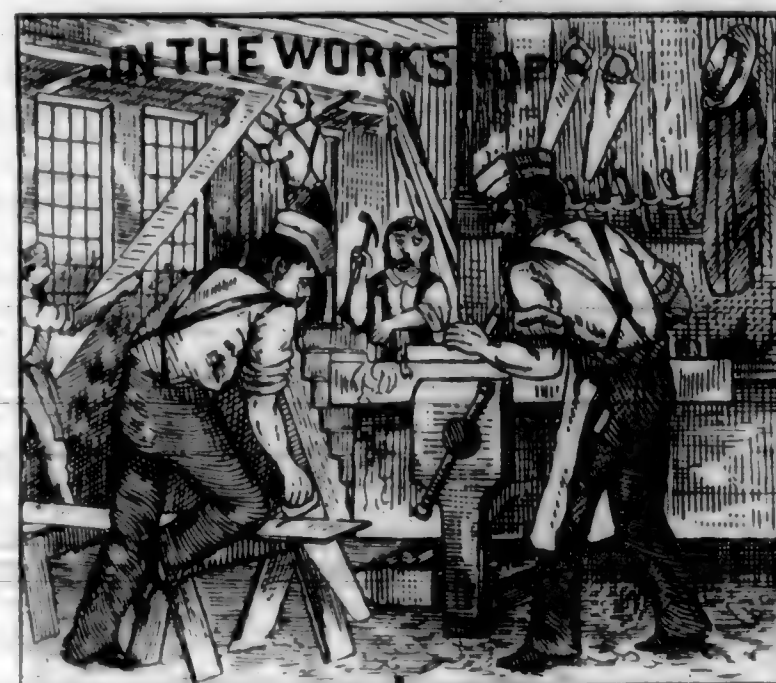




We will be pleased to receive for publication in this column items of information in regard to practical ideas connected with the mechanical part of the building trade. We especially invite suggestions from apprentices and young mechanics.

"A CARPENTER is known by his shavings." He is also known by the character of his work, and the state of his tools may be known by the same standard.

TO FIND NUMBER OF STUDS REQUIRED AROUND THE OUTSIDE OF BUILDING.—Take three-quarters of the circumference—in feet—of the outside of the building. Add one stud for each corner, angle, and opening; or, allow one stud for every foot of the outside measurement.

In planning stairs, think of your head room from the lowest starting point to the highest landing, or somewhere in ascending or descending stunning falls and broken limbs may accompany bruised foreheads and broken heads.

THE "Steel Square and Its Uses," as it originally appeared in these columns, will not be published in book form. We have, however, a work by that name which we will forward to any address upon receipt of \$1.00, either in coin or one-cent stamps.

Bad work is set out by the "rule of thumb."

DRIVING NAILS.—The handle of a hammer should be grasped at a short distance above the end of the handle, in such a manner that the end of the handle projects an inch or more beyond the side of the hand. The hand and the eye act so well together in concert that, after a little practice, the amateur will have no difficulty in hitting a nail square on the head. If not so hit, the force of the blow will be partly lost, and the nail will be moved out of position. In driving nails in hard wood, a hole should first be made, either with a brad-awl or a gimlet. Sometimes a knot will cause a nail to swerve from its right direction, and even to curl up, thrusting the point through the wood at no very great distance from the hole at which it has entered, "coming out," in workman's parlance, "to have a look at the fool that is driving it."

ONE thousand feet of lath are 2,000 pieces, and will cover 120 square yards.

JACK PLANES; WHY SO CALLED.—"Since every Jack became a gentleman, there's many a gentle person made a Jack." So wrote W. Shakespeare, Esq., in his immortal tragedy, "Richard III." The term "jack" seems to have been applied to any mechanical contrivance for replacing the personal service of an attendant, or to an implement subjected to rough and familiar usage. In England the most common name is John, and the familiar synonym of that cognomen—Jack—was applied to the plane. It is derived from the Jewish word "Jacobus," and was corrupted into "Jacques" in France, and, being the commonest Christian name in the latter country, was used as a contemptuous expression for a common man; hence the term "jack" is applied as mentioned above. Besides the jack plane, we have roasting jack, jack screw, boot jack, jack towel, jack boots, black jack, etc.

ONE and one-fourth yards of good sand will suffice for 100 square yards of plastering; 1½ barrels of lime for one coat, and 2½ barrels for two coats, for same number of yards; one bushel of hair to above quantities. One-third barrel plaster will harden 100 square yards.

TALL CHIMNEYS AND SPIRES.—Lowell has four chimneys over 200 feet high. The Merrimack Company has two chimneys

283 and 206 feet respectively; also 110 steam engines. Glasgow, Scotland, has a 446-foot chimney, not for smoke, but for chemical fumes, and another chemical chimney of 350 feet; and Manchester, England, has one of 415 feet. The Merrimack Company's is the tallest smoke-chimney in the world. The Tremont and Suffolk Company has one 225 feet, and the Lawrence Company one 211 feet. The chimney of the Pacific Mills, Lawrence, is 227 feet; that of the Navy Yard, Boston, 239½ feet. Bunker Hill monument is 221 feet tall. Trinity Church spire, New York, is 284 feet.

FIFTY pounds of building paper will cover sixty yards.

MANY thoughtless workmen seem imbued with the notion that the more glue there is used in joining wood together, the stronger will be the joint. This is a great mistake, for a *thick layer of glue makes a weak joint*. Indeed, the thinner, in reason, the glue, the stronger will be the joint, the great desideratum being the exclusion of air. If the air could be *entirely* expelled from between two surfaces, they would adhere one to the other without glue. In the manufacture of a certain sort of glass, where one piece is ground against another to bring them to a *face*, it is sometimes the case that the air is so perfectly excluded that the two plates adhere so firmly to each other that they cannot be separated without fracture. Glue should be used while hot, and the surfaces to be joined rubbed together before the clamps are applied.

WHITEWASH.—One-half bushel good, fresh, unslaked lime. Slake it with boiling water, covering it during the process, to keep in the steam. Strain the liquid through a fine sieve or strainer, and add to it a peck of clean salt, previously dissolved in warm water; three pounds of good rice, ground to a thin paste and stirred in while boiling hot; one-half pound powdered Spanish whiting, and a pound of clean glue, which has been previously dissolved by first soaking it well, and then hanging it over a slow fire, using an ordinary glue pot. Add five gallons of hot water to the mixture, stir it well, and let it stand a few days, carefully covering it over. *Must be applied hot.* One pint will cover one square yard of finished surface. This wash retains its brilliancy for years; can be applied to surfaced lumber instead of paint.

TINTS may be imparted to whitewash by adding a little blue black, or indigo, or orange red, or Venetian red.

The Flight of Time.

ITS tramp is steady, quiet, rapid, sure, and its periods certain. It has been flying for myriads of ages, carrying with it growth and decay, happiness and misery, light and darkness, sunshine and storm; and still it speeds its onward course, heeding not the wails of grief and anguish, as it lands one after another of the human family beyond its confines. Its history is made up of joys and sorrows, hopes and disappointments, bright suns and dark hours, silvery lit and starry skies and midnight gloom; balmy zephyrs and resistless storms, each and all passing away in the breath of time. Millions of years mark its duration, and millions more will yet pass to its account; yet it matters not how fast it flies, if in its flight it bears no story of misspent days and hours, as far as those now wafted upon its ever-vanishing course are concerned. Its records will tell how well or badly each has improved its fleeting moments. That which has been and is we know. That which is beyond in the vast immensity of the great hereafter, is hidden from human knowledge by the dark and impenetrable veil of uncertainty, through and beyond which no mortal eye hath seen or penetrated, except so far as revealed to multitudes who live in the light of faith in things not made manifest by sight, allured by the angel Hope to realize that when time and mortality to them shall have passed away, a brighter and better condition awaits them, where, purified from all the entanglements and ills of time, the realms of purity and perpetual rest will be entered and enjoyed; where, in the immortality that will abide forever, they will revel in scenes of perpetual peace and uninterrupted love and purity. Thus the votaries of Hope, holding faith in future bliss, draw consolation to themselves, and the embitterments of time are mellowed and softened by the dews distilled from faith in things hoped for. Still flying time stops not nor pauses in its speedy passing away, nor stays its onward course, because from its embrace millions and millions of human kind have passed away, nor any remain beyond their allotted time to enjoy its enchantments and opportunities.

ASKED, ANSWERED, AND COMMUNICATED.



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

A YOUNG mechanic inquires for a "correct method of finding the length of one of the sides of an octagon, the diameter being given."

Rule.—Knowing the diameter of an octagon and the length of one of its sides, to find the length of side of any octagon, add or subtract, as the case may be, to the known length, two and one-half inches for each six inches of diameter.

In order to use this rule, it will be necessary to remember some one certain measurement. Assume 8 feet as the average width. The length of side will be 3 feet 3¾ inches. Paste this with the rule on inside of your tool-chest lid. Suppose diameter is 9 feet 9 inches. Difference between 8 feet and 9 feet 9 inches is 21 inches. Apply the rule, and we have 3½ × 2½ = 8¾; add this to the length of side given, and the result is 4 feet ½ inch, which is the correct length of side.

THE weight of zinc per superficial foot is as follows:—

Nos.	10	11	12	13	14	15	16
Weight, oz.	9	11	13	16	19	22	25

NEVER use iron nails in laying zinc, as iron and zinc combined, causes galvanic action, which ultimately destroys the latter named metal.

THERE is no absolute need of painting zinc work; for exposing it to the atmosphere has the effect of coating it with a thin film of oxide, which protects it from the further action of the air as effectually as paint.

PAPER HANGER'S PASTE AND HOW TO APPLY IT.—Good paste for paper hanging is made of old flour, mixed to a milk-like consistency with water. When put in a kettle to boil, a little size or glue may be added, which will increase its tenacity. A little alum may also be added, in order to keep the paste sweet and to cause it to spread more freely. When boiled, it should be of the thickness of ordinary gruel, and laid on the paper smoothly and equally with backward and forward strokes of the brush. Care should be taken not to load the brush with too much paste at one time, lest the paper be rendered too damp. When an over-abundance of paste is used, a little is pressed out at the edge when the cloth is used to dab the paper against the wall. This may be removed by a sponge dipped in clean water.

In answer to a student; there are three primary Greek orders: Doric, Ionic, Corinthian, to which the Romans added the Tuscan and the Composite.

THE ancient Greeks seem to have been unacquainted with the principle of the arch, all their doorways, windows, and spaces between columns being on the principles of the architrave. In Roman architecture, the arch is one of the principal features. In Greece, the rivers are very small and the means of crossing them were simple; but in Italy the width of the rivers necessitated the use of arched bridges.

DORMER windows are small windows built out of a high-pitched roof; they are so called because they were originally used for dormitories or sleeping chambers.

A WOMAN made the first orange box in California, and has built up an industry that now amounts to 50,000 boxes a year. —*Ex.* Truly, Californians have to go away from home for items.

INDICATIONS point to an increased price for tools in the wood-working line. Mechanics should make calculations accordingly.

MORTAR and paint may be removed from window glass with hot, sharp vinegar.

SOOT falling on a carpet, if covered thickly with salt, can be removed without injury to the carpet.

A GOOD moth powder is made of ground hops one dram, Scotch snuff two ounces, camphor gum one ounce, black pepper one ounce, cedar saw-dust four ounces; mix thoroughly, and strew among the furs and woollens to be protected.

LARGEST MASS OF SOLID BRICK WORK.—The Mengoon pagoda is one of the most interesting sights in Burmah, and in its unfinished state is the largest mass of solid brick work in the world.

ORIGIN OF THE DORIC SHAFT.—The Doric shaft, with its characteristic diminution and channelings, was known in Egypt more than 1,000 years before its introduction into Greece, as is proved by the monuments of Beni-Hassen. Commercial relations had existed between the two countries for centuries, and it cannot be assumed that the Greeks had not seen Egyptian works of architecture. They could not have arrived at precisely the same results by independent invention.

NEW YORK CITY embraces an area of 24,394 acres.

"TOO MANY IRONS IN THE FIRE."—This is an old proverb, another version of which is: "He that hath too many irons in the fire, some of them will burn." This morsel of metaphorical wisdom, evidently the work of a blacksmith, is, of course, intended as a warning against undertaking too much, and, at first sight, sounds like a prudential maxim, well adapted to secure efficiency and singleness of aim on the part of all workers. But, more closely considered, the precept shows for itself what it really is—a piece of narrow-minded, petty prudence, adapted only to the guidance of incapables and fools.

The fact is, nobody who is good for anything needs any such cowardly caution about having "too many irons in the fire." Your active, efficient characters, they who do the largest share of work in the world, are the men who want and will have a great many "irons in the fire." Shovel, poker, tongs and all, these masterly workmen keep them always hot and always busy. The rapidity of their daily accomplishment is only equalled by its variety. Both their combinations and their execution are such as perplex and startle little minds, and lead them to repeat in full chatter much such petty maxims as the one now under consideration. It is by such men that human progress is advanced, inventions and discoveries are made, fortunes are won, and all valuable improvements and reforms are achieved.

ONE cwt. per superficial foot is an ample allowance for the probable load on an ordinary dwelling-house floor, exclusive of the weight of the floor itself. Two cwt. per superficial foot is sufficient, in many cases, for warehouses and factory floors.

THE weight of a crowd of men closely packed is about 84 pounds per superficial foot.

GIRDERS are often sawn through the middle, and the two pieces bolted together with the sawn sides outwards, not, however, as is often erroneously supposed, to increase the strength of the girder. It is really weakened by such an operation. The main benefit to be derived is that an opportunity is given to examine the heart of the timber, and thus expose cases of rotteness. Girders cut as suggested are much less liable to rot. The oldest author on architecture, Vitruvius, "directs a space of two fingers' breadth to be left between the beams for forming the architrave over columns in order that air may circulate between and prevent decay." Every observing mechanic has noticed that decay begins at the joints and other places where the pieces are neither perfectly close, nor yet sufficiently open to allow any dampness to evaporate.

In Amsterdam, there is a floor constructed which has no joists whatever. The room is sixty feet square. The floor consists of three thicknesses of tongued and grooved flooring, each layer being one and a half inches thick. The first course is laid diagonally across the opening; the second, also diagonally, but the reverse of the first; and the third course is laid parallel with one of the sides of the room. Each layer is securely nailed to the other. The middle of the floor is kept about two and one-half inches higher than it is at the sides of the room.

Art and Architecture.

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

IX. THE SENSE FOR BEAUTY.

AS the first efforts in forming must naturally have been crude and simple, nevertheless man tried any way to give to the objects of the same a form which pleased him, if only by its agreeability the purpose in view was expressed. So is it proper, even on the most



primitive or simple building, a projecting cornice is attached, that the rain-water falling from the roof does not run down the wall; but this cornice gives to the structure an inditing and marked form, pleasant to him if only by the purpose which is by it expressed. Gradually we seek, with consciousness to perfect the necessary and required raw material to such forms, agreeable to the purpose, which, on the whole, finish and complete a work pleasant to our view. In this way manifests itself in the highest degree the impulse or drift to form the sense for beauty. But this sense for beauty is manifoldly graded, and shows itself in most different ways; nevertheless it is the highest ornament of a nation, and the high perfection of the same by the Greek people, giving to them as such the brightest luster, and shine for all time to come. With the development of such perfections is necessarily united and conditioned a high standard of culture of the impulse for liberty and truth; then the last impulse could not express itself either with a nation existing in brutal stupidity, or with such living in despotic fetters and bondage, or living together in immoral concubinage. There would be the sense for beauty, and its expressions and manifestations for nobody's approbation and admiration, and never would come to a perfect execution. Here it would shrivel through fear, or grow wild in licentiousness. Uniform harmonies, development of thought and will, are indispensable for his own perfection, and by the same he gains such active capacities as he can and must use and apply for the general culture of mankind.

X. ITS IMPORTANCE FOR THE EDUCATION OF THE HUMAN RACE.

That the sense of beauty is necessary and unalienable for the promotion of the education of the human race, is clear and evident in every way. If we would take the sense to feel it from our world, we would cease to be human beings. Not only would it destroy the one who is used to live in artistical ideas, and find in its enjoyment the highest pleasure and satisfaction, but even of the most modest and contented every attraction to live would be taken away; from the simple peasant girl, the pleasure of a flower; from the wild man of the desert, the delight in his plumage and colored adornment.

With necessity is the sense for the beautiful implanted in humanity, and in each human being are unquestionable traces to be found. By the awakening, enlivening, and cultivation of the same will be effected the imperceptible, uninterrupted, and most powerful influence on the whole human race. He knows to give form to the first religious inspiration; he permits the eye to rest always, and always with love, on nature; it leads to deep meditation over the same; it leads to respect of the sexes, to mildness of manners, and, lastly, to art; and by artistical works a considerable retractive effect is exercised. The importance of the sense for beauty has been intelligently explained and made to become universal property. It would therefore appear as if beauty is only the servant of attaining truth; but this is an illusion; for if this be true, it must be first established that the highest purpose of life would be exclusively the attaining of truth. But who will assert this, since the purpose of life could be, with the same right, the perfect ennobling and refining of our soul, the reaching of the highest good? And, lastly, should not also the attaining of the highest beauty, in the viewing of the "epitome of all heavens" be revealed and disclosed,—be a worthy purpose of life, but not an exclusive one? But also this cannot be correct. The spheres do not exclude, but condition each other; are inseparable, and act always through and by each other, so that it is no profanation of Christian mysteries, but a deep, in its self supported, truth, when in the meaning and comprehension of the sense of the "undivided Trinity,"

truth, goodness, and beauty, the common aim of the intellectual, the ethical, and the esthetic impulses of men have combined. So aspires the sense for the beautiful to the same aim, and finds, lastly, its termination in the same idea, in which rest the origin and fulfillment of truth, and liberty, God.

XI. ART AND POETRY.

As far as history dates back, we find in the earliest nations the coincidence of activity in the sense of the beautiful in the most differing and manifold manner. The first traces of the same appear in the habiliments of man, his utensils, arms, and such like, which were embellished, not showing directly their practical purpose, i. e., the seam in a cloak being covered by a strip of cloth of a different color; or such as by the form of the object the purpose and its conditions were directly visible and evident, as in a column, as of something free-supporting. To such structures nothing compels man but his own instinct and drift, so that which he makes he gives its form a charm, pleasant to the eye or ear, to read on his mind by the two organs, to give him pleasure in the object made.

Such exertions in the sense of beauty we name art, in the widest sense, or poetry, poesie. Then here are the arts of forming and sounding not yet separated, and the Greek word and meaning taken therefrom means a making, producing, and forming by tradesmen as well as artists and poets. The law which guides and inspires him is his own feeling and sense. He is able to bring the undetermined into form and shape. He is able to perceive, if his inner instincts and impulses are expressed, that his sense of beauty is satisfied. The process which goes on in the mind of men we lead back to the fancy or imagination, that is, the capacity of the soul to conceive and put before her things or objects which the organs of sense do not observe. Free and independent out of his imagination and conception, man learns to make and form beautiful objects and things, and he uses for this purpose the natural material and stuff, to bring them (beautiful things) into existence.

XII. DIFFERENCE IN THE ARTS OF SOUNDING AND FORMING.

Is the material or stuff used or employed words or sounds, then the objects formed belong to the dominion of the sounding arts, poetry in the closer sense and the art of sounding or music. Are the former objects of a bodily form, then they belong to the domain of the forming arts, such as the art of building, sculpture, painting. The means of the first group, that is, the condition by which necessarily the work of the same reach our observation, is time. Those of the latter group is space. The objects of the first group act on the ear, and its forms are conditioned by the motion in the time. Those of the latter act on the eye, and its form is conditioned by bodily stuff being in space. Different are both kind of objects, not by their origin and meaning, but merely by the way and manner in which the originators brought them to appearance and expression. There exists not only no opposition and contradiction between each of them, but more of a complete uniformity in their origin. Both are only daughters of the same mother; but she gave them to different husbands, and the children of the one worked with rule and square, the chisel, the palette, while those of the other took to the pen and to the lyre; but not one of them denies the common origin, and they acknowledge and recognize each other as sisters and brothers, and all breathe the same inspiration.

A series of pursuits and activities are rightfully included in the arts, but with the same rights the objects of the same belong to the beauties of nature. Those are all living, and man only forms the living, without taking from them the conditions of their origin and the passing from their existence. They form and make a transition from nature to art, and consist principally in the art of gardening, dancing, with the art of riding, to which may be added mimic and the art of play acting.

XIII. ART AND THE BEAUTIFUL.

The common definitions and explanations of "Art" and its spirit are, as known, insufficient and partly empty phrases. This lays in the difficulty of giving a definition of "Beauty," and we must limit ourselves to understand and comprehend the capacity of man to produce beautiful objects, either immaterial, as the bodily or the sounding, and further expanded and narrowed down to the totality of all such things, which we call works of art, although we should use analogy, as in the dominion of nature (kingdom of animation), the kingdom of art. If we would give an abstract definition of art, we would lose ourselves in the domain of phrases, or proceed solely descriptive, by separating the human action from its subject and make it objective. In the last manner may be seen in art a presentation, that is, an activity, by which the inner thought or spirit comes to appearance. But this illustration is hereby so limited and bounded that

this activity has no useful, practical purpose, but only to produce or represent. It is clear that by this definition man is forcibly removed, but again being introduced in the same, it would only make clear that art is nothing else but man's activity, respective capacity, to produce and make beautiful things. In the same time it has been tried, those which are beautiful things, to be solved with this definition. Nobody and nothing gives us the right to exclude man from this definition of art, since art is not conceivable without a human representative, or its products without a human originator. Art, man has alone.

XIV. WORKS OF ART.

The object and purpose of art are the making and creating of beautiful things. Beautiful things made by man are therefore works of art, and only because they are beautiful are they works of art. The spirit of a work of art is its beauty, and, figuratively speaking, the purpose of art is beauty. Things having another purpose are called useful, lovely, agreeable, useless, or bad.

If now we review a multitude of such things, which generally are included within the sphere of art, we find between them a large number of such which, to us, do not appear beautiful, and which we must call ugly as the works or objects of remote people; nevertheless we don't object to adopting them as works of art. The reason therefor is that such things and objects, at the time they were made and to their people, appeared beautiful; or were considered as such by their own maker. Who could in real earnest call beautiful the images or figures of the Assyrians at Khorsabad, the paintings of the Egyptians, or a Madonna of the Byzantines; and who could call beautiful the abortions of the Rococo? The decision on all these objects is, that they were produced by the originators in a clear, or in an indistinct and with an unconscious intention to make beautiful objects; or that, at the time of their creation and making in general, they were thought to be beautiful.

A complete contrary and contrast would be that which was made intentionally to be ugly and was made ugly. Such an idea of ugliness does not exist, since all which is ugly or kindred to it has other purposes to fulfill; let it be for the existing of fear or grief, a tickling of a sensual pleasure, or other perceptions or objects, transformations and deformities, as exist in nature. The humorous, the comic, and the satirical are connected herewith, and will be mentioned hereafter.

An uncultured, coarse sense and mind will hold that as beautiful which appears to a cultured and refined mind, hard, ugly, and such like. With the general advance of education and culture, the appreciation of beautiful things will increase with the individual man as well as with whole nations—and the human race. In regard to its originator, he shows by his work of art his own coarse or refined sense, and since the same, with very few exceptions, always corresponds and is the outgrowth of the sense of beauty commonly existing in his people; then this work of art will show the sense, way of thinking, and sense of feeling of the whole nation. In the series of the works of art made by the same is revealed its inner and particular development and historical culture, which would, without the same, be forever lost and unknown to us. What would we, for example, know of the Greeks, if of the high temples and towns, of the marble figures of the gods, of the pictures and utensils, no trace was preserved; the genius of Homer would be dumb and silent to us, the muse of Sophocles lost forever, and all that, which, being kindred to those spheres, would be to the slightest presentiment strange to us. To think this, though, is already impossible, since Greek life without art is not conceivable. By our works of art we will be judged by posterity, justly, according to the merits of the present age.

XV. BEAUTY.

Since the purpose and the spirit of a work of art is the beautiful, we have now arrived at the question: What is beauty? A general logical definition of beauty cannot, by any means, be established or put up; since it must be brought back to that capacity of man which is not of a logical nature, the mind. But the beautiful is, nevertheless, not possible without certain practical relations; the same are again to be put up with difficulty and explored, as the reasonable necessity of a conclusion is missing. Then, from the divided opinion of men, and the want of proof bearing the logical test of such opinion, to call an object beautiful is to raise the question, Are objects beautiful themselves, or do we only feel in our minds the impression of beauty; or, Is beauty an objective property of bodies, such as gravity, expansion, color and such like; or, Is it only a subjective sensation in man transferred to one subject? Without illustrating these points for and against it, and perhaps arriving at a result, it may be sufficient to state that beauty is neither purely objective nor purely subjective, but is both at the same time. If beauty

was purely objective, she must appear to all men alike, as a red colored body must appear red to all; but would beauty be purely subjective, she would not make on the many one and the same impression, but would appear different to all; so much different from each other as each individual man's form, mode of thinking and of feeling, differs from those of another. At the same result we would arrive, when we reflect that beauty is not purely spiritual, but is attached to a certain concrete form, through which it operates on our senses by our eyes and our ears. The peculiar form being unconditionally attached to the object, is inseparable from the beauty of the thing itself; then the same would, when changed in its form, cease to be beautiful. In this sense, beauty is something objective, adhering to the thing itself. Otherwise is this form, for such a one not comprehending the same, just as incomprehensible as if beauty did not exist, and he would not call the thing beautiful; but only the one will find the same beautiful, having a suitable fine feeling, refinement, a fit and proper way and manner of perception, from which it can be concluded that the beauty is transferred to the things by the person enjoying it.

But how are we to proceed? If from general truth, a logical conclusion of the spirit of the beautiful cannot be formed, lays therein generally the impossibility to get closer and nearer to the same? or does a method exist which at least approximately leads to this aim? This is the empirical method, which tries to deduct from experience a principle. It has been truthfully said that we cannot proceed in the same way as in geometry, which goes from the general to the special, and singly and from the spirit of the thing to their properties and concludes, but we must content ourselves, from only single pieces, to draw probable conclusions. Of what sort or kind these conclusions must be is clear; that they cannot be purely defining the object; nor be purely of a physiological kind, to explore and investigate the affections and emotions in the human mind; but must refer themselves from the relation of the beautiful thing to man, which in the main will be objective and formative explanations. But the conclusive characteristic signs or marks which we perceive by viewing beautiful things are these—that the thing itself pleases us well, and that we in the same thing, merely as stuff and as a body, positively take no interest. When we, for example, find a bronze monument beautiful, we do not consider by far the value of the material which, when coined to pennies, would make to many no indifferent object. In this feeling, not wished for nor desired (disinterestedly) lays a deep satisfaction in the mind of man to make and produce beautiful things. The capacity and ability on which this satisfaction and pleasure is based, is "Taste," which is man's esthetic capacity of judging things in regard to the beauty of the subject; taste is ruling. The word "taste," being raised to a school expression, is nothing else than the sense for beauty of the single individual man, so that it is eas to be seen, in regard to the definition for the beautiful, we move around in a circumference. Two illustrative reflections come to our aid,—one that the pleasure of the beautiful is not purely sensitive, and the other, that in the appearance of the beautiful thing lays direct the semblance of a spirit; both differences we must recognize clearly and plainly by our intellect and reason. If now this contentment and pleasure are not purely sensitive and expanded, are not exclusively in our feeling, then they exist necessarily in accord with feeling and thought, the mind and the spirit, or, as may be expressed, in the harmonious play between imagination and intellect. But that in the appearance of the beautiful lays direct a spiritual sense, leads to the recognition of the purpose of the beautiful thing, which directly becomes perceptible; without that the intellect sees directly the purpose. The point in question is the spiritual meaning of the beautiful thing, which in the aspect comes directly to view, in the most suitable manner, so that a perfect harmony between the spiritual meaning and contents—the idea, and the outward appearance of its form, exists.

XVI. BEAUTY OF NATURE.

It is now the time to mention in a few words the relation of beauty in nature to beauty in art. In nature all things have certain practical reasons and purposes, and undergo and underlay an uninterrupted change; and beauty is here only an adornment of the necessary, even if the same in a higher sense itself is needed, and so united, that with and by each change, the same itself is changed, dissolved, or destroyed. The conditions under which beauty is attached to nature are inconstant, continuously beginning and ending. Man alone is capable of producing things of which beauty is not a subordinate aim, but is the sole and exclusive purpose, untouched by the changes of nature, unalienable, retaining its beauty, giving a presentiment of eternal duration.

(To be continued.)



PLATE 6.—CHINESE GARDEN HUT.

Graining.

IN graining work that is paneled, the lights and shades of the panel should be stronger than on the rest of surface. The rails and stiles of doors should be more simple than the panels in the imitation of dark decorated woods, as rosewood. If the cross rails are full of work, make the upright stiles plain, for their appearance is changed by their position with regard to light. Perhaps the greatest triumph in staining is imitating successfully the curls of mahogany. Graining in maple wood is suitable for dining-rooms; the color of maple varies very much, and therefore it is necessary to select a choice piece for imitation. Polard-oak graining suits well for a dining-room, with its warm color and rich effect, the color varying from the lightness of maple to the darkness of mahogany, so affording a range of choice. Oak color is adapted to all styles of wainscot, harmonizing with warm colors on wall space, whether this be papered or painted, and making pleasing contrasts with cold ones. It also looks well on the ceiling cornices of lobbies. In wainscot graining the lights and shades on the panels should be the strongest. If the prevalent color of a room be warm, the graining of the wood-work should correspond; if crimson, maple, satin wood, or oak graining may be employed; if green, some cool-toned and light-colored wood. Smoothness of surface is important in the grained imitation of woods, as well as the rendering of deep, transparent, and shadowy half tints. The grainer should not revel, as we have seen some do, in knots, which, indeed, should be left out, as well as the representation of cross-grained stuff, which the architects would avoid in real wood, whether for stiles, rails, or panels. Where wood has been previously painted, the grainer should examine it closely to see that it is not liable to peel off, and so spoil his work. Where marble has to be imitated, in order to secure a transparent effect the best polished copal should be used with colors, never turpentine.—*Painters' Magazine and Coach Painter.*

THE world moves on, inventions and progress still rush together for the benefit of the present generation; but we look back with a feeling of veneration to the art and talent displayed in ancient architecture. In all the modern edifices of which we pride ourselves, the striking features are but a reproduction of the thought of the old masters, with the exceptions that we build in a few months buildings that would have taken them years to complete. We are gradually returning to the age of artistic

wrought iron, cunning designs in brass, elaborate wood carving and marble tessellate pavements. Acquiring wealth rapidly, we are less inclined to look at the cost of the work so artistic and durable. The old Romans prided themselves on the marble floors of their dwellings, and the proof of their knowledge of its durability is demonstrated by the recent discoveries made in Roman ruins, where the marble mosaic pavement retains its original designs and colors. Of late years, an Italian artist, Mr. Caretti, has introduced this work in some of our new-fashioned residences, and a handsome design for the hall of Mr. A. D. Kohn's house is his latest work. Should, in centuries to come, Macaulay's New Zealander be digging in the ruins of Chicago, a marble mosaic pavement may be brought to light, and create a discussion as to whether Chicago was an old Roman city or the creation of a more modern age.

SOME of our scientific exchanges are describing a kind of concrete that is said to be in use for building purposes in France. It possesses the desirable qualities of solidity and hardness. It is said to be composed of 8 parts of sand, gravel and pebbles; 1 part of common earth, burnt and powdered; 1 part of powdered cinders, and 1½ parts of unslaked hydraulic lime. These materials are thoroughly beaten up together, their mixture giving a concrete which sets almost immediately, and becomes in a few days extremely hard and solid, which property may be still further increased by the addition of a small quantity—say 1 part—of cement. Among other constructions to which this material has been applied is a house three stories in height, 65x45 feet, standing on a terrace, having a perpendicular retaining wall 200 feet in length and 20 feet high. Every part of this structure was made of the hard concrete, including foundations, vaults of cellars, retaining wall, and all walls, exterior and interior, as well as the cornice work, mouldings, string courses, balustrades, parapets, and the building is without band iron, lintels, or wood throughout.

In order to render glue insoluble in water, it is only necessary to add a little potassium bi-chromate to the water in which it is dissolved, and expose the glued part to the light. One-fiftieth part of the bi-chromate will suffice.

A bound volume of this Journal for either of the years 1880, 1881, or 1882, will be sent free to all new subscribers for balance of this year and 1887.

Glimpses of Sunshine.

MECHANICS are apt to compare their life of toil and scanty pay to a long season of cloudy weather. They feel that they are under a shadow, hemmed in by circumstances which they cannot control, and that they must keep on treading, as does the horse, on an endless treading-machine. Skilled mechanics here and there have good-paying positions, but the great mass have all they can do to make ends meet. Probably this is partly due to this era of extravagance in the mode of living and of dress. The American mechanic cannot submit to live like a savage, nor even like some in our midst, who swarm together like pigs. He is fond of home, and no matter how humble it may be, he will make it as bright and cheerful as his means will permit; in fact, he is more likely to spend a little more than he earns, than he is to pinch and deny himself to save a few dollars every year.

But in the last ten or fifteen years the men who work at trades have experienced a steady decline in their incomes, partly from lower wages, and partly from lack of work.

It used to be that men were employed from January to December, but that day is past, and nine months is now about the average time made. Week and piece-work prices were formerly higher, and probably the employers obtained better prices than they do now. But labor-saving machinery has placed the employers on a footing by which they make as much clear profit as formerly, but it is distributed over an increased output.

The mechanics, especially the skilled ones, have had no means of competing by their labor, as an offset to the rapidity of steam power. The effect has been to push them aside, or compel them to accept greatly reduced pay, or turn their hand to something else. There has been a steady weeding out of good mechanics, and a steady influx of laborers who had brains enough to feed a machine.

Crowded out of their regular work, and compelled to squeeze in wherever there was an opening, it engendered a spirit of unrest, and a determination to make an effort to better their condition by concerted action. We now witness the result in the gigantic organizations that have been formed, and which are making demands that are rapidly being acknowledged by the public as reasonable and just.

For a time there was a chaos of doubts, fears, and misapprehensions on the part of the public, and even many workmen stood trembling, and fearful that the demands of organized labor would but increase their burdens. But when the workmen stated their case calmly and fearlessly, and showed that they were in earnest, and that nothing could swerve them from their purpose to gradually and lawfully compel just treatment, a little blue sky began to appear, letting in glimpses of sunshine in the form of concessions by a generous firm here and there over the country.

The Saturday half-holiday movement among merchants has grown out of the great labor agitation, and it is plain to be seen that capital is on the giving hand. Labor must not make unreasonable demands, even under sore oppression; but having once decided on what is fair and just, it should not cease all lawful efforts until its claims have been granted. The crying need of the hour among mechanics and laborers is a little business knowledge. They need to learn that but a small proportion of men have the ability to start and develop an enterprise which may give employment to hundreds of men.

They need to learn that out of these one hundred that are steadily employed probably not one of them has the business capacity to carry on the works for a single day. They need to learn that the finished products must find a market, and that the profits over and above the cost of labor, stock, and contingent expenses are not always sufficiently large to warrant an increase in the first cost.

When the majority acknowledge the above stubborn facts, they will be much stronger in self-defense, for it will guard them against foolish outbursts of temper, and strikes, which always result in heavy losses of money and great privation in their families. What labor needs is perfect organization, guided by common-sense views of business, and plenty of money to stand out against oppression.

The money can be easily had; for if one million wage-people pay in but one dollar a year apiece, a fund is at once created that in a few years will command the respect of even the most exacting capitalist.—*Painters' Magazine and Coach Painter.*

THE *Journalist* for March says: "The trade journals are a recognized and important factor in the journalistic profession, and many of the brightest and ablest men in the country are engaged in their conduct."

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 of not 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 every other.

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 offered 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.

What Will Come of the Labor Troubles.

DEFINITE and excellent results will come out of the chaos of strikes and violence and the accompanying discussions. Experience is a thorough teacher.

The first result will be the cutting loose of respectable workmen from association with the anarchists. They see with consternation the hideous purposes of these social bandits, and are hastening to denounce them. The manifesto of the Chicago Knights of Labor has the right ring.

A second result will be an end of strikes and boycotts to force non-union men out of employment. The utter collapse of the great St. Louis strike and of the Third Avenue strike in New York, and the multiplying arrests of boycotters for conspiracy, settle that question. If men want to strike on their own account, they can do it; but by the same measure that their right to quit work is defended, the right of other men to earn a living by any employment that is offered them will be defended also, and at any necessary cost.

A third result will be a little longer in coming, but it will come. American workmen will learn the lesson which a majority of British workmen learned several years ago, that the only successful strike is the one that never occurs. The waste of strikes has become so enormous that the imagination can scarcely picture it. It has become a chief factor in trade depression, and, as such, a prime cause of low wages. The only way to raise wages is by keeping at work, respectfully presenting the demand for an increase, and abiding loyally by the decision of conference or arbitration, holding the strike in reserve as a last and extreme resort.

The present disturbances are deplorable and disastrous, but they will clear the air.—*Ec.*

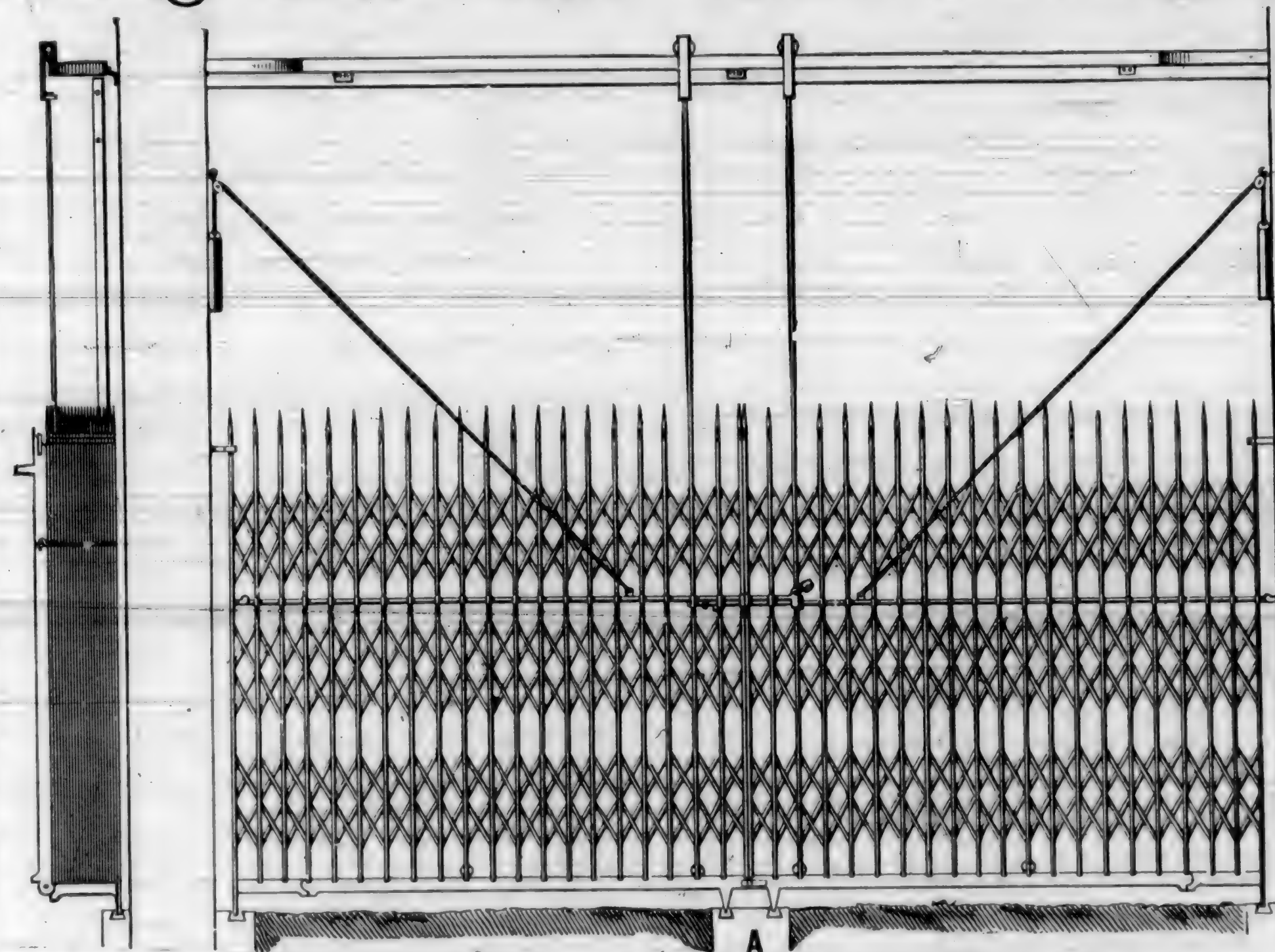
Book Notices.

OSBORN'S TABLES OF MOMENTS OF INERTIA, AND SQUARES OF RADII OF GYRATION. By Frank C. Osborn, C. E. Is designed to supply partially, at least, a need felt by engineers and draughtsmen engaged in structural works in iron and steel.

DIRECTORY OF ARCHITECTS FOR 1886. By Bryan & Co., Holyoke, Mass., and New York. Supplies in main part the names and addresses of architects in the United States, California included.

Folding Gate and Guard Company.

These Gates and Guards are manufactured to order in San Francisco, to fit and fill openings as desired. Descriptive Catalogues and Price List furnished.



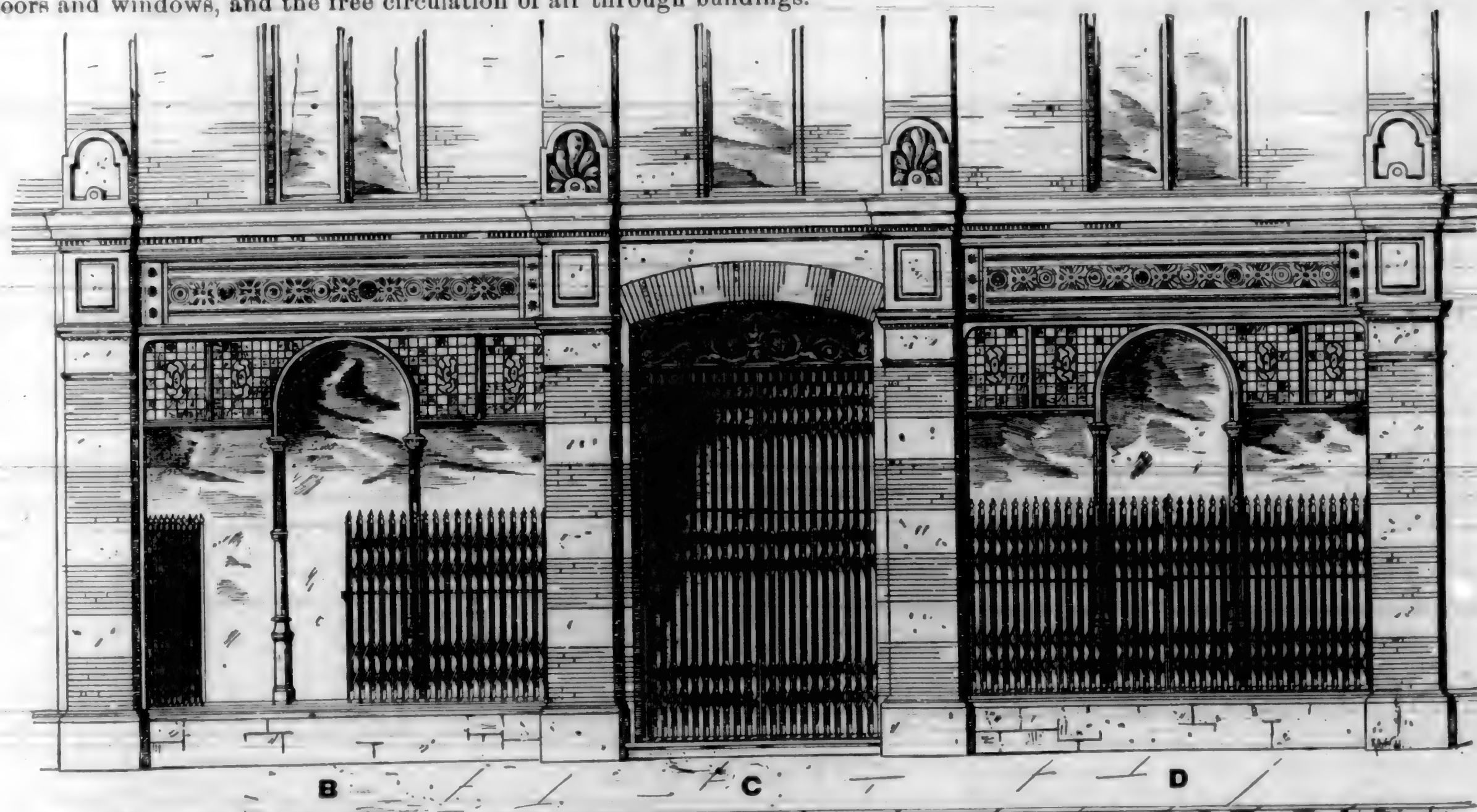
ABSOLUTE SATISFACTION GUARANTEED.—They are easily handled and adjusted, and are the most perfect device in use for the purposes for which they are intended.

Protect Your Homes and Business Houses

WITH THE IRON FOLDING GATES AND GUARDS.

They are ornamental in design, and afford perfect security when applied to store doors and windows—to vestibules, doors and windows of dwellings, and at stables, elevator wells, etc.

When in position they are an absolute safeguard against Burglars, Thieves, Tramps and Designing Persons, and can be removed and replaced without unbarring. As a Sanitary Device they are superb, permitting the opening of doors and windows, and the free circulation of air through buildings.



DESCRIPTION.—A represents the guard suspended overhead; B—Store window partly closed; C and D—Store door and window fully closed.

CEO. H. RICE,
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109 California Street, San Francisco, Cal.

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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, 1879.

NUMBER 8.

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, CAL., AUGUST 10, 1886.

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Building Summary.

AS will be noticed by our monthly report, the number of contracts let since our last issue is considerably less than those for the similar period of 1885. How far the G. A. R. Encampment may have contributed to this result, is a matter of conjecture. One thing is certain, that the encampment business engrossed the attention of a large number of our citizens, and business generally was greatly affected by it.

REPORT FOR AUGUST, 1886.

64 frame buildings, value.....	\$376,431
8 alterations and additions, value.....	12,950
72, total number of engagements, total value.....	389,381

REPORTED IN AUGUST, 1885.

95 engagements of the value of.....	395,150
August report, 1886, less than 1885.....	5,769

The Offered Sale of This Journal.

SINCE the first announcement in its pages that the entire interests of this journal would be disposed of to competent parties, a great many personal inquiries have been made, and propositions submitted and declined.

A sale contingent upon certain stipulations might have been made a month ago, but as we propose an unconditional surrender of the situation, we shall hold the fort until a competent commander-in-chief shall arrive, with satisfactory financial credentials.

Negotiations now pending with parties and firms east of the Rocky Mountains, may result in a full change of management by the first of January next, if not sooner. In the meantime the journal will be continued as heretofore to the best of our overburdened abilities.

A GENERAL EXPLANATION.

Those who have made inquiry by letter, and personally, have asked for all the facts of the case, and what will be included in the sale.

As a general answer, we state: A sale will include every interest of the publication,—its good-will, subscription list and advertising patronage, office appointments, desk, bound volumes and back numbers since 1879, outstanding accounts due from all sources, five hundred copies, more or less, architectural, mechanical, and other publications (optional), and all else pertaining to the publication and circulation of the journal.

We state, in answer to the question repeatedly asked by correspondents, in reference to

COMPOSING ROOM AND PRESSES,

That there are none. The journal has been conducted incidentally in connection with our architectural pursuits, and printed and bound ready for distribution by contract.

But with these limited facilities and restricted advantages, and personal attention divided between two great interests—editor and manager, and practicing architect—each demanding our whole time and energies, we have continued our publication work for eight years (less four months) with a profit to ourselves, making a most enviable reputation for the journal, as evidenced by the hundreds of complimentary notices from time to time published by technical, class, and other journals, and preparing the way for some one to continue its publication with great success and profit.

G. A. R.

THE Twentieth Annual Encampment of the Grand Army of the Republic, held in San Francisco, has been a grand affair, meeting the highest expectations of the home guards, the citizens of the Pacific Coast, and the visiting host from all quarters of the United States.

But our daily contemporaries of this city have so fully and elaborately chronicled all matters pertaining to this great and ever-to-be-remembered gathering of patriotic men and women, that anything on our part, more than a mere notice of the event, is unnecessary.

One remarkable feature, however, is worthy of special mention; that while the number of men, women, and children moving to and fro through the streets of San Francisco, entering and leaving the city by trains and ferries during the period of the encampment, aggregated hundreds of thousands, approximating 2,000,000 persons, not a single accident to life or limb has occurred in connection therewith.

Aggregating the number of trips of street-cars during each day, from 3,000 to 4,000 cars were moved daily, or for the week, some 25,000 to 30,000 trips on all the lines—perhaps more—yet the accidents reported in this connection do not reach the average of such happenings during ordinary times. This is the more remarkable in view of the fact that Market Street was "swarmed all day long" with the living masses, and parts of each day hundreds of cars passing a given point each hour; while at the Pavilion, on several occasions, the Larkin street-cars were run through surging crowds, and at the park terminus, frequently from one to two thousand people at the same moment transferring to and from cable to steam-cars, or in and out through the entrances to the park. Yet, under all those risky conditions, the week passed without leaving any sad and mournful monument of sorrow to mar the pleasures which seemed to flow in all directions.

The Circus Style.

CIRCUS in this sense—that a circus is a place that offers to the public a variety of funny things, as well as a few instructive and pleasing features, and the more really funny the entertainment, the better it draws, consistency being but incidental in its make-up.

In this view of the case—true merit and pure architectural rules and principles aside—the numerous clownish structures erected in San Francisco and elsewhere, are so thoroughly funny in general appearance, effect, and detail, that every intelligent architect or competent architectural critic can but laugh at the endless contortions, distortions, ill proportions and abominations set up to public gaze, and the whim of prevailing taste with those who seek and accept these structural malformations, are something astonishing.

The modern idea of house-designing, in the hands of competent and artistic architects, has, in some cases, evolved neat and pretty delineations. But the liberties possible under the false guise of Eastlake have also made it possible for consummate pretenders to operate, and conceal and disguise their ignorance of true principles, and practice their abominations under the pretext of a fancy name, used to excuse error, and gull clients to accept ignorance and incompetency as a style of architecture.

There can be no objection to any neat, consistent, and meritorious departure from the old order, in which symmetry, proportion and good taste has been respected and blended. The progressive age in which we live, not only commends but invites innovation upon the forms and features which have held the world subjugated to the creations of the ancients. Beautiful and to be admired, the grand old structures the world over stand as exemplifications of that depth of conception which evolved the classic orders, and will so stand until the curtain of time is rung down at the close of all human existencies, and the consuming flames lick up every vestige of human thought, and crumble into ashes the last evidence of human—architectural—skill, if such an event shall ever transpire.

But in architecture, time must work, and has worked, changes, and those possessing true merit and excellence will become renowned and admired, and be placed side by side with those of the early ages; but the nondescripts passed off under the name of Eastlake—meaning any structural abomination, however erroneous, as well as those of modest neatness and pleasing appearance—can exist only as remembrances of the freaks of fancy of the period, to be looked upon in future years as most singular exhibitions of the reckless corruptions tolerated in the latter periods of the nineteenth century.

This is none too severe criticism, as much that is now practiced is defenseless upon any hypothesis of refined ethics, good taste, convenience, or consistent form, and in details innumerable, fearfully at variance with rational comparison with anything in true art or nature, and inclining in harshness and hideousness in general effect, to structures among barbarous races, or the semi-civilized and idolatrous nations.

In many of the examples the ill-shaped lines and inconsistencies are positively repulsive to the eye of those who have studied the beautiful from forms, as handed down to present generations through successive ages; yet there is at the present time a too general disposition to favor extravagancies in house designing, as in all other things, and to recognize as good the wildest imaginations and concepts of men, who in the attempted pursuit of classic architecture would fall to the deepest depths of obscurity.

Life of Cast-Iron Pipes.

THE fact is well sustained that the wear, by rust, in uncoated cast-iron pipe exposed to the action of clean, fresh water on both sides, is not more than one-eighth of an inch in three generations. With the present method of protecting such pipe with asphaltum, the life of the ordinary cast-iron pipe, used in building construction, may be greatly prolonged; indeed, even an ordinary coating of coal-tar pitch, when properly applied, is sufficient to add at least a score or two of years to its durability. The life of a soil pipe, even when quite thin and uncoated, has been found, by experience to be so great that it is not unreasonable to suppose that the greasy matter contained in sewage serves to coat and protect the iron from the corrosive action of the water and the acid components of the sewage.

The defects and leakages more generally met with in such pipes, are caused by the defective manner in which the joints are made, and improper placing and securing. Materials and devices used in buildings are often made to bear the faults of bad workmanship, and frequently "tearing to pieces" is done under the presumption that the things torn out are worthless, or not good, while the real difficulty lies in the defective handling and fitting.

Copper Boiler Explosion.

THE explosion of a copper boiler, in the kitchen of the Winchester House, in this city since our last issue, by which human life was jeopardized, and property damaged to the value of nearly \$2,000, was an occurrence of infrequent happening.

The possible explosion or collapsing of copper boilers connecting with ranges or stoves, is a matter well understood among plumbers and competent architects, and as a rule, precautions in the shape of tanks and steam pipes are applied in all such cases, and when sufficient and properly connected, there can be but little danger of either collapsing or explosion, even if the sheet metal of the boiler is light. Consequently the fact that a copper boiler did explode in the kitchen of the house named, is *prima facie* evidence that the vent—the "steam pipe,"—was too small, was trapped, or choked by corrosion or otherwise. To produce an explosion by steam, the vapor must be confined and accumulate until its force becomes greater than the resistance afforded by the vessel or chamber in which it is bound. An insufficiency of water alone would not cause an explosion in any case where a vent was applied capable of carrying off all excess of power in the steam beyond the strength of the holder. Hence it is fair to conclude that the cause of the explosion was the absence or obstructed condition of such proper vent or escape. There might have been but a fractional part of the quantity of water required to fill the boiler, and no explosion occurred, if there had been a sufficient escape for the steam produced by the water passing through the water-back. The boiler may have been constructed of light material, but that fact alone would not have been sufficient to produce the explosion, if the precaution against the result had been free and of sufficient size.

The fact that the boiler was thrown to a great height, and the building construction in which the accident happened demolished, proves that there was a considerable accumulation of steam in the boiler, and that it was so bound as to obtain a force beyond the resisting and retaining capacity of the shell in which it was held.

The lesson to be drawn from the case under review is, that vent pipes—of sufficient capacity to boilers are most important and necessary adjuncts, and that they should be kept free from corrosion or stoppage of any kind.

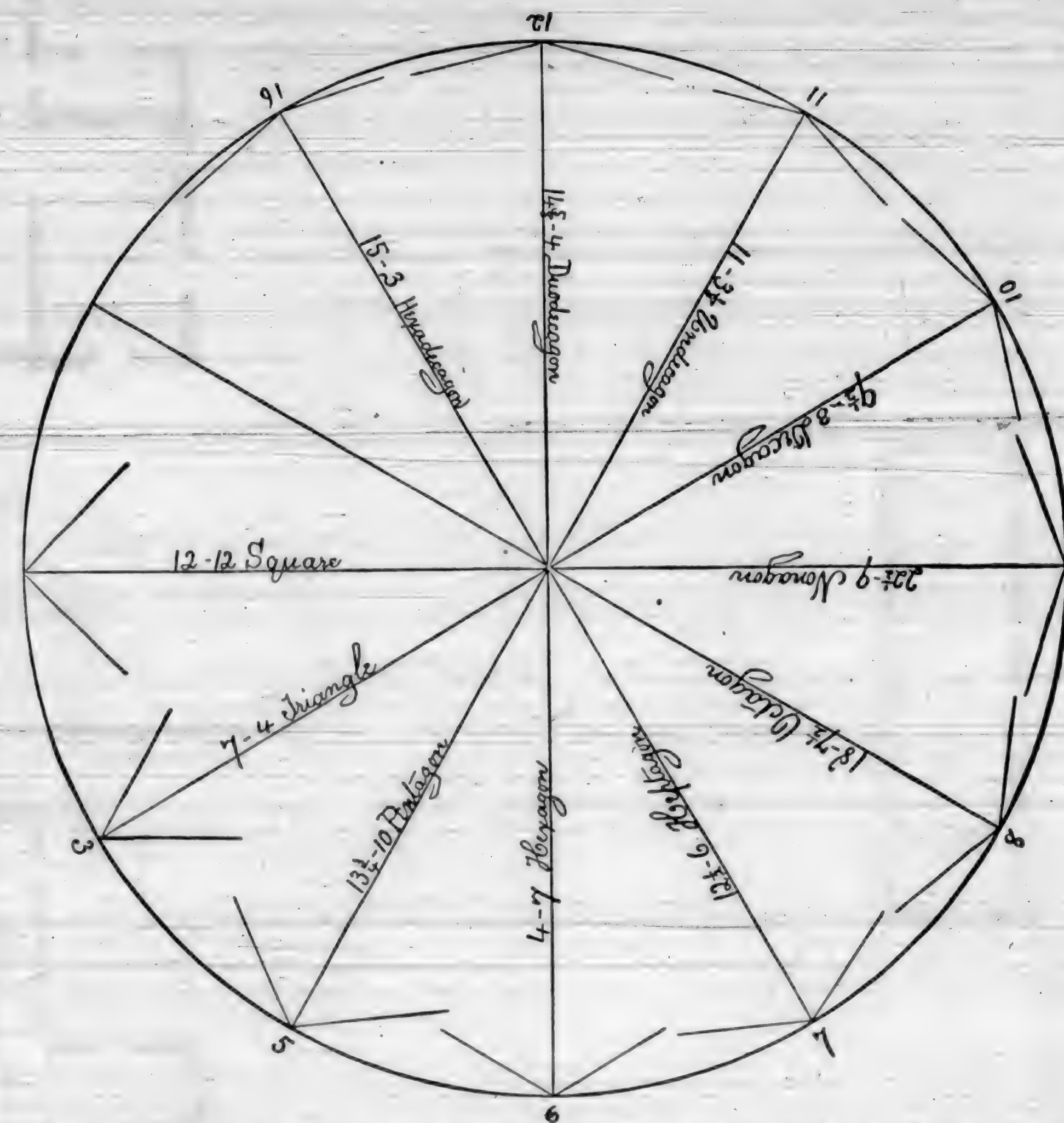
A second lesson suggests itself to manufacturers of boilers, and plumbers, not to make or use those of thin metal. Had the boiler in question been a little heavier, say five dollars' worth more of copper in the weight of the sheet-metal, the accident would not have occurred just when it did, and might not have happened at all. The repeated and frequent draining of water for dish-washing and kitchen purposes, after meals, the time when the explosion in question occurred—just after breakfast—when the fire in the range was less than it had been in cooking the meal, clearly indicates that there was a chokeage in the vent pipe, terminating as stated, in the explosion of the boiler, loss of a sum in damages to property sufficient to build a neat little homestead for a family, and the severe scalding of one of the helps, and some injury to others.

STAINING MARBLE.—The art of staining marbles in a permanent manner has long been lost, but an American has rediscovered the process or discovered a new one equally effective, so that it is now possible to paint a marble surface with pigments which sink into the substance of the stone to any desired depth and then to polish the surface as highly as before the marble was treated.

ACID PROOF CEMENT.—A cement for resisting sulphuric acid even at boiling heat may be made by melting caoutchouc at a gentle heat and adding, with constant stirring, from six to eight per cent of tallow. Then mix therewith enough dry slaked lime to make the whole the consistency of soft paste; finally, add thereto about twenty per cent of red lead, whereby the mass immediately sets hard and dry. A solution of caoutchouc in twice its weight of linseed oil, aided by heating, and the addition of an equal weight of pipe-clay, yields a plastic mass which will likewise resist most acids.

SHINING BLACK INK.—The best shining black ink, used for mourning paper, and the manufacture of which has up to the present time been kept a secret by the makers, may be prepared, according to the *Papier Zeitung*, of lamp-black, borax, and shellac. The ink is made as follows: In one liter of hot water sixty grams of borax are dissolved, and to this solution three times the quantity of shellac is added. After this mixture has been properly dissolved, the necessary quantity of lamp-black is added, the whole thing being constantly stirred. Should the luster not be satisfactory, more shellac is added.

Every Mechanic Should Paste This Page on the Inside of His Chest Lid.



In 1881 a series of articles on the "Steel Square and Its Uses" was commenced in this journal. They were continued until late in 1883, and received with great favor by our mechanics. In June, 1882, we presented the above original design by which mechanics at a glance could, by the shortest possible method, determine the proper bevel necessary to make a figure of any given number of sides. The edition containing the above cut has long been exhausted and we have been opportunely over and over again to reprint the illustration and explanation. Many other articles found in back numbers of the CALIFORNIA ARCHITECT have been inquired for with the request that we republish the same; our rule is always in each number of this journal to furnish to our readers entirely new matter and we for the first time lay aside our rule and republish the above cut with its explanation.

The above design is an ORIGINAL and very simple illustration by which the mechanic can see at a glance the necessary bevel to be obtained to enable him to make a polygon of any number of sides, by simply using the STEEL SQUARE, no drawings being necessary. With the exception of the triangle, all the bevels used are those formed by the SHORT ARM of the square; the three-side figure being formed by the bevel of the LONG ARM.

But little explanation is necessary to thoroughly understand the cut. If a nonagon is wanted, look for the figure 9 outside of the circle; following the line inside, we find the figures 22½x9. Place your square against the STRAIGHT edge of—say a piece of lattice, using the above figures to form the bevel. Mark bevel on SHORT ARM; cut nine pieces of the same length, with the same bevel; fit the nine pieces together, and you have a nonagon, or polygon of nine sides. Proceed in the same manner with any of the sets of figures given.

By cutting out the above figure, and pasting it on the inside lid of his tool chest, the mechanic will always have handy a guide by which he can easily obtain the bevel of any cut illustrated above.

The lines forming the "crow's feet" at the end of each of the radii, show the direction of the sides necessary to be made to form the figure required, indicated by the number on the outside of the circle.

Floor Plans for a Seaside Cottage.

THE accompanying engraving represents the plans for a building to be erected near the sea-shore. One of the first things to be thought of in designing houses to be built near the water is the arranging of the various rooms in such a manner that perfect light and ventilation are secured without the windows being too much exposed to the fury of prevalent storms, or the regular blow of trade winds. This fact has been carefully kept in view in the plans as presented on this page.

Another fact must be kept in view: Such houses as the one illustrated must be provided with suitable bath and dressing-rooms, handy of access from the beach. By examining our first-floor plan, it will be seen that two such rooms are provided for. They are directly in front of the intended building and can be entered very easily. The front, as shown, faces the sea, the main entrance being in the rear. Following out the suggestion given above, no windows have been placed on one side of the building, thus presenting a blank surface to the fury of the storm which may happen to rage. The plan may be reversed so as to have said wall face any point of the compass and still carry out the general design shown.

The arrangement of the first story will commend itself especially to those who find it inconvenient to have servants around among the living rooms. Ample accommodations are found in this floor for all kitchen work. By the means of a dumb waiter, the meals, after being cooked, can readily be transferred to the dining-room; a large cellar affords ample room for the storing of coal, vegetables, etc., while the servants are provided with a fine front room, with a beautiful room.

Via parenthesis, we may remark that one of the principal reasons why servant girls are so hard to keep in one place is the insufficiency of their bedroom accommodations. They are put anywhere, and often sleep in rooms in which the sun never shines. This is radically wrong; servants are hard-working people, and nature demands that they should have proper rest and well-ventilated rooms. There are already too many houses in which the servant's room opens directly out of the kitchen; consequently the room is filled with the smoke and fumes arising from the cooking; the bed clothes, etc., are permeated with the noxious vapors, and when the weary servants retire for the night, they are compelled to breathe the same kind of greasy air that is inhaled during the day. The result is a few months' stay in one place and then a change. By all means, ladies, see that your houses are so planned that the servant can have a sunny room.

Ample bedroom is provided for a family of at least eight persons, and by doubling up in the beds, many more can be provided for. Should an attic be wanted, the stairway can be carried up similar to that shown on third-story plan. The rear portion of the attic could be fitted up as an observatory, with the telescope, etc. Children living in such a house could thus be early taught the rudimentary principles of astronomy. The front portion of the attic would make a fine billiard room, leaving ample room between stair hall and observatory for a children's play room.

While the arrangement as shown will not be acceptable to many, it must be remembered that a sea-side cottage is not intended for a permanent residence. Compactness with ample accommodations; every convenience and yet only a moderate outlay of money; these two facts must be well borne in mind when planning a house of the character shown. Being away from a town, no water pipes are indicated, nor gas pipes marked; to those wishing to go to the expense, an artesian well and windmill and pump complete will supply the one, and a gas machine the other.

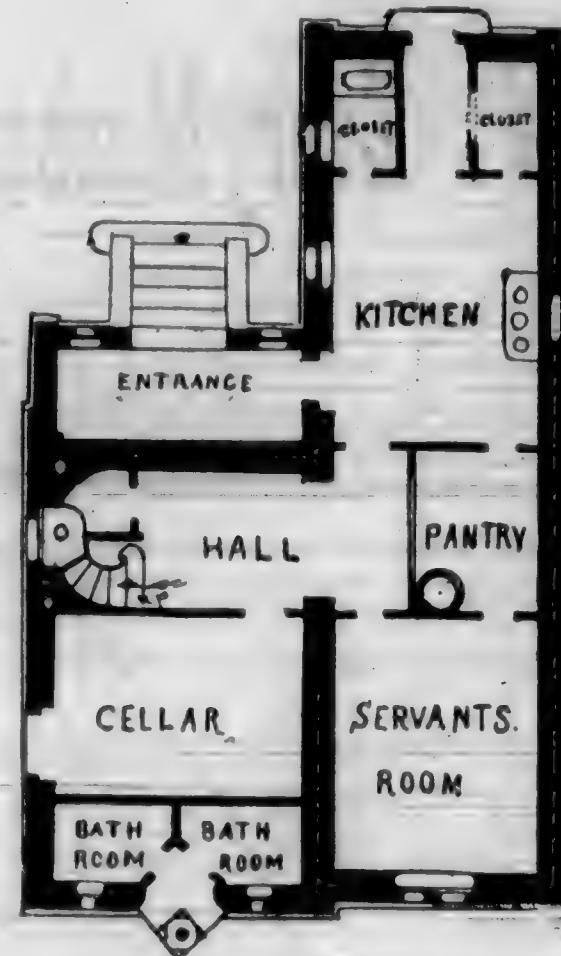
The front elevation we do not give. This may be varied to suit the tastes of those building. We have only endeavored to present the general plan of the house, leaving

it to an architect to supply the balance of the drawing. A house of the character shown can be built in this section of the country for any amount from \$5,000 upwards, depending greatly upon the accessibility of the different materials required in its erection.

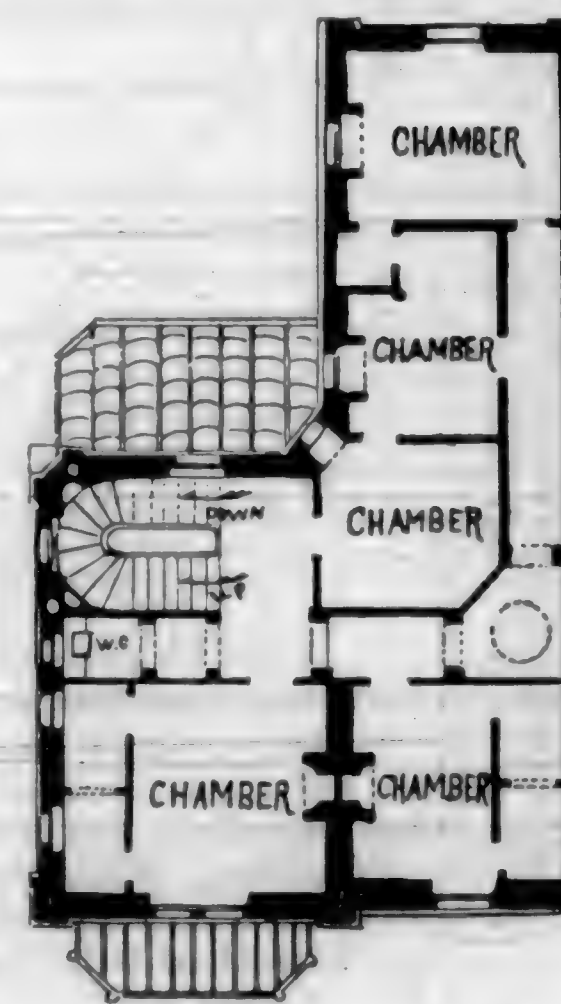
Painting Floors.

NOW that the fashion is more and more prevalent of using carpets that do not completely cover the area of the floor, and which thus escape distortion by being so cut as to coincide with every angle, recess, or curve of the walls, floor painting should certainly be more generally adopted. Painted borders are all well enough, but the whole area of the floor may be advantageously laid out in color. This painting necessarily involves priming, which, in itself, as applied to floors, is hygienic, as having the effect of closing the pores in which dust lodges, the dust, with its darkening and forbidding effect, never failing to obtain lodgment unless, indeed, the boards should be of costly hardwood, which is the exception, not the rule. It may be said that a floor painted all over will not be seen, but, without replying that a painted border where the whole area is not colored is a deception, we may remark that the entire treatment of a floor or cover affords a security against unsightliness should any portion of the central carpet be accidentally raised, and that in the event of its removal for purposes of cleaning the painted ground suffices, more especially if enriched with a few rugs or tinted or patterned mats.

In the hot summer months a floor artistically painted will be often found preferable to carpet, as aiding in the movement of the air, not harboring dust, and proving on the whole cooler. Paint may be so compounded and laid on floors as to suffer but little injury, even when exposed, in a long course of time. Should the colors become dull, a slight varnishing will suffice to renew much of their pristine freshness. There are many rooms in a house which would be all the better for not being fully carpeted. Such especially are bedrooms. When we speak of painting a floor we do not refer to giving it a uniform hue. The handsome designs carried out in encaustic tiles may be repeated in color. Geometrical figures centered with small leaf patterns are peculiarly appropriate; so, too, a host of fresco patterns, these being varied in successive tiers. Longitudinal lines representing the chromatic scale of colors might be repeated at certain intervals. Diagonal lines in different hues, lying thwart each other, in basket-work style, would have a good effect. The borders, as a matter of course, should be differently treated.



FIRST STORY



THIRD STORY

DOVETAILING.

THE art or mechanical science of dovetailing consists in fastening boards or timbers together by letting one piece in the form of a *dove's tail spread*, or wedge reversed, into a corresponding cavity in another, so that it cannot be drawn out. The mere fact that a mechanic can explain what a dovetail is, does not imply that he is therefore fully acquainted with all the mechanical skill necessary to perform the operation required with artistic ability. Practice alone, with a careful attention to details, is the main requisite necessary to perform a neat and accurate joint.

Again the mechanic must study; because he has practiced enough to enable him to make joints hardly discernible to the naked eye, is no reason why he must consider himself as perfect. He must have a thorough conception of the proportion which a piece made to fit into another should have toward that into which it is fitted, so as to produce the greatest strength with the least possible waste of material. He must also know how to proportion a joint so that it shall not fail or give way before another.

It is in the latter particular why so many joints made by the most skillful workmen separate with a trifling strain, or from being bound too tightly together, fly and split in all directions. This is owing to want of study on the part of the mechanic, as he is lacking the information necessary to estimate the strength required to resist the stress on the joint.

In Fig. 1 we represent the common dovetail. The projecting ends are called the *pin* of the dovetail, and the aperture into which this pin is fitted is called the *socket*. The form shown is the strongest of all the various patterns, and is used in tool chests, backs of

drawers, and in places generally where strength is considered of more utility than beauty. In laying out the dovetail, it is best to allow the pin to be a little long, so that after the work has been put together, the projections can be smoothed off with the plane, thus making a clean surface.

The strength of the joint depends on the form of the dovetail, as well as on the proportion it bears to the parts cut away. No absolute rule can be given for the bevel of the *pin*; in ordinary work an angle equal to about 75° or 80° is that usually employed. To those who do not understand how to obtain the angle required, we would say, take a pair of compasses and scribe a circle; draw two diameters at exactly right angles to each other; the arc of the circle will thus be divided into four parts, each equal to 90°; divide the arc of one of these sections into five equal parts; draw a line from the center of circle to the point nearest the perpendicular; this line in relation to the diameter will give the bevel necessary for the *pin* of the dovetail.

Young mechanics are apt to allow too great a bevel for the *pin*. This fault must be carefully guarded against. Too much of a bevel decidedly weakens the joint. The best rule to go by is to study the nature of the wood, and give as little bevel as possible and still prevent the possibility of the pieces pulling apart. Hard or tough wood admits of much greater bevel than redwood or pine.

Fig. 2 represents the *lapped* dovetail. In this form the ends of the dovetail show on one side of the angle only, and is generally used in the front of drawers in cabinets, bureaus, etc., where the side cannot be seen unless the drawers are opened.

Fig. 3 represents the *mitred* or *secret* dovetail. In this the dovetails are not seen at all. While, admittedly, this is the weakest form of all the various patterns, still it is very useful where neatness is required, and is generally employed in making fine boxes, etc., for the parlor or library.

As represented in Fig. 4, a tenon may be held tight in a mortise, by framing the latter in the shape of a dovetail, and *fox-tail wedging* the tenon into it; this is done by four thin wedges into and projecting from the end of the tenon, so that on coming in contact with the bottom of the mortise hole, they may be driven into the tenon and enlarge it sufficiently to fill up the dovetailed mortise. Care must be taken to so arrange the wedges that the two outer ones may be driven first, and then the inner ones; by this means only thin pieces of the tenon are split and

turned outwards at a time, thus avoiding the risk of splitting the tenon beyond the shoulder, which might occur if fewer and thicker wedges were used. Light blows should be given at first so as to cause the tenon to gradually split.

The mechanic must have his tools in perfect order. Only dull instruments as well as tools slip over work. If the edges are keen, they will *grab* hold of the wood as if eager to do their part. In fine work it is absolutely essential that the tools be in perfect condition, as a slip of the plane or saw may cause damage which cannot be easily repaired.

Scribing.

SCRIBING is the operation by which a piece of wood-work is made to fit against an irregular surface. Thus, for instance, the base-board of a room, by scribing, is made to meet the unevenness of the floor. To determine just the amount of wood necessary to be removed, take a pair of compasses and open them to a width equal to the greatest distance or space between the base-board and the floor. Having set the compass, draw them along the floor so that a mark will be scribed in the board, corresponding to the bumps on the floor. Cut the wood away according to this line, and on refitting the board, a good joint will have been obtained.

A CURIOUS flower was recently discovered on the Isthmus of Tehuantepec, Mexico. It has a faculty of changing its color during the day. It grows on a tree. Another peculiarity of this floral chameleon is that it only gives out perfume at noontime. One of the strangest things about this flower, however, is that it should be found in Mexico when its colors are those of the United States flag. In the morning it is white; at noon it changes to red, and at night it adopts a soft blue color.

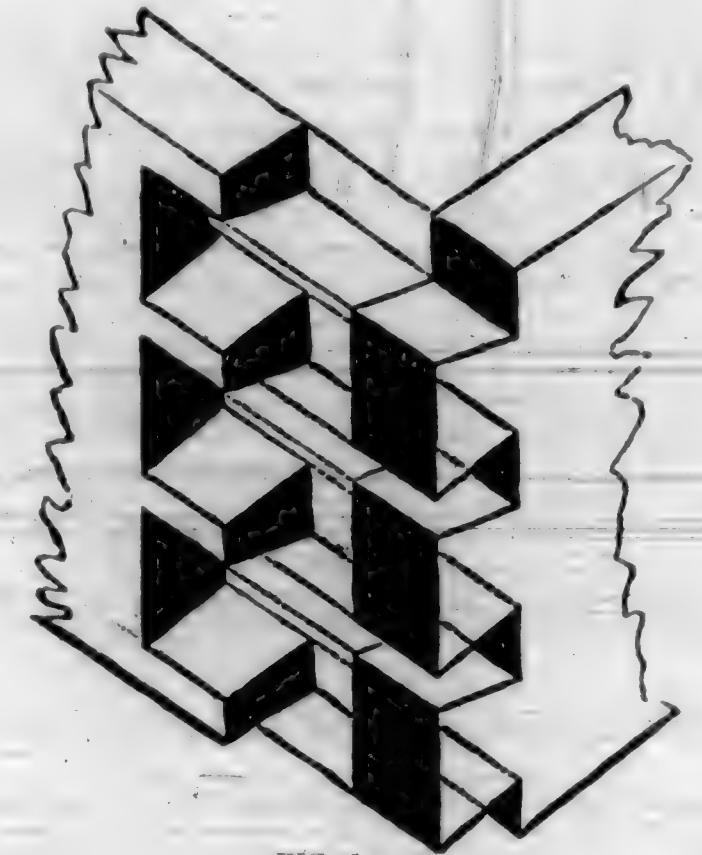


FIG. 1.

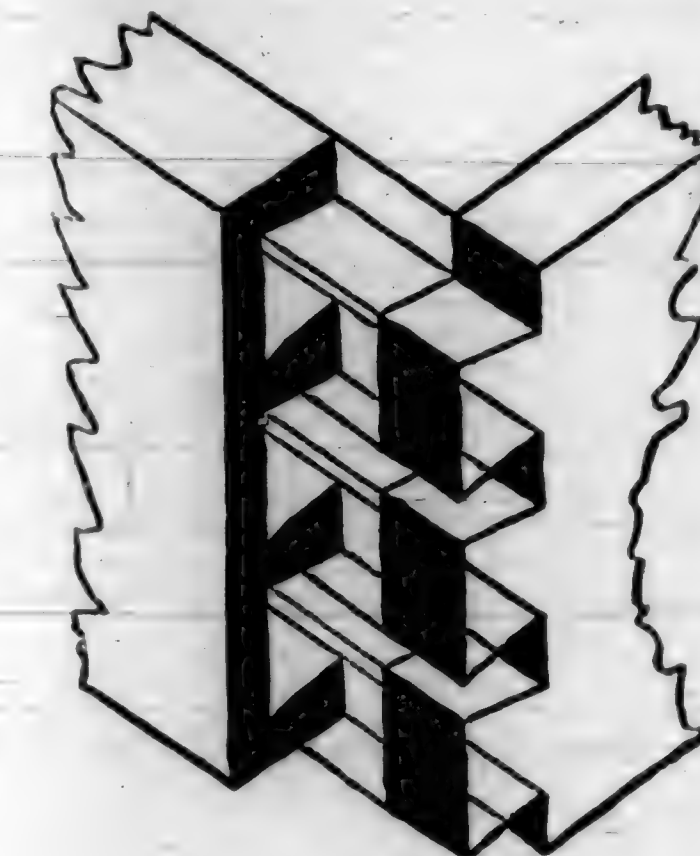


FIG. 2.

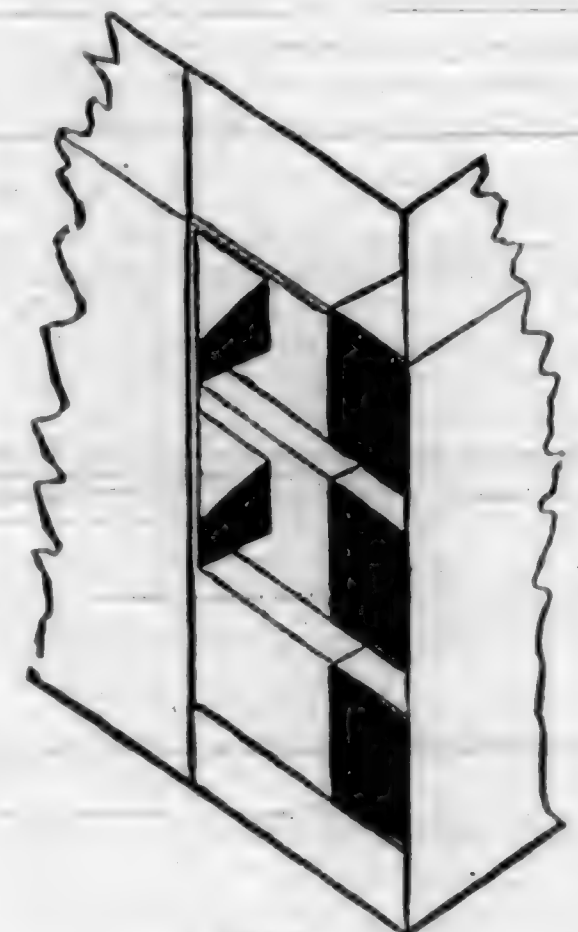


FIG. 3.

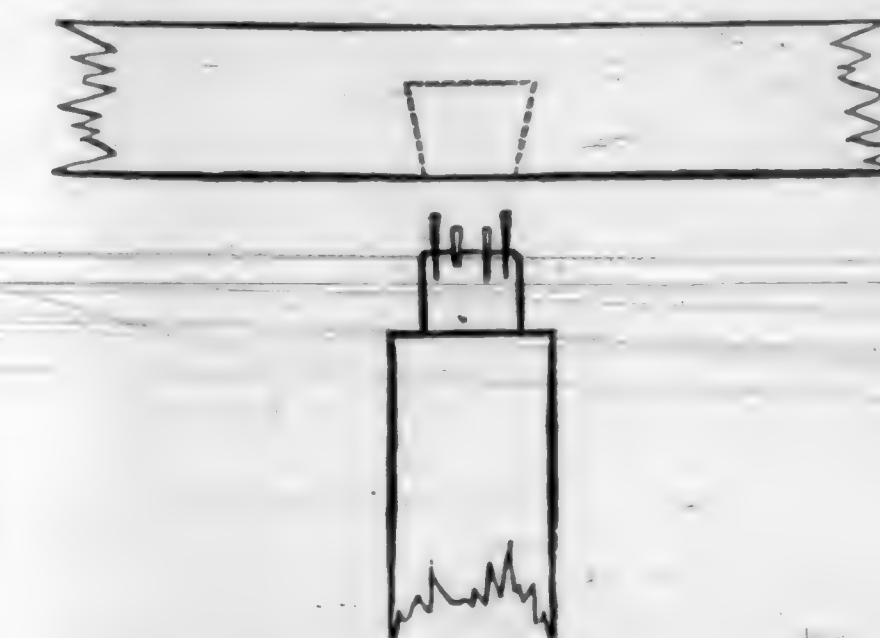


FIG. 4.

American Institute of Architects.

WE have received a copy of the proceedings of the Institute at its nineteenth annual session, 1886, containing also an expressive likeness of the first president of the Institute (deceased), Richard Upjohn.

The address of welcome was delivered by Dr. Thomas A. Atchinson, which was responded to by Mr. Kendall, in which the following occurs: "Additional associations for the furtherance of professional interests have been formed under most favorable auspices, and we must feel especial gratification in the increased facilities for the study of architecture, which are offered by the Institute of Technology, in Boston; by Architectural Department of the School of Mines of Columbia College, in New York; by the Illinois Industrial University, at Champaign, and by other institutions of learning in various parts of the country, so that the student in America can now obtain a professional training, which will be of greater practical value to him than the architectural courses of Paris, Vienna, or Berlin."

The addresses, containing many interesting references, were listened to with deep attention, and received hearty applause from members and guests. The following extracts from the proceedings indicate the spirit and feelings actuating our professional brethren—members of the Institute:

"It would seem desirable that some effort be made to bring about a closer union and relationship between the architectural associations of this country. To this end it seems but proper that some advance be made by the American Institute of Architects, as the oldest organization of architects on the continent. As a means to that end, it would seem desirable that this Convention take some action looking to a representation through a regularly appointed delegate at all conventions of architectural societies throughout the Union, and that such societies be requested to send each a delegate to all conventions of the A. I. A."

San Francisco Chapter is duly noticed in the report of proceedings.

Matters relating to supervising architects to public works, compensation, competitive plans, etc., were considered.

A "Bill to establish the office of Commissioner of Architecture, and a Board of Public Biddings, and for other purposes," was presented by the committee previously appointed to prepare such a bill, in which among other things occurs:—

"Section 27.—That any contractor who shall construct the building on which he is engaged in a different way from that prescribed in the plans and specifications, or who shall supply different or inferior material from that called for in the specifications, or who shall cause the work to be done in a manner different from that called for in the specifications, or in his contract, except as provided for in this act, shall, on conviction of such offense, be fined in any sum not less than five hundred dollars."

Reference is made to the following "words of our first president, Richard Upjohn, spoken at the convention of 1867. After sketching the early struggles and history of the Institute, Mr. Upjohn said further: 'It is the duty of every one of its members to throw the full force of his abilities and influence, so far as the demands of his first duties toward himself and his dependents will permit, into combined effort to make the Institute attain its object, and realize its noble ideal. If we do so, if we show that we respect our work, and ourselves as its doers, that we know what we mean, and mean to do it, so far as our providential opportunities will permit, if we make what we have done apparent, and show that we have well laid out our plans for the future, and have the men, the intellect, and the culture to carry them out well, we shall find that Providence will not fail us, but will, through the medium of outside co-operations, supply us according to our need and progress with the material means requisite to make our mental capital available.'

"Eighteen years have passed since these words were spoken. The Institute has developed and grown strong under its federal system of united chapters. A bright and useful future seems to be open before us; the art of architecture is more appreciated, and the practical science of building is more generally and better understood. To be members of the American Institute of Architects should be our pride, and an attendance upon its annual conventions a journey of pleasure and profit to all fellows and associates."

The many reports of committees, and speeches by able representatives of the profession, contain a large amount of instruction, and furnish data and facts of great value to those earnest in desires to improve themselves in the practice of a profession time-honored and noble, yet ever challenging the best efforts of the human mind to keep pace with its unfoldings, and ever

furnishing new bases of thought, and revealing new beauties through each succeeding generation.

The suggestion expressed, that every chapter in the United States should be represented at the annual councils of the grand body, is a good one, and honored, indeed, will be the man who shall be the first from California to represent San Francisco Chapter and the architectural profession upon the Pacific Coast.

Technical Terms.

SOME of the technical terms used in the building trades are very curious, and while many of them have some direct clue as to their derivation and meaning, others possess nothing whatever to show their signification or origin. Technical terms vary to a far greater extent than one would imagine. Even in different sections of the same district one will often find a considerable difference in the pronunciation and manner of spelling technical words; in fact, it is often difficult to determine what the correct spelling and pronunciation should be. An instance of this variation may be found in the word "rebate" in the Dictionary of Architecture, which is therein given, spelt in no less than twenty-three different ways: Rabbet, rarebet, rabbit, rabit, rabbit, and others are given. Other words, equally as well known, vary in as great a degree.

At a recent examination in building construction the following question was given: "Give a short description and sketch, where necessary, explaining the meaning of each of the following terms: 'Tumbling In,' 'Welsh Arch,' 'Dutch Arch,' 'Birdsmouth,' 'Hot Short,' 'Cold Short,' 'Natural Bed,' 'Sandwich Girder.'" Although the terms all refer to well-known features of construction, some of the terms are sufficiently uncommon to render an explanation of their meaning of some interest to our readers.

"Tumbling In" is a term in brick-work used to denote the way in which the courses of bricks are built out of the horizontal when it is wished to reduce the width of a chimney or buttress, or the length of a wall.

"Welsh Arch" is another term used in brick-work, and refers to a bad piece of workmanship. When beams of any considerable thickness are built into walls, when, in fact, they are more than about seven inches in width, a single brick over them will not carry the superincumbent load, and it is therefore usual in good work to turn a ring arch over the end of the beam, leaving a small space around it for the purposes of ventilation. Bricklayers often do not take the trouble to turn a fair arch, but compromise the matter by constructing what they term the "Welsh Arch," which simply consists of a brick splayed at each end, supported on the splayed ends of the adjacent bricks. It need scarcely be added that this construction should not be permitted in any good work.

"Dutch Arch." This refers to another form of bad workmanship of the bricklayer. The strength of this "arch"—there is really not a single quality of the arch about it—lies wholly in the adhesive power of the mortar.

The word "Birdsmouth" has two meanings. First, it is a term used by framers as applied to the joint made at the foot of a common rafter, where it rests upon the wall plate; and, secondly, it is applied to the cutting of bricks where it is necessitated by the corner of a building coming at an acute angle.

"Hot Short" and "Cold Short" are both terms applied to defects or impurities in iron. The presence of sulphur, and, probably, also, magnesium, makes the iron red or hot short, that is, brittle at a high temperature; and the presence of phosphorus and silica, cold short or brittle at a low temperature. Both are serious defects; the latter the more so. These impurities come either from the ore or from the coal and flux used in course of its manufacture, and certain materials are, where necessary, used to remove them, common salt being usually employed for the purpose.

"Natural Bed" is of considerable importance to masons. It refers to the plane of deposit of aqueous or sedimentary rocks. It is very advisable that all such stones should be laid on this bed in order that the stone may the better resist the action of the atmosphere upon it.

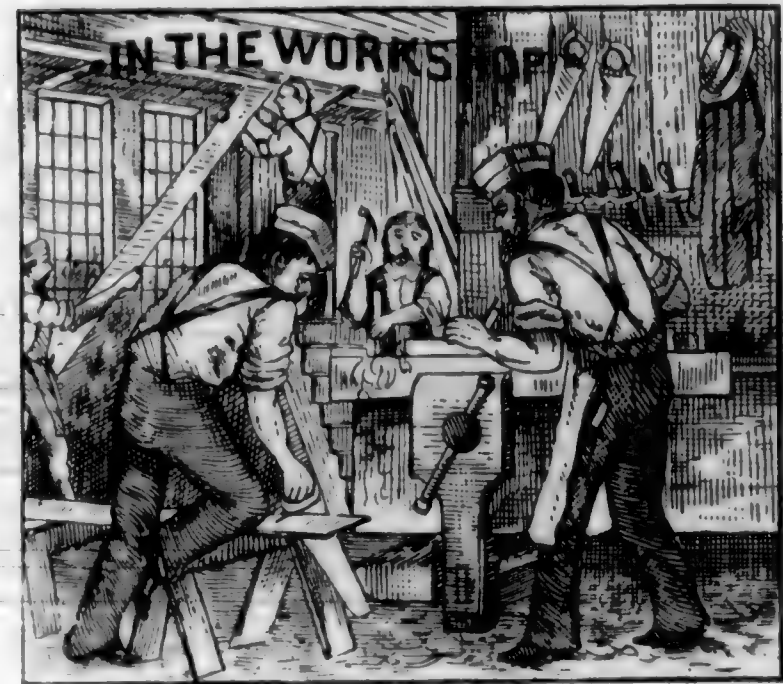
"Sandwich Girder" is simply a vulgar name given to the fitch girder, consisting of a beam of wood sawed longitudinally down the center, the two portions being reversed or the faces of the parts previously forming the center being placed outside, a plate of wrought-iron placed between them and the whole well bolted together, forming a strong, light, stiff girder suitable for many positions, and more particularly for loads and positions like those of a breastsummer.—*Artus, in Building.*

PLUMBERS should be careful not to use lead in contact with oak, unless the latter is perfectly dry and free from sap, otherwise the gallic or acetic acid in the wood will turn the lead into acetate of lead or ceruse.



FRONT ELEVATION FOR A COUNTRY MANSION.

The above unique illustration was designed especially for this journal. If surrounded by trees as shown it will present a very striking and handsome appearance. Much depends upon the manner in which it is painted. Rich, warm colors should be used. The arrangement of the porches and verandas is such as to give shelter from the sun in summer and the storms of winter. The cost may be varied anywhere from \$10,000 upward. There is no economy in trying to save a few hundred dollars on such a design as that shown. Only the best material and skillful work should be used and employed. Special pains should be taken to have the chimneys built in a substantial manner.



We will be pleased to receive for publication in this column items of information in regard to practical ideas connected with the mechanical part of the building trade. We especially invite suggestions from apprentices and young mechanics.

Do not attempt to peep through key-holes, for in the future disappointment will follow. A new lock is now out, and will soon be on general sale. The key-holes for opposite sides of the doors are out of line with each other, and the locking bolt has two key-bit receiving notches, and there are also special key-hole guarding plates, making a simple but strong lock, not easily picked, and entirely preventing the pernicious habit of peeping through the key-hole.

It is a common idea that a "chimney cannot be too large," in other words, the larger the area of the flues, the better the draught will be. This is not always the case. In many cases—in foundries, manufactories, etc.—where a chimney has been built large enough to serve for future additions to the boiler power, the draught has been much improved as additional boilers have been set to work. The cause of this is to be found in the increased steadiness of draught, where several boilers are at work and are fired successively, as also in the better maintenance of the temperature of the flue.

One thousand brick, closely stacked, occupy about fifty-six cubic feet.

A cubic foot of good gas, from a jet one-thirty-third of an inch in diameter, and a flame of four inches, will burn sixty-five minutes. Internal lights require four cubic feet, and external lights about five cubic feet per hour. When Argand burners are used, from six to ten feet will be required.

Dry bricks will absorb about one-fifteenth of their weight in water.

A CORRESPONDENT desires information in regard to seating space in theaters. There is no general rule in universal practice regarding the space to be allowed each person. Boards of Work, Boards of Supervisors, and architects, in different parts of the country, have endeavored to formulate certain dimensions to be used for each individual present in the theater, but when there is a rush, the rules suffer as well as the visitors, in the general squeeze for a place. Generally, the following figures will represent the minimum space to be allowed in the different parts of the house: Width of seat, in dress circle, eighteen inches; family circle, sixteen inches; orchestra seats, same as dress circle; gallery, fourteen inches. To be comfortable, not less than eighteen inches in width should be allowed for each person. The above measurements apply only to those theaters not using the new-fashioned tip-up seats. Desks used by scholars in our public schools are in length as follows: For two scholars, three feet ten inches long; for one scholar, two feet long. A chair for a scholar five years of age, should be nine and one-half inches high; ten years of age, thirteen and one-fourth inches; fifteen years of age, fifteen and one-half inches; over fifteen years of age, sixteen and three-fourth inches.

In selecting house decorations see that the effect is not destroyed by the surroundings; for instance, when the carpet is faded and the furniture shows many years of faithful service, by no means indulge in bright colors, plush and satin chair scarfs, elaborately embroidered table coverings. Where it is necessary to conceal defects, subdued colors have a more pleasing result.

TO RESTORE DISCOLORED IVORY.—Wash well in soap and water, cleaning out any carving with a small brush, and place while wet in full sunshine. Wet for two or three days, several times a day, with soapy water, still keeping the article in the sun with a glass shade over; then wash again and the ivory will be beautifully white.

We have repeatedly called the attention of carpenters and painters to exercise more care in the building of scaffolds, as they are certain death-traps where improperly constructed. There is scarcely a day but what the papers record the death of either a carpenter or painter, resulting from the falling of a scaffold, and it is certainly strange that these repeated warnings do not have more effect upon the workmen who build them. They not only owe it to themselves, but to their families, and we would urge that it be the duty of the architect, builder, or boss, to thoroughly inspect each scaffold erected. By so doing serious accidents will be avoided.

The houses which sell the quickest are the ones which contain the latest improvements. Improvements are in their very nature such as to add to the convenience and comfort of their possessors. And the old-fashioned portable wash-tub and the cistern, hand-maids of the ancient days, were at one time designated "improvements." But the march of progress has not only carried them, but all other kindred household appliances, to the realms of shade, and so in degree the same may be said of everything pertaining to architecture, sanitation, and equipment. From the cellar to the garret whatever conduces to make a well-appointed, finely-equipped, and properly-piped and ventilated house, is that which is rewarded by prompt and profitable returns. And what is applicable in one sphere of action applies with equal force to all others. Those who are heedless of this are always left behind, and make up the long line of "disappointments" which strew life's pathway.

TO PUT AN EGG-SHELL POLISH ON FANCY WOODS.—Three parts of shellac, one part of gum mastic, and one part of sand-arac gum are dissolved together in forty parts of alcohol, and form a beautiful polish, which may be applied with a brush or cloth.

SALT AND DIGESTION.—If a piece of salt is taken into the mouth, the flow of saliva is temporarily increased, though it is not certain that the amount secreted in any given time is any greater than it would have been had no stimulants been used. It has been argued, also, that the effect of salt on the gastric juice in the stomach is the same, and that its use promotes digestion. Some recent experiments, however, on a man who had an artificial opening into his stomach to supply food, which he could not take through the mouth, seems to negative this assumption, and that salt hinders the secretion of the gastric juice and digestion rather than promotes them. If the amount of salt is considerable, digestion almost ceases. Experiments like these have great value, for they help to clear away the superstitions of past ages, which seem to be held by the educated and the ignorant alike.

STEEL NAILS.—Establishments for the manufacture of steel nails and steel nail plates are on the increase in this country. These nails, it is alleged, are produced much more cheaply than those of iron, owing to the cheaper process—the Bessemer—in preparing the metal, but their grip is less than that of iron nails.

A BILL of goods had been sold, and when the proprietor came in he saw the sales book and hurriedly called the salesman: "Did you sell Eiddler this bill of goods?" he inquired. "Yes, sir, I did," was the reply. "How did you sell them?" "On time, sir." "On time! good heavens, young man, why didn't you sell them on eternity, so the account wouldn't be outlawed by the statute of limitations."

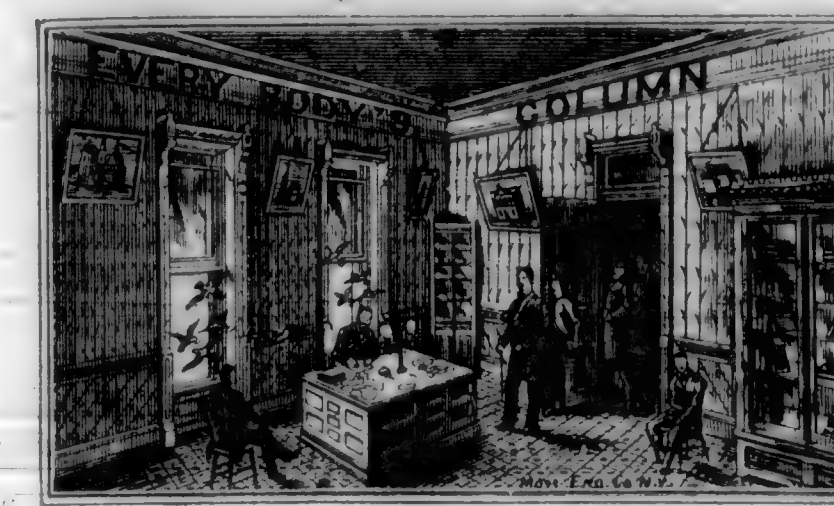
WOOD PRESERVATIVE.—Introduce into the pores of the wood the following solution: Mix two parts of gutta-percha with one part of paraffine, heat to liquefy the mixture and apply while hot.

A FINE LUBRICANT.—A good lubricant for fine machinery and one which will not gum or corrode may be obtained by putting pure olive oil into a clear glass bottle with strips of sheet lead; expose to the sun for two or three weeks and then pour off the clear oil for use.

TO POLISH GLASS.—To polish plate glass and remove slight scratches, rub the surface gently, first with a clean pad of fine cotton wool, and afterward with a similar pad covered over with cotton velvet which has been charged with fine rouge. The surface will acquire a polish of great brilliancy, quite free from any scratches.

The heaviest wood known among the four hundred species of trees found in this country is said to be the black ironwood of Southern Florida, which is thirty per cent heavier than water. Sixteen of the species, it is stated, are so heavy that their perfectly dry wood will sink in water.

ASKED, ANSWERED, AND COMMUNICATED.



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

LOS ANGELES, CAL., July 21, 1886.

EDITORS CALIFORNIA ARCHITECT AND BUILDING NEWS.—Gentlemen: I observe in your July issue some one asks for "correct method of finding the length of one of the sides of an octagon, the diameter being given."

The rule is given, but the writer cannot exactly see into it. Will you kindly, in your next issue, try to explain the rule more clearly, and illustrate or suppose a case where the diameter is less than twelve inches. By so doing you will greatly favor one of your readers.

The rule, as given in our July issue, is applicable to any octagon, regardless of the length of side. If our correspondent will read carefully, he will find that the rule says, "add or subtract, as the case may be, to the known length, two and one-half inches for each six inches of diameter." Thus the mechanic must remember some one certain measurement for a certain given width. To illustrate, we will use a different width from that given in the July issue. An octagon 7 feet in diameter, the length of one of the sides will be 2 feet 10 1/2 inches. Now to find the length when diameter is 12 inches, the difference between 7 feet and 1 foot is 6 feet; allowing 2 1/2 inches deduction for each 6 inches of the 6 feet, will give 2 feet 6 inches; subtract this from the known measurement given above, and we find 2 feet 10 1/2 inches less 2 feet 6 inches, leaves 4 1/2 inches, the correct length of side when octagon is 12 inches in diameter. We simply used 9 feet for width of octagon, as that is the average width for bay windows. The following are some of the measurements in practical use:—

Diameter.....	7 feet 6 inches;	side, 3 feet 1 1/2 inches
".....	8 " 0 "	" 3 " 3/4 "
".....	9 " 0 "	" 3 " 8/8 "
".....	10 " 0 "	" 4 " 1/4 "
".....	10 " 6 "	" 4 " 4/4 "
".....	12 " 0 "	" 4 " 11/4 "

The rule can be applied whether the diameter is 8 inches or 80 feet.

DRIERS IN PAINTS.—What are they, how used, and how do they act?

The above three questions are asked by a young apprentice. Their brevity pleases us. The drying of linseed oil is due to the readiness with which it absorbs oxygen, and any material which promotes this absorption is termed, in painters parlance, a "drier." These, by yielding up the oxygen they contain, encourage the oxidation of the oil.

As many pigments retard the drying of the oil, the addition of driers is necessary to prevent the paint from remaining sticky, or "taeky," as it is termed.

The principal driers are acetate, or sugar of lead, sulphate of zinc (white copperas), and litharge (oxide of lead).

Observe the following points in using driers:—

Not to use them unnecessarily with pigments which dry well in oil color.

Not to employ them in excess, which would only retard the drying.

Not to add them to the color till about to be used.

Not to use more than one drier to the same color.

Avoid the use of driers in the finishing coat of light colors, as they are liable to injure the color.

Our correspondent should procure a standard work on painting, and spend his leisure time in study; this office can furnish any work published in any branch of the mechanical, scientific, or professional occupations and trades.

A BRICKLAYER'S hod, measuring 1 foot 4 inches by 9 inches by 9 inches, equals 1,296 cubic inches in capacity, and contains 20 bricks.

WHAT is meant by "larrying," a term used by bricklayers?

The best way of laying the paving or bricks in the body of the wall, after sufficient facing bricks have been laid, is to lay in between the face bricks a thick bed of "larry," or rather liquid mortar, and then slide each brick along in it into its proper place, in doing which the mortar rises to the top of the joints, the process being called "larrying."

Please state specifically the difference between carpenter's work and joiner's work.

Carpenter's work, as distinct from that of the joiner, consists of framing and putting together all the wood-work connected with the proper construction and stability of a building or other kind of structure. He supplies all the wood-work required to be built in or bedded on brick walls, such as plates, templates, etc.; also all centers, turning pieces for arches, etc.; the carpenter constructs roofs, lays the floors, erects partitions, nails on the rustic outside, and what is usually termed inside finishes.

It is seldom that a carpenter is a first-class joiner. The larger timbers with which the carpenter has to deal, and the comparative absence of that high finish which is essential to joiner's work, render it almost impossible for the same man to be a first-class hand at both branches of the trade. A first-class joiner is always too slow and cramped at carpenter's work, and a first-class carpenter is not usually sufficiently attentive to those details which constitute highly finished joiner's work.

After a house has been built and covered in, the joiner takes in hand all the wood-work, as a rule, connected with paneled partitions, doors, skirtings, dados, etc. In joiner's work, close-fitting joints and smooth surfaces are the chief objects in view, whereas the aim of the carpenter is to give strength to resist the strains to which his work may be exposed.

All surfaces left exposed to view are worked smooth with the plane by the joiner. He must also exercise great care in fitting and framing the various parts together, that they may be affected as little as possible by the shrinking or warping of the material used.

We have stated the difference between a carpenter and joiner as the terms are generally used. In San Francisco, and, in fact, all over the Pacific Coast, the term joiner is seldom used except in connection with cabinet work. The first question a foreman asks of an applicant for work is, "Are you a full hand?" and the answer establishes the questioned mechanic's abilities to perform any certain work. "First hand," "second hand," "floor nailer," "partition setter," "inside finisher," etc., are terms used by men applying for the honor of swinging a hammer or pushing a jackplane, etc., on any certain job. We remember seeing a sign as follows:—

JOHN SMYTHE.

CARPENTER, JOINER, & PIECE WURKER.
Floors naled and Sash put in.

If the man's abilities were equivalent to the knowledge of grammar, as evidenced by the sign, we pity the looks of the work with which he was connected. Piece workers are the scabs in the carpenter's trade.

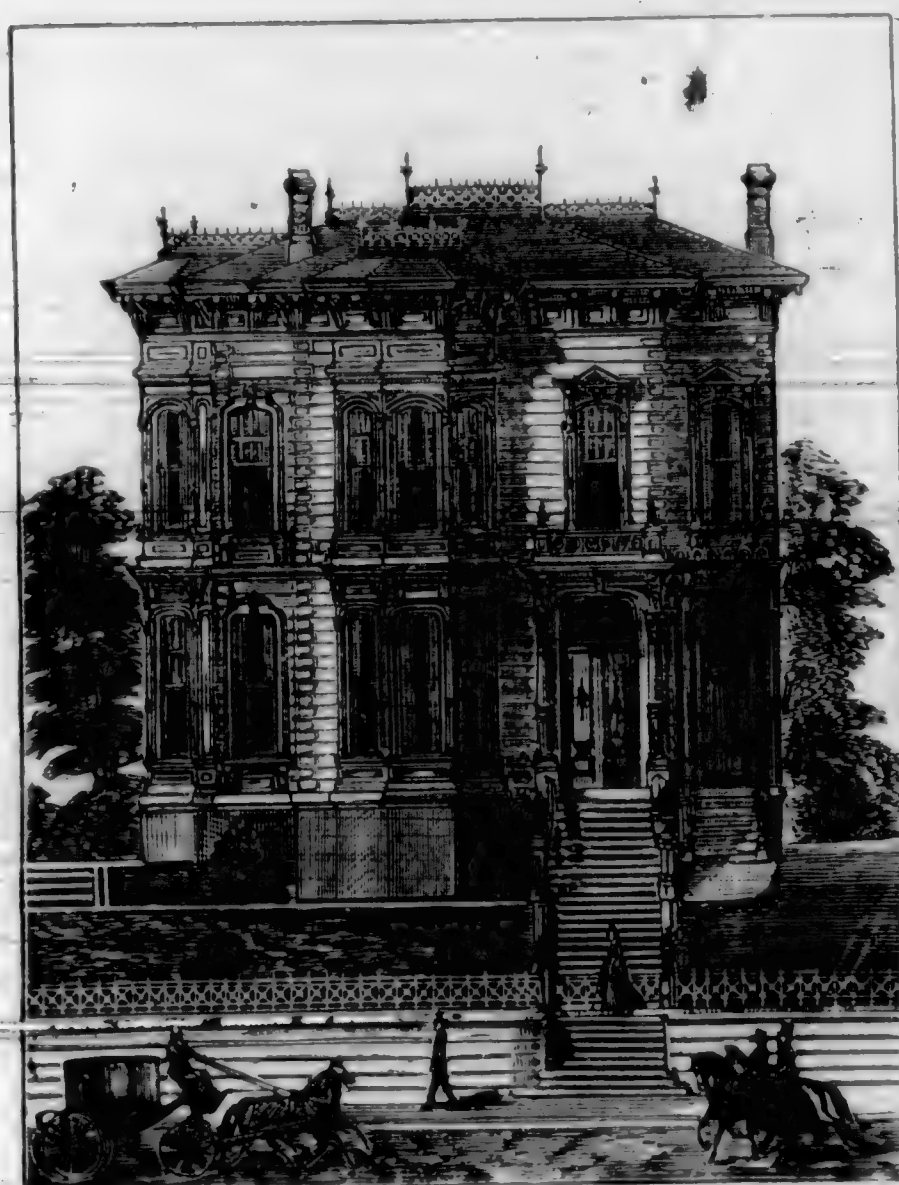
LEAD DOTS.—In securing lead to wood-work on roofs, etc., and to effectually protect the nails from rust, etc., the following method is used: Wherever a nail comes, hollow the wood out slightly; drop the lead into the hollow; drive the nail in through the center of the hollow, and then fill up level with solder. The same may be done without hollowing out, but then the lead dot covering the head will project above the surface of the lead work.

In giving old lead in exchange for new lead, it is generally customary to allow six pounds per cwt. discount on the weight of the old material, on account of the latter containing dirt, etc.

FISH VS. SCARF JOINTS.—When the beams abut end to end, and are connected by pieces of wood or iron placed in each side, and firmly bolted to the timbers, the joint is called a fish joint. When in a joint the pieces overlap each other, and are bolted together, the joint is styled a scarf joint.

An average gas burner consumes about four feet of gas per hour. Windows, as ordinarily constructed, will admit about eight cubic feet of air per minute.

At the drum-tap 9,000,000 drilled soldiers would take arms in Europe.



Art and Architecture.

[Special for this Journal. By F. HILLERT, Architect and Mechanical Engineer.]

XVII. BOUNDARY OF PERCEPTION.

TO enter on the many explanations of beauty which partly contradict each other is impossible, since the best of them can be referred back to the harmony of spirit and form, and the accord of the power of imagination with intellect when divested of the learned shroud. The difficulty of the subject matter lies herein, that we must abstract the spirit of the beautiful from a number of beautiful things; that our feeling, depending on many conditions, will always speak with it; and that objectivity and subjectivity, principally and with lasting truth, cannot be parted and separated from general views and definitions, which, in themselves, would be comprehensible. Human speculation finds here a boundary she cannot pass, but could she succeed in uncovering the secrets of the human heart, and the miraculous blending of spirit and mind, as they are shown by the pleasure in the beautiful, and discover sober and intelligent laws, it may be that the finest ornament of beauty worth living for would be lost irreparable to humanity.

XVIII. IDEAL OF BEAUTY.

By such characteristics of beauty, as well as a pleasurable sensation of man, the quality and nature of things point by the impenetrability of its spirit back to a mystic cause, without which we cannot conceive or think of the consummate perfect beauty. Then as to man indeed the truth of yonder unapproachable image always will remain, but will destroy him as soon as he lifts the veil; but, nevertheless, he anyway incessantly aspires and presses towards the eternal tree of knowledge, hunting and seeking his liberty in vain, through all zones and seas, and at last, beginning with the smallest, wrestling with himself, must gain his liberty; so he also strives mightily towards the beautiful, but the highest fulfillment of the same remains to him always concealed. Man has presentiment, demand, and pursues to the highest aims of truth, liberty, and beauty, but he never reaches them. Name the primeval cause to which those aims point, as we like, put the relation to a supersensible cause, if we want to express ourselves generally comprehensible; and still more, to give to the human being a contentment of mind, we must, then, always say that the highest truth, and the highest good, as also the highest beauty, rest in God. The being of God once settled, out of him flows the wonderful harmony, which in our feeling, in our mind, solves, in fact, the problem of the spirit and conception of beauty.

The highest beauty is in God, has been said with categorical decisiveness of conviction. And in fact if we speak, from things which by our intellect we do not comprehend, the secret precedence in our breast, but anyway are touched in our deepest mind by unexpressible beauty, and almost raised above ourselves, then we find the purest and only fulfillment in the belief in the existence of God. We see then in beautiful things the images of eternal beauty, and in nature the appearance and phenomena in which only one highest spirit, God, is expressed;

and in art the secret revelation of the human spirit, in which rushes the aspiration of the divine breath,—truly a noble and exalted vision of nature and of art. And if we look back to our inward mind and place together and compare the manner of sentiment of man himself, we recognize that in yonder trait is divine beauty; and where we find it expressed clear and shining, we stop there admiringly and say, A godlike, a beautiful soul. The pure inner harmony of mind, undisturbed by any blemish, any uneasiness, finding in itself and its God the most perfect satisfaction, and anyway knowing nothing in its own heavenly purity and innocence, but in sacred aversion and awe recoils when compelled to approach divinity by a worldly symbol. The same speaks wonderfully and enchantingly, and in the figure and in the eyes of such men rests, visible glorious, and magnificent, a beauty which could be called superterrestrial if she would not appear visible on earth; but even in death such a soul may be able to effuse over its dying feature the purest luster, the noblest peace. Nobody praises the soul higher than a poet. To him she stands higher than beauty of nature or beauty of art, and well may be added, unknown to himself, the beauty of his own soul, untarnished by meanness and coarseness.

We can easily realize and perceive that with such supersensible and figurative illustrations for our knowledge, nothing is to be gained where our sensitive faculties come direct to play, as with the beautiful.

XIX. SPIRIT AND NATURE OF A WORK OF ART.

When the beautiful, as has been explained, in respect to the thing, is perfect, harmony of idea and appearance, or, as we commonly say, in accord and harmony with sense and form, so is herewith expressed the characteristic of the meaning of a work of art. But how is this harmony between the spirit and form to be understood? In the inward, immediate, and direct manner, and so that the meaning, the idea, of a certain work of art cannot appear in a changed form; not to be represented and made to appear in other stuff, without itself being changed and altered. Hereby is, in the same time, the impossibility expressed, to bring the idea of a work of art to view by words; what direct can be seen at each piece of music, on every object of the forming art from which, by the most correct description, a clear view and conception never can be gained; the same finds, in a closer sense, its unlimited application on poetry. Then, as soon as it is tried to reproduce the meaning of a tragedy, of a poem, in other words, the insufficiency and inability appear. The work of art is inseparable from its own peculiar exclusive form, which necessarily belongs to its spirit and meaning, as the body to the soul of man; but the form is enlivened and spirited by the idea showing and existing in the work of art, as its soul, which is invisible, as the soul of man. Considering, and not to drive the comparison of a work of art to its highest pitch, and arrive at discouraging results for the human mind, that man is a living organization, having a purpose of his own will, when the work of art is a make, having only the semblance of an organic life. But since the work of art does not know a purpose of will, but only wants to fulfill this one, to be beautiful, it can attain the same more perfect, as in general the natural organization, having other purposes to fulfill.

The idea of a work of art only originates in the fantasy of man, i. e., it originates in the power of his imagination, his mind; without that the intellect in a rational way can get to the same—in direct excitation, with which throughout a more or less raised effect of the mind is connected. The idea of his own imagination, man will and must, by his own inner urgency and drift, make visible and conscious to himself, and in doing this he creates at least a basis for his work of art. He does not sober down the charm of his own inner vision, in giving the same in words, and with his intellect seeks an expression accordingly for it; but his inner vision of mind flows direct into the lines, in the color, into the modeling clay. He touches the lyre and draws from it melodious sounds which, in his own imagination, presageful and yet knowingly lived, or he powers them in words. He does not seek the whole richness of his soul. So works of art are produced, noble, high, and beautiful in all, perfect and well equipped.

XX. RETROSPECT.

Connecting all together, we obtain from all our observations which we, in regard to the explanation of beauty, as well as in creating a work of art and its enjoyments, always and unalienably, were referred to incidents of our mind, taking away therefrom all logical perception and arriving in us to a consciousness which distorts, stains, and destroys, so soon as we wish to convey them to bases of reason, to establish and prove the same by ideas of reason. But if we now consider that the happiness and the pure contentment is poured out by the world of the beautiful, and when we think that the highest reward for a good and

noble act done disinterestedly lays in our soul, and if, lastly, we must acknowledge to ourselves that even the abstract thought gives the highest contentment to man, only then, when in a victorious satisfaction out of a conflict he has gained to the world a truth, can rest a moment,—well might we throw up the question, since such moments to the human being grant a complete satisfaction, and hereby a presentiment of the highest happiness is accorded. Does, then, the inner essence of human life lay more in the pleasurable perception, or, as we might believe, in the thinking?

Before we proceed any farther, we should attach here some remarks on the other kind of the aesthetic effect on our mind. We spoke of the beautiful, but with it the whole dominion of sensible impressions is not exhausted in regard to the form and its signification. But since to our feeling, if otherwise we do feel, nothing is indifferent, it follows we distinguish only that which is agreeable to our senses from that which is disagreeable. The former is positive; the last negative. The last we call ugly, terrible, monstrous, and such like, but here we cannot enter on its explanation.

XXI. THE SUBLIME.

The positive does not exhaust itself alone with the beautiful, it includes in the same time the sublime and the cheerful, and between these two lies the beautiful. The sublime exists only in nature, and only such things are for us sublime which bring us direct by the power and might of their aspects to the presentiment of a divine cause of their creation. Not the magnitude of the spiritual meaning for itself is decisive for the sublime, but this religious relation; not the preponderance of the ideas over the form, but the indirectness with which our mind, by its aspect, is directed to God. But if art wants to effect such like, she becomes symbolic; man can only express that by his work, what he comprehends; that lying and being in the sublime, he does not comprehend; he has only a presentiment, and therefore can never make the sublime. But the perfected work of art, we say, originates by a breath of divine inspiration, and therefore must, in the perfect work of art, lie a touching point of the sublime, even only a touching point.

XXII. THE CHEERFUL, MERRY.

The cheerful (jolly) is not in nature, but only in art. If before the sublime our disposition becomes one of veneration, even of worship and adoration, then we want to enjoy the beautiful, full and whole; but over the merry we want to laugh. But as not all that we venerate is sublime, that we enjoy is beautiful, so is not all over which we laugh, merry.

To explain, the cheerful or merry, or, as it may be called, the comic man, has not been successful. The question, What is comic? has not been solved. We decide, with surprising security, this or that is merry or that is not; but why we do so we cannot support by a general everywhere-satisfactory definition. Since Aristotle, all aesthetics on the definition of the merry, became themselves merry aesthetics. The grades and undergrades of the merry in all possible arts make it more difficult to bring them to a common subordination, to one definition, which we will leave to the reader to bring under one cap, the humorous, the witty, ironic, the caricature, the burlesque, grotesque. If we limit ourselves to the forming art, we recognize that in all comic works pure harmony is disturbed in a manner, that subject matter belonging together are set up, that is, that contraries are united in an unusual manner, and that matters belonging together are connected in an unusual manner. To this opposite only spiritual, only in the idea, then, the work produced is humorous; but if it appear in form, it becomes a caricature.

XXIII. THE HUMORISTIC, THE CARICATURE, AND THE SATYR.

The humorous picture, the truly proper form of the appearance of the comic in art, is always without a sting and harmless, and follows the general rules of form.

This meaning is in the spiritual conception, in the manner with which the artist entangles the contraries and solves them again. With humor we can only view general evil, folly, and weakness, and humorous work, therefore, can only in a general sense point its expressions against a certain person; then the conditions of human society furnish stuff for the forming and introduction of contraries. Inasmuch as the plastic in single works can be humorous, painting is any way the dominion in the forming art, and indeed a part of the mythological objects, the animal, fable, etc.

Caricature is wit drawn, and has always the purpose to ridicule, to scoff, to mock, to humble; is mostly directed against a certain person. She has therefore a point. She is an exaggeration and therein lies her comical result. But since the same already pursues an outward purpose, she does not belong any more to

the dominion of the pure art; she uses art as a means for its purpose; may be that the figure is stretched, and that to the same is given an excessive large head; and may be that the same introduced in extraordinary relation to other figures and things. The caricature always remains a certain premeditated disfiguring and deforming of the peculiar form, and therefore in this sense does not belong to the domain of art. An intermediation between her and the humorous work is the figurative satyr, which, as it were, in a harmless way, secures its victim, and, when secured, and begins to rejoice over the humor, the person of the same unaware, is struck a blow in the face with the satyr's cloven foot. Hereby is a regular form observed, but the spirit is directed against a certain object with the intention of a covered assault. This particular moment taken from speech is in art difficult to represent, but it may be introduced in the same with the assistance of the comic allegoric.

We must desist here from a further expounding of these difficult relations, which would remove us from our purpose, and point only to the fact that as the beautiful in its highest perfection touches the sublime, so its lowest state has already mixed with the ugliness, that is, its own negation; it is in us a gradual succession of aesthetic impressions and feelings; but when the merry passes over us without any deep impression, the sublime captivates us, the beautiful gives us full, pure, and noble satisfaction, which remains with us and is lasting.

The morning gate of beauty is the consecrated land of perfect humanity; behind him lies the merry world, before him the sublime infinity; but only under the ark of peace, which is a protective haven adorned with all the gifts of art expanded over the race of mortals, men thrive, whole, good, able, and noble.

XXIV. THE DIFFERENT ARTS, THE THREE DIVISIONS.

We have before already separated the forming from the art of sounding, according to their marks of perception, and both only in the manner as to their expression, designated them as different. We turn ourselves exclusively to the first, which we, in future, will abbreviate, simply calling it art, when the sounding art generally is introduced as poetry and music, which is the plain language therefore in general use. Of the art in the closer sense we have the art of building (architecture), of sculpture, and of painting, the two latter united to the arts of forming. They are founded throughout on the same origin, and their differences are again only in their peculiar condition in which each of them in their manner brings its work to appearance.

XXV. THE ART OF BUILDING (ARCHITECTURE).

The art of building is the least art in all its parts since the inventing or designing artist does not himself execute his own work, but has the same done by others, under his direction. The sole artistical effect lies in the conception of the plans which he makes and fixes, and accordingly the building is executed.

At such designing the artist's fantasy must be in complete and full tension, to bring to him in his mind the building to be designed so clear and visible that he can oversee it as with a single glance, detecting no faults and finding it satisfactory. Then with the plan once decided and determined and the execution started, the same, on the main, must be proceeded with, as changes of any considerable extent and importance are not admissible; when the other artists, and fully the poet and the musician, have unlimited sway. But not only this, but more the mechanical fitting together of the building material, the construction based on the statistical laws; but, before all, the problem that the building itself must satisfy its practical purpose, gives to the art of building an unartistic addition, and yet are all these moments absolutely necessary to give to the building a beautiful appearance. Then were the same put up without connecting and joining of material, without construction, hewn and worked out as a whole of the natural rock, as perhaps the free-standing buildings and cavern temples of the Indians, it will always bear the character of the crude and accidental; but when a building has no practical purpose whatever, or at least not a reasonable one, as, for instance, some monuments erected in our time, it brings forth the impression of the gloomy, uncomfortable, and senseless. From this we learn that the purpose is the essence of the artistical idea; that a building without it misses its vital part, as a work of art is in want of the spiritual sense and meaning. It is, then, no more a work of art, but a nonsensical play work; just as a purposeless heaping up and adorning of heavy and huge masses of stone would be a senseless play. Herefrom it would also appear that the art of building with its practical purposes could not produce a work of art, which would for itself be beautiful, and in fact and in the face of the higher demands of art ceases to be art. But the artistical lies in the conception of the purpose in its perfected sense, and in the effort to show this in the building as a direct expression. This is the principal thing;

but a second moment we have in this, that the crude masses of the material used in the construction, must obtain a beautiful form, in which the legitimacy and law of the former finds its expression so that the building, as an organic growth, destined for a clear, unmistakable purpose, is expressed by its form. The beauty in the art of building has a good deal of similarity with the beauty in nature (see No. 15), from which the same obtains his artistic form not in a direct manner but so that she unites the same with geometrical symmetry, and so finds a natural expression for the mathematical dryness of the construction. Herein exists the æsthetic language in the art of building, the ornament, which is the more powerful, perfect, and beautiful, the more in an indirect manner, the construction of the statistical motives and destination of the building members adorned by it, is shown. So before all the Greek Doric column, a strong, powerful, slightly swelling or tapering shaft growing out of the bottom (foundation) of the building in a thickly set stem, giving to the heavy burden resting on it a sure and safe support and by its ribs and canelures fluting, giving to it the appearance as something organic, grown in the manner of a cane, tapering gradually with the ascend where one or more rings impart to it a larger and stronger coherence. The plant grown in Greece (*Dolmen specia*) was a hollow tube and ribbed outside, having a larger compressive resistance and likely was taken as the symbol for the adoration of the shaft of the column.

Above the same swells, in beautiful curved lines, the capital on which an ornament of turned-down leaves indicates that the weight of the entablature is acting upon it. Around the square plinth, serving as a mediator and receiver of the weight of the beam resting on the column, runs a beautifully arranged ribbon artistically wrought around. This may serve to indicate how the art of building ornaments and decates, whereby it cannot be passed in silence that very many ornaments, namely, with barbaric people of the middle ages, and even later, and now, partly in their rawness and partly by their playing tendency, are far off from the earnest and the truth of that which it should be to give to the form of the construction a spiritual meaning. To the fantasy is here left a wide range, and it can on the different parts of a building on the massive inclosure, the running around, the free standing, the loaded and the load, the free overhanging, etc., sufficiently manifold, manifest itself, of which the more or less perfect ornaments of all the different styles of building give evidence.

Have the single parts of a building in accordance with their spirits obtained their beautiful form, then they have again to be referred by their position and situation to each other and to the whole purpose of the building, the spiritual meaning of the same as a whole, what namely holds good and is true in regard to the preventing of the mixing of the different styles of architecture. This purpose finds its first expression in the first sketch, on which is based every matter in the ground plan, which arranges the situation and position of the single rooms to each other according to their contemplated use, but already indicates what construction the artist in the execution of his building will use. Is a wide, large hall, perhaps for the sitting of a legislature, to be made, then are no Doric columns nor Gothic arches or such like to be applied, but inclosing walls are to be erected, over which a wide ceiling, free and easy, is to be suspended. This is, in the same time, foreseen and decided in the plan, and since, as has been shown, the ornament,—the art language of architecture,—are not to be selected arbitrarily, but must be founded on the construction, then the plan points already to those, and the same to the construction. The unity of idea is therefore unconditionally existing, notwithstanding all apparent contrarieties, and as the building artist conceives his problem, and then shapes and forms it, he must complete all in one in his fantasy; plan, position of the building member to each other, construction, style, ornamentation. One is conditioned by the other, not one before the other, and all besides each other. By means of a comprehensive drawing he supports the picture of his imagination; and his sense of taste must be his guide for the production of a real, true work of art.

It is generally known that the Washington Monument is higher than any other structure now in existence. While this fact is seldom disputed, still it does not equal the Biblical Tower of Babel, which, according to the best authority, before its fall had reached an altitude of about 680 feet, being 125 feet higher than the monument erected to the memory of Washington.

A FRENCHMAN has found means to restore the life-like expression to the eyes of dead persons. He places a few drops of glycerine and water in the corners of the eyes and the effect is said to be startling, so life-like do the eyes become.

Building Outlook in San Francisco.

ALTHOUGH the remark is repeated by a thousand tongues daily, that "building is being overdone in this city," still a hundred, more or less, of owners of building lots demonstrate each month, by commencing building improvements, that the streams of faith in the future of San Francisco continue to flow.

There is a considerable showing of vacant houses in the city, but not sufficient to deter others from improving their real estate. The greater number of erections are for rental purposes, but there are also a large number of private residences under way and contemplated. The improvements are not confined to any special locality or portion of the city. Some parts are more desired than others, but all alike share in the general prosperity. As to the quality of construction prevailing, it averages fair, but only a small proportion approximating first-class. The universal disposition of owners is to economize, and build as "cheaply as possible." There are but few cases of even reasonable liberality in outlay. The dollars of cost are weighed for all they are worth, and made to spread out to the last grain of value, without fair and equitable compromise in the class of material and workmanship. The best of everything is wanted, and any suggestion proposed by architects to lessen outlay, by introducing low-cost articles of not unquestionable quality, is almost sure to be rejected, with a lingering desire on the part of the owner, to enjoy the benefits of the more expensive without increasing the total cost.

These remarks apply more particularly to houses built to rent, in the erection of which wise and prudent economy is proper, as rentals are generally regulated by the sum of costs of construction, and renters are not willing, as a rule, to pay five or ten dollars per month more for a house containing no more than equal accommodations, simply because the owner may have exercised a fair degree of liberality in introducing better materials or fixtures, which do not produce some visible effect to the eye, and an impression upon the mind of the renter that the demand for the extra amount is warranted in certain ways and is reasonable.

It is poor economy, however, if not absolute folly on the part of any owner who attempts to cut down outlay, by resorting to the use of "shoddy" construction in any part. For, while it may prove a present saving, it is an expensive one by reason of the continual repairs afterward required to "keep things in order;" for it will be found, as a rule, that poorly constructed buildings require almost constant attention to keep them in repair and good condition. "Shoddies" of any sort are poor investments, particularly in permanent building constructions, where decades, if not generations, of wear and service are required. This, intelligent owners readily realize, and, therefore, dictate approximately first-class material and workmanship, as practically the more sensible and economical course. But it is not always the case, indeed, but seldom, that this intelligent understanding of matters is followed to its legitimate application,—a willingness to pay the excess in value and cost of the good over the inferior. Consequently, the absence of fair liberality toward those engaged in building works, by those for whose profit and benefit they are executed, has a bad effect, in that it stimulates purposes on the part of contractors to meet this condition of things, by practicing methods and procedures calculated to equalize the exactions of those who want excellently well-built houses, at five to twenty per cent less than a right and proper cost. It is simply absurd to suppose that men will not work out every possible saving in executing contracts, in which a fairly liberal disposition is not manifest by owners, in confining competitors to recognized, trustworthy, and competent bidders, and excluding the rough scruff and irresponsible class from the privilege.

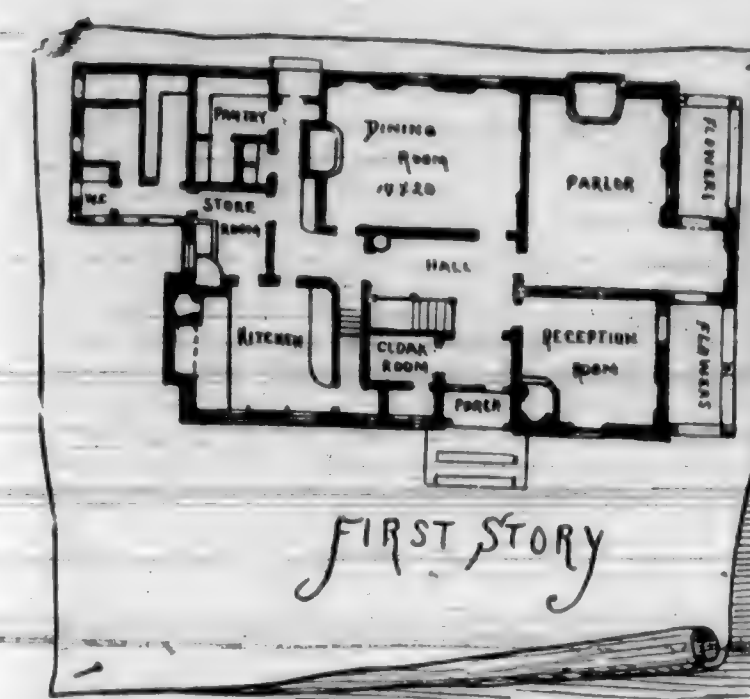
TRACT distributors in New York complain that thousands of tracts are being distributed throughout the tenement house districts and along shore, printed in imitation of the genuine, and bearing titles such as: "Be Saved," "Salvation for All," and the like, which, after a page or two of religious argument, run off into eloquent patent medicine advertisements.

SMALLEST convenient size of slab for a fourteen-inch-wash bowl, 21x24 inches. Height of slab from floor, two feet six inches.

A DOUBLE bed is six feet six inches long, by four feet six inches wide. A single bed is two feet eight inches wide, by same length as above.

A 4x8-foot billiard table requires a room not less than 13x17 feet.

Plans for a Commodious Country House.



THE accompanying engravings will well bear a study from those contemplating the erection of a commodious country building, where compactness is the principal feature to be taken into consideration. The rooms are ample in size, and a close study will disclose that every convenience is provided for usually found in this class of houses.

About Sleeping.

WE believe in sleep and enough of it. A man may get rich faster by long working hours, but certainly he will live the longer by devoting at least eight hours of the twenty-four to reposeful conditions of mind and body.

Franklin declared that six hours sleep were enough for any man but a fool. Franklin was undoubtedly a great philosopher, but in this respect he probably erred in making his own frugality the standard for the rest of mankind.

Still one may sleep too much. A recent writer grows enthusiastic over what he calls the forgotten art of lying abed. It is certainly a clever bit of consolation for those who must do it.

"One of the most useful yet neglected of all the arts is that of lying abed. The damage that is done by persons getting up is past all reckoning. All the mischief and crime, the counterfeiting and forgery, the murder and theft, are perpetrated by parties who persist in getting up. Not only individuals do wrongly by leaving their bed, but rivers as well do an immense amount of damage. 'What man ever broke his leg on a slippery pavement or was run over by an omnibus, who lay in bed?'"

What great achievements have been accomplished in war, in poetry, in literature, by genius abed! "Coming events cast their shadow before"—one of the most memorable lines in the English language—originated with the poet, Tom Campbell, one morning before he had risen. Longfellow thought out that exquisite poem, "The Wreck of the Hesperus," after he had retired. Ben. Franklin said, "Early to bed and early to rise makes a man healthy, wealthy, and wise." Now Franklin started out all right but got terribly mixed up when he said "early to rise." There is the fatal mistake. People who rise early are sure to catch the malaria; the ground is full of half-hatched poisonous germs; the sun is not up and has not warned them into life, giving them wings and set them adrift. Poor mistaken man, he arises, inhales them all; they fructify and poison his entire system; hence chills, fever, malaria, and half the ills that human flesh is heir to.

"Rise before the sun,
And make a breakfast of the morning dew,
Served up by nature on some grassy hill;
You'll find it nectar."

"Was ever more arrant nonsense written? Fancy a man getting up on a cold, rainy morning and climbing high hills on an empty stomach, but to eat—what? Why, dew. How long would that fellow last? Wouldn't he be a fit candidate for Lone Mountain, and no questions asked? But the early bird catches the worm. Yes, but the sharp boy knocked that delusion in the head forever and eternally when he said: 'Father, there's the point—what in thunder did the worm get up so early for? He trifled with destiny; he tempted fate; he should not have done it.' That boy was a benefactor to the human race. He was sound on the lie-abed question."

"That French proverb says: 'De lit a la table, de la table au lit'—From bed to grub, from grub to bed.' That's something like it. Get up and eat, eat and go to bed again. Why not? All the animals do it. All nature, the grandmother of us all, teaches it. Every animal in the world eats and seeks repose. The cow eats, and, lying down, placidly chews her cud; the anaconda swallows an ox, horns and all, and goes to sleep—sleep that knits up the raveled sleeve of care, the birth of each day's life, sore labor's bath, balm of hurt minds, great nature's second course, chief nourisher in life's feast. And yet this is what they would deprive us of who say, Get up, and who oppose the art of lying abed."

"Mrs. Macbeth strikes the key-note when she shouts: 'To bed! to bed!' A Spanish minister, suddenly raised to power, signalized the event by going to bed and staying there for fear he might have something to do. It was in bed in the little inn of Waterloo, that the Duke of Wellington received the list of the terrible casualties of the fatal June 18. Gray's 'Ode to Music' was written in bed, and Sam Johnson's 'Lobo's Voyage to Abyssinia' was dictated to the printers before the great author of the 'Lives of the Poets' and lexicographer had arisen. Peter Pindar (Dr. Wolcott) was so fond of lying abed that he received his visitors lying beneath spreads and counterpanes. Rossini wrote one of his finest operas in bed, and was too lazy to pick up a sheet that had fallen away. George IV. lay in bed to read the newspapers, and Macaulay read twenty pages of Schiller before getting up. John Foster thought out his sermons in bed, and the methodical Anthony Trollope used to read an hour before getting up."

THE extensive outdoor use of zinc by builders at the present time has directed attention to the peculiar process of oxidation which this metal undergoes, and which is so important to be considered in all applications involving exposure. The rusted surface does not rub off or blow away, but forms a sort of hard crust or enamel upon the surface of the metal, and when laid upon board, which is or may become damp, or exposed to steam or condensation below, it rusts on both sides. The thin zincs first introduced in this way were rusted through, brittleness ensuing and failure being the result. But if the zinc be of sufficient thickness, after a certain time oxidation ceases, and the result is a body of solid, sound metal, encased above and below by a solid coating, thoroughly impermeable to the accidents of weather or temperature, and which requires no painting. The various ways of spreading zinc consist, mainly, in laying it in a corrugated form without boarding, the trusses of iron or wood of the roof carrying the weight, or in rafters about one foot more or less apart, with a corrugation at each rafter only, or upon a general surface of boarding, in the manner of a lead flat.

It ought to be the aim of every husband and wife to build for themselves some kind of a home, though it be ever so humble, and then to beautify and make it attractive by every device of taste and love. It is possible for very poor people to become real estate owners; the obstacles in the way are not insurmountable; only let each home be built according to its owner's means, not those of their neighbors. How precious is the vine planted by the hands of the children! the shrubs and flowers tended by a mother's loving care! A more intimate knowledge of these pleasures is purifying, ennobling, and strengthening to all natures. The man who loves flowers, trees, and all beautiful things cannot be a bad man; the children who are taught to love these things from infancy, who work, and care for, and help make beautiful their home, are more helpful and unselfish, less frivolous, and more likely to make good and noble men and women. We believe if there was more home-building there would be a smaller number of unhappy marriages, less recourse to courts of law, and fewer divorces.

Some Facts about Bells.

THE nature of the country has much to do with the sound of bells. In a hilly locality a bell will not be heard half so far as if the land were level or nearly so. A bell will be heard a great deal further lengthwise of a valley than over the hills at the sides. Where bell-towers are lower than the surrounding buildings and trees, these obstructions break the sound and prevent its free passage to a distance. Towers having small windows or openings, with the lower boards close together, often box up the sound. In cities, the noise of steam and horse-cars, manufacturing establishments, carriages and carts rattling over the pavements, etc., is so great that bells are not expected to be heard at any considerable distance, and this is the reason why, in all cities, several bells are used for fire alarm purposes, it being impossible for one bell, no matter how large it may be, to be heard above the thousand and one noises incident to every large place. It is said that the largest bell ever made in this country weighed 22,000 pounds, and before it was fractured hung on the City Hall, in New York. On one or two occasions this bell was heard up the Hudson River thirteen miles, in the night, when the city was comparatively quiet. It is a great mistake to suppose that bells can be heard in proportion to their weight; that is, a bell of 2,000 pounds will be heard twice as far as one of 1,000 pounds. This is not so, for the reason that the larger bell does not possess anything like twice the resonant surface of the smaller one. What is gained and admired in the larger bell is its deep, majestic, and dignified tone, which it is impossible to secure in the smaller one, the weight of the bell invariably governing its tone. A bell of 100 or 200 pounds, in an open belfry, on an engine house, a school-house, or a factory in the country, is frequently heard at a long distance, out of proportion, apparently, to one of 1,000 pounds in a church tower near by; and instances of this kind frequently cause no little comment in the way of comparison. One reason for this is that the small bell has a sharp, shrill, penetrating sound, that must, of necessity, be heard a great deal farther, in proportion to its weight, than the low, mellow, "church-going" sound of the church bell. The same principle applies to the whistle of a locomotive, and it is heard a long distance, simply because its tone is shrill and penetrating. When hung stationary, and struck or tolled, bells will not be heard, as a rule, half as far as when swung. The swinging motion throws up the mouth of the bell, and not only carries the sound off, but imparts to it a richness that is always absent when the bell is at rest and struck. A great deal is to be gained by ringing a bell properly, throwing the mouth well up, and not lazily jingling it. It is not physical strength that is required in ringing a bell so much as "getting the knack" of catching the rope just right, particularly on the second "down pull." The windows in the tower should be as wide open as possible, and the tower ceiled just above the windows.



Building Intelligences.

Where owners' names are left blank, it is so done in most instances by special request.

A	Bryant , cor. Langton. Two-story frame. O.—J. Mahoney. A.—J. J. Clark. Day work. \$2,500.
Army , bet. Guerrero and San Jose Ave. One-story frame. O. and B.—J. M. Comerford. Day work. \$1,700.	Bush , cor. Van Ness. Alterations. O.—Capt. Blair. A.—J. J. Clark. C.—C. H. Ackerson. \$1,900.
Alms House Track . Three-story frame. O.—City of San Francisco. A.—McDougal & Son. C.—Owens Bros. \$45,000.	Broderick , bet. Hayes and Fell. Two- story frame. O. and B.—J. Adams. Day work \$4,500.
B	Bush , nr. Devisadero. Two two-story frames. O.—T. Edwards. C.—W. Davis. \$4,500.
Bush , cor. Jones. Two-story frame. O.—W. Norris. A.—J. J. Clark. C.—R. Walls. \$7,500.	

Market Reports.

CORRECTED FOR AUGUST, 1886.

Pine , Rough. per M feet, \$15 00	
" No. 2. " " 12 00	
" " 2 in lengths. " " 13 00	
" 40 to 50 feet lengths. " " 17 00	
" 50 " 60 " " " " 18 00	
" Selected. " " 20 00	
" Clear. " " 25 00	
" Fire Wood. " " 8 00	
T. & G. Flooring , 1 x 6. " " 27 00	
" 1 1/2 x 6, 1 x 4, 1 1/2 x 4, 1 1/2 x 3,)	
" 1 x 3, and narrower. " " 30 00	
" No. 2. " " 22 00	
" " " " " " " 35 00	
" No. 2. " " 27 50	
Furring , 1 x 2. per lineal foot, 00 1/2	
Redwood , Rough. per M feet, 14 00	
" No. 2. " " 30 00	
" Surfaced. " " 23 00	
" T. & G. 6 in, 12 ft. and over. " " 25 00	
" " " 7 to 11 ft. " " 20 00	
" " " under 7 ft. " " 30 00	
" Rustic. " " 26 00	
" No. 2. " " 30 00	
" T. & G. Beaded, 12 ft. and over. " " 25 00	
" " " 7 to 11 ft. " " 20 00	
" " " under 7 ft. " " 22 50	
" Siding, 1/2 inch. per M, 25 00	
Pickets , Fancy. per M, 16 00	
" Rough Pointed. " " 14 00	
" Square. per lineal foot, 00 1/2	
Battens , 1/2 x 3. per M, 2 00	
Shingles per M, 3 25	
Laths , 1 1/2. " " 3 75	

NAILS—Rates were recently reduced to:—

200 keg lots.	2 70
100 keg lots.	2 70
Smaller quantities.	2 75

PAINTS AND OILS:—

Pioneer and Nevada White Lead, 1,000-lb. lots.	62
" " " " less quantities.	7
Pioneer White Lead (local factory), 5-ton lots.	64
Cal. Linseed Oil, raw (single bbl. lots).	45
" " " " boiled.	47 1/2
Turpentine, per gallon.	47

BRICK —California Building Description, soft, per 1,000.	5 50
" " " " red.	6 00
" " " " hard.	7 50

A LOAD of mortar measures a cubic yard, to make which requires a cubic yard of sand, and nine bushels of lime. Thirty hods filled with mortar will make a load.

THE largest match factory in the United States is situated in Akron, O., which turns out 57,000,000 matches in one day when run to its full capacity.

F	Haight , bet. Devisadero and Broderick. Two-story and basement frame. O.—J. Cardozo. A.—Miller & Armitage. C.—C. Quinn. \$6,250.
Folsom , cor. Twenty-third. Two-story frame. O.—L. J. Lange. A.—C. Kenitzer. C.—F. W. Kern. \$4,500.	K
Fair Oak , cor. Twenty-third. Additions. O.—F. H. Wulzen. Day work. \$2,200.	Kentucky , nr. Sierra. Two-story frame. O.—D. Keefe. A.—David Salfeld. Day work. \$2,250.
G	L
Golden Gate Ave. , bet. Fillmore and Steiner. Alterations. O.—P. Berwin. A.—P. R. Schmidt. C.—P. Griffin. \$1,500.	Liberty , nr. Dolores. Two-story frame. O.—J. Kennedy. A.—J. J. Clark. C.—C. Dunshee. \$2,000.
Geary , cor. Dupont. Additional contracts reported before. O.—A. M. Davis. A.—Copeland & Banks. C.—Treadwell & Thomson. \$35,450.	Larkin , nr. Turk. Four-story frame. O.—G. G. Burnett. A.—Jas. E. Wolfe. C.—Chambers Orr. \$3,500.
Golden Gate Ave. , bet. Scott and Devisadero. Two-story frame. O.—Margaret Chandler & R. S. R. de la Hautiera. C.—Bateman Bros. \$9,000.	M
H	Market , nr. Jones. Alterations. O.—F. Grass. A.—P. R. Schmidt. C.—J. E. Alexander. \$850.
Hayes , nr. Franklin. Additions. O.—C. Christen. A.—B. E. Henriksen. C.—D. J. O'Brien. \$1,100.	McAllister , nr. Hyde. Additions and alterations. O.—H. Dodel. A.—David Salfeld. C.—B. Dryer. \$1,000.
Howard , nr. Third. Car House. O.—Onnibus R. R. Co. A.—J. J. Clark. Day work. \$4,500.	Mason , bet. Eddy and Market. Additions. O.—J. P. Schmitz. C.—R. Currie. \$2,500.
Howard , nr. Third. Additions. O.—John Murtha. A.—M. J. Welch. C.—A. G. Fitzpatrick. \$2,000.	O
Hayes , cor. Laguna. Additional contracts and total cost. O.—L. M. Fabry. A.—Miller & Armitage. Painting, plumbing, plastering, etc. Total cost of building, \$6,700 20,100	O'Farrell , northeast cor. Octavia. Two-story attic and basement frame. O.—L. Dinkelspiel. A.—P. R. Schmidt. C.—J. A. Leonard. \$17,000.
	Oak , bet. Fillmore and Steiner. Two-story frame. O.—Mrs. Kellum. A.—S. Emery. \$5,000.
	Oak , nr. Devisadero. One-story frame. O.—M. W. Collins. A.—R. H. Daley. C.—R. O. Chandler. \$2,000.
	P
	Polk , nr. Market. Three-story frame. O.—John Nightingale. A.—A. J. Barnett. C.—A. Jackson. \$6,841.
	Pierce , nr. Sutter. Two-story frame. O.—Dr. Salfeld. A.—David Salfeld. C.—S. F. Green. \$3,750.
	Polk , cor. Bush. Three-story and frame market. O.—Capt. T. G. Taylor. A.—W. Mosser. C.—G. E. Gonyeau. \$25,000.
	Powell , bet. Francisco and Chestnut. Three-story frame. O.—M. Votti. C.—G. M. Salabury. \$3,000.
	S
	Silver , cor. Fourth. Three-story frame. O.—F. Joubert. A.—W. Mosser. C.—J. A. Leonard. \$3,500.
	Seventeenth , nr. Shotwell. Three-story and one-story frame. O.—L. Van Lark. A.—H. Geiffus. C.—C. Miller. \$6,500.
	San Jose Ave. , bet. Twenty-third and Twenty-fourth. Two-story frame. O.—W. A. Von der Neiburg. A.—M. J. Welch. C.—A. B. Tarr. \$3,000.
	San Jose Ave. , bet. Twenty-seventh and Army. Two-story frame. O.—Bridget Sullivan. A.—M. J. Welch. C.—C. E. Dunshee. \$7,500.
	San Jose Ave. , nr. Duncan. One-story frame. O. and B.—J. M. Comerford. Day work. \$1,500.
	Sanchez , nr. Twenty-seventh. One-story frame. O.—B. J. M. Comerford. Day work. \$1,500.
	Seventeenth , nr. Noe. Two-story frame. O.— C.—W. J. Brownrigg. \$5,000.
	Scott , bet. Page and Oak. Eleven two-story frames. O. and B.—Charles Hinkle. Day work. \$48,000.
	T
	Twenty-third , cor. Dolores. One-story cottage. O.—Miss A. Murphy. A.—J. J. Clark. C.—M. Coady. \$2,000.
	Twenty-sixth , bet. Harrison and Treat Ave. One-story frame. O.—O. Moore. A.—P. R. Schmidt. C.—J. C. Bassett. \$1,000.
	Twenty-fifth , cor. Bartlett. Three two-story frames. O.—T. Edwards. C.—N. Ellis. \$8,000.
	Twenty-seventh , nr. Sanchez. One-story frame. O. and B.—J. M. Comerford. Day work. \$1,300.
	Twenty-third , nr. Fair Oak. One-story frame. O.—M. Baron. Day work. \$1,000.
	Tennessee , cor. Sierra. Two-story frame. O.—Bridget Sullivan. A.—M. J. Welch. C.—C. E. Dunshee. \$2,700.
	V
	Van Ness , cor. Pacific. Four two-story frames. O.—R. B. Gray. A.—J. Marquis. C.—I. E. Alexander. \$25,000.

OAKLAND.

Broadway, cor. Fourteenth. Three-story brick. O.—Senator J. G. Fair; A., E. R. Swain; \$100,000.

HILL'S PATENT INSIDE SLIDING WINDOW BLINDS

Are Adapted to Any Style of Window

And Suitable for all Buildings, Dwellings, Stores, Office Buildings, and for Houses Built to Rent, Hotels, Boarding or Lodging-Houses are Unexcelled.

THEY are entirely inside of the window casing, and while requiring no furring out or boxing, make it an impossibility to tear curtains, interfere with plants or window ornaments, or become broken by contact with chairs or other movable articles. The light can be admitted and sunlight excluded from any part of the window; can be instantly removed and taken to any part of the house to clean, and as easily replaced.

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They are made in three sections in height (each section sliding past the others), and any number of divisions in width corresponding to the folds in the old-fashioned folding blinds. They require no HINGES—all trimmings furnished with blinds—are MADE OF ALL WOODS, finished or unfinished, and COST LESS than old-style folding blinds. They have been extensively used by the best architects and builders throughout the East and West, and have given perfect and entire satisfaction wherever introduced.

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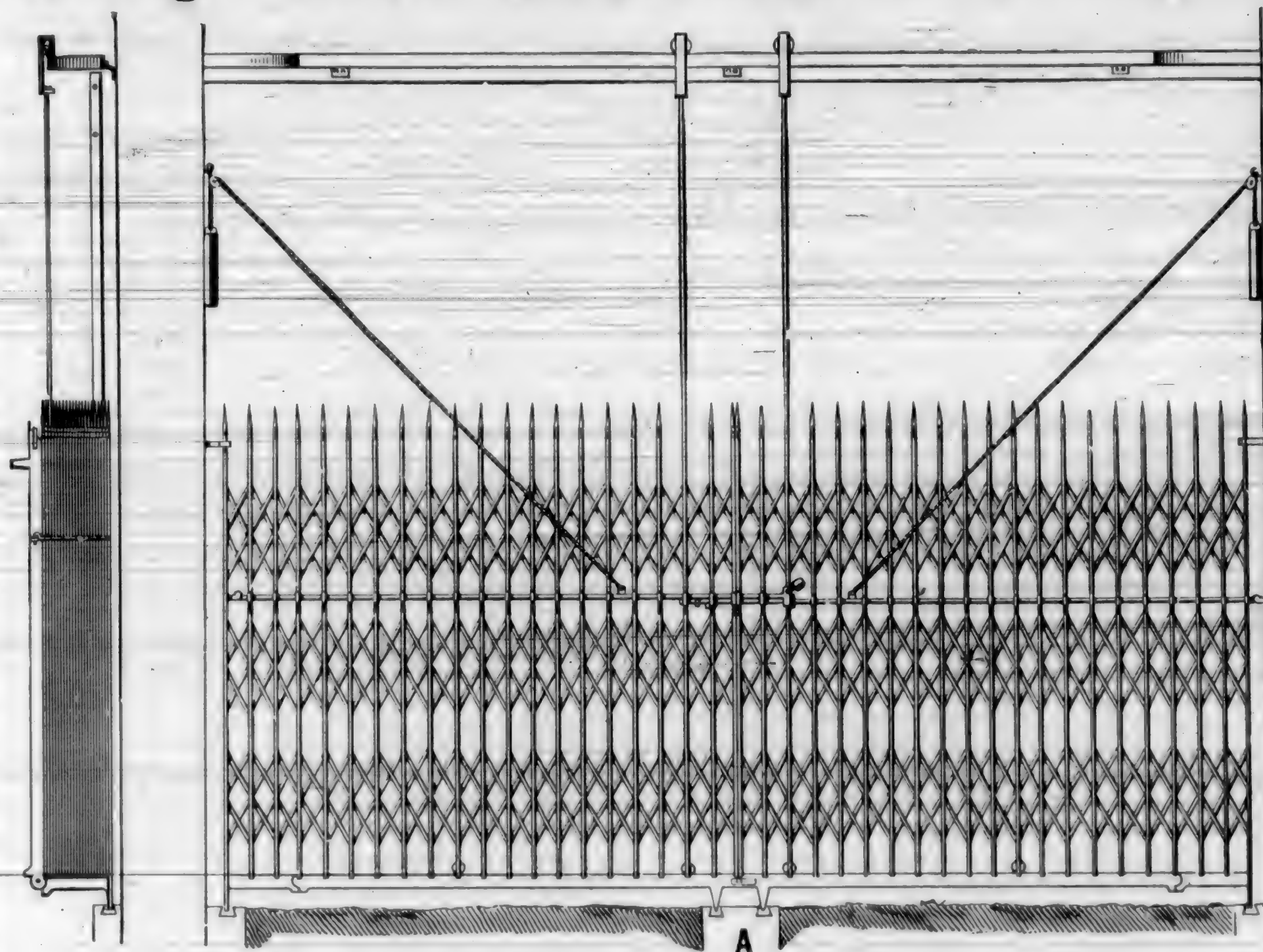
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The following are a few of the owners who have adopted the HILL BLIND in preference to any other:—

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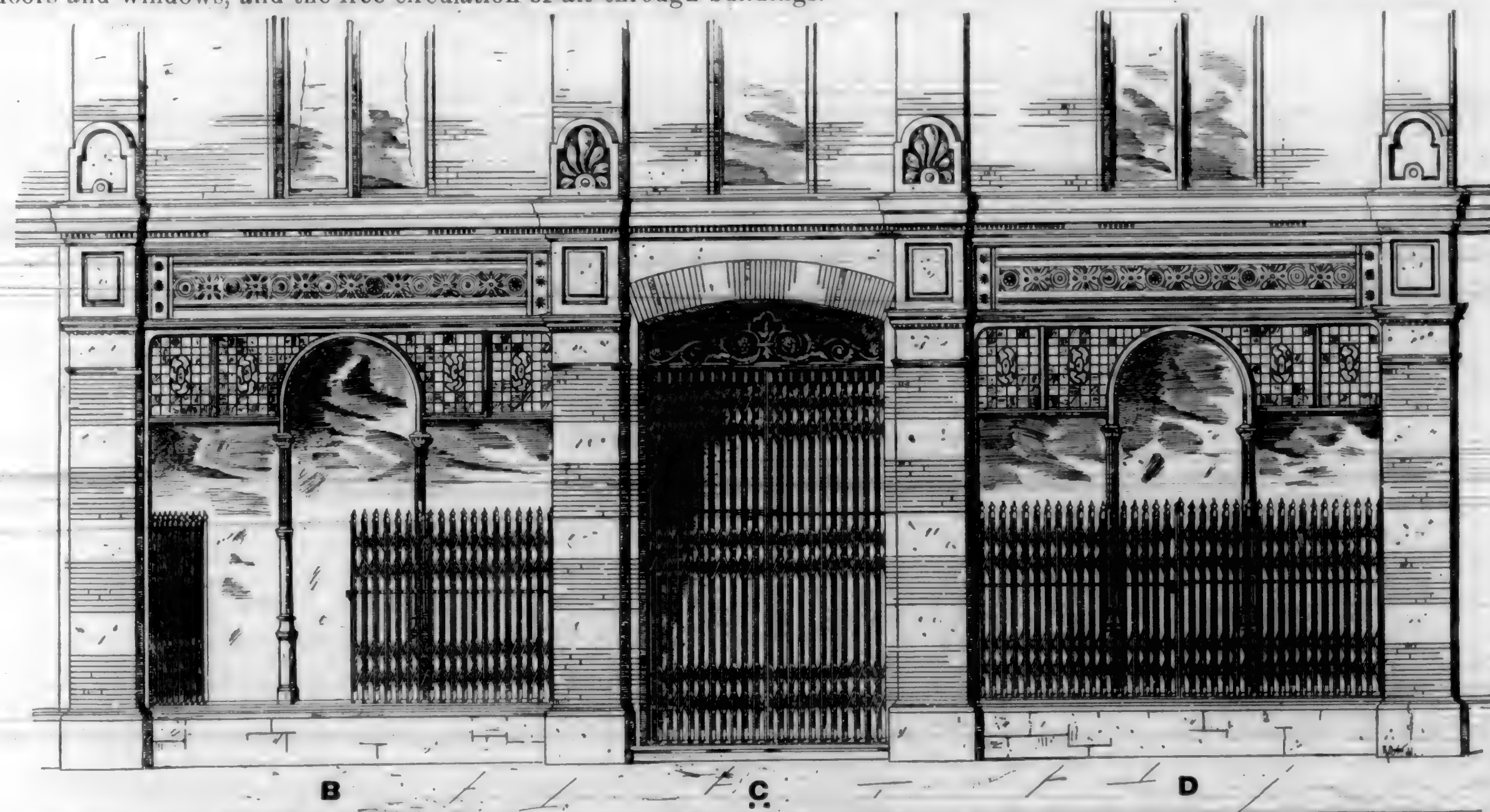
ABSOLUTE SATISFACTION GUARANTEED.—They are easily handled and adjusted, and are the most perfect device in use for the purposes for which they are intended.

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DESCRIPTION.—A represents the guard suspended overhead; B—Store window partly closed; C and D—Store door and window fully closed.

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J. P. LECOUNT,
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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, 1879.

NUMBER 9.

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, CAL., SEPTEMBER 15, 1886.

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THE OFFERED SALE OF THIS JOURNAL.

SINCE the first announcement in its pages that the entire interests of this journal would be disposed of to competent parties, a great many personal inquiries have been made, and propositions submitted and declined.

A sale contingent upon certain stipulations might have been made a month ago, but as we propose an unconditional surrender of the situation, we shall hold the fort until a competent commander-in-chief shall arrive, with satisfactory financial credentials.

Negotiations now pending with parties and firms east of the Rocky Mountains, may result in a full change of management by the first of January next, if not sooner. In the meantime the journal will be continued as heretofore to the best of our over-burdened abilities.

A GENERAL EXPLANATION.

Those who have made inquiry by letter, and personally, have asked for all the facts of the case, and what will be included in the sale.

As a general answer, we state: A sale will include every interest of the publication—its good-will, subscription list and advertising patronage, office appointments, desk, bound volumes and back numbers since 1879, outstanding accounts due from all sources, five hundred copies, more or less, architectural, mechanical, and other publications (optional), and all else pertaining to the publication and circulation of the journal.

We state, in answer to the question repeatedly asked by correspondents, in reference to

COMPOSING ROOM AND PRESSES,

That there are none.—The journal has been conducted incidentally in connection with our architectural pursuits, and printed and bound ready for distribution by contract.

But with these limited facilities and restricted advantages, and personal attention divided between two great interests—editor and manager, and practicing architect—each demanding our whole time and energies, we have continued our publication work for eight years (less three months) with a profit to ourselves, making a most enviable reputation for the journal, as evidenced by the hundreds of complimentary notices from time to time published by technical, class, and other journals, and preparing the way for some one to continue its publication with great success and profit.

San Francisco Chapter American Institute of Architects.

THE regular meeting of the Chapter was held on September 3, in the rooms of the San Francisco Art Association.

The proposition of H. T. Bestor to become a member as Fellow, was favorably acted upon, and he was duly elected.

Proposition was received from A. M. Squire to become a student member. Messrs. Pissis, Curtis, and Sanders were appointed as an Investigating Committee.

The following communication was received from the Builders' Association of California:—

To S. F. CHAPTER, A. I. A.: The Builders' Association of California, recognizing the fact that there is in use in San Francisco nearly as many different forms of contracts as there are architects in the city, and believing it to be desirable to adopt one form for use that shall meet the requirements of the building trades, that shall be alike equitable and just to both the owner and contractor, have appointed the undersigned a committee on the part of said association, with instructions to communicate with you and ask the appointment of a like committee on your part, to meet, consider, and present a form to our respective associations for adoption and general use. We would, therefore, respectfully request your association to appoint such a committee at its next meeting, to meet with us at such time and place as you may select, for the purpose aforesaid.

Hoping the above will meet with your favorable consideration, we remain, gentlemen,

Your obedient servants,
JOS. WILCOX,
JER. O. MAHONEY,
CHAS. C. TERRILL.

The Chapter, in accordance with above, appointed Messrs. Wolfe, Kirk, and Gash as the committee.

Election of officers being in order, the following gentlemen, having received the highest number of votes, were duly installed in their offices for the ensuing term: President, A. Pissis; Vice-President, T. A. Eisen; Secretary, B. E. Henriksen; Treasurer, J. M. Curtis; Trustees, G. H. Sanders, A. Laver, J. E. Wolfe, J. Gash, W. P. Moore.

Resolution carried that delinquent members be notified to pay up; failing to do so, suspension will follow.

Summary of Building Activities.

Below will be found the third quarterly report for 1886, as compared with 1885:—

360 engagements for 3d quarter, 1885.....	cost, \$1,638,260
277 " " " " 1886.....	1,490,279
83 decrease.....	\$147,981
As may be seen, the difference of 83 engagements and cost of \$147,981 must be recorded in favor of 1885. The corresponding monthly report for the month of September is:—	
169 engagements for 1885.....	cost, \$785,700
106 " " " " 1886.....	448,177
63 " " " " in favor of 1885.....	\$337,523

We Want YOU, Who Have Not, TO PAY UP.

ANTICIPATING retirement from the management of this journal, those who have not paid up their subscription dues will confer a favor by doing so at once. Let there be no delay in this matter. We propose to clean up as neatly and nicely as the good pleasure of *honestly disposed* patrons may make possible, and as thoroughly—as the law provides for—with those who refuse or neglect to settle their accounts.

Every unpaid dollar due us has been faithfully earned by unceasing desires and earnest efforts to found and perpetuate a California class journal in the interests represented in these columns, and measured by the mental and physical cares and labors, and the financial requirements to this end, every dollar yet due us has been honestly earned and should be paid promptly.

We hope not to be required in any case to invoke legal redress, but as protection of publication interests, which have been and are so often abused by that portion of the reading public who seek to obtain their reading matter without cost, the law in such cases made and provided is, that every man who receives a subscription journal of any sort, can be held and made to pay the full amount of subscription, up to the time of payment and stoppage.

Questions and Answers.

BUSINESS MANAGER OF ARCHITECT: Will you please to let me into one of the secrets of the "perfumers' art," and tell me how it is possible to make so much "triple extract of heliotrope," when I know from my extended travels, there is very little indeed of heliotrope flowers cultivated for the perfumer to use?

CURIOSITY.

San Jose.

ANSWER:—I do not know that it is just right to expose the secrets of the perfumer or any other art or profession. But as "Curiosity" is an old friend, I will just this once let her know how to make essence of heliotrope without the flowers. Add to a tincture of vanilla a small proportion of oil of bitter almonds; add essence of rose, and orange flower, *q. s.*, and you will have an excellent extract of heliotrope.

G. H. V.

EDITOR CALIFORNIA ARCHITECT: I have taken the *Carpenter and Builder* (published in New York), for the past three years. There has been quite a controversy in it in regard to the number of shingles a man can put on a roof in a day. How many do you think a man ought to lay in a day, provided he made a good job?

H. T.

San Francisco.

ANSWER:—A man working for us, that put on three thousand a day, each shingle to be well nailed, would be doing a very faithful day's work. Of course, we know five, and as high as six thousand, have been put on by one man; but we are not answering to "slapping" them on, but simply a good day's work well done.

BUSINESS MANAGER OF ARCHITECT: I have a roof, the span or width of which is forty eight feet, and the height eighteen feet. It is rectangular, hipped at each end. I can figure out the length of my common rafters easily enough, viz., thirty feet. What will be the length of my hip-rafters? Also, how do you get the length of the latter?

ANSWER:—If your rafters are 30 feet in length (I notice that does not allow of any projection), by the same rule your hip-rafters will be 38.41 feet. You have simply worked out the problem of finding the hypotenuse, two sides being given. Apply same principle to the hip-rafter—regarding a common rafter as one of the sides, and half the width of the roof the other side, of your triangle.

EDITOR ARCHITECT: As I want to furnish all materials for my building, I take the liberty of asking you how much of lime, sand, and hair will it require to make enough good mortar to plaster 100 square yards?

ANSWER:—Eight bushels good lime, sixteen bushels clean sand, one bushel of hair. The longer the latter the better.

A HOUSE in danger, a family in peril.

THE builder that deceives the architect wrongs the client as well, and if he connives at bad workmanship he demoralizes the workman and constitutes himself a criminal.

GARDEN mold may be good for vegetables, but as a component of mortar it spells early ruin.

GOOD workmanship needs no coat of paint to enhance the execution, for like sculptor's work, good workmanship is best judged in the nude without drapery or color.

WET your bricks, wash your sand, slake your lime, but perish not your mortar with water, or your work will not be worth its bond.

The Shingling Question.

It is rather amusing to see one whose experience is more than local, to read the questions and answers appearing in various journals in reference to what constitutes a good day's work at shingling. Many unwise and intelligent discussions arise from the diversity of answers given and opinions expressed; while the fact is, that no general answer can be framed which will apply to all sections of country—for the reason that shingles, like nearly all else used in the erection of buildings, possess special characteristics within certain naturally prescribed limits. The man who might perchance "lay" 2,500, or even 3,000, of California's soft redwood shingles within ten hours, would find himself loser upon a bet to lay 1,500 Eastern cypress shingles—or in some cases 1,000—fully half an inch thick, within the same number of hours. There is, also, a material difference whether six-penny or four-penny nails are used, and whether there is to be one or two nails driven in each and every shingle, or on an average, two nails to each three shingles. Again, it makes quite a difference whether the shingles are made of soft redwood, the only shingle now used in San Francisco, or sugar-pine, or white fir, qualities more common in other parts of the Pacific Coast. Either of these kinds, compared with those made of harder wood in other States, and much thicker, requiring six-penny nails, bear no comparison. And the man who glories, as some do, over the feat of laying 2,500 or 3,000 redwood shingles, performs no better nor more noteworthy day's work than do other men who enjoy a sense of pride at having laid 1,000 of a heavier and more difficult kind to lay.

Material Facts for Owners' Consideration.

Good buildings are sometimes erected without the professional services of an architect, but whether as good and complete as they would have been under the planning and superintendence of a competent architect, is a question. The proposition suggested is reasonable. For the incessant and perpetual study of an architect is to discover and develop new ideas, to determine and mature better plans, to overcome difficulties encountered in prior experiences, to provide against defects and errors which may have occurred, and, in a word, concentrate the entire energies of his mind and brain, to producing improved results; and it is not reasonable to suppose that among men of equal intelligence, education, judgment, industry, and advantages, that those who devote their time, and employ their mental and physical energies in special pursuits, can properly understand and practice their selected avocation, and by incidental application, also understand as proficiently, those specialties which others, their equals in all intellectual and physical senses, have made matters of constant study and daily application. Men generally master not more than one thing or calling, and as the "old saw" goes, "They that are jacks at all trades, master none." We admit that there are a host of contractors who would have become most excellent architects had they so applied themselves. But a reasonably perfected knowledge of architecture can only be obtained by the possession of the natural qualifications of mind and judgment, and constant practice and study. Incidental scholastic and superficial knowledge does not, by any means, qualify men to assume the practice of a profession, than which no other requires the more intense exercise of every mental and intellectual faculty. Hence, we find men calling themselves architects who are simply pretenders, mere frauds, aspiring to be what they can never become, through fatal defects in their natural or acquired qualifications. But mistakes sometimes occur even with the best and most careful architects, and generally when no architect is employed, and almost always when buildings are intrusted to the manipulations and control of parties whose presumption is only equalled by their fearful lack of judgment, and complete ignorance of every correct principle of architecture.



Facade of Suburban Dwelling.

VARIETY in architectural arrangements is as much to be desired as variety in dress. The accompanying illustration presents the front view of a dwelling lately erected in a suburban portion of a country town. The original plan contemplates two houses with exactly the same facade, only having the main entrance doors on opposite ends of the front. By this arrangement of two owners combining the main features of a design, and building conjointly, a much richer and grander effect is produced. From a short distance away, the house would present the appearance of a magnificent villa. As shown, wood, brick, or stone may be used in the construction. Shingles on the gables would much heighten the effect. Due regard must be exercised in regard to the colors used in painting the exterior.

Art and Architecture.

[Special for this Journal. By F. HILLERT, Architect and Mechanical Engineer.]
XXVI. SCULPTURE.

THE art of building incloses space and makes rooms, to which, by the form signifying the purpose, and its creation the semblance of organic life is given, raising the same to a work of art.

With sculpture, every practical purpose for the use of its work drops away; its way of beginning and the staff are of themselves indifferent; they are only wanted to be seen. From the art of building to sculpture, is a large step for independent development, to pure liberty of art from all outside efforts consummated. What conditions are imposed upon sculpture, above all the visible, bodily appearance of the work? The same have, with the work of architecture in common, the extension in length and breadth, but as works of art they are inaccessible to their inside, even as a colossus, the Statue of Liberty of New York, etc., and only its outside in her artificial form, immaterial of the same, is hollow or of a solid mass. The ideas which man can speak out and embody in such work of art, must be shown and given in bodily individuality. The sculptor is to individualize, that is, to make figures. From the—from nature borrowed, mathematically sheathed—ornament by which the art of building indicates, sculpture makes a large stride, by taking the organic living for its model and pattern. Men and

animals, single or in groups combined, are her objects, but she has to represent the same so that, out of the form, the figure speaks directly the spiritual, also the character, an action or a general idea. In the structure of the body, the position, the tension of the muscles, the motion, the form of the head and the features of the face, must by this the spirit be spoken out; what in reference to a certain action, an olympic and sword combat, or a certain character, such as of a sudden anger, must lie near by and be self-evident. In reference to the representation of a personified idea it is more difficult to find the right, and we must admire the high sense for beauty of the ancients, which gave to them the idea of love, the most graceful figure; to the idea of pain, the noblest expression; to that of strength, the most perfect form. In the gods and heroes of the ancients are general ideas personified, and this is the highest problem of the plastic. The Christian plastic, compared with the antique, is, ideally taken, poor, since, with the exception of the crucified, of Maria and the disciples, by the legions of saints, is hardly a figure, in which really something general, human, and dignified is spoken out; and only lately we arrived to represent faithful, devout submission, the joyful death of a sacrifice and similarities, even if more so shown in painting.

The works of sculpture are made from one kind of stuff, worked from outside toward the inside, as with stone, marble; or from the inside toward the outside, by putting on, as with modeling clay; or they are cast in a certain form with bronze, iron, and cast-stone, etc. Since, first, what was probably done in past ages for marble and cast-work models of clay were made, then is, in regard to a true work of art, the making of the model in clay is decisive. The later executions are secondary, and belong to the technic, whereby we must not lose sight that the artist already at the making of the model must know how, later, he will complete his work, since the manner of his execution here and there in single parts at the commencement will require a different treatment.

By all works of sculpture is only one kind of stuff, therefore only one color in existence, sculpture colored, as, perhaps, the gilded ivory pictures of the ancients, inlaid bronze work, or even heads of marble with eyes of precious stones, and such like are exceptions and change nothing in the principle; then the colored painting of a statue is something barbaric and belongs always to the period of transition. The corporeity and the hardness of the material, as well as the single color, limit principal sculpture in its production and point the same irrevocably to the statue and figures, denying to the same the physical life, the world of sensibility, and, namely, of deep passions. The eye is yet closed and dead; the soul does not speak through those bright stars. The eyes closed, which is only missing on few figures, is an indication for the whole manner in which the plastic forms. Not bodies in imitation of nature she desires to make, but figures—idealized, spiritual, and godlike. So is the outline of the plastic art the ideality, which, not considering accidentalities of single persons, conditions the image in her eternal duration and pureness. Partly and seemingly dissension from this highest axiom will afterwards be referred to.

Selecting a group, there can come to expression a situation or a conflict, since the position and relation of the single figures to each other can speak and point to an action, or they all can be united to a common idea, as the former, *i. e.*, in the group of the Farnesian bull, and the latter in the group of Neobe and her children, is the case. The single statue will always bear the character of "in itself" sufficient.

But the plastic possesses more, as in the group the means to show actions and situations, namely, in the raised picture, the relief which, from the complete fullness of the space, is already set back from the surface, and by a slight raising and lifting off of the bodies from the background, giving to the same the semblance of a full appearance. Besides the statues is here the representation of other things possible, as trees, buildings, implements, and such like; and the plastic finds here an expansion of her domain, outside and above her original limits, without, however, taking away from her the conditions of bodily matter, and points hereby to the possibility, by extensive training, to an art which is equipped with farther-reaching means, and which is

XXVII. THE ART OF PAINTING.

This art abandons the bodily of the art of building and sculpture, and sacrifices the real actuality, whose semblance she reaches and again obtains, by a delusion or by other means. She is set back in the surface, the plain or curved, and her means of representation is the color. As the things appear to the eye, which only can be seen from a point, and that only from one side at the time, so she would let the same also appear in the picture. If we, in the rear of a visible object for the eye, the front side of the thing would set up a perpendicular wall, then this would represent the

ground plan of the picture; but the plan is filled up with the visible front part of the things, and, indeed, so that those being farther back in the space appear smaller, as they actually are. This semblance is reproduced in the picture, and is designated with the name of "perspective." A work of painting is, therefore, the presentation of objects on a plane, which, by means of color and perspective, produces the semblance of reality, naturally understood under the general condition of a work of art.

By the possibility to represent in an unlimited manner the whole extent of reality, painting possesses in the same time the means to bring to view the inner feelings of the soul, the tender, soft emotions, general ideas of the most affecting modesty to the highest magnanimity, as far as they can take in general a visible form. The offers direct a hand for the personification of an idea, and know how to bring the same with astonishing ease to appearance. Color is her stuff and material, and a few strokes drawn with a pencil on paper, obtain first and have only appearance, when the same by the coloring are set off from the paper. The different coloring material used conditions the appearance of the painter's work; then that which is only drawn in one color, on a certain priming ground, will only in part arrive to the semblance of reality, and the same to be tried to be gained by shading and shadows; but that which is executed in many colors, obtains again, by the material condition of the color, a different character. The different coloring material requires also surfaces for painting of a different material. The mode of the color mixing, preparation, and grinding, the spreading and the treatment of singularities, have also a considerable influence on the colored, that is, the color in her artistical effort, that the finest gradations needed everywhere are made possible. In the coloring, painting has an inexhaustible source of representing the most opposite and contrary dispositions, and hardly perceptible shades. Works of painting are divided, partly in reference to the kinds of means used in representing, and partly according to the kinds of the represented objects; but both, as can already be seen, only refer to the outside aspect.

More correct would be a separation of the different works according to the kind of ideas they represent, so that such works which would unite the most important, significant and essential to one group; but such which contain the accidental, momentary, and insignificant, to another group. The first would be named the historical works in the highest and most expanded sense; the latter, to be designated as genera. The dividing line of the two groups will frequently run over and overlap each other, and we will be compelled to divide the same according to the kind and method of painting, as above indicated, or according to the subject treated, such as religious, historical, historic genera, genera, likeness painting, animals, landscape.

XXVIII. RELATION OF THE THREE ARTS TO EACH OTHER.

While the art of building must content itself to give, by indication to their works, the semblance of the organic, while the sculpture has to remain in the outer form of the organic, the painting penetrates to the organism itself, and lays down the deepest connections of the spiritual and objective in one form, which has departed from nature so far, that the same, instead of the natural occupation of space, which the art of building and nature demand, has withdrawn to a surface, and on it, as illustrated before, the semblance of perfect reality made possible. But of the three arts, is the art of building the fundamental and lawful, standing in the forefront, historically and aesthetically before the others; it educates so, as to say, the artistical sense and the art, and makes man capable to feel himself independent to form; and again, to perceive the work of art as something different from the creations of nature. The sculptor, whose hand and skill for work have already been trained in making of building adornments, the ornaments, columns, etc., steps in next, and at the commencement leans closely onto the art of building, whose rooms she adorns and ornaments; but she also wakens to an independent consciousness, and teaches above all others the beautiful proportion and the ideality. The painting, which has perfected itself the last, enters now, opens to art the reality of things and of the soul. The sister arts are supplementary to each other; they finish the circle of the beautiful, as far as visible to the eye. Their principles unite themselves to a higher unit, which every active artist, wherever he may stand, must be conscious of, namely, cannot enough be pointed out to so lively conception of the strict laws of the art of building, which give, well and truly comprehended, everywhere a sure foundation for intuition, judgment, and invention. Through the union of the arts by their works, speaks a higher whole, and only so arrives each to its wordiest position, to the solution of its highest problems. Nothing better and higher exists in the plastic, as the adornment of the sanctuaries of Olympus and Athens; nowhere is painting higher than there, where it ornaments walls and ceiling of a

large room, etc.; and where a building shall arrive at a true and real beauty, perfect monumentality and greatness of the sister arts must reach out and assist the wreath of plastic and figurative ornament, as in museums and fine theaters. But as architecture is connected with the building trades, so points painting however by its gift to actions of the souls of men, which only exist in the time to make them visible in space, already to poetry and music the art of sounding. So it could appear, as if the arts overlapped each other—the art of building over sculpture, by the plastic decoration and the statuary ornament, the figurative, forming to painting by the relieve or raised picture to the simple drawing; but nevertheless the boundaries are fixedly drawn and must be strictly kept; then if one of the arts should forget her conditions and her mode of representation, and, going over to the domain of the other next above, her works become unthoughtful, repulsive, and repellent, then the art of building would become individualized, or the sculpture pictures give, then they are not to be approved; their works do not please a refined and cultivated taste. When, therefore, painting draws statuary or architectural, if figurative forming forms architectonic, it is this, anyway, a restraining of the artistical capacity; but the work carries with it severity and dignity.

XXIX. ART AND RELIGION.

It has already been said that a work of art is the reflection of the state of culture of its originator, his time, and of his people; and this, therefore, coming direct from the original self of its originator, he again being rooted with his whole thought and mode of thinking, with his time and with his people. In the different periods of history must, therefore, appear a different kind of art. The main reason lies in the religion of the people; then the religion, since the beginning of the human race, has been that moment and impetus, in which every time and always the highest interests were united, in which the measure or scale for the thinking capacity, the depth of perception, for the striving after morality, the arrangement of state and for personal dignity is given. That religion, more than anything else, separates and unites people, is clear, and needs no further explanation, since every section of history gives speaking proof; and our time itself, which designates partly a beginning, where the positive religious being passes over to the liberated humanity, is rich in such examples.

Art is intimately related to religion; then the impulse after divinity does not satisfy at first a reasonable perception, but it leads much more to the lowest state of all perceiving, corresponding to the sensitive intuition, necessarily thereto, that man tries and endeavors to make himself a concrete presentation of that which his soul desires very much to see. The most sensitive religions begin with elementary objects, such as the sun, fire, and similarities, and pass over to natural things, as trees, animals, and such like. An imposing progress lies then in the taking of personal objects as deities; and, lastly, the personification of a god-like or any ideas referring to divinity in a certain form. This is true for the whole humanity up to to-day, with the exception of Protestantism, as far as they are true to its spirit and principles; then Judaism and the Mohammedans, who discard images of God and set up only hereby a wise prohibition against extravagancies of phantasy; but the Protestantism, that is, as a universal historical idea, and not in the accidental exterior community with the so-called "Evangelists," whereby it is intended to disabuse a misunderstanding against the works of art of eminent, not Protestant artists, is not hostile to art; as to the former religions, he is only from its own inner spirit against the works of art as images of the godly divinity, and repels from it all supernatural; wherefore he only accentuates the purely human and the nobility of humanity. It is a large process of culture, which only one, and that a very small part of humanity, has brought about, laboriously and slowly, and their universal historical sense and their aims are not very difficult to be recognized. The pace of development runs from the sensual creed to the spiritual consciousness.

The more variable and different religions of nations are from each other, so much different are the arts of the same, and consequently the more they come near to each other, the more similar are these. Yet, when many nations are of one and the same religious belief, the difference in the arts will only be recognized and seen in small, insignificant works, which are to be traced to the different perceptions of the same religion through the different characters of the people, and such like. As long as a people has its own religious belief, it has its own national art, and if one and the same religion is in common with more nations, then is art periodical.

XXX. NATIONAL ART OF THE ANCIENTS.

The national art rules the collective antiquity. Here every nation has its own national religion, and art oversteps the boundary of

the people only together with the religion. The types of the old kinds of art are different in their main spirit; and even then, if we believe that some early relation existed between them, we are on the main only authorized to find in them the first impulses to an independent activity within their own nationality. The most important example pertaining hereto is the dispute on the influence which the Egyptian and Asiatic art had on the ancient Greek art. In the face of the monuments, to deny such influence unconditionally is the prerogative privilege of the superabundant Hellenist, when otherwise to trace and pursue the same up to the prime period of the Greek art, to find in all imitations and perfected Egyptian patterns and models, is a preconceived prejudice of those who are incapable to conceive and comprehend the independent people's character. If the old Pelasgians, and, more so, the old Dorians and Ionians, received from the more advanced people the incitation for art exercises, then this is by no means a lowering of the Greek spirit, but sooner a glorification, since they obtained imperfect and raw germs, which, by their own force, were brought to the highest perfection. Something similar executes itself uninterruptedly in all dominions of life, and the judgment here goes from one extreme to the other. At the time of the Roman emperors, as the deities of the different nations and their culture were introduced in Rome, an inclination for a barbaric art was gained, as numerous sculptures of this period, which were executed in the Egyptian style, show. Religion is now undoubtedly conditioned by the natural disposition of the people, their bodily constitution, the formation of their soil, the lay of their country, and similar influences; but it is already formed, in some measure, by the art training of some nominal value, and thus stands in a closed and fixed relation to the same, which is naturally without detriment to any change after time may make with it. So we find perfectly formed religious creeds, which have already called forth a certain fixed art, but which were proclaimed by an interested priesthood as unimpeachable commandments of divinity.

The true reason is the inordinate desire of power and self-interest of the priests, who, by their divine threatening and menace to exclude the people from every and any interest in their religious organizations, and every, even the slightest, attempt in that direction, is punished in the severest way. So originates a perfect stand-still in the religion, and the once created art forms are retained unchanged. Art is therefore under such conditions that the vein of its life is tied and its development played out. In this way it happened that the same unaltered types of art remained thousands of years in Egypt, and the rigid and stiff Byzantinism, longer than five centuries, showed the same lifeless forms.

In the Indies was the appearance of the reformed Buddhism the cause of a new and less important art, or the one of the Bramaisms, but the Asiatic and African nations, being under the dominion and rule of an oppressing priest religion, their art is, therefore, more or less typically stiff, without any developing progress.

The liberty of the Greeks created the first true art from small, typical, narrow commencement to a perfected beauty. The Romans were, in art and religion, essentially dependent on Greek influence, but by both were taken up in their peculiar national form.

Please Make Immediate Settlement.

AS AN entire change in the management of this journal is likely to occur at an early day, those who are indebted to us will greatly oblige by

MAKING PROMPT PAYMENT.

Do not hold off because you may for a time, but pay up at once and remove the obligation. It is *our* due and *your* duty.

THE most celebrated carpenter I ever heard of, was the Carpenter of Rouen. You never saw him, but you have seen the ruin of the carpenter, perhaps.—*Builder and Woodworker.*

No, we never did. We never saw a good carpenter ruin anything, but we have seen fellows who pretended to be, that did ruin everything they undertook, including their own and the prospects of good carpenters for profitable jobs. We suppose this class is not common to any one city, but may be found in Rouen, Paris, London, Amsterdam, New York, and all other cities. We certainly don't need any "Rouen" or "ruin" carpenters here.—*Southern Lumberman.*

Remember on the occasion of our successor taking charge of this Journal, we propose to publish entire a delinquent list of subscribers. Prompt attention to paying your back subscriptions is absolutely essential.



A COUNTRY SKETCH.

Spoiled Buildings—Owners' Follies and Grievs.

OWNERS are often brought to grief by their mistakes in the means adopted by them to avoid the expense of an architect, and obtain plans for their buildings. Sometimes they know, or become acquainted with some *honest mechanic*, to whom they are induced to intrust the whole matter of plans, specifications, and construction, only to repent it when it is too late. The party to whom the proposition is made, elated with the splendid opportunity opened up to him, and full of conceit in his own abilities, uses all possible means to secure and consummate the arrangement, and plans are made—and such plans!—and the work progresses. Once under way, there is no stopping it, and step by step the owner discovers and realizes, one after another, grievous errors, which are difficult to remedy. And when the building is completed, he simply feels disgusted. Imperfect arrangement, poor construction, homely design, and incurable defects crowd upon him, as the reward of his folly; and regrets for his error haunt him day and night, but it is too late—the building is erected, and he must endure its defects. But the first general dissatisfaction is primary and bearable, compared with after experiences in their various details. The plumbing work has, perhaps, been done by some tenth-rate man—some spoiler of good materials—for there are, in San Francisco, some of the least qualified men to be found in the United States, who call themselves "practical plumbers"—men who have not the slightest idea of what constitutes a really good job, not to say first-class. Nor would the payment to such men, of ten times the value of the work done, secure skillful workmanship at their hands, for the simple reason that they do not possess, and therefore cannot practice, mechanical skill and abilities. And owners who employ this class of plumbers are unfortunate, indeed. But to continue, defects show themselves in all connections. Pipes are put in of insufficient capacity, wastes entirely too small, and sometimes so cramped in making bends as to diminish their practical size one-half; "tinker" instead of "wiped" joints; leaks at various points and places; wetting and spoiling ceilings and walls, and not unfrequently carpets have to be torn up to escape the deluge. All this is followed by a still more serious defect—one affecting the health and lives of the occupants, viz., imperfect or insufficient traps, pipe ventilation, bad sewerage, etc., resulting in the distribution of the vicious and poisonous sewer gases through the building, and, as a consequence, the ill health, and sometimes premature death of loved ones. The intended pleasant home is thus transformed into a mere fume-castle, a disease-breeding charnel-house, not fit for human habitation. All this is followed by continual repairing, tearing up floors, removing fin'ishes to get at concealed places, etc.; and for all this the owner has been made to pay a good round price, amounting to more, as a rule, than it would have cost him to have secured a good building, erected under the superintendence of a trustworthy architect. But bad plumbing work is not the only serious defect which so often occurs in such cases. The foundation is often wholly insufficient, and settling occurs, with any quantity of ugly cracks in the plastering. The structure is perhaps so poorly braced that the edifice trembles with every wind that blows; and, when the rains fall, leaks are found at every exposed window and opening, and the roof itself yields its proportion of internal wettings. But we will not continue our enumeration of "bad things," as to do so would consume columns of space. Such cases are known to all architects, and many a "served him right" is indulged in, upon the principle that a competent physician laughs at the sufferings of a patient whose pains and agonies result from self-treatment or quack practice, and the educated lawyer smiles when his client gets himself into a *terrible fix* by intrusting his case to some pettifogger, or who tries to work out the intricacies and problems of law by his own self-conceived legal ingenuity.

Landlord's Liability for Bad Drains.

THE old question of the responsibility of a landlord for the defective drainage of a house which he had let to a tenant came again before the High Court in the case of *Bartram vs. Aldous*, which was the first case tried before Mr. Justice Grantham. The case is specially instructive, as the fact of the house being in an unsanitary state was not disputed. Evidence, which was admitted to be accurate, was given to show that the waste-pipes from the bath-room opened direct into the main sewer, and that the house-drains were untrapped. The natural consequence was that sewer-gas escaped into the house, and the tenant's family became ill. Under these circumstances he refused to pay two quarters' rent which was due, and brought a counter claim for the damages which he had sustained through becoming tenant of a house which was uninhabitable.

By English law a landlord who lets a house does not ordinarily warrant that it is fit for habitation. The tenant is supposed to make inquiries, and ascertain the material facts for himself; and if he makes a bad bargain, so much the worse for him. The fact of the drains being defective, of itself, affords no answer to a claim for rent, and Mr. Aldous was obliged to rely on a representation which he alleged the landlord to have made at the time of letting the house, to the effect that the drains and water-supply were both perfect. On the question of this representation having been made there was a conflict of evidence, and the jury gave their evidence in favor of the landlord. Whether this verdict was right or not is a matter which does not concern us here. The case shows plainly that a tenant of an ordinary house cannot, after he has made his bargain, impose on his landlord the additional liability of providing proper drains. There are, no doubt, exceptions to this rule. It has been decided that a landlord who lets a furnished house, impliedly warrants that house to be fit for habitation, and that he may therefore be liable to pay damages consequent on its not being so. The Housing of the Working Classes Act of last year, 48 & 49 Vict. c. 72, sect. 12, also provides that in any contract "for letting of habitation by persons of the working classes, a house or part of a house, there shall be implied a condition that the house is at the commencement of the holding in all respects reasonably fit for human habitation." Neither the Legislature nor the judges have seen fit to incorporate any such condition into contracts for the letting of houses of a superior class, and there the intending tenant must protect himself. This he can do by having the house surveyed before he becomes tenant, when, if his surveyor is competent, any gross sanitary defects are likely to be detected. He might also insist on the insertion in his lease of a covenant by the landlord that the drains, etc., are, and shall be kept in a proper condition. Such a covenant is at present unusual, and the landlord's solicitors would probably for that reason object to its insertion. But if the intending tenant insisted, and the house was in such a state as to comply with the requisition, the covenant would most likely be conceded; if the landlord's agents persisted in refusing, that fact should certainly be sufficient to raise a suspicion that the house was not altogether fit for habitation. Too often landlords let, and tenants take houses without giving any real thought as to their sanitary condition. Greater attention at the time of letting to the duties and to the risks which they respectively incur, would save many disputes and much subsequent unpleasantness, and would be beneficial to the health of the community.—*Sanitary Record*.

La Semaine des Constructeurs publishes a short note upon a matter of considerable importance to builders. So far as we can gather from the note, a contractor agreed with the officials of a certain town to construct a building in accordance with plans and specifications offered him on behalf of the town. He carried out his contract to the letter, but after the building was completed it showed signs of weakness, and the contractor was called upon to make the work good. He defended himself on the ground that he had faithfully carried out the plans and specifications, and proved that he had done so; but the highest court in France decided that, notwithstanding this, he was bound to make good the defects which had appeared in the building, for the reason that he had neglected to inform the town officials of the improper character of the materials specified, and to warn them that it would be impossible to do good work with them. This decree, which was given by the Council of State on the second day of last April and is reported in the journal *Droit* of the eleventh, will surprise those contractors who think it business-like to conceal their knowledge of defects in plans or specifications in the hope that they will be able to get a good price later for extra work in changing the work done in accordance with imperfect documents, but there can be no doubt that it expresses

the general policy of the law. As applied to architects, this policy requires that the client should be clearly informed of the inconveniences or risks which would be incurred in following out his instructions, if the architect, knowing of these inconveniences, would free himself from responsibility for them. Before the law, the architect is always the adviser of his client, and is bound to advise him faithfully. In the absence of explicit instructions, and even, to some extent, in opposition to them, he is clothed with a very extensive authority in directing the conduct of the works which are placed in his charge, and in return for the discretion which the law allows him he is obliged to assume a proportionate responsibility. The client may, in unmistakable terms, take this responsibility away from him, but interference with the architect's work, and even the giving of contrary orders, will not have the effect of shifting the responsibility for the building from the architect to the client unless the former takes care to warn his client against the possible consequence of his actions, so far as he can foresee them.

Paint, Putty, and Piety.

"MR. EDITOR: I wish you would say a word about putting one's religion into one's work. Last year I built a new house, and employed a Christian man to paint it. He makes good prayers at the prayer-meetings, and utters a good word of advice to the young. But in his work he failed to exercise the same degree of moral sentiments, and did not fill up the nail holes in many parts of the work, and did not paint the top edges of the upper story, and other places which could not be seen from below, but which as much, or more, needed painting. He took care to slight the work just where he thought it could not be discovered, and the nails not being puttied, they caused leaks, which led to a detection of his neglects. I have discounted that man's piety and prayers, ever since. Perhaps this painter treated me as he did because I am a woman and a widow. Any way, I prefer Christians who fill up the holes with putty, and paint the top edges."

"LADY FRIEND."

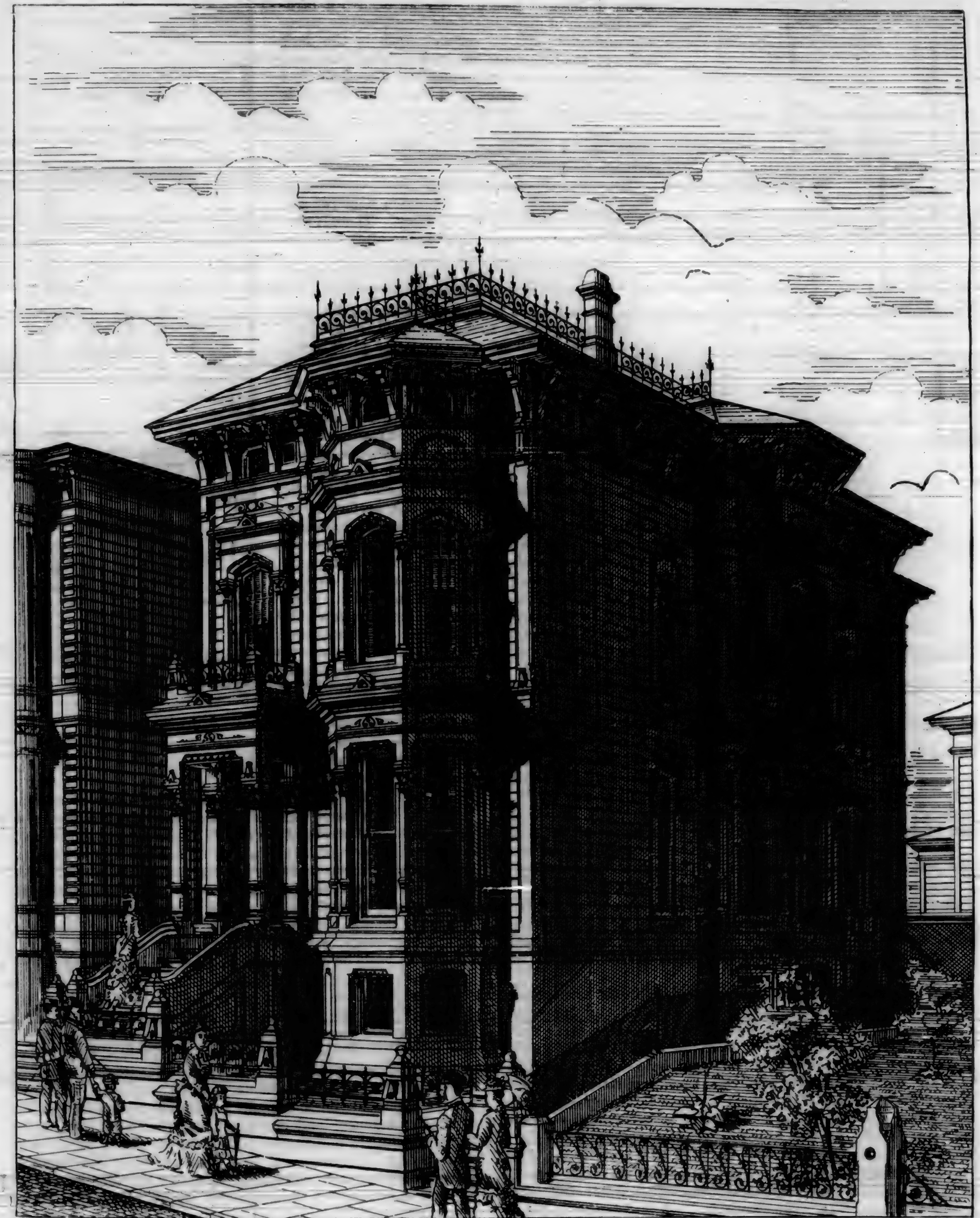
"Our lady correspondent has said quite as effective words about putting one's religion into one's work, as we could possibly say. And our friend is right; you Christian painter, how could you let those nail holes go unputtied, and those top edges and places which you imagined would not be detected, go unpainted? Was it Christian-like? Was it manly? Was it honest, particularly toward a woman—a Christian sister? We advise painters who pray and talk well, to putty and paint well; for right doing is better than right talking and loud praying. We want Christian painters who will fill up the holes with putty, and paint well the upper edges." (An Eastern editor's criticism on above.)

And the CALIFORNIA ARCHITECT AND BUILDING NEWS adds: This is severe on Christian painters. By-the-by are all the painters in San Francisco, Christians? If none but Christian painters leave nail holes unputtied, and upper edges, roof gutters, and parts not easily seen, go unpainted, Christianity is certainly in the ascendancy among San Francisco painters, and extensively represented in our midst. The lady brings no charges in reference to the character of stock used by the Christian painter. It may have been pure lead and oil. San Francisco Christian (?) painters sometimes don't use those ingredients—soap, potash, whiting, etc., are cheaper, and owners often want cheap work, and they get it. We have known painters in this city whose Christianity and piety have not been brilliant nor self-evident, and their prayers—sort of ejaculatory expressions—prefix to sentences, beginning with the letter d, who have—well, never mind the rest, we won't repeat, they call it paint, painting, and pure stock!

A VERY simple test to ascertain whether the air of any apartment contains sewer gas is made by saturating unglazed paper with a solution of one ounce of pure lead acetate in half a pint of rain water; let it partially dry, then expose in the suspected air. The presence of sewer gas in any considerable quantity soon darkens or blackens the test-paper.

TWO OUNCES of soda dissolved in a quart of hot water will make a ready and useful solution for cleaning old painted work preparatory to repainting. This mixture, in the above proportion, should be applied when warm, and the woodwork afterward washed with water to remove all traces of soda.

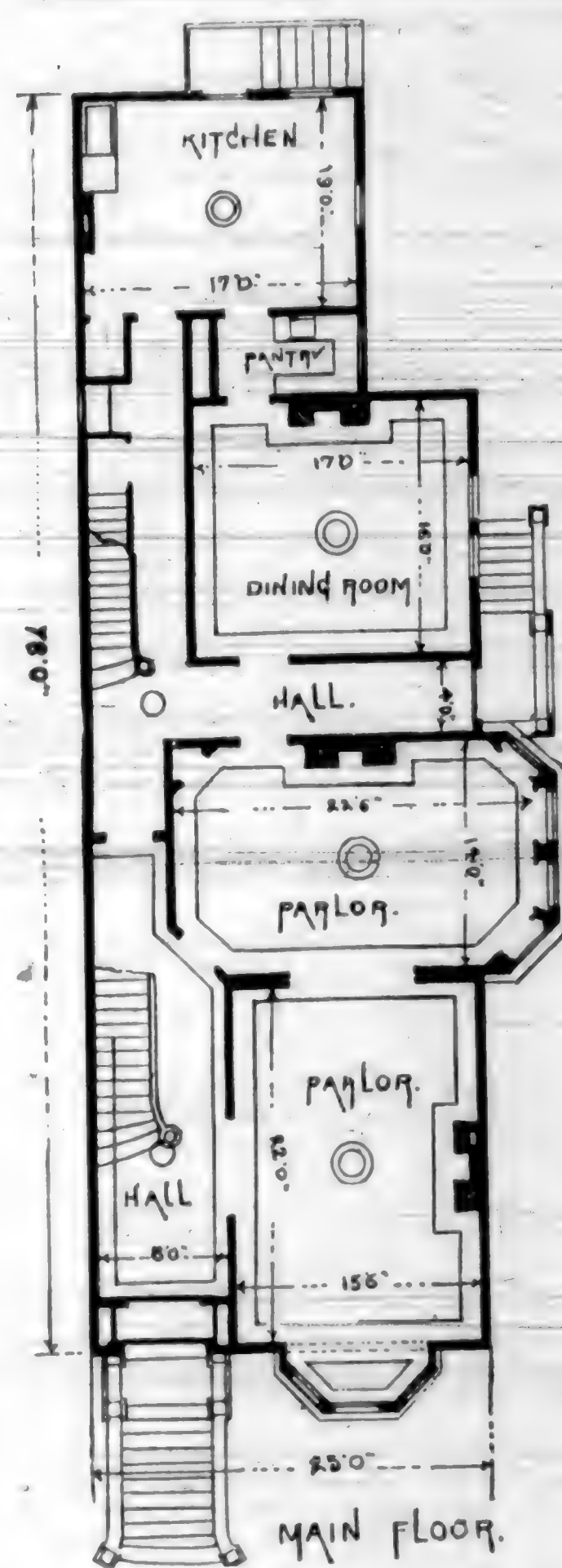
We carry a full assortment of architectural publications, and are prepared to forward to any address copies of any work published, at lowest market price.



A REPRESENTATIVE SAN FRANCISCO DWELLING.

THE above cut and accompanying plans on opposite page aptly represent the average architecture of a dwelling intended for those who move in the well-to-do walks of life. Although the design is intended for any location, still the building appears to better advantage when placed on the side of a hill. The exterior is in perfectly good taste, without any attempt to clap on the *balderdashian* styles commonly but erroneously styled as Eastlake, Queen Anne, etc. When finished as per plan, the beholder is at once struck with the solidity, clean-cut finishes, and the general well-to-do appearance of the structure, thus

establishing at once the owner as a practical business man. The general plans, and arrangement of the rooms on the different floors, will well repay a careful study. The first thing observed is that no waste room exists in the house; no dark closets to bother the careful housewife; in fact, while studying the general plans, you are at once impressed with the general compactness in the whole arrangement. This feature especially recommends itself to the lady of the house, as it requires much less work to keep the various rooms in the *shining dollar order*. Notice the basement; it extends under the whole house, and is



sections, and cuts off completely all danger from the smell of cooking, etc., ascending to the second floor. All such doors should be provided with self-closing springs, so as to guard against their being accidentally left open by careless servants or the future heirs of the master of the house. No cornice is shown in rear hall, that being a matter solely regulated by the owner's purse. The kitchen is well lighted, and is handy of access from hall and yard and also convenient to the basement, which is reached by stairs both from outside and inside. Pantry is large, and is provided, as shown, with a sink, shelves, and drawers.

Much care and study have been exercised in the arrangement of the second or bedroom floor, so that suitable and convenient spaces may be had for beds, bureaus, chairs, tables, etc. Many designs have been presented to us as individual owners' studies, representing plans that would suit said owner's ideas to perfection, and yet, after a little talk, they have been either torn up or thrown into the waste basket. The first duty appears to have been either the last, or not thought of at all, viz., the arrangement of the room for the proper disposal of the furniture necessary for the uses to which the room is to be subjected. Take the front chamber in plan. The alcove at once suggests the proper place for a bed. The largest size of a double bed is not over 5 feet in width. The alcove is 11 feet 3 inches in length. Thus over 3 feet each side of the bed is left for such purposes as the occupant of the room may desire. Between the chimney and bay window there is a suitable space for a bureau, organ, book-case, lounge, or any other article of furniture. The best place for a bureau is in the dressing room between the window and wash-stand. If placed there, the space in front room as mentioned can be used for a large looking-glass, by which ladies can see their full dress uniform to advantage. It will also be noticed that room on the walls is abundant for the hanging of pictures, etc.

All the other rooms are equally convenient, being so arranged that, when furnished, they will present an appearance at once indicative of home comforts.

The attic is large, well lighted, and ventilated. The large room can be used as a dance hall or for any other purpose which sug-

amply lighted in every portion by numerous windows judiciously placed. Servants have a care-less fashion of disposing of old boots, bottles, worn-out umbrellas, and all sorts of trash in the dark holes of the basement; but in the plan as laid out, no chance exists for receptacles of the stuff that should only find a place in the ash barrel that is emptied regularly by the proper person.

Should it be desired to heat the house by steam or hot water, ample room exists in basement for a furnace room.

The billiard room is large and convenient. Should more light be required, extra windows can be placed each side of the chimney. There is also ample room for a children's ten-pin alley between the billiard table and the hall partition. If so used for this purpose, care should be taken to have the flooring of extra good quality.

The partitions in rear of the billiard room can be either plastered, or made of tongued and grooved boards planed both sides. The latter gives more room and answers every purpose.

The main floor plan is at once suggestive of compactness and convenient arrangement. Should it be desired, the sliding doors in parlors may be done away with, and the opening arranged for a portiere. While we do not advocate the use of portieres between a hall and parlor or dining-room, still between two such parlors as shown in engravings, we think they are much preferable to sliding doors. The latter will every once in a while get out of order, but the former having none of its portions concealed from view, will last as long as a good housewife informs us—as long as the stuff of which it is composed is in fashion. According to this lady's authority, portieres are like fashions in dresses, to be changed as often as the purse will allow.

The dining-room is so situated that no smell from thence can permeate into the parlors, the intervening hall proving an effectual barrier. The latter is an especial feature in the arrangement of the main floor; by its use you have access to yard, basement, parlors, and upstairs; the door in main hall effectually divides the front and rear

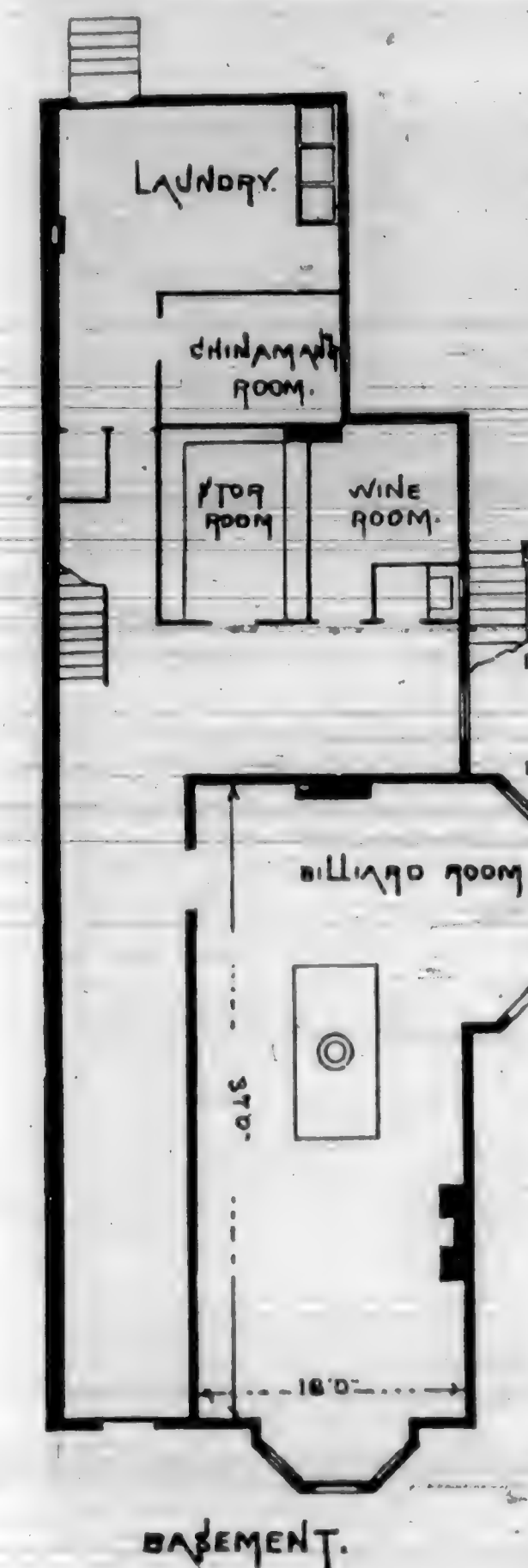
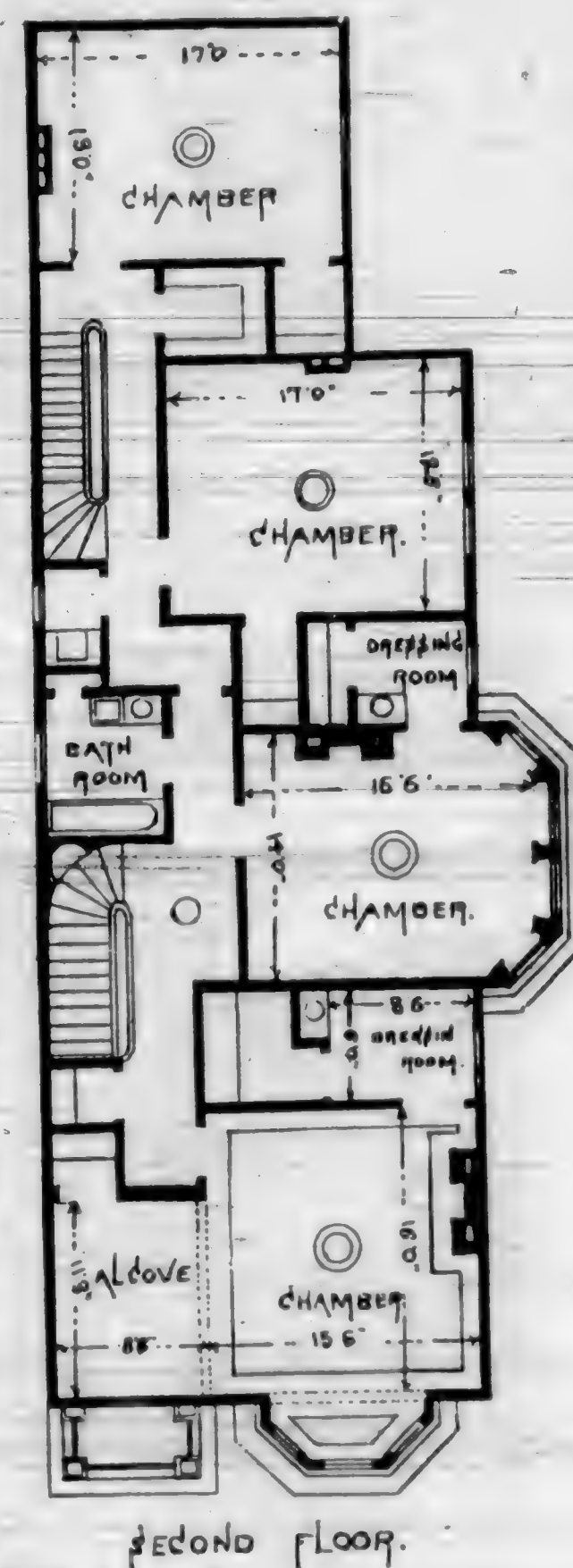
gests itself to the mistress. The tank room—easy of access—is located in one corner, thus doing away with the hot water boiler in kitchen. As arranged by us, the tanks present a vast superiority over the copper boiler; plenty of hot water is always to be had whenever a reasonable fire is kept up in the range. A window in the room gives light, and—what is absolutely essential—plenty of air, so that the water may be thoroughly aerated.

Having presented a general description of the house as shown by the engravings, we will add a few hints suitable for those intending to build or occupying a house after its erection.

WHEN you have determined to build, the first thing to be done is to go to the best architect within your reach and consult him as to the most expeditious method of reaching the result desired. Do this before consulting any builder or contractor, and you will invariably find it to your advantage. The reason is plain. The architect stands as a disinterested third party between you and your mechanic, he having made a special study of the arrangement and convenience of modern structures, and, being constantly employed in designing such, is better versed than any one else you could find. In selecting your plan, give the architect a short synopsis of what you consider best adapted to your wants, and the amount you desire to expend; then let him work the design up and submit it to you for inspection, which will enable you to see and correct all which does not suit you, and your house, when completed, will come up to your expectations.

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

A KITCHEN and its belongings should not be planned solely for the comfort or ease of the cook, but for the general health of the household; for the purer the air below the purer will that be which circulates above.



MORTAR and paint may be removed from window glass with hot, sharp vinegar.

GRAINED wood should be washed with cold tea, and then, after being wiped dry, rubbed with linseed oil.

REMOVE flower-pot stains from window-sills by rubbing with fine wood ashes and rinsing with clean water.

STRONG brine may be used to advantage in washing bedsteads. Hot alum water is also good for this purpose.

OIL-CLOTHS should have a coat of varnish applied once in six months, after being scrubbed with hot soap-suds and thoroughly dried.

PLUSH goods and all articles dyed with aniline colors faded from exposure to light, will look as bright as ever after sponging with chloroform.

SOOT falling on the carpet from open chimneys, or from carelessly handled stove-pipes, if covered thickly with salt, can be brushed up without damage to the carpet.

CARPETS should be thoroughly beaten on the wrong side first and then on the right side, after which spots may be removed by the use of ox gall or ammonia and water.

WHOLE cloves are now used to exterminate the merciless and industrious moth. It is said they are more effectual as a destroying agent than either tobacco, camphor, or cedar shavings.

A GOOD moth powder is made of lupuline (ground hops) one dram; Scotch snuff, two ounces; camphor gum, one ounce; black pepper, one ounce; cedar sawdust, four ounces. Mix thoroughly and strew among the furs and woollens to be protected.

FURNITURE needs cleaning as much as other woodwork. It may be washed with warm soap-suds quickly, wiped dry, and then rubbed with an oily cloth. To polish, rub it with rotten-stone and sweet oil. Clean off the oil and polish with chamois skin.

A CHEAP paint for a kitchen floor, that will save much work in cleaning, can be made with five pounds of French ochre and a quarter of a pound of glue dissolved in two quarts of boiling water; then apply enough boiled linseed oil to make the paint flow easily from the brush.

WHEN hard-finished walls have been calcimined, the soiled coats should be washed or scraped off before a new one is put on. This is the most disagreeable part of the process. The furniture should be covered, as the lime makes spots that are removed with difficulty, especially upon black walnut.

TO CLEAN marble the following is recommended: Common soda, two pounds; powdered pumice-stone and finely powdered chalk, one pound each. Pass through a fine sieve and mix to a thin paste with water. Rub it well all over the marble and the stains will be removed; then wash the marble over with soap and water and it will be as clean as it was at first.

BUILD with seasoned timber, or you will build to your own discredit and others' loss.

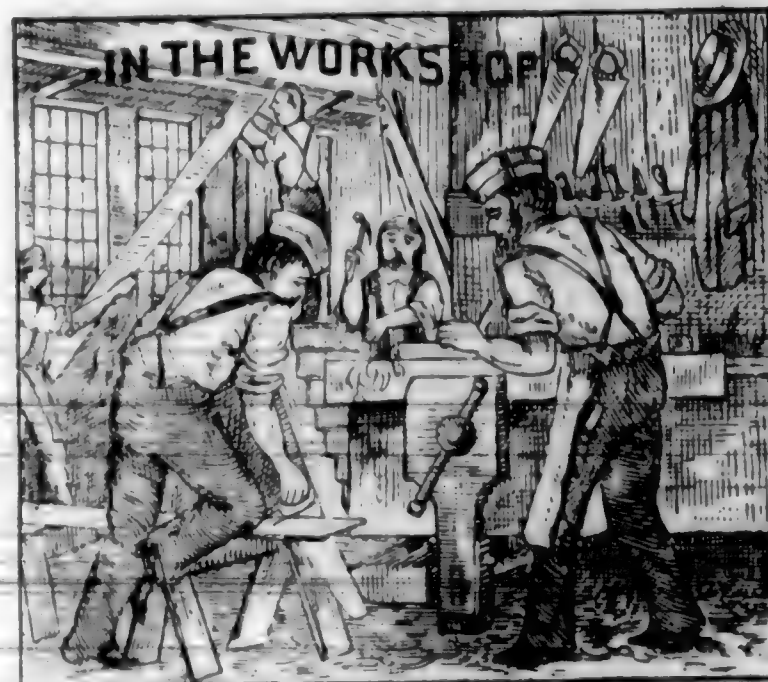
AFTER the dust has been thoroughly beaten out of carpets, and they are tacked down again, they can be brightened very much by scattering corn meal mixed with coarse salt over them, and then sweeping it all off. Mix the salt and meal in equal proportions.

Ladies the Best Planners.

IN many particulars in connection with the comforts and convenience of family residences, the mistress often displays better judgment than the master. Nor is this fact at all strange. If the lady is observant and intelligent, her continued experiences and contact with the general arrangement of home more fully qualify her to comprehend alike the convenient and practical, and the objectionable arrangements met by her in home experiences; and gathered in the course of her visits among friends. Sometimes men are obstinate, and refuse their wives the privilege of any say in the matter—following their own views in all things; but, as a rule, better and more satisfactory

results are reached, when the opinions of an intelligent wife are at least consulted. Although some architects "don't want anything to do with the women," yet it is questionable whether every man in the profession who enjoys the patronage of female clients, either as wives or sole owners, has not received from them many sensible and practical suggestions; and it is perfectly reasonable that it should be so; for while the architect may fully understand the theories and principles of architecture in every phase and department, he cannot understand the detail workings of his plannings, except so far as he may have "tested them" in some special manner; while the women-folk are brought in hourly contact with all defects or perfections that exist, and are thereby the better qualified to at least express an opinion. In addition to this, it is an incontrovertible fact, that many ladies enjoy much better general ideas of planning buildings than do their husbands; not because the husband lacks good intelligence and business capacities, but for the reasons already stated. Home and house experiences on the part of the wife, and the intense desire and determination on her part to have everything just as it should be, naturally qualify and leads the mind to right conclusions. With all the objections urged by some, to women interfering with such matters, if the many little details of occurrences that transpire during the period in which the "talking over" of plans is indulged in between man and wife could be discovered, perhaps there would be but few well-arranged houses found not to a large extent shaped by the mind of woman. For from the hour when the husband reveals an intention to build, the wife, as a rule, enters heartily into the proposition, and she at once commences to study up her part, not only so as to secure for herself all of the little conveniences of arrangement which would never be thought of by the husband, but to make the house generally as perfect in detail as the amount of money to be expended and "best judgment" will accomplish. Consequently, in the repeated discussions which ensue, the wife introduces this, and that, and the other feature, until by the time a final conclusion is reached, first thoughts are materially changed, and, to a greater or less extent, the wife's ideas and suggestions permeate almost if not quite every arrangement of the building.

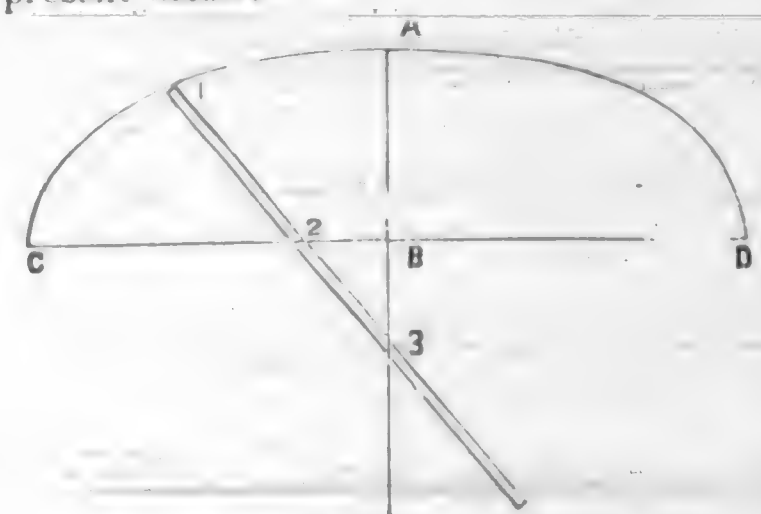




We will be pleased to receive for publication in this column items of information in regard to practical ideas connected with the mechanical part of the building trade. We especially invite suggestions from apprentices and young mechanics.

BUSINESS MANAGER ARCHITECT: Will you please illustrate a method for drawing the *half oval*; one that will apply to making an elliptic on a large gateway?

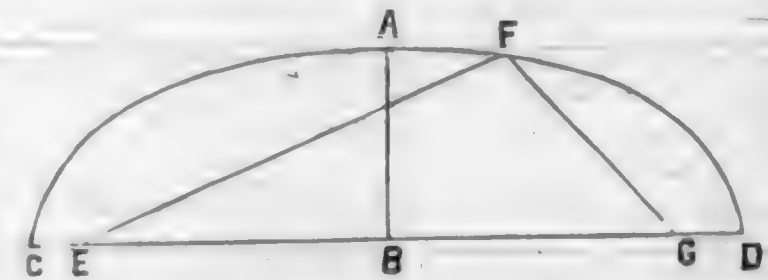
PALO ALTO FARM.
ANSWER.—There are many methods by which the required curve can be made. One of the oldest, as well as simplest, we present below:



Let C D be a given distance, and A B a given height. Take a straight edge; from the end of this set off 1 3, equal to the distance C B, and again, set off 1 2, to equal A B. Now lay the straight edge on the line C D, with 1 at C. Then, with a pencil, make any number of points, all of which will be in the curve, by moving the straight edge, keeping 3 on the line A B, and 2 on the line C D.

Another simple way is represented by the adjoining cut:

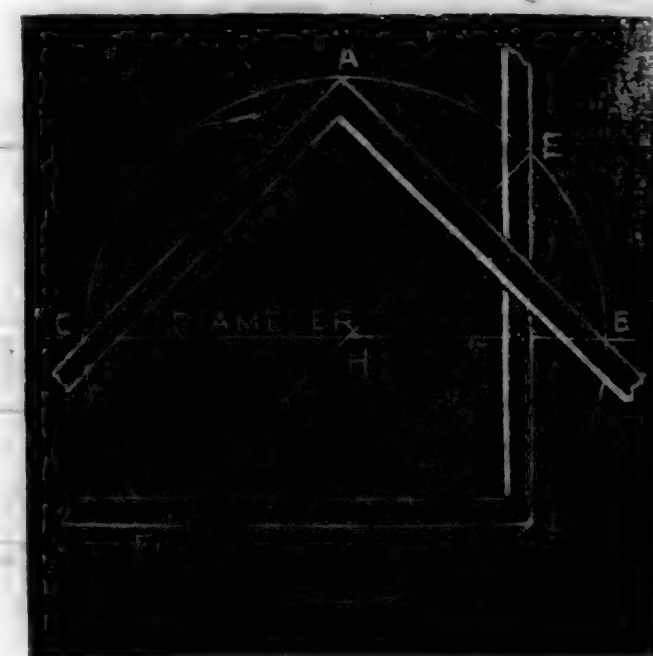
C D being any distance, A B any height. Mark two points on C D, as at E G, to correspond to the distance C B or B D, using A for the center. In these two points put a pin or nail. Tie a string at E, stretching it over the point A, and fastening at G. Now, with a pencil in which a groove has been cut, to prevent slipping, sweep the curve.



Let no building workman be too proud to take a hint from the humblest laborer that attends him, for the experienced looker-on betimes sees more than the doer.

Artificial like natural drainage, is governed by gravitation, and the absence of a proper fall in either is as opposed to nature as a swamp is to health.

How to find the diameter and center of a circle with the square:



This cut shows at a glance how the diameter and center of a circle can be found. Place the square as shown at A B C. The line B C will be the diameter. Place the square so that the point of the square A will touch any other point of the circle, as at D; draw E F. The point of intersection, H, will be the center of the circle.

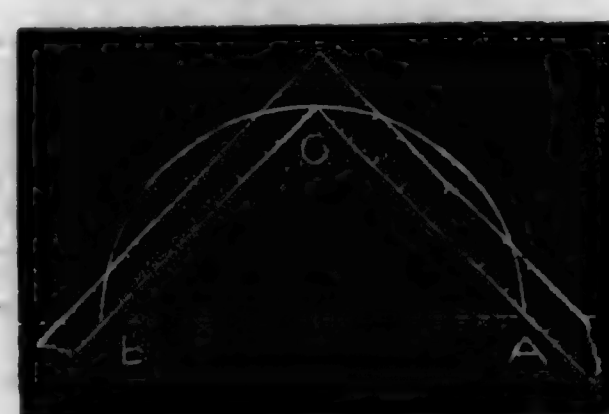
J. C. is informed that no regular rule can be laid down for the projection of cornices on buildings. Much depends on the style of architecture employed. To use a general rule, however, we might say that for a building seventy feet in height, the proper projection should be about thirty-six inches.

A CORRECT mechanical method by which two fences can be set at right angles to each other:

From any scale of equal parts, as that represented by the line D, which contains 5, set off from B, on the line A B, the distance B e equal to three of these parts; then from B, with a radius equal to four of the same parts, describe the arc a b; also from e as a center, with a radius equal to five parts, describe the arc intersecting the former in C. Lastly, join B C; the line B C will be perpendicular to A B.

This mode of drawing right angles is troublesome on paper; but in laying out grounds or foundations of buildings it is often useful; since, with a measuring rod, line, or chain, perpendiculars may be set out very accurately. The method is demonstrated thus: the square of the hypotenuse being equal to the sum of the squares of the other two sides, the same property must be inherent in any three numbers of which the squares of the two lesser numbers added together are equal to the square of the greater. For example, take the numbers 3, 4, and 5; the square of 3 is nine; the square of 4 is 16; 16 and 9 added, make 25, which is 5 times 5, or the square of the greater number. Although these numbers, or any multiple of them, such as 6, 8, 10, or 12, 16, 20, etc., are the most simple and most easily retained in the memory, yet there are other numbers, very different in proportion, which can be made to serve the same purpose. Let n denote any number; then $n^2 + 1$, $n^2 - 1$, and 2n, will represent the hypotenuse, base, and perpendicular of a right angle triangle. Suppose n equal 6; then $n^2 + 1 = 37$; $n^2 - 1 = 35$; 2n = 12. Hence, 37, 35, and 12, are the sides of a right angle triangle.

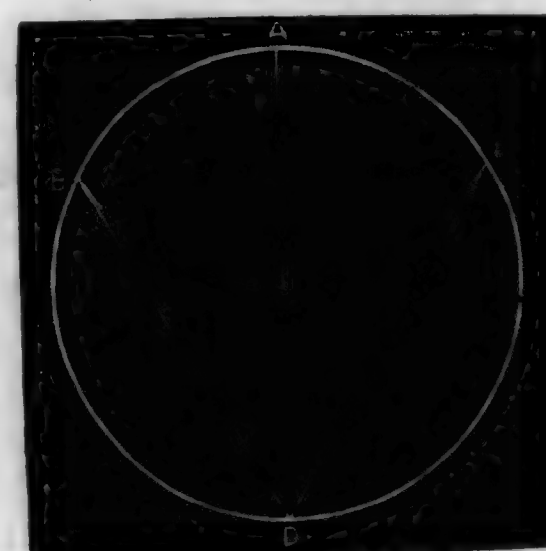
How to make a circle with a square:



Drive in a nail at the points A and B. It is better to use a "French" nail, as, being round, the square slips easily. The nails evidently cannot be farther apart than the length of the "tongue." Place the square in the position indicated in the cut; and with a pencil held firmly in the crotch at C, and the square kept on the nails, a circle can easily be drawn.

A SIMPLE way to describe an equilateral triangle within any given circle:

Upon any given point A in the circumference, with the radius A S, describe the arc B S F. Draw B F. Make B D equal to B F. Join D F. B D F will be the equilateral triangle required.



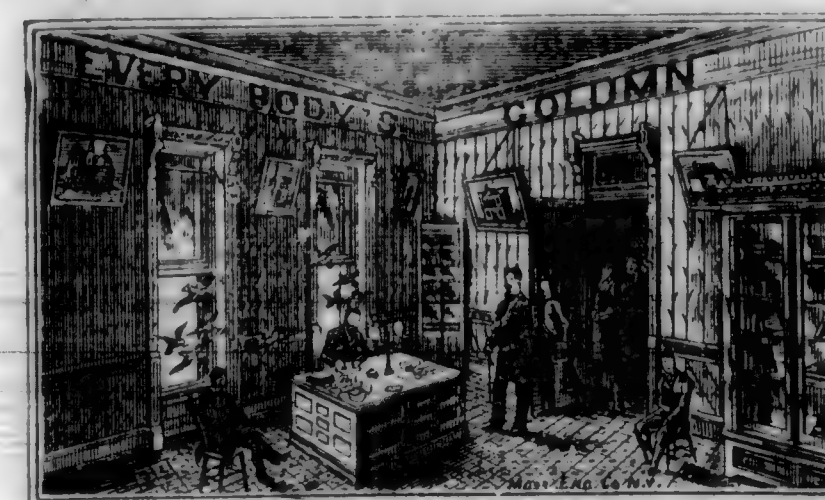
FRIEND ARCHITECT: Please tell me how to compute the number of joists it takes in a building when spaced sixteen inches from centers?

AMATEUR.
ANSWER.—Multiply the length of the building in feet by 3, and divide the product by 4. For instance: the building is 124 feet long = $124 \times 3 = 372 \div 4 = 93$, the number of joists required. This rule is applicable, no matter what the thickness of joists may be, as long as they are spaced 16 inches from centers. Allow one extra, except when the end sills are utilized in place of joist. Of course deduct when the latter is the case.

BUSINESS MANAGER ARCHITECT: How many pounds of lath nails does it take to put on 1,000 laths?

ANSWER.—There are 420 lath nails in a pound. So 11 pounds is what you will require for 1,000 laths.

ASKED, ANSWERED, AND COMMUNICATED.



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

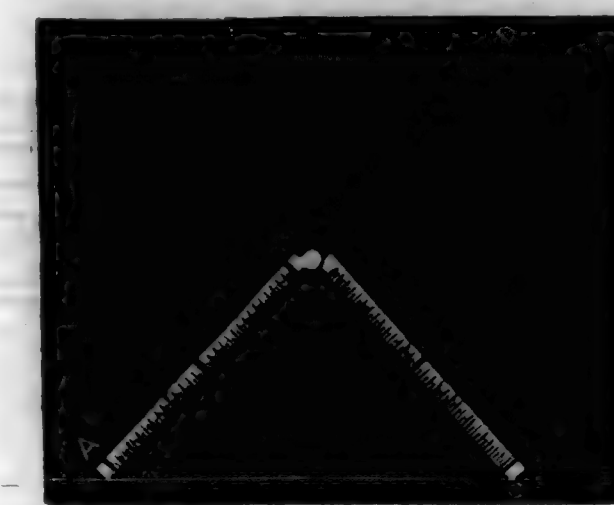
Free to All.

The columns of this journal are open to all who differ with us upon any subject presented. We are too old in years and experience to assume that we have passed the realm of human infirmity, or for the moment to suppose that we have reached the realm of thought where perfection reigns supreme. But this we do assure—that whatever of error there may be contained in our columns will be speedily corrected, as soon as attention is directed thereto, and we are convinced of the error. We will give place to a reply in any case, when a mistake or wrong statement has occurred. It is our desire and purpose to be fair, just, and correct in all things, and do no person or subject any violence. We therefore invite free discussion and criticism, and again state that the columns of this journal are at the service of all who desire to differ with us upon any theory or subject, or who take exception to anything at any time appearing in our columns.

EDITOR ARCHITECT: What is the exact height of Mount Diablo?

ANSWER.—According to Professor Davidson, it is 3,843.63 feet above tide level.

To SQUARE a board with a pocket rule, no square being necessary:



Apply the rule on the board as shown by the engraving. Make a dot at the point C. With the left hand hold firmly that part of the rule denoted by A B, and with the right hand extend the rule as shown by the letters A B D. Draw a line through the points C and D, and it will be found to be exactly at right angles to the edge of the board. It is evident that the above method may be employed, using the rule at any angle.

The Chinese Must Count.

The Chinese have a most ingenious method of reckoning by the aid of the fingers, performing all the operations of addition, subtraction, multiplication, and division, with numbers from one up to 100,000. Every finger of the left hand represents nine figures, as follows: The little finger represents units, the ring finger tens, the middle finger hundreds, the forefinger thousands, and the thumb tens of thousands. When the three joints of each finger are touched from the palm towards the tip, they count one, two, and three of each of the denominations named. Four, five, and six are counted on the back of the finger joints in the same way; seven, eight, and nine are counted on the right side of the joints from the palm to the tip. The forefinger of the right hand is used as a pointer. Thus, 1,234 would be indicated by first touching the joint of the forefinger next the hand on the inside; next, the middle joint of the middle finger, on the inside; next, the end joint of the ring finger, on the inside; and finally, the joint of the little finger next the hand, on the outside. The reader will be able to make further examples for himself.

In putting up your screen doors and windows be very particular to have a little hole in one corner so that the flies can go out doors when they get tired of being inside.

WAXING FLOORS.—The following is a good recipe for waxing floors, and the method of application. Stir twenty-five parts of shredded yellow wax into a hot solution of twelve parts of pearl ash in soft water. Keep the mixture well stirred until the effervescence ceases, then remove it from the fire and stir in twelve parts of finely-ground yellow ochre. It may now be poured into cans to cool. When wanted for use, one part of it is dissolved in five parts of boiling water. Apply warm with a paint brush.

It dries in a few hours, when the floor is polished with a floor brush, and afterward wiped with a woolen cloth. It is said this wax coating will last for six months with ordinary use.

Queen Anne Hodge Podge.

Architect.—Well, I declare that is a pretty fair house plan for an amateur, only you have left no space for stairways and closets. Did you make it yourself?

Prospective Builder.—Yes, but the only thing that puzzles me is to know what style of cottage it is. It is not Gothic, nor Italian, nor—

"No, it is absolutely nothing. As to style, it is simply a meaningless hodge-podge, to be frank with you."

"Well, what shall I call it, have you no name for hodge-podges?"

"Oh! yes. We call 'em Queen Annes."

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

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

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

There is nothing so tends to shorten the lives of old people, and to injure their health, as the practice of sitting up late, particularly winter evenings. This is especially the case where there is a grown-up daughter in the family. This sanitary item is published at the request of several young men.

To REMOVE iron taste from new kettles, boil a handful of hay in them, and repeat the process if necessary. Hay water is a great sweetener of tin, wooden, and ironware. In Irish dairies everything used for milk is scalded with hay water.

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

WHAT has become of the straw lumber which, three or four years ago, we were told would revolutionize the lumber business?

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

WOOD may acquire an oak, walnut, or cherry tree color by staining it with ordinary tincture of iodine diluted with spirit until the exact shade is obtained. White shellac must be added to the iodined solution if the stain is to be made permanent, or the wood after the stain is applied may be French polished. The iodine may be laid on with a rag or a brush.

If stove polish is mixed with very strong soap-suds, the luster appears immediately; consequently there is less dust to breathe and blacken.

EDITOR ARCHITECT: How do you cut a hip-rafter? and oblige
SONNY.

Sacramento.

Well, Sonny, we have always used a saw for that performance; but if you want to know a rule by which you can cut any kind of a rafter, we will be most happy to inform you.