvantages are, in the higher pressure all the parts have to sustain by the insertion of the pressure valve.

The advantage which the middle pressure heating apparatus has over the high pressure, consists in the smaller tension in the fire-coil, and in the lower temperature of the water, giving a milder and less strong radiating heat, a larger reserve of hot water. The disadvantages are only in the first higher cost of the arrangement.

Apparently, in general, for warm water heating the form of low pressure is the most recommendable, and for hot water heating that of mean pressure.

STEAM HEATING.

The same depends on the extraction of the so-called latent heat of the steam. In a similar manner, as with water heating, steam is conducted to heaters placed in rooms to be warmed. In the heater the condensation of the steam to water sets free the latent heat to be given over to the walls of the heater, and by the same distributed to the surrounding air.

The important parts of the steam heating arrangement are: (a) the steam boiler; (b) the conducting pipes for the steam and for the condensed water; (c) the condensation apparatus.

The steam boiler for steam heating is constructed on the same general principles as a steam boiler for industrial purposes. Important for boilers for heating purposes is the volume of water and the tension of the steam. The first (water) is selected in large quantities, since the use of steam is very irregular. The use of steam is large at the starting of the heating, before a constancy of heat distribution in the system is arrived at. Tubular boilers are, in general, less to be recommended than smoke-flue boilers. Under certain conditions it may become necessary to use tubular boilers, which may be the case when the same is placed under rooms which are occupied, a municipal regulation forbidding the putting up of common constructed boilers in such places, which may be avoided by using the tubular boiler (so-called inexplosives). They all agree in this respect, that, through the small quantity of water and steam in them, a considerable large damage by explosion is excluded.

The use of such boilers calls for a very careful attendance, and a larger measure of water-feeding capacity, since by the small volume of water in the tubular boiler and the large

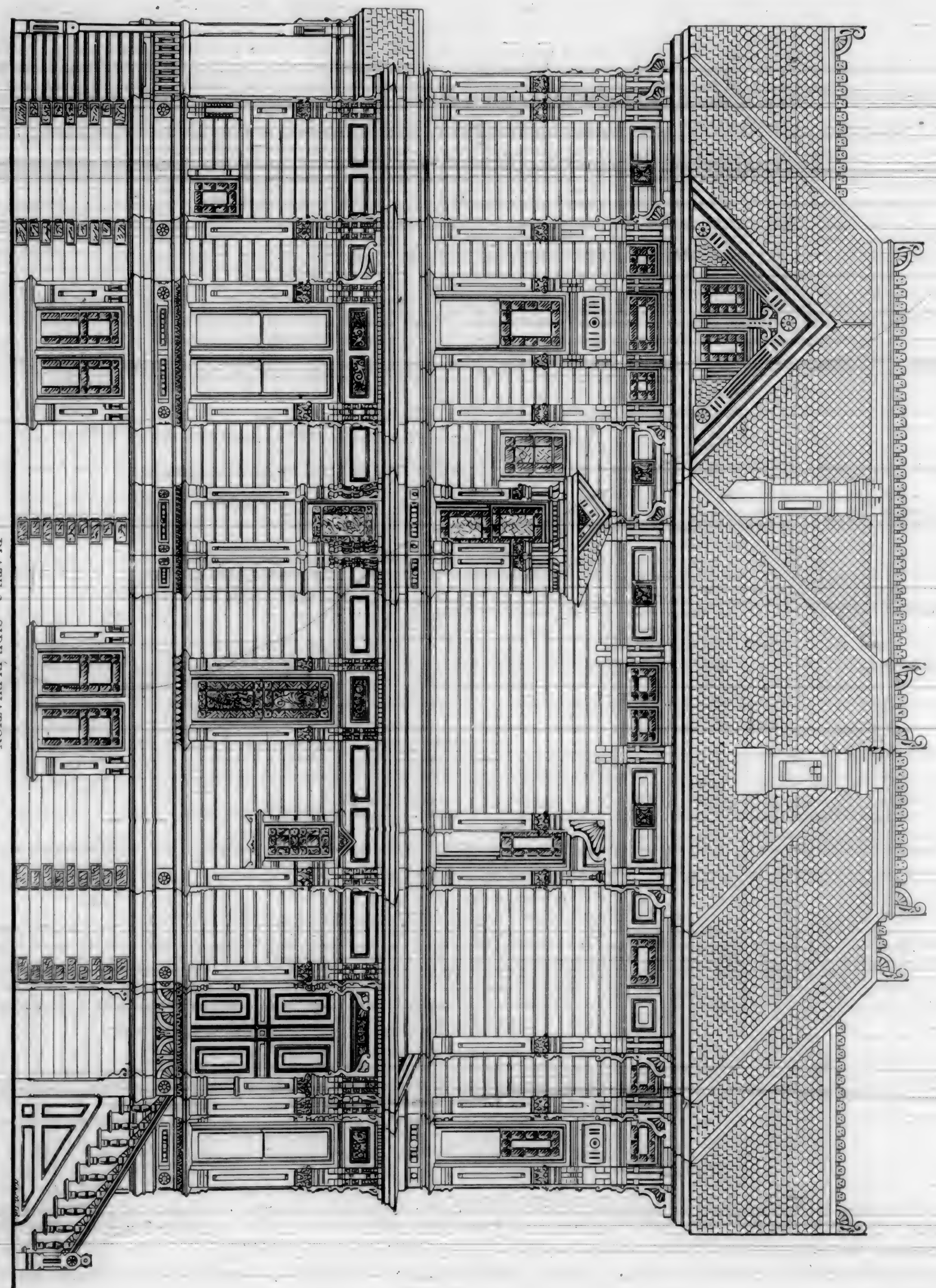


PLATE 2.-SIDE ELEVATION.

heating surface of the same, it may happen, at the beginning of the firing, to be impossible for the feed-pumps to supply—by the fast creation and use of the steam—the loss of water in the boiler as fast as required.

The feed apparatus for tubular boilers, according to those circumstances, have from two to three times the capacity of those for boilers with a large quantity of water.

For the pressure in the boiler, if possible 3 to 4 atmospheres can be taken; for pipes and heater, not above 2^o atmospheres. The reduction of the pressure is made by a so-called reduction valve. For feed water for the boiler the condensed water of the heaters should be used as much as possible.

In the disposition of the steam conducting pipes special care must be taken to avoid a cooling off of the pipes as much as possible, and the condensation water to run off with the direction of the steam. The best manner is to lead the steam in a main pipe direct to the highest point of the arrangement, and from there conduct the same by the shortest route to the heater. Is this method of conducting impossible by local reasons? And when there should be a necessity to place the main conduit of the steam lower than the heater, then the conducting pipes in all cases must run ascending, the incline to be in the direction of the motion of the steam; also, care must be taken that the condensing water has an outlet at its lowest point. All branching off for steam must be made at the upper circumference of the main steam conducting pipe.

When more heaters are to be placed in the different stories above each other, the common steam-conducting pipe can be used for the condensing water conduit from the heater, by connecting the admitting and discharge pipes from each heater with the steam pipe, and insert in the connecting pipe of the discharge a "back-lift valve," which must be so balanced that, when the surface of the condensation water in the heater reaches a certain height, this column of water will open the same, giving an opportunity for the water to escape. The steam pipe, arranged for the common use of steam and water, is not recommendable; it is difficult to remove the air accumulated from the heater, the action of the back-lift valve making a disturbing noise all along the pipe. It is therefore better to arrange separate steam and condensing water pipes, and insert in each of them, with the boiler, a valve.

The section of the steam pipe should be taken at least as large as the section of a safety valve required for a boiler, to furnish the needed amount of steam. For long conducting pipes this manner of calculating—taking from praxis—is insufficient, and it is then to be recommended, to make correct calculation, considering all the losses of pressure and resistances.

Pipes not used for the emitting of heat should be protected by surrounding them with non-conducting material, and care must be taken that by the interpolation of "compensators" and movable bearings, the expansion of pipes does not produce untightness and leaking.

The condensation water—draw off—pipes, which must also be run with care, must descend continually to the end. The diameter of the same—steam having a 1696 larger volume than the formed condensation water—can be much smaller than the steam pipes; but it also must be considered that the condensation water conduits, at the beginning of the heating and before the state of continuance is established, the condensation being more intense, must carry off quick all the condensed water.

The heater applied for steam heating is similar in form as the warm water heater described before. In the construction of the same, precaution must be used to prevent any untightness and leakage by the sudden start and letting on of steam. All tightening of joints, etc., must be made with metallic or mineral stuff, all organic matters are, therefore, to be excluded.

For the calculation of the heater the previous formulas for warm water heating can be used; as an average figure may be taken, that a wrought-iron steam heater can condense in the state of continuance—the temperature of the surrounding air being 20° 1.5 kg. (3.31 lbs.) of steam per square meter (10.76 sq. ft.) in an hour's time, emitting about 800 units of heat, provided that the surface being washed by the steam is like the heat-emitting surface. With other heaters a corresponding lower (heat-emitting) figure must be brought in account. Special precaution must be taken, and means provided for the removal of the atmospheric air from conducting pipes and heaters; also when the system is placed out of work, and air to be admitted. For this purpose air valves are to be put in, to be opened and closed by hand, or self-acting arrangements being attached to do this hand work effectively in the proper time.

The three systems of central heating first discussed may be combined to the forms (1) Water air heating; (2) Steam air heating; (3) Steam water heating.

The two first combined heating arrangements are to be constructed by uniting the calculations for air and water respectively steam heating. With both kinds all the warming apparatus can be placed in one heating chamber, and from the same conduct the warm air, as with air heating, to the rooms to be heated. Or, right square under the rooms to be heated is placed a heating chamber, and led to the same from a common fire-place, the warm water representing the steam. By the last method we have the advantage, that the warm air can ascend perpendicular, and that for large horizontal distances a single fire-place is sufficient.

The steam water heating arrangement can either be executed as a warm water heater, by which the water is not heated direct by the fire, but by steam; or an oven for a steam heating apparatus is constructed, containing and holding a larger quantity of water which is heated by steam, thus supplying a large reserve for heating after the steam has been shut off. It may be recommended to name an apparatus after the first arrangement "Steam warm water heating." This system is, on account of its expensiveness, only at such single instances to be recommended where the different warm water heating arrangements shall be served from a single fire, and the horizontal extension does not permit a concentration of the heating boilers. The second combined system, properly called "steam water heating," has of late been frequently applied for rooms where a quick warming with a longer "after heating," as with warm water, is desired.

The heaters for steam water heating, which do exist in many various constructions, can be classified in the direct and indirect. The direct water heaters contain a space filled partly with water, the other part with steam, heating gradually the water. By the indirect steam water heaters, the space for the water and for the steam is separated, and the transmission of the heat from the steam to the water is done through a common surrounding wall.

Saw and Hatchet Carpenters.

THEY are getting to be pretty plentiful of late. They always appear in great numbers when times are dull and regular skilled mechanics are slack of work. But it may be necessary to explain to some of our readers what a "saw and hatchet" carpenter is. He is a man who has no regular trade or business, but has learned to use a hand-saw and hatchet so as to be able to put up a tolerably passable rough board fence. He then considers himself a jack-at-all-trades, and is around in season and out of season making bids on all sorts of jobs, from a chicken-coop up. There is nothing he will not undertake to do, and if he can arrange to get the material on credit he don't allow any such slight consideration as the price of the job to prevent his getting it. His hatchet is not the genuine G. Washington brand, and generally serves a better purpose in beguiling the unsuspecting citizen into giving him a job, or the accommodating lumber dealer into furnishing him the material, than in the actual execution of the work.

To an inquirer not personally acquainted with the skill of carpenters of the city, business in the building line would appear phenomenally dull. It is the saw and hatchet gentlemen who make nearly all the complaint. It is true that many worthy and competent carpenters are slack of work, and the price of their labor fluctuates with the demand for their services. It is impossible to fix uniform prices on small rough jobs or house repairs, where the saw and hatchet man abounds. They are nuisances to the retail lumber dealer and the dealer in building material. They ruin the business of the honest, skilled mechanic, who has served his time and mastered the trade, and produce unsightly "puckers" around the mouth of the retail lumber dealer, who so very often has to "whistle for his pay." An instance very recently was brought to our notice where an unsophisticated property-owner—a widow—asked for bids on some cheap building. The bills for the material aggregated \$570, and the bids ran all the way from \$800 down to \$500. Of course the saw and hatchet man got the job, and made whatever he got for it off the lumberman and the employes, and it is natural to suppose that the widow got a poor class of cheap work. We have reason to believe that the class of workmen we allude to is not confined to any particular locality, but prevails over the entire country to the great detriment of the skilled mechanic and annoyance of the lumber dealer, besides being an imposition on the citizen. A reform in this matter is much needed. If a citizen has work that is needed at all it is worth doing well, and ought to be worth a fair living price.—*Southern Lumberman.*

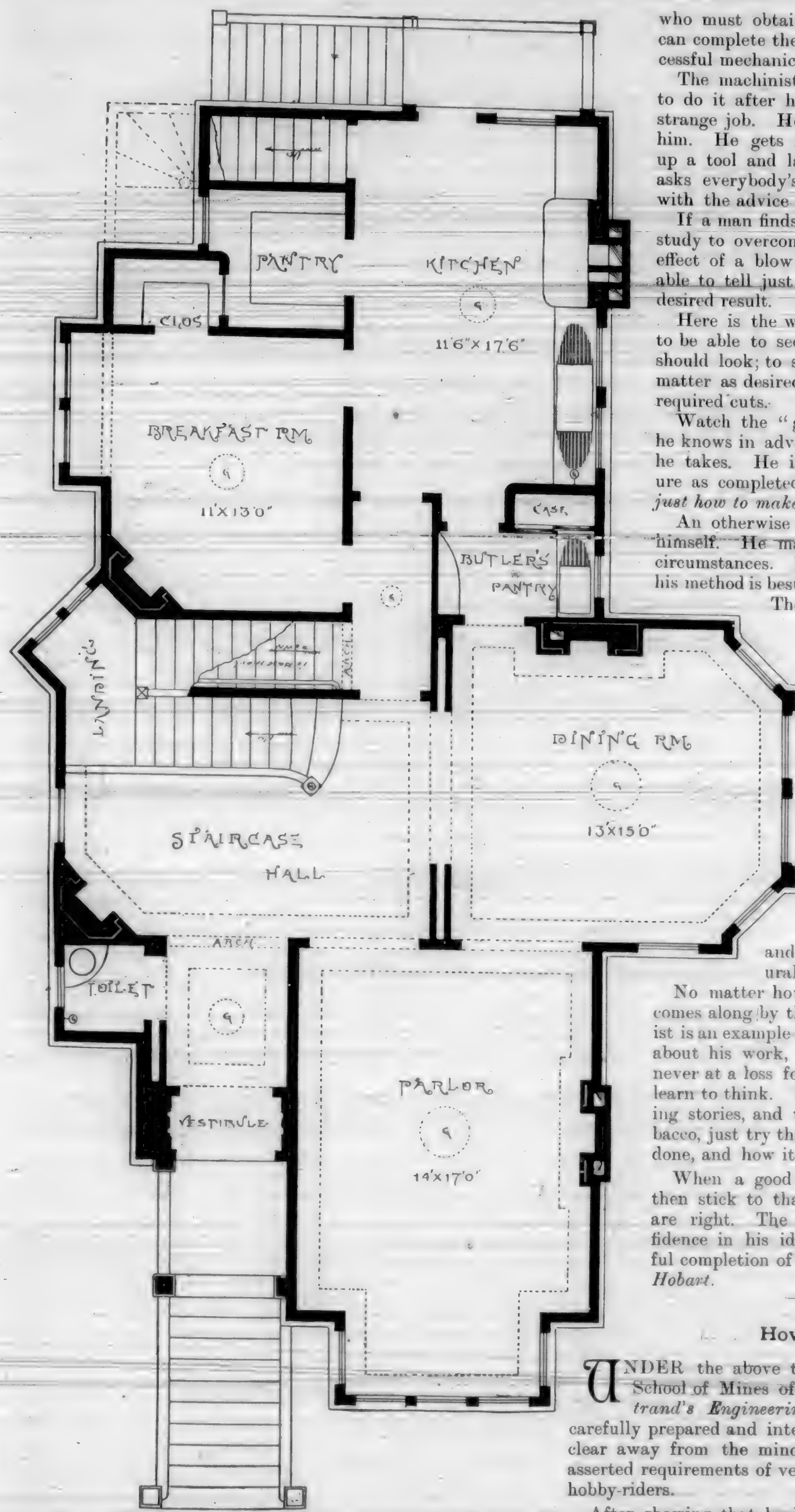


PLATE 3.—MAIN FLOOR PLAN.

Confidence.

CONFIDENCE in one's self goes far toward success. The machinist who is able to go about an ugly job feeling sure that he can devise ways and means for successfully completing the work, is the man who is valuable to his employer. A man who knows how to think, is apt to be such a man, while the man who must depend upon some job he has done before, or

who must obtain an idea from his neighbor before he can complete the work, is not the man to make a successful mechanic.

The machinist who don't know what to do, or how to do it after he has got a hint, is a sorry chap on a strange job. He is in misery, and so are all around him. He gets nervous, jumps here and there, picks up a tool and lays it down again without using it; he asks everybody's advice, and don't know what to do with the advice after he gets it.

If a man finds himself in this condition he ought to study to overcome it. Let him learn to think out the effect of a blow before he strikes, and he will soon be able to tell just what kind of a blow will produce a desired result.

Here is the whole secret of being a good mechanic: to be able to see in advance just how a finished job should look; to see what cuts are needed to shape the matter as desired, and to know just how to make the required cuts.

Watch the "good machinist" and you will see that he knows in advance exactly the effect of every action he takes. He is like a good artist. He sees the picture as completed, and knows what marks to make and just how to make them.

An otherwise good man may have no confidence in himself. He may be too easily led by surrounding circumstances. He may underestimate himself, when his method is best if he only had the nerve to stick to it.

The other extreme is often met with. The "self-sufficient" workman is the man.

What he doesn't know about a job, never ought to be known. This man is another who doesn't know how to think. He sees or hears of a certain way of doing, and advocates that method without thinking why and wherefore, or if the method he advocates will have the desired effect.

The thinking machinist is neither of the above men. He is between them, and never reaches either extreme. He thinks when he is not aware of it, and methods and jigs suggest themselves to him naturally.

No matter how ugly the job, a way to do it always comes along by the time it is wanted. Such a machinist is an example well worth following. He goes quietly about his work, makes no fuss or confusion, and is never at a loss for ways and means. Let us, therefore, learn to think. Instead of running our brains on telling stories, and telling which is the best brand of tobacco, just try the effect of thinking out how work is done, and how it should be done.

When a good way of doing a job is thought of, then stick to that way, and have confidence that you are right. The man who thinks is apt to have confidence in his ideas, and can go ahead to the successful completion of any job that comes to him.—*James F. Hobart.*

How Much Ventilation?

UNDER the above title Mr. James L. Greenleaf, of the School of Mines of this city, has published in *Van Nostrand's Engineering Magazine* for November, 1885, a carefully prepared and interesting paper, designed, as he says, to clear away from the minds of some people a feeling that the asserted requirements of ventilation are made by enthusiasts and hobby-riders.

After showing that healthy men are constantly vitiating the air in which they live, and that the dangerous and unpleasant impurity thus added to the air is mainly the organic matter given off from the lungs and skin rather than the carbonic acid, he goes on to discuss the practical question, "How much air is necessary per individual to keep the impurities down to a safe limit?" His conclusion is that if we are content with a somewhat tainted air, from 1,500 to 1,800 cubic feet of fresh air per head per hour will answer, but that if we wish the air in our rooms to be entirely free from traces of mustiness, and to be perfectly fresh

to the senses, the supply must be from 3,000 to 4,000 cubic feet per head per hour. The paper is one that should be read, by all architects and by all who are interested in the subject of ventilation.

Finishing.

WOOD finishing is the process of applying to the surface after it has been prepared, by filling and smoothing, or otherwise, a thin coating of varnish or other substance, to render it durable, enhance its beauty, or change its appearance. There are numerous methods of finishing, and a variety of materials are used, the varieties of varnish being the principal. The distinctive qualities of these varieties are treated under their proper headings.

In their natural state all woods are more or less porous, consisting of bundles of hard fibers, with interstices filled with a softer substance. These constitute the grain, and as the hard or soft parts predominate, the wood is said to be hard, fine, or close-grained, or soft and open-grained. To fill these softer parts, or pores, and give to the whole an even, uniform surface, hard, and capable of a brilliant polish, is the object of the finishers' art. This hard, firm surface was formerly gained by the successive application of several coats of varnish, at least three preliminary coats being required to fill the pores; the inequalities were then reduced by fine sand or glass-paper, and several additional coats laid on, the last, after becoming thoroughly hard, being polished if desired. In this operation, however, a great quantity of varnish is absorbed by the open pores of the wood, and it is consequently so expensive that it is now seldom used. Recourse is therefore had to various plans to render the wood non-absorbent before applying varnishes, and certain compounds called fillers are largely used for this purpose.

Richness of effect may be gained in decorative wood-work by using woods of different tone, such as amaranth and amboyna, or inlaying and veneering. The Hungarian ash and French walnut afford excellent veneers, especially the burls or gnarls. A few useful notes on the subject are given by a recent American authority. In varnishing, the varnishes used can be toned down to match the wood, or be made to darken it, by the addition of coloring matters. 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 by a cloth dipped in very fine brick-dust; a good gloss may also be produced by rubbing 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.

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 afterwards 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 ounces 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 ounces of logwood chips in one gallon of water, and brush the decoction while hot over the wood; when dry, paint with a solution of two ounces of potash in one quart of water. A solution of permanganate of potash forms a rapid and excellent brown stain.

True and False.

THE statement of building intelligence for 1885, as appearing in December number of this journal, and in the *S. F. Chronicle Alta, California*, and other journals that used our table of facts, were correct. The statement in an evening journal, making the sum of expenditures \$7,858,110 was not true, except in this,—to take the total sum of reports appearing in this journal, and upon general principles adding thereto ten per cent, which gives the exact figures of \$7,858,110. But this was not honest journalism, as the figures given by our contemporary were presented to the readers of that journal as *original facts*, while in truth the reports of this journal were taken as a basis, and the ten per cent added, without one word of credit to us for the pilfering done from our columns.

The attempt of the journal referred to, to furnish weekly building reports in imitation of our monthly, are lamentable failures. To make up large lists and delusive showings, our files of two months or more back are sometimes resurrected and paraded to swell up the list; cases are reported which have no existence in fact; small jobs of a hundred or two dollars are magnified into respectable operations, and extravagant exaggerations utilized to swell appearances and bolster up appearances beyond fair and legitimate facts.

For several years, and until a few months since, this was the only journal that attempted to furnish reports of building activities, which were depended upon monthly by the city press generally, most of whom gave due credit, including the evening journal in question, until it fell upon the idea of a *new stroke of enterprise in imitating and patterning after us*, and fixing up weekly reports.

One thing is certain, the grand flourish of \$7,858,110 for the year was not derived from any original data in possession of the *Evening Bulletin*. It was borrowed capital without acknowledgment.

Yellow Pine.

IN places where wooden floorings or trimmings undergo severe or constant use the valuable Southern yellow pine has become almost indispensable. In ship work its durability has been long acknowledged, but it is only within a few years that its usefulness for house purposes has been appreciated. In former times it was tedious stuff to work by hand, but its tediousness is now overcome by improved tools and steam dressing, and the increased call for hard pine wainscoting and ceilings that have attended the active building operations of late has been readily supplied. No wooden flooring that is used bare is superior to narrow strips of Georgia yellow pine. A well-laid surface of the wood improves with age and friction; its resinous quality hardens for it a sort of natural varnish. Art, too, has recently touched this sturdy old timber. Thin door panels are sawed out of planks containing thick deposits of resin. When these panels are placed in doors that the sun can strike, the effect produced is a rich, red wine color, showing inside the room. There is a process of artificially seasoning pine. There is also one of steaming it, so that the resin will show uniformity in the board, but the naturally veined surfaces are handsome enough when properly smoothed.

The supply of this timber seems exhaustless. A large fleet of schooners and other craft is devoted exclusively to its transportation from Virginia, North and South Carolinas, Georgia and Florida. The latter State is renowned for the long boards that are cut from its trees. Georgia owns the standard of quality, but any untapped stock rates high. Trees from which the pitch has been partly removed in the manufacture of turpentine turn out lighter wood, but such cuttings have not the wearing merit of sawings from virgin trees. Since the war, owing to better railroad facilities, large tracts of new forests have been opened to commerce. Europe, especially England, is a large buyer of this wood. Its excellence in railroad work on account of toughness and comparative lightness, is becoming recognized abroad as well as in this country.

When yellow pine vessels become dismasted or capsized at sea, they form most dangerous wrecks, and at night are an especial terror to navigators. Their buoyant cargoes prevent them from sinking, and they become, so to speak, a floating reef. Several abandoned schooners have been known to drift about the ocean from six to eighteen months. Not long ago one appeared on the coast of France. Captains report these drifts to the Government. The Government in turn spreads the information, but the danger is only partly provided against, as currents or driving winds can vary the situation indefinitely.

A LITTLE girl of two and a half years burnt her finger for the first time the other day. She placed her finger on a hot potato, and suddenly drew it back, exclaiming, "O der's a pin in it!"

The Mechanics' Lien Law, and Supreme Court Decision.

AT considerable expense, we have had the Mechanics' Lien Law of the State of California compiled from *Deering Code of Civil Procedure*, and had the same printed and bound in convenient book form, with flexible cloth covers; price, 50 cents per copy. Sent by mail to any address, free of postage.

ALSO,

Such decisions of the supreme court as bear directly upon lien law issues. Every architect, owner of real estate, and every contractor and workman should secure a copy. The trade supplied.

AMERICA'S SHAM CASTLES.—There is the trouble with the American. If he has \$100,000 to spend, he makes the building look like a \$200,000 house. I don't suppose there is a building in Detroit that would make a decent ruin. We build for show. We put on these abominable sheet-iron cornices, and paint them to look like stone. If we have a shingle roof, we color it so as to look like slate or tiles. We put up brick buildings and thinly face them with stone. The only genuine thing, as well as the only original thing about American architecture is the pioneer log-house of the backwoods. There the logs were logs with the bark on, and the roof was of clapboards split from the oak blocks, the chimney was built of clay, and stood boldly and generously out as if it were not a thing to be hidden, but the warmest and most inviting thing about a house. The floor was uncovered boards, and the blackened beams overhead stood boldly out in the grateful light of a hickory fire blazing on the huge, ample hearth. The log-house was a product of the immediate land around it.

The clay dug from the well made the chimney, the logs cut in the clearing made the house. Now we live—or try to—in an age of furnaces, of hot and cold water, of shoddy and sewer gas, and die of malaria and diphtheria and all modern improvements.—*Detroit Free Press.*

ONE of the most encouraging features in the labor movement is the desire for arbitration, for intellectual entertainments, for laborers' night schools, lectures, etc. The American workmen recognize that the true path to pursue is to know more, to understand the great and vital questions underlying trade, commerce, manufacturing and government itself. Mere theories take very little hold. Socialists have less influence than ever with the masses. The wage-workers will not be led into the adoption of wild schemes. Our public school system has made it impossible for the brain and brawn of a country to attempt destructive remedies. Men and women are arising out of labor ranks, becoming fair writers and lecturers.—*The Tradesman.*

SOME investigations made relative to the heat of combustion of stone coal have led to the conclusion by Meunier and others that during the formation of coal a certain quantity of heat must have been absorbed, since the theoretical heat of combustion was always less than that actually observed. From want of knowledge, however, as to the real constitution of coal, it is regarded as impossible to determine the nature of this absorption. It is also a fact that, from want of knowledge as to the composition of coal, the heat of combustion cannot be calculated. It is well known that two coals of precisely the same chemical composition may and do afford very different degrees of heat in combustion.

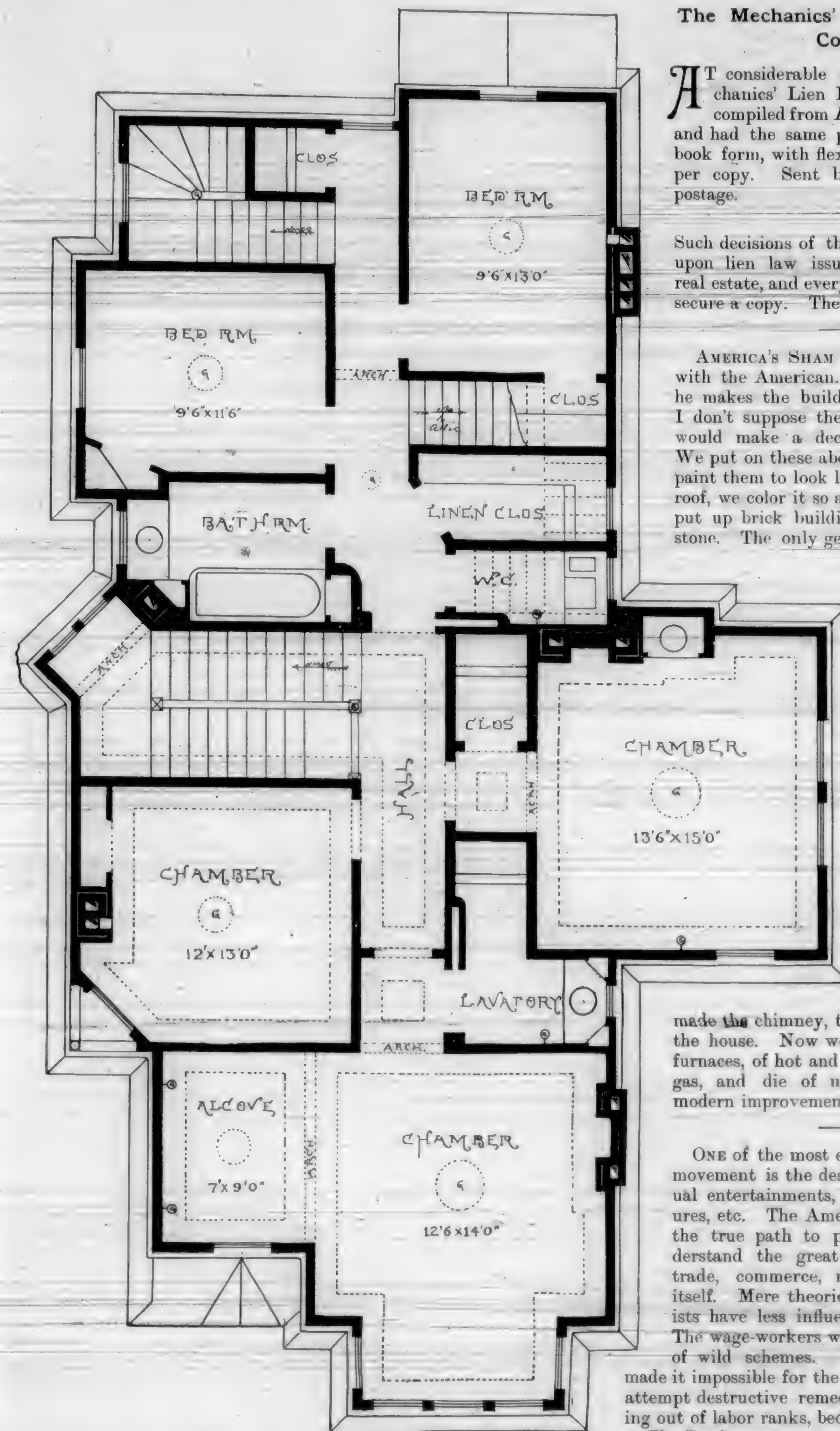


PLATE 4.—SECOND FLOOR PLAN.

THE London plumbers and gas-fitters are adopting a system of registration, for protection against incompetent workmen, who assume to do work on their own account and, by botching it, injure the reputation of the trade.

It is stated that the Pennsylvania Railroad Company has under consideration the Frost gasoline light as a means by which to furnish illumination for its passenger coaches. The Frost light has an illuminating power equal to seventy-five candles, or nearly as much as a 6' Lungren burner.