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THE three hundred and fifty-one children attending one of the Jersey City public schools have recently had their eyes examined by a competent oculist, at the order of the School Board, and he reports that only sixty-nine of the number possess perfect eyesight. The statement is not a little startling, as the percentage of imperfection is very high, and those who read hastily probably feel that, as the defects are found in school-children, the cause of the defects must lie in the improper lighting of the school-rooms, and that the architect who designed the building is responsible for a physical inflection of very grievous nature. But it is not fair to make such a deduction, and, more than this, we do not feel that the diseases and weaknesses of the eyes that afflict school-children, defects that statistics show to be on the increase, are in the major degree chargeable to the improper lighting of school-rooms, although it is the custom to make that charge as the easiest way of disposing of the matter. As to the large number of children in the Jersey City school reported as having eyesight defective at the time of the examination, it must be remembered that the eye, like other portions of the body, is subject to temporary ailments, and so an examination made a few weeks later would doubtless reveal that many natural cures had been effected meanwhile. School-children occupy school-rooms only some five or six hours a day, and during the morning session, at least, their physical condition is better than at any other time in the day, and so not likely to be much affected by improper lighting of the school-room. Moreover, scholars are occupied in recitation, during which the eye has chance of rest, from one-third to four-fifths of the entire time spent within the school-building, and it seems to us a gross absurdity to assert that the short period of actual study in the school-room, however poorly that may be lighted, is the cause, or even a chief cause, of the trouble. Statistics show that ocular defects are on the increase, and it would be interesting to know whether the ratio remains the same in the buildings which have been in use for a term of years, or whether the ratio increases while conditions of lighting, good or bad, have remained unchanged. The fact that eyesight is deteriorating, while, as every one knows, greater effort is made to secure the proper lighting of school-rooms than ever before, tends to show that something other than the school-room is at fault. The other probable causes are the typographical imperfections of the school-books used, the enlargement in the educational curriculum, which entails longer hours of study, but most of all, the improper attitudes which children are allowed to assume at home while reading and studying, and the lack of care and watchfulness on the part of parents to provide proper light for the inevitable evening tasks, tasks which have to be disposed of while the eye is tired and strained. Our own parental ex-

perience satisfies us that school-book publishers and the improper conditions for study at home are more clearly responsible for weak and defective eyes than the imperfections of the school-rooms and the lack of watchfulness on the part of school-teachers.

BUT as publishers will use worn stereotype-plates, and as it is not to be expected that parents of all classes, living in houses and tenements of every grade, can provide perfect conditions for home study or understand how necessary it is to make sure that a child holds the book in a proper light and at a proper distance from the eye, a School Board can do no more sensible thing than place the school-children under the regular inspection of competent oculists. Mr. Gerhard, in the paper we published a week or two ago, establishes a very good case in favor of the introduction of the rain-bath into the school-houses established in localities which serve only the families of the tenement-dweller, and shows clearly how a physical cleanliness cannot but make more simple the task of keeping the atmosphere of a school-room sweet and clean. The medical examination of school-children which is enforced in Boston and in some of the schools in New York and Chicago has already proved its great usefulness in preventing the spread of contagious disease, and the installation of an inspecting oculist is but another step in the same direction. If architects should be called on to provide buildings for only physically clean and healthy children, we fancy they would be less often charged with being ignorant of how to light and ventilate a school-room.

IT is doubtful whether the plumber, the painter or the roofer is responsible for a greater fire-loss during a year one than the other, but between them their carelessness causes an immense loss, through the agency of the forgotten candle, the oily rag and the overturned brazier. The painter probably heads the list of delinquents, since to the peril of the oily rag he adds that of the naphtha-torch, though fortunately the practice of burning off paint has given way somewhat to the practice of dissolving it off with strong solvents. The torch, however, caused last week a rather unusual and interesting fire, the one that destroyed the Baptist church at Arlington, Mass. We call it unusual, for it seems to us a rather unnecessary piece of thoroughness to remove old paint from a church spire with a naphtha torch preparatory to giving it "three strong coats" of new paint. The case is interesting for several reasons. The trustee who authorized the painters to use the torch seems to have had a feeling that the process was hazardous, and it was his purpose to be personally on the scene with a Babcock fire-extinguisher for use in case of mishap; but, most unfortunately, he forgot to put in an appearance, and so there was no carbonic dioxide at hand to turn upon the first flame, which did not delay in getting firm possession of the spire, thoroughly dried by the recent intense heat. In the next place, although the authorities seem to have secured from the insurance companies a builder's permit which allowed them to make the proposed repairs without vitiating their insurance, the permit had run out before the spire was ready for painting, and no steps had been taken to secure an extension of it. In the last place, the insurance-policies contain the usual clauses prohibiting the use of naphtha on the insured premises. Altogether it looks as if the Baptist Society would lose not only its church edifice but also the seventeen thousand dollars for which it was insured, and, seeing how things have resulted, must now feel that it would have been cheaper to strip off the old clapboards and build a new spire, if their painters were unwilling to get rid of the old paint with scrapers and sand-paper. It seems possible that, in such cases as this, where a good deal of old paint is to be got rid of, the pneumatic sand-blast might be used to advantage.

THE matter of shade-trees is one that at this season always attracts attention, and in behalf of those which are suffering through the drought it is worth while to explain how a Toledo, O., man helps his trees to maintain a vigorous leafage. Having, by the use of a post-hole auger, discovered in what directions the main roots run, he sinks over them a length or two of drain-tile sunk vertically, the upper ends coming to within an inch or two of the sod, which can easily be made to drain into them, so that in case of natural rain or hose-watering the roots receive from a short shower or slight artificial

sprinkling a greater benefit than would be natural if the water fell upon an unprepared surface. But shade-trees do not suffer alone from drought and insects. It is said that they are injuriously affected by the passage of the electric-fluid over wires and cables that may be strung through or beside their branches, and as proof of this fact the manner in which the trees on Third Avenue, Brooklyn, have been destroyed by the feed-wire of the Third Avenue trolley-line is adduced. That the electric-fluid, in a more dilute form than a lightning-stroke, is injurious to trees we do not of our own knowledge care to assert, but it is perhaps likely. But, whether this be true or not, the electric-current is certainly the indirect cause of great havoc to our shade-trees at the hands of telephone, railway and telegraph line-men, and the citizens of the town as well as the aggrieved individual abutter have a right to protest that their rights are being trampled on by monopolies. Apparently the lawmakers of different communities look on the matter in different ways. Thus, in New York line-men are not allowed to cut down or trim shade-trees while stringing their wires unless they can prove that in undertaking to avoid them they would be obliged to resort to extreme or extraordinary means. In Michigan, on the other hand, the Supreme Court holds that the grant of a right to erect telegraph-poles along the highway implies, of course, the right to string wires on them and that wires cannot be strung if obstacles are interposed; that as the poles cannot be set in the road-bed and must be set within the curb-line, their natural place under the grant of location is in the same line as the boles of the shade-trees, and it is only so much the worse for the lovers of shade-trees if these and their branches are found to be obstacles. One would like to sentence that honorable court to spend the heated hours of the day for a few summers in driving a loaded team over a road running east and west and sheltered from the sun only by telegraph poles and wires.

THE ease and comfort with which life is sustained in the Klondike region and in Alaska is one of several facts that go to support the theory that some at least of what we are pleased to consider the aboriginal peoples of this continent in reality migrated from Asia, crossing Behring Strait by aid of a Mosaic miracle, perhaps, by boats, or over the ice. As all sorts and conditions of men are seeking their fortunes in the Klondike and, not finding them, are compelled to return afoot along the coast by the easiest trails, it is possible that some one of them, trained in ethnological research, may, during his tramp, light upon traces of the passage of the progenitors of the Mayas of Yucatan, and so show how this people of strongly Asiatic type arrived on this continent. For the ethnologist it is fortunate that the early peoples did not carry their food packed in the ubiquitous "tin" which now so untidily discloses the route of the modern emigrant, soldier or picnicker. But while the Maya riddle awaits solution, a good many enigmas of less age are being unriddled by the patient investigations of trained explorers; indeed there is every evidence that American archaeology is attaining a rank of very considerable worth. Probably it can never reach the plane occupied by Egyptian and East Indian research, but it can no longer be sneered at as unfruitful and uninteresting, as used to be the case. One of the latest results achieved by American explorers is in the region of the Pajarito Cañon, between Bland and Española, New Mexico, where a party of explorers have discovered amidst "hundreds of similar ruins," the remains of a communal building, two or three stories high, built of dressed stone, measuring four hundred and fifty by five hundred feet and containing originally twelve or fifteen hundred rooms. Only one of these rooms was explored and the relics obtained are said to have been forwarded to the Northwestern University, at Evanston, Ill. If the report is true in all particulars, the finds are of great importance and, as the age of the ruins is placed at between five and six hundred years, they will compel the reconstruction of a good many theories regarding the civilization of the elder inhabitants of this country. In this one room, only nine feet by twelve, were found not only stone implements, battle-axes, polished stone mirrors and so on, but also iron knives and an iron bar, much rusted, of course, a rude smelting-furnace, copper ore and some gold ornaments, besides a beautiful turquoise. The fact that the clay pots about the hearth still contained bones and traces of food, such as scorched corn, together with other evidence, seems to indicate that the place was hastily deserted. The pottery, of which twenty-five samples were secured, was decorated on the inside surface as

well as outside, and some wicker baskets which could not endure handling are said to have had marked interest because of their form and the patterns developed in their weaving.

IN sending out the programme for the various classes of its Schools now housed at One-hundred-and-ninth Street and Amsterdam Avenue, New York, the National Academy of Design announces the establishment of a new department, in which the arts of die-sinking and the designing of coins and medals are to be taught under the united auspices of the American Numismatic and Archaeological Society and the Academy of Design. Now, although the currency of the country is once more on a metallic basis and the industry of the counterfeiting brotherhood may make it necessary to call in and re-coin our circulating medium more frequently than in the past, we cannot believe that very many artists can make a livelihood by becoming expert in producing dies for use in the Government mints, all the more that the Director of the Mint has always shown a marked preference for adopting the designs prepared by the official designers. But there is on the other hand a very promising career for those who can produce artistic designs for the medals which are growing in favor as prizes to be distributed by learned, artistic, philanthropic and other bodies which stimulate emulation and promote progress in many directions by the inauguration of competitive contests of one kind or another. Moreover, even if a student cannot turn his training to account as a working die-sinker or medallist, he would find it of help in the studio attached to some of the great industries which are earning an enviable reputation for American silverware.

WHAT portion of the public that has not the great good fortune to be included in one or another class of artists has always drawn amusement from the exhibitions of peevish self-complacency which so many artists — be they painters, sculptors, architects or photographers — seem to take pride and pleasure in exhibiting. Whistler's exhibitions of caustic ill-temper may be forgiven, since they generally have some shadow of an excuse, and are, moreover, so very amusing: besides one cannot help feeling at times that, like the antics of the mountebank, they have their real purpose as a means of advertising the artist and his product, and one is interested to discover how far the artist really dares to follow the fakir. There is never any means of telling when this foible of the artistic temperament will next break out, but its latest manifestation, so far as reported, is to be found in the published list of prizes — gold, silver and bronze medals and honorable mentions — awarded to artists exhibiting at the Paris Exposition. Appended to the list of recipients is a remark to the effect that the absence from the list of certain names, which might naturally be supposed would have been included in one grade or another, is to be accounted for by the fact that these unnamed artists "informed the jury that they would not accept silver or bronze medals." Could peevish self-complacency go farther! The artist, in the lordly way of his kind, seems to say to the jury to whose discriminating judgment he had voluntarily submitted his product, "I have weighed and measured myself and the value can be expressed only in gold." This manifestation of conceit would have been merely amusing if this statement had been made as a condition of acceptance at the time the exhibits were placed before the jury of admission, but it is said that the refusal — perhaps after all a quite uncalled-for one — was announced to the jury after the posting of the list of gold-medallists.

BEING modest persons, not given to placing undue value on the statements we make, we are, perhaps, too prone to feel the uselessness of correcting any immaterial blunder we may, from time to time, be guilty of, but we trust we have always shown a becoming willingness to correct any material misstatement likely to be of real prejudice to any one. There appear to be those, however, who flatteringly give an unexpected weight to our smallest saying and feel that even immaterial blunders should not go uncorrected. This agreeable flattery is to be found in the very opening paragraph of Number One, Volume First, of the *Architect and Builder*, a new architectural journal published in Philadelphia, where the editor points out that we accidentally did wrong to the memory of Leigh Hunt by ascribing to the late Clarence Cook the authorship of the verses dedicated to Abou Ben Adhem. We trust that in the long and prosperous career before him our contemporary may not find his pages sullied by a more direful blunder.

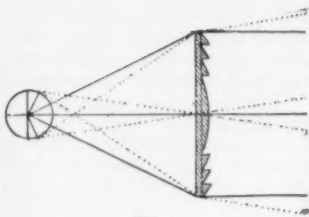
PRISMATIC LIGHTING FOR THE ILLUMINATION OF DARK INTERIORS.<sup>1</sup>

Fig. 1.

ifications, is to-day solely used for this purpose.

The Fresnel lens is designed for projecting a powerful beam of parallel light upon objects to be illuminated at a distance. The principle of this device is seen in Figure 1, which shows a central plano-convex lens surrounded by a series of rings or segments of lenses or prisms, to which successively diminishing curvatures or angles are given, in order to give them a common focus.

Within the past four or five years the application of this principle has been made, and with decided success, to the illumination of dark interior spaces, where the amount of light naturally entering therein is insufficient for satisfactory illumination, and artificial lighting must occasionally or constantly be resorted to.

The requirements of public buildings and modern office-buildings, in this respect, have been most urgent, and the various devices known generally by the name of "prismatic lights" have been extensively used for the purpose and have proved so useful that in one or another form they have come to be regarded by architects and builders, not to speak of a great number of householders, as indispensable.

It is the purpose of this communication to give a brief review of the art of prismatic lighting, which, at the present time, is passing through the active stages of the course of evolution, to which all the arts are subject, in determining the survival of the fittest.

Omitting, for the present, consideration of the vault-light for basements and cellars, where but one form of prism, namely, an approximately right-angled prism depending on total reflection for its utility, is admissible, there are two general methods in vogue of installing prismatic lights to meet the requirements of service.

In one of these, the sheet of prismatic glass is placed in a window-frame in the vertical position, thus taking the place of the window-light. In the other, the sheet of prismatic glass is installed in a more or less inclined position, projecting outwards from the window-opening. This form of construction is known in the trade as a "canopy."

The question as to which of these two forms of installation will give the best results is determined by the extent of the sky-opening upon which dependence must be placed for light.

Where this is of considerable area, as, for example, where the windows face a wide street, the prismatic glass set into the window-frames in the vertical position will give satisfactory results.

Where the windows receive their light from a restricted area, as, for example, in courtyards or the side-yards of dwelling-houses, and generally in the many situations where high walls rising in close proximity cut off the free access of light from above, the projecting, canopy, form of prismatic glass is preferable.

Speaking in a general way, the change from the vertical to the canopy form of installation will be indicated when the incident angle of the light falling on the window-opening averages 60 degrees from the horizontal plane.

THE practical application of the refractive property of the lens or prism to change the direction of light-rays passing through it, for the purpose of artificial illumination, originated with the French physicist, Fresnel, who first suggested its use in lighthouses, for the protection of maritime coasts, about the year 1815; and the Fresnel lens, in various modifi-

The popularity achieved by the use of light-projecting devices of this general nature has called into existence a great number of patented inventions, some claiming special forms of prism-construction (in combination, in certain cases, with a prismatic or lenticular formation on the reverse side of the glass), and of a far greater number of design-patents and methods of glazing, and other matters of minor detail.

For the purpose of this communication, these minor devices may be left out of consideration, and the several generic forms of prism-construction only will be given attention.

These may be divided into two general classes:

(1) Those in which the glass forming the light-projecting device consists of sheets having on one surface a series of prisms or segments of lenses of any desired angle, the back of the sheet being a plane surface, and

(2) Those in which the glass forming the light-projecting device consists of sheets having on both surfaces a series of prisms or lenses.

The prism-glass most generally known and used is that of the first-named class.

The action of a section of prism-glass of this construction is shown in Figure 2, in elevation and plan. It is obvious that the general refracting effect of the prismatic surface in this and in the other forms of prism-glass will be substantially the same, whether the refractive surfaces of the structure be straight (i. e., prismatic), or more or less curved (i. e., lenticular), irrespective of the angles of the prism-sections or of the curvature of the lens-segments. It is important, however, that these angles (or curves) be carefully considered, since upon the correct appreciation of this element the light-projecting efficiency of the structure largely depends. Improper angles (or curvatures) may greatly diminish the efficiency of the device, by the dispersion and loss of light, caused by total reflections in the interior of the glass.

There is general misapprehension regarding the proper action of light-projecting glass, which needs a word of reference. It is assumed by many that the prismatic light should be so constructed that all the exterior light transmitted from the interior boundary of the prismatic window, or canopy, should be directed in lines substantially parallel to the boundary-walls, floor and ceiling of the apartment, and that the more nearly this condition is realized the closer will be the approach to the theoretically-perfect mode of operation. Some of the manufacturers of prismatic glass endeavor to realize this condition by varying the angles of the prisms uniformly from the centre to the edges of the sheets, on the principle of the Fresnel lens.

A little consideration of what is intended to be realized by prism-lighting of interiors will suffice to show that this view is an erroneous one and liable to result, in practice, in a much inferior interior illumination than can be otherwise obtained.

This criticism will be understood by stating the general proposition, that the objects of prismatic lighting are, first, to direct as much extraneous light into the interior as possible, and, second, to direct it in such manner as to derive the largest possible benefit therefrom.

In considering the relative merits of parallel and divergent light-transmission by prismatic glass, it should be said that

practically as much extraneous light can be directed into the interior space to be illuminated by the one as by the other arrangement of prisms or lenses. But, when we come to consider the second portion of the proposition, it can easily be shown that the system of transmitting the light in parallel lines cannot possibly be as effective as the method of divergent transmission, and more especially, divergent transmission in both vertical and horizontal planes, and for the following reason:

It is well known that the best effects in interior illumination are realized when uniform diffusion throughout the apartment is obtained. This effect can be secured most effectively only when all shadows are obliterated by calling into requisition the action of the entering

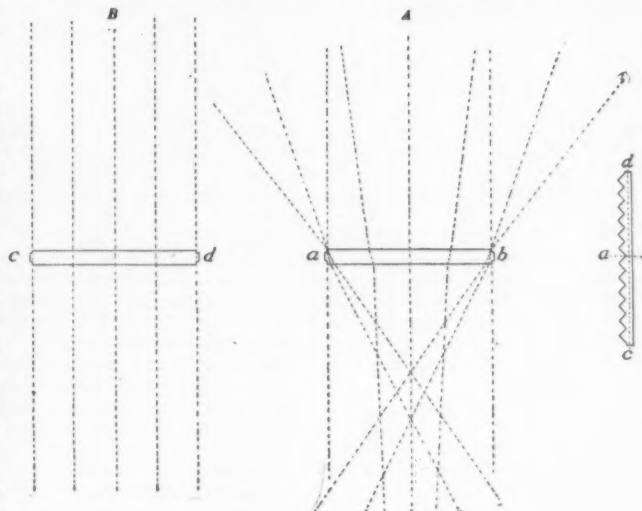


Fig. 2.

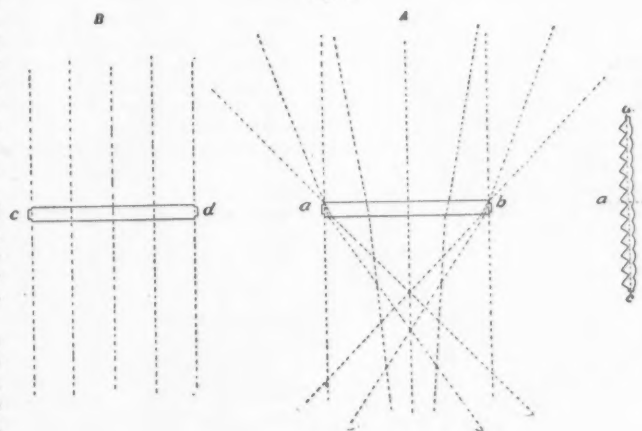


Fig. 3.

<sup>1</sup> Paper read by Dr. Wm. H. Greene, before the Franklin Institute, and printed in the *Journal of the Society*.

light reflected from all parts of the side-walls, floor and ceiling of the apartment.

By the method of directing the transmitted light in parallel lines, the ill effects of shadows cast by opaque objects in the path of the entering light will be realized in the extremest degree, as there will be no ameliorating influence to counteract and neutralize the shadows by reflection from the bounding-walls and floor of the apartment; and an inspection of the condition of an apartment thus treated will disclose this objection at once.

By the method of divergent transmission, while quite as much, or more, extraneous light is thrown into the apartment as by the other method, its distribution is decidedly more advantageous, from the fact that the repeated reflections from the bounding-surfaces of the apartment cause the practical obliteration of all shadows and a practically uniform diffusion of the light to all parts of the interior.

Returning now to the descriptive portion of the subject, the *modus*

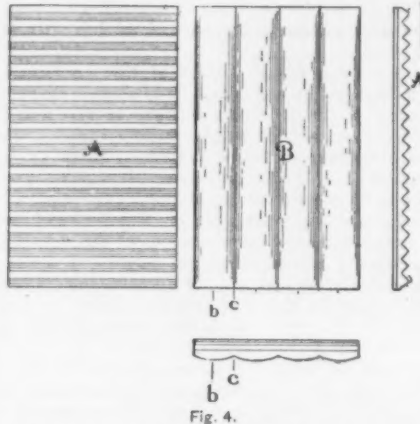


Fig. 4.

*operandi* of the simplest form of a light-projecting prismatic window is shown in the plan-views in Figure 2, A and B, in which the light from an exterior source falling upon the plane, outward surface of the glass is refracted at the boundary of the interior prismatic surfaces and projected into the room to be illuminated.

Figure 2 A, which is a plan-view of this construction taken on the line *a b*, exhibits the effect of the light-distribution in vertical plane from the effect of refraction from the terminal portions of the prism, where the influence of the more oblique rays is not counteracted by a modification of the angles of the prism from the centre-line to the upper and lower edges of the glass. Figure 2 B is a plan on line *c d*, showing that the light-rays are not distributed divergently in the horizontal plane, but are all directed in parallel lines.

Figures 3 and 4 represent the action of prismatic glass of the second class, i. e., in which both surfaces are prismatic or lenticular.

Figure 3 shows a form of light-projecting glass that has lately come into use, and for which certain advantages are claimed over the construction previously described. The sheets in this form of prism-glass have one surface furnished with prisms—commonly placed toward the room to be lighted—and the other surface formed of a series of lenses of small curvature, distributed in panel form, parallel to the direction of the prisms. This construction, as well as that shown in Figure 2, manifestly exaggerates in the vertical plane the divergent distribution of the transmitted light, and consequently operates, so far as it goes, in the correct manner, utilizing the reflecting action of ceiling and floor in diffusing the light.

The construction shown in Figure 3 possesses one obvious advantage over the several modifications of Class 1, namely, that the lenticular form of exterior surface arrests and directs into the dark interior to be lighted a certain amount of the exterior light, which, with the plane exterior surface of Class 1, would be lost by total reflection from the exterior plane surface. Practically, all of this additional light thus projected into the dark interior would be gained if the angle of the prism and the curvature of the lens-panels were correctly adapted to the length of the apartment to be lighted.

The latest modification of Class 2 remains yet to be considered.

In this, the interior prismatic surface of the glass is the same as that just described, but the exterior lenticular panels are arranged not parallel, but transversely, to the direction of the prisms. The details of this form of construction are shown in Figure 4, A and B, while the *modus operandi* is best observed in Figure 5, A and B.

The radical difference in the operation of this form of light-projecting glass and that of both forms previously described resides in the fact that the light-distribution in this form is exaggerated in the lateral as well as in the vertical plane. This feature is illustrated in Figure 5 B, in which B is supposed to be a section of the prismatic glass taken on the line *c d*, from an inspection of which it will be manifest that the vertical arrangement of the exterior lenticular panels will serve a similar purpose in this construction in relation to the light falling sideways on the exterior surface of the glass as the lenticular panels in the previous case serve in relation to vertical rays; namely, to arrest and refract into the dark interior a considerable amount of light in the horizontal plane which would otherwise be lost for useful purposes. All of the light thus collected and in-

troduced into the dark interior by the lateral collecting action of this device is so much clear gain over the devices previously described.

Further consideration will show, also, that if the interior surface of the glass be provided with prisms of uniform angle, determined in each case by the length of the apartment to be illuminated, this form of construction will secure the same advantage in respect of the vertical diffusion of the entering light as will be obtained from the lenticular prismatic construction previously described.

On theoretical grounds, therefore, the last-described modification of light-projecting glass, belonging to Class 2, should give the best results if intelligently installed. Comparative practical tests also bear out this conclusion.

An additional and important advantage possessed by prism-glass of the last-named construction (namely, a prism-plate constructed with prisms on one side and prisms or lens-panels arranged transversely on the reverse side) remains to be noticed.

Since all illumination by means of prism-glass is thrown from a

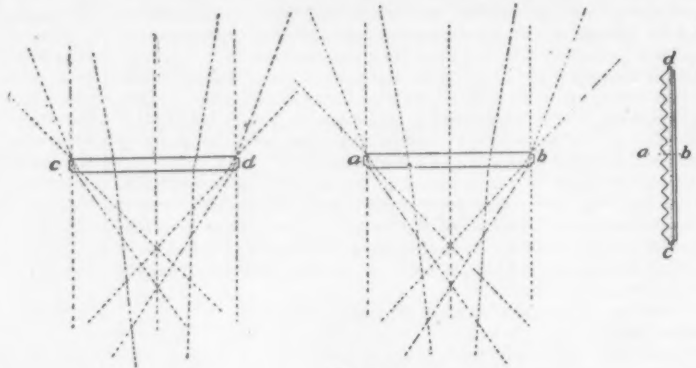


Fig. 5.

comparatively low point, namely, through windows, while all other artificial illumination is directed from a point above, the shadows produced by the prisms on objects in a room constitute a disadvantage common to most systems of lighting by means of prisms, as has been noticed in what has preceded. The light-projecting glass last described, however, by reason of its diffusing quality, both in the horizontal and vertical planes, largely overcomes this objection. Where two such prism-windows are used for the same apartment, the light thrown from one window completely overlaps that thrown from the other, thereby practically obliterating the shadows produced by prism-lights of other constructions.

This construction also has the advantage of enabling manufacturers to produce more readily the larger sizes of prisms, from the fact that one surface has projections at right angles to projections on the reverse side, giving a bridge effect, thus adding to the strength of the plate. For this reason, likewise, it is not essential to have the thickness of the body of the glass as great as with other forms; and, inasmuch as there is a larger loss of light, through absorption in passing through a thick than a thin medium, the loss of light from this cause may be very much reduced.

Finally, it may be said that all the various forms of light-projecting prismatic glass accomplish, measurably, their intended purpose of considerably increasing the illumination of dark interiors over what would occur without artificial aid. In the selection of the kind of light-projecting glass and the manner of its installation, the user should be guided by the personal observation of the effects produced, rather than by the claims of rival manufacturers.

#### THE CHANGES OF THE GREAT LAKE LEVELS.



Picture Show-case for the Russian Navy Department. From Stroitel.

AMONG old sailors and engineers who have studied Lake Michigan for fifty years, Captain Keith's "discovery" that the drainage-canal has lowered the lake level 5 inches does not produce much consternation. Lake Michigan, like all of the Great Lakes, is a mystery. Old seamen recall the fact that Lake Michigan once rose up bodily 7 feet in an hour along this coast. In 1886 it fell 3 feet in two hours. There was a great tidal wave in Lake Erie in 1843 at Buffalo, which drowned twenty people in their beds.

So strange and unaccountable are the fluctuations in the levels of all the Great Lakes that sailors have an abiding faith in "Old Sub," the underground monster, who turns the water off and on in a subterranean passage under the lake.

"Old Sub's tinkerin' with the stopcocks," say the seamen, when the water begins to creep up on the gauge. Sometimes the level goes lower and lower, and then the talk is that "Old Sub has taken to drink."

Some believe that a great undiscovered passage exists between the Great Lakes and a body of open water about the North Pole, and that a disturbance there accounts for the wonderful ebb and flow of the water in the basin of the Great Lakes. Occasionally, on a trip to Waukegan some sailor announces that the boat passed over the very region where "Old Sub" is turning the water in, ice cold and in unlimited supply. In a little different way scientists have sometimes upheld the theory of a subterranean passage, which feeds the lakes, and cite the seven years' rise and fall of lake levels as a proof of it. Others take no stock in the theory of periodical movements.

But through it all there is the mystery which has not been fathomed yet by any plummet or measured by the rise and fall of any barometer. Long before the opening of the drainage-canal a variation of 5 inches in the lake level was known to be an ordinary affair. Sometimes the variation can be accounted for, but more often it cannot. Scientific men are as much at a loss as the veriest old salt.

Day in and day out the lake level changes aside from changes caused by the winds. No man knows why, and no man can reckon the times and the places of these lake "tides." So constant are the fluctuations that a general fall of 3 inches a year over the entire surface of Lake Michigan and Lake Huron would not be appreciable in the ordinary set of gauge readings. The automatic gauge shows an oscillation of the lake every twenty minutes, amounting sometimes to between 2 and 3 feet. In 1886, after the water had run down suddenly 6 feet in Chicago Harbor, an attempt was made to account for these oscillations on a scientific basis. Seven gauges were set about the lake and read at five-minute intervals. The upshot of it was that some of the observers decided that the phenomenon was due to a swing of the lake in its bed from shore to shore. Others did not think this reasonable, but had no better theory to advance. More remarkable still, it was found that one day's observations showed a general lowering over the whole of Lake Michigan of several inches.

As early as 1673 Father Marquette took note of changes in the lake levels. He asked the Indians about it, and they said that Lake Michigan swung from high to low and back again in fourteen years, or that every seven years the water ran the gamut. Baron La Hontan, in 1689, made some tolerably extensive notes on the variations in lake levels. He wrote that in twenty-four hours once, at the northern extremity of Lake Michigan, he saw the lake rise 3 feet and fall 3 feet in the day. He was first to observe the flow of water from Lake Huron to Lake Michigan, or from Michigan to Huron, which is now acknowledged.

"We cast our fishing-nets in the straits," says the doughty old explorer, "and for three days the current sucked them to the eastward so strongly that we could with difficulty haul them from the water. Then for two days the current set steadily toward the west, and carried our nets in that direction."

Stories of mysterious inundations by the lake, of times when the beach widened, and a great fringe was added to the sand along the shore, have always been current among Indian tribes. From Marquette, down to engineers and seamen of to-day observation has confirmed these legends. At Sault Ste. Marie, General Dearborn noted an ebb and flow of 1½ feet of water in two and a half hours.

Lake Erie has been known to rise from 7 to 20 feet in a few hours. A few years ago, at Cleveland, the lake suddenly rose 5 feet. In 1886 Lake Michigan rushed up to a height of 7 feet above the ordinary level at Milwaukee. In that year the water fell 6 feet in Chicago Harbor, and somewhat less in the lake within a few minutes. High-masted schooners careened to one side, and the big poles knocked together confusedly. It looked as if the Chicago River would be drained dry in half an hour, and the experience has never been forgotten among the Chicago seamen. In 1848, it is said, the same thing occurred.

In addition to these sudden and inexplicable changes in the lake level, there is a tolerably well-defined periodical movement of the surface extending over a number of years. Sometimes it is claimed that this movement requires seven years, sometimes ten years. Ossian Guthrie and others declare that the movement is not periodic, but that it usually extends over from two to ten years. Then there is an annual rise of the lake from January to June, caused by the ordinary spring rainfall, which runs the level of the lake up about one foot higher in June than in January. For thirty years consecutively the spring rise was found to be 14½ inches. A series of heavy spring rainfalls will raise the level of the lake 3 or 4 feet above datum for a number of years, and a series of droughts will reduce it correspondingly.

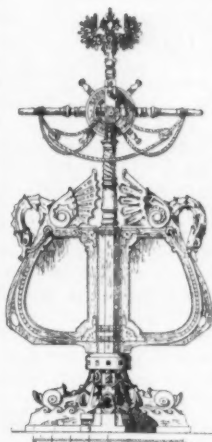
Beginning with 1847, Ossian Guthrie has kept a record of the fluctuations of the level of Lake Michigan. In 1847, as has been stated, Lake Michigan went very low. From 1847 to 1859, with occasional lapses, it crept up nearly 3 feet above datum. From 1859 to 1863 it fell, then it swung back to 2½ feet above datum in 1876, ran down in 1879, going up abruptly in the spring of 1880. From 1880 to 1886 the lake level rose 3 feet. From 1886 to 1892 it fell about 4 feet. In the spring of 1893 it rose 15 inches in a few days' time. Since 1893 the lake has been going down, and during most of last fall and this spring it has been below the 1847 mark. To-day, owing to the usual rise from rainfalls, the lake is higher than it was before the opening of the drainage-canal. Figures at the United States engineer's office show that during January, February and March the lake level was just about what it was in December of 1899, although each day's record shows a variation of several inches.

On January 11 there was a variation in the lake level of 1 foot. From February 11 to February 12, in 1894, the lake level at the foot of Randolph Street rose a little over 2 feet.

These daily fluctuations of from 6 inches to 2 feet are accounted for, engineers believe, by winds and by barometric pressure. A strong east wind will easily raise the surface of the lake here 2 feet. Again, if the atmospheric pressure all over the surface of Lake Huron is suddenly reduced, the water will rush through the straits from Lake Michigan, and Huron will rise, mysteriously perhaps, on a perfectly calm day.

Engineers at the office of the Drainage Board estimate that if no rainfall were to reach Lake Michigan, and the maximum flow of 300,000 cubic feet of water drawn off through the drainage-canal, it would take a little over eight years to reduce the level of Lake Michigan 1 foot. As a matter-of-fact, the annual rainfall always produces a waste overflow past Niagara which greatly exceeds that drawn off by the drainage-canal. If the water were not taken through the canal it would go over Niagara during spring freshets. In general, engineers agree that the physics of Lake Michigan and of all the Great Lakes has never been studied accurately, and that the mysterious movements of the immense inland seas offer a comparatively unworked field for useful and scientific research. — *Chicago Inter-Ocean.*

### MONIER CONSTRUCTION.<sup>1</sup>



Picture Show-case for the Russian Navy Department. From *Stroitel*.

THE writer welcomes every proper form of popularization of engineering and architectural constructions in cement and steel in combination. But he thinks it will greatly advance the practice of this new system if it is relieved from the burden of a proprietary name and from the suspicion of being a patented system. It can be easily shown that any one is at liberty to employ steel and concrete in combination in almost any way he chooses, without infringing any fundamental patent. There are a few patents upon particular combinations of steel and concrete which may be made to hold, but these can be avoided if one so desires.

As to Monier's claims, they seem to the writer to be practically nil, so far as priority of use is concerned. Neither does it appear that any American patent on this system has ever been taken out. It seems that Mr. W. E. Ward, Member of the American Society of Mechanical Engineers, of Port Chester, N. Y., was the first to use iron or steel in combination with concrete in a thoroughly scientific manner. In a paper before the American Society of Mechanical Engineers at the Cleveland meeting, in June, 1883, Mr. Ward described at length the construction of a residence wholly of reinforced concrete, which he designed and built in 1875.<sup>2</sup> He says he began his experiments to this end in 1871, and began planning for these in 1867. He claims the "invention" of this system of construction, but has freely given it to the public, apparently never having applied for a patent upon it. In France, letters-patent were granted in 1869 to François Coignet on a "Combination of Iron and Concrete," so that Monier's use of wire-netting in concrete for the manufacture of large vases (for orange trees) and small tanks, in 1876, loses all significance. Furthermore, Monier was a gardener and used his wire-netting in the body of his concrete merely to bind it firmly together and to prevent cracking. He had no knowledge of the stresses in a beam, and the use of the iron to resist the tensile stresses while the concrete is relied on to resist the compressive stresses. Thaddeus Hyatt, also, in his work on "*Concrete-Iron Construction*," 1877, reports tests made for him by Kirkaldy, London, in 1876 and 1877. Both Hyatt's book and Ward's paper seem to have dropped out of notice. Hyatt seems never to have heard of Monier. It is Ward in America and Hyatt in England, therefore, to whom credit is due for a scientific combination of these materials. Hyatt acknowledges that the combination is not new, but claims that these two materials had not previously been intelligently combined in building-construction.

The reason this system came to bear Monier's name is because it was patented and exploited in France and Germany under this name, and has now been brought here from Germany. The Monier construction proper seems to be adapted only to circular tanks and to arches symmetrically loaded. Where bending-moment has to be resisted, the adaptation required is so different from the true Monier (imbedded wire) construction that it should no longer bear his name. It should more properly be called cement-steel, or steel-cement, construction. When plain wires or rods are used, reliance being placed solely upon the adhesion of the concrete to the wires, they are sure to work loose if there is much jar or variation of stress. I have been told that this has been the case in the Studebaker Building, Chicago, to such an extent as to necessitate the replacing of

<sup>1</sup> Discussion by Mr. J. B. Johnson of a paper at the meeting of the Western Society of Engineers and published in the *Journal* of the Society.

<sup>2</sup> See *Proceedings of the American Society of Mechanical Engineers*, Vol. IV, page 388, and the *American Architect* for August 18, 1877.

floor systems. The steel bars should be twisted, as in the Ransome construction, or better, they should be crooked or grooved so as to take a firm hold of the concrete. Where cement-mortar alone is used the adhesion to plain wires will be sufficiently high to warrant the use, but in concrete the adhesion to plain surfaces will be found insufficient.

As to this construction being "absolutely fireproof," it is difficult to see how it can be any more fireproof than the concrete of which it is composed. If this concrete material be a cement, mortar and crushed stone or gravel, it is far from being "absolutely fireproof."

#### THE WORLD'S GREAT FIRES.



**U.** C. CROSBY, late President of the National Fire-protection Association, has compiled a very interesting list of the world's great fires. In describing some of the most important disasters, he says: —

"London was nearly destroyed by fire in 798; again in 982, 1212, and 1666. The latter fire is known in history as the "Great Fire"; it burned over a territory of 436 acres, including 400 streets; 13,200 buildings and property-value upward of \$53,000,000 were destroyed. Edin-

burgh was nearly destroyed by fire in 1700. Lisbon was burned in 1707. Venice was destroyed by fire in 1106 and again in 1577. Berlin was destroyed in 1405. Berne in 1634, and again in 1680. Hamburg was nearly destroyed by fire in 1842; 4,219 buildings were burned, and 100 people lost their lives; property value destroyed, \$35,000,000. Copenhagen was burned in 1728; 1,650 houses destroyed; again in 1795, and 1,563 houses burned. Stockholm in 1751, with 1,000 houses destroyed. Moscow in 1752, visited by a large fire; 18,000 houses destroyed. Again in 1812; this time the fire set by Russians in order to prevent the French occupation of the city; 38,000 houses were destroyed, and over \$150,000,000 of value.

"Constantinople has been the scene of numerous and costly fires; in 1729 a great fire destroyed 12,000 buildings and nearly 6,000 people. In 1745 another great fire lasted five days; again in January, 1750, 10,000 buildings destroyed. In April, the same year, another fire, with \$15,000,000 of property destroyed. Again, later in the year, a fire destroyed 10,000 houses; in 1756, 15,000 houses were destroyed and 100 lives lost. In 1782, 10,000 houses were burned; in 1791, between March and July, serious fires destroyed 32,000 houses, and nearly the same number were destroyed again in 1798. In 1816, 12,000 houses and 3,000 shops were destroyed. In 1870 Pera, a suburb of Constantinople, was nearly destroyed, 7,000 buildings and over \$25,000,000 property-value being consumed.

"Smyrna had great fires in 1763, 1792, and 1841, destroying from 2,000 to 12,000 buildings at each fire. Great fires have occurred in India, China, and Japan; in many cases large cities were entirely destroyed. In Quebec, in 1845, 1,650 buildings were destroyed, and the same number in May and June following; and in 1866, 2,500 buildings and 17 churches were destroyed. St. John, N. B., 1837; nearly all the business portion was destroyed. In 1877 the "great fire," over 200 acres burned, and ten miles of street; about \$13,000,000 of property-value. St. John's, Newfoundland, in 1846 was nearly destroyed, and \$50,000,000 of property-value burned; again a big fire in 1896. Montreal in 1850 had a great fire; 250 buildings destroyed; in 1852 about 1,200 buildings were destroyed. Various cities in South America and West Indies have been destroyed by fire; in some cases property-values of \$30,000,000 and upward were destroyed; a large loss of life resulted also.

"The United States has a record of destruction of property by fire not equalled by any other country. Charlestown, Mass., in 1796, \$300,000; in 1838, 1,158 buildings. Savannah, Ga., in 1820, 463 buildings and \$4,000,000 value. New York, in 1835, 530 buildings, 52 acres burned over, and \$15,000,000 of property destroyed; in 1845, 300 acres burned over, \$7,500,000 value, 35 lives lost. Pittsburgh, Pa., in 1845, 100 buildings; \$1,000,000 property-value. St. Louis, Mo., in 1849, 15 buildings; \$3,000,000 value; in 1851, 2,500 buildings destroyed. Philadelphia, Pa., in 1850, 400 buildings. San Francisco, in 1851, 2,500 buildings, and a number of lives lost; property-value, \$10,000,000. Portland, Me., in 1866, over one-half the city; 200 acres burned over, and 1,743 buildings destroyed. Chicago in 1871, known as the "Great Fire"; 2,124 acres nearly covered by buildings entirely burned over, including 17,430 buildings; many lives were lost, and property-value of upwards of \$106,000,000 was destroyed. Boston, Mass., in 1872; 65 acres of the mercantile section burned, including 776 buildings; nearly all of brick-and-stone construction; property-value, \$75,000,000."

THE OREGON FORESTS. — Oregon has three forest-reserves — the Cascade Range Reserve, area 4,492,800 acres; the Bull Run, area 142,080 acres, and the Ashland, area 1,560 acres, or an aggregate area of 4,653,440 acres. — *N. Y. Evening Post.*

## BOOKS AND PAPERS

**D**URING the past ten years or more the houses of the working-classes have been attracting a great deal of attention both in England, on the Continent and here. Each new contribution adds somewhat to our knowledge of the subject, and each experiment tried teaches some lesson. Generally, however, circumstances vary so much in different countries that the experience of one does not, to any great extent, benefit another.

The latest contribution to the housing problem is a volume containing plans, elevations and descriptive letter-press by Messrs. Cranfield & Potter. For English uses these plans are excellent and the descriptions are sufficiently clear to give even an amateur a thorough understanding. The plans follow established English types and the elevations are good examples of the use of common material. They are, however, wholly unsuited to our climate, our customs and our people. Whether our people would be better off if they could learn to be content with and to like these things is a social question of considerable complication.

The authors deplore the high cost of buildings — owing to price of labor, or material, and to stringent building-laws; but they estimate their buildings at 1d. per cubic foot, which does not seem high to us. High wages are by no means an unmixed blessing to the working man. They bring increased cost for pretty much all he requires, shelter, food and clothing, and by putting large sums of money in his hands lead him to think that he can afford expensive amusements, gay hats for his wife, and such like things, and need not practise economy, as must the man in a slightly higher class.

In housing the poor near cities the separate dwelling is preferred to the tenement, and the present book is concerned with small, independent houses in a block and with two-flat houses. The problem presupposes a large area to deal with, and the authors suggest making small yards, back and front, and keeping the centre as an enclosed play-ground and garden, with a service-road running through. A good plan, but not novel, and, as shown in the book, capable of being improved.

The construction of these houses cannot furnish us examples, but it might at least suggest the possibility of improvement in building-laws which should encourage fireproof-construction even outside of fire-limits.

The walls are either 9 inches or 4½ inches, the latter sometimes rough-cast for greater protection against weather, and the roofs slate, probably laid on battens. The carrying of the party-walls above the roof-line is a serious difficulty in such a row of tiny houses (most of them about fifteen feet wide and one-and-one-half stories high), for it adds to the expense and to the likelihood of leaks. It certainly seems as if some better method of fireproofing between houses might be devised — as, for example, bedding a plate on the wall, and putting on small nailing-strips bedded in cement to take the slate.

The dimensions of rooms are, on the whole, a little smaller than what is considered the minimum here — and our minimum is looked at askance by our fastidious workman.

In the designing of the houses there are three or four things which make our problem wholly different. *First.* — Heating. No one would dream of cooking at an open fireplace, or of heating rooms thus. *Second.* — Plumbing could not be done in a one-story out-building. *Third.* — We could not omit cellars. *Fourth.* — Staircases in the centre accessible only from rooms would not do. *Fifth.* — A half-story on the second floor (what the English call the first) our workman considers very poor accommodation. The first four are really vital and make these English plans quite useless for us.

To consider the plans more in detail. The bedrooms seem to be the poorest features. Here one would consider that a bed, a bureau, a wash-stand and a chair were a necessity, and that where closets could not be afforded there must be space for a wardrobe, or at least some hanging-space. To accommodate these, 7' 6" x 11' has been found to be about the minimum. In these plans one finds in almost every house a room no more than 7' x 7', and in many cases even this space is reduced by raising part of the floor for head-room on the staircase. The only possible way of using the room on Plan A would be to make a bed on the bulkhead over the stairs, which would have to be about thirty inches above the floor. In some of the larger houses, on the double-tenement basis, that is, one family on each floor; the ground-floor suite consists of parlor, living-room and scullery, with only one bedroom; and the second-floor tenement of parlor, living-room and two bedrooms, one of these opening out of the parlor. This would not be considered good planning here. Further, in a tenement of this dimension (575 floor feet) there should be more room for stores, clothes, etc.

The general remarks on planning are chiefly mere elementary principles — such as that staircases should not be dark, that rooms should have window-area equal to a tenth of the floor-area and that at least half should open, that water-closet and pantry should not be adjacent, and that the coal-bin should be readily accessible from the outside. The plans do not always conform to even these elementary rules. There are few new suggestions; that of sinking a tub in the

"Houses for the Working Classes in Urban Districts." By Sidney White Cranfield and Henry Ingle Potter. Publisher, B. T. Batsford, 94 High Holborn.

concrete of the scullery floor does not recommend itself. With us the class that rent the cheapest houses do not appreciate the tub, and if they did would not use such an arrangement.

The more detailed description of the various sets of plans are interesting—sometimes suggestive. The smallest plans with a frontage of 11 feet and an area of 375 feet, seem impossibly small, and yet there are four rooms and a scullery. To be sure, the stairs and coals are in the centre, water-closet and pantry adjoin, and in the modified plan, which gives five rooms, one bedroom is of the bulkhead type previously mentioned. When, however, one considers how comfortable neatness and care can make a steamer state-room, one wonders if the tiny house well arranged is not really as well able to give true comfort as a larger one, providing always that these bedrooms of 100 feet have but two occupants at the outside.

So much depends in these small places on the old adage, "A place for everything and everything in its place." A living-room or bedroom intelligently planned to accommodate the necessary articles, when so used and neatly ordered, may be more comfortable and livable than a room twice as large which has been ill-planned, or which is kept in slovenly fashion. The lesson of neatness is all-important for the tenant of one of these miniature houses.

Group B houses are slightly larger and give entries, otherwise they are no improvement on the smaller plan. The bulkhead bedroom is evidently a hobby of the authors', as it is again and again suggested as an improvement enabling one to get two bedrooms in a space fit only for one.

Group C shows plans arranged with the common device of an irregular party-wall giving each house alternately increased width, front and rear. This would be a very appreciable item in cost, especially where it must be carried through the roof.

In Group D most of the objectionable features of the preceding plans have been removed (except the favorite bulkhead bedroom), but one plan (an existing type) has five chimney-stacks for each pair of houses and an irregular party-wall. This would seem extravagant in a house of 15 feet frontage, containing but five rooms. D<sup>4</sup> is a type generally condemned here, central plumbing opening on a narrow area, but where the building is but two stories the chief objection is removed. With us this plan has been used for six or eight story apartments. D<sup>6</sup> is, perhaps, on the whole the best plan shown. It is compact, free from breaks in party or external walls, and not open to the objections pointed out in the other plans. The area is 944 feet, about the same as B<sup>4</sup> and most of the C group, but gives far better accommodation. This double house is estimated at £85, about \$400; with us the cubic contents (20,414 feet) could not be contained in wooden walls for less than six cents a foot—our building would have to have a cellar, which would add nearly one-third to cubage; without cellar it would cost \$1,200, and with cellar at least \$1,600. Then, the method of construction in England would be impossible here. A wall two bricks thick, plastered without furring, would not keep out our driving rains unless kept constantly painted, nor would a slate roof laid on battens protect from either heat or cold, nor would it keep out drifting snow. On all such lines we must buy our own experience. These plans and methods of construction may answer admirably in England, but they would be absolutely out of the question here. There is, however, no reason why we should continue to build cheap houses of inflammable material—we could build light walls of various fireproof and cheap materials which would be strong and dry, but the majority of our city building requirements, in the rigidity of their laws as to brick buildings, distinctly encourage wood where it is permitted. This is bad policy from every point-of-view. It encourages cheap buildings, made to sell and not to last, unsightly buildings which ruin a neighborhood, inflammable buildings which threaten one another and the neighboring city as well.

Group E plans are of the area-lit type—never advisable if it can be avoided, but sometimes a necessary evil where lots are deep and must be narrow to avoid extravagance.

Group F shows double tenements; a form very popular here, but not to be recommended where the single house is possible. The smallest plan F<sup>1</sup>, with scullery in a half-lit entry, is below the standard of anything which would rent here. Group G are similar, and represent a type which with us would be made seven or eight stories, and fitted with better stairs, lift and better plumbing, and would be better planned, to avoid rooms without doors on an entry.

It may seem from what has been written that the book is without merit and without applicability to our country, but there are certain lessons to be learned—not so much by the owners and builders of such houses as by the tenants, and this will be a difficult lesson to teach. A people who make good wages and earn money with comparative ease find their chief enjoyment in spending it, and if they prefer to do this they have their reward. As long, however, as this remains their point-of-view, it is no use to attempt to give the working-people very cheap and economical houses. One is inclined to think that the disregard of economy is a widespread habit, due to the easy circumstances of a new and rapidly expanding country, and which it is very difficult to shake off.

In France and in England a gentleman with \$15,000 or \$20,000 a year will be as careful of all his expenditures as the clerk supporting his family on \$1,500, not so much because he must, as because he prefers to get as much as possible in the way of actual return for his money. The same man here considers that he has a substantial return in the fact that he lives without care. This same spirit pervades to a certain extent our working-classes—they want comfort,

even luxury, and would rather spend their money in that than live with close economy and put more in the savings-bank. To meet this, a class of house has been built which is roomy, fitted with heat and plumbing, showy and tawdry. It is not built to last, but with a view to selling to the tenant, who often finds himself possessed of a building which deteriorates so rapidly as to make repairs a heavy annual item. Often repairs are neglected until the value of the house is almost obliterated.

There is another condition of our circumstances which changes the problem very materially. Our people all want to own both land and house rather than rent them. Urban land is too valuable to be covered with such small houses as we have been considering. The workman, therefore, will find his house in a suburban district and he will want a detached house and not one in a block. On the other hand the owner of the city land cannot get a fair return unless he can get a large rent. He will, therefore, turn to the many-storied tenement. The separate house and the tenement are, therefore, our problems.

For the cheapest kind of independent house the semi-detached is probably the best. This can readily be so planned as to give privacy to each family and to group the outbuildings and arrange their surroundings so as to be to their mutual advantage. Such buildings should be of brick, cement or plaster, and roofed with slate or some fireproof material. If the prejudice against attic rooms could be overcome, a single story with light walls and a large gambrel roof would afford excellent accommodation. Party-walls would, of course, be brick.

When all is said and done, direct contact with the working-man and intercourse with him is the best way to find out what he wants and the best way to get him to accept suggestions. Without this, theories, plans, even actual buildings, are of little use.



[Contributors of drawings are requested to send also plans and a full and adequate description of the buildings, including a statement of cost.]

A COMPETITIVE DESIGN FOR THE LADY CHAPEL OF ST. PATRICK'S CATHEDRAL, NEW YORK, N. Y.: THREE PLATES. MESSRS. N. LE BRUN & SONS, ARCHITECTS, NEW YORK, N. Y.

IN order to minimize the labor of the competitors and at the same time lighten the difficulties of examination and comparison, the Archbishop's professional adviser, Professor Ware, furnished the competitors with identical outline drawings of the present Cathedral, printed in light-gray ink on Whatman paper, the portions of the east end where the new design was to be drawn in being left blank. Both the competitors and the expert found the device of such great advantage that it is to be hoped that in any similar cases it will always be adopted.

The only disadvantage the method has is in cases of reproduction, where only one printing is possible, and we speak of the matter to account for the somewhat coarse and sketchy character of the lines which represent the untouched old work, as they interfere with the more delicate rendering of the Lady Chapel portions of the drawings rather more than they should. To the competitors, Professor Ware made the following report:—

"The design selected for the Lady Chapel of the Cathedral of St. Patrick proves to be the work of Mr. Charles T. Mathews, of 150 Fifth Avenue, New York City.

"Owing to some delays at the Custom-house, the drawings were not ready for the Archbishop's examination until Wednesday, the 25th of April. In order to preserve as far as possible a perfect *incognito*, the French drawings were lettered after their arrival in this country, and the descriptive paper accompanying them translated and type-written.

"His Grace sailed for Europe on Sunday, the 29th, but he had time before he went to examine the drawings, and, while disclaiming any wish to control the decision, he indicated four of them which to his own mind seemed preferable. The final decision, however, he committed entirely to Messrs. Eugene, Edward and Thomas H. Kelly, the sons of the late Mrs. Eugene Kelly and the executors of her will.

"Of the fourteen designs submitted, two were somewhat exceptional in character, one of them having the shape of a Greek cross, the other that of a letter T. This was set crosswise on the plot of ground facing upon 51st Street. Of the remaining twelve, four showed a nave without aisles, four a nave with aisles or side-chapels, and of the other four, the plan of one had the shape of a circle, one of a decagon, one of an octagon and one of a hexagon. In seven of the designs the straight east end of the Cathedral was not disturbed, in seven it was reconstructed so as to give at the east end of the chancel a wide aisle running around the apse, forming a sort of *chevet*. In width and height these designs varied as much as the somewhat restricted space and the conditions imposed would permit, some rivaling the Cathedral in height, or even overtopping it, others taking a distinctly subordinate place. The approximate estimates varied accordingly from less than \$200,000 to more than \$400,000, and if the minimum

prices for all the different items were added together and this sum compared with the total of the maximum prices, the total range would extend from less than \$150,000 to more than half a million. But most of the figures ranged between \$225,000 and \$275,000.

"In point of architectural character there was less to choose, for while two or three of them were of exceptional interest, and two or three others hardly met the requirements of the case, the rest were singularly uniform in architectural merit, and in point of draughtsmanship there was little ground for discrimination among them. Moreover, while the French drawings clearly betrayed themselves by marked peculiarities of treatment, there was nothing to show which came from England or from Canada, nor was it possible to guess correctly, as it proved, as to the authors of the others.

"On examining the drawings, it appeared, what was perhaps to be expected, that those with a single nave, without aisles, seemed on the whole best to meet the purposes of Mrs. Kelly's bequest and the conditions of the site. It was also plain that the designs which contemplated the enlargement and completion of the east end of the Cathedral were, other things being equal, much to be preferred. Of those which fulfilled these conditions, Mr. Mathews's scheme was clearly the best, both from the simplicity and elegance of its plan and from the character of the external treatment and the admirable way in which its outlines combined with those of the Cathedral itself, a point to which attention had been directed in the instructions. The large way in which the Cathedral and chapel were made to open up together was also a point in its favor, though this was a point to which some of the other competitors had paid special attention. These considerations seemed to me conclusive, and I had no hesitation in accepting and confirming this judgment. On referring to the memorandum which Archbishop Corrigan had made, it was satisfactory to find that Mr. Mathews's design was one of those which he had specially approved.

"I am instructed to thank the competitors for the personal interest which they have evidently taken in the work, for without it the drawings could hardly have reached so uniform and so unusual an excellence as they exhibit."

[The following named illustrations may be found by reference to our advertising pages.]

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[Gelatine Print.]

ENTRANCE TO THE OLD CASTLE, MILTENBERG-ON-THE-MAIN, GERMANY.

[Gelatine Print.]

THERE are few stretches of country containing as many odd and picturesque little towns as the district in Southwestern Germany called Franconia. Not yet invaded by the noisy locomotive, nor yet dotted with mills and factory-buildings, these little towns, frequently hemmed in their expansion between mountain-sides and streams, have preserved their mediæval, romantic character from the levelling influence of progressing civilization to such a degree that they afford an ample and most attractive field for his researches to the student, as well as valuable models to architect and artisan.

A charming bit from one of these Franconian towns (such as would have delighted the heart of John Ruskin, the hater of railroads and modern improvements) is shown in our plate. It represents the arched entrance-gate, whence leads a hilly path up to Miltenberg Castle, in Unterfranken, Bavaria, about thirty miles west of Würzburg. The old castle, perched high upon the hill above the town-houses, used to serve as a hunting-castle for the Electors of Mayence, to whom it has belonged since A. D. 986. To architects, the two houses flanking the archway on the right hand, in half-timbered construction, with their exquisitely quaint façades and high gables, should prove especially attractive. Over the cellar-archway of the taller one is inscribed the number 1594, probably the date of the origin of the two houses. The fact that these buildings dating from so late an epoch show so pronounced a mediæval character cannot surprise the student when he considers how tenaciously the builders in the Franconian country clung to the Gothic style, a locality noted for a most peculiar amalgamation of Gothic and Renaissance, called the "Julius" style, which flourished during the first quarter of the seventeenth century.

The wealth of timber of the country, together with the circum-

stance that the State furnished the timber free to the citizens who wanted it for building-operations, was undoubtedly favorable to the general adoption of the style of construction we encounter in these pretty house-fronts.

The tall building with the cosy-looking oriel enlivening its front contains (so we are told by a sign) a sewing-machine and bicycle-shop, a rather rude anachronism, reminding the traveller that we stand at the end of the nineteenth century, Franconian backwardness notwithstanding. Would not Ruskin's sensitive soul have been filled with disgust at the sight of this sign! The small house to the left of the archway has a façade decked with bright frescos, such as meet the tourist's gaze frequently in South German towns. These frescos have either been recently renovated, or else are of modern origin altogether.

The Renaissance fountain in the middle of the little square matches the rest of the charming architectural group admirably. It was carved in stone and erected by a Nuremberg guide-master A. D. 1583, costing 703 florins, or about three hundred dollars, according to the town-archives. It is gratifying to know that the eye of the state-government is watchful regarding the preservation of those splendid old houses and will not permit their being torn down to make room for such ugly modern piles as that visible to the left in our plate.

A COMPETITIVE DESIGN FOR THE LADY CHAPEL OF ST. PATRICK'S CATHEDRAL, NEW YORK, N. Y.: THREE PLATES. MR. GEORGE B. POST, ARCHITECT, NEW YORK, N. Y.



THE SERPENT MOUND TO BE A PARK.—The Serpent Mound, the most famous of the works of the mound-builders of Ohio, is soon to become the property of the Ohio Archaeological and Historical Society. Now it is the property of Harvard University. Secretary Randall of the Ohio Society received notification recently that the Trustees of Harvard University had adopted a resolution signifying their willingness to transfer the control of the famous park to the Ohio organization. A deed will be drawn up in a few days. Ten years ago the clubwomen of Boston purchased the property in question for the sum of \$5,000 and presented it to the Peabody Museum, the Trustees of which transferred it to Harvard University. More than \$3,000 has been expended in improvements, but the Eastern institution has reached the conclusion that the park should be under the control of Ohio people. A correspondence was opened with Mr. Randall, who, after ascertaining that the society which he represents has the right to acquire such property, accepted the offer of the Trustees. The conditions of the transfer require the society to maintain the mound and its surroundings as a public park, and to erect a suitable monument or tablet inscribed with the record of the preservation and the transfer of the property. — *Columbus (Ohio) Press-Post.*

MORE TOWNS AWHEEL.—One of the most extraordinary spectacles in the world has recently been witnessed in Mix County, S. D. Six large towns, including Edgerton, Old Platte, Castalia, Academy, Colvin and Jasper, have been torn up by the roots. Every house and business structure in all these towns has been "snaked off" its foundation, mounted on wheels, hitched to twenty-four, and in some instance forty, horse teams and started on the long trek across the prairie toward Platte and Geddes. These are new towns on the line of the Milwaukee Railway, of which the Yankton and Tyndall branch, now in the course of construction, is the first railway-line the county has ever had. When the railway was surveyed, instead of hitting any of the fine towns then in existence, it followed the rich lowlands in the middle of the county. The towns surveyed on the line of the road were named respectively Platte, Geddes, Lake Andes, Wagner and Avon. People living in the old towns have been fighting hard to induce the company to change the route, but, failing in this, they decided to move, bag and baggage, houses, business blocks and all, to the new towns. Within a week where have been villages of from one thousand to two thousand population there will be nothing but a lot of poles in the ground, surrounded by ragged stone foundations. The growth of Platte within a week discounts any fairy tale. All the old buildings from the old town of Platte, many miles away, have been hauled in and set on lots in Main Street. Two churches are in course of erection, and an opera-house was among the structures commenced. Three hundred men and teams are grading the streets. The impression created in the mind of visitors is that somebody has taken a contract to build a city in twenty-four hours. The town-site company reserved the best corner lot in the place for any man who would put up a sixty-room hotel, to be completed within sixty days. A Michigan man accepted the offer by telegraph, and his advance guard is now at work. The hotel is to be of brick and stone, electrically lighted and thoroughly modern. An artesian well, sunk 800 feet deep, is throwing a stream big enough to supply a town of 5,000 people. The immediately available supplies of lumber, stone, brick, steel and building-materials were exhausted recently, and telegrams were rushed everywhere giving orders. In one instance a four-story frame structure 60' x 40' was hauled eleven miles on an ordinary wagon, with the gearing ingeniously arranged, by a forty-horse team. The building will be placed on a foundation in the new town, and the plastered walls were not cracked in transit. Gamblers and other questionable characters have made their appearance in large numbers, but the town has already organized a police force, and there is little disorder. — *Cincinnati Enquirer.*

# THE AMERICAN ARCHITECT AND BUILDING NEWS

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## THE BRIDGE "TRUSTS."

It is well for fair-minded people, and most people desire to be reasonable in their views of public affairs, to consider what may properly be said in favor of any combination of the kind commonly denominated as trusts. Not all of these great combinations that have been formed during the past two years are mere stock-watering schemes, although many of them, it must be admitted, are. The American Bridge Company, recently formed, is an instance of a combination for which some very good reasons are presented.

This combination was not formed hurriedly. It was a long time under consideration. The concerns which have entered it were not weak or unsuccessful, nor were they owned by men who were anxious to sell out their interests and retire from business. It was not a case where over-production had glutted the market. The construction of steel bridges and buildings is not a business which can be carried on like a nail-factory or a cotton-mill, that may accumulate a large stock of manufactured articles for which there is no immediate sale.

In the work of the bridge companies the contract must in every case precede the beginning of work upon any structure, and in almost every case an open competition is invited by the person or corporation which seeks to provide itself with such a piece of construction. Let us see what has happened in such cases hitherto.

The building of the East Hartford bridge across the Connecticut is a useful instance. In that case there were a dozen or more bidders, each one of whom submitted plans for the bridge which it proposed to supply, and each of these sets of plans cost several hundred dollars. Then each bidder was required to deposit a certified check of a specified amount, to be held until the competition was completed. In this way more than \$200,000 of cash capital was locked up for several weeks. It is probable that the actual cost of this competition to the bridge companies was not less than \$25,000. Practically the whole actual cost of the bridge was equalled by the amount expended by the companies seeking the contract. The same thing happens whenever a large number of bidders enter into any competition for this class of work. It is needless to argue that this is a wasteful system. A combination including all, or nearly all, the bidders could have afforded to take the Hartford bridge contract at a much lower price than any one of them could safely offer.

Another strong reason for the bridge combination is found in the necessity imposed upon the concerns having large works to meet the obstacles placed in their way by the bridge-brokers. There are not a few so-called bridge companies or firms which maintain no manufacturing plants, but act simply as parasites on those concerns which do have such plants. The methods of the bridge-broker are thus described:

Without so much as a blacksmith shop behind him, the broker has entered his bid upon every piece of bridge construction for which bids were advertised; and it has been frequently the case that his bid has been the lowest, and he has obtained the contract. Knowing the condition which has existed in a majority of the big shops, and the difficulty with which the plants were kept busy, he has taken advantage of it, and after obtaining the contract he has sublet it to the builders at a price below the cost of turning out the material. The builder has been compelled to accept the work and the broker's figures for it, or close up his plant. The new combination will "freeze out" the broker.

This does not mean that all competition in steel bridge-work is to be abolished. There will still be plenty of it, but it will not be so easy for competitors to force the carrying on of business at a loss, as formerly. The consolidation of the business of buying steel for construction-work should enable a large saving to be effected, and we do not see why it is not permissible to expect a real public benefit from the formation of the American Bridge Company. — *Hartford (Conn.) Times.*

## A CASE IN POINT.

An architect and consulting engineer has been specifying Dixon's Silica-Graphite Paint for some little time. One of these specifications was for a new roof on a factory. About seven or eight months after the roof was painted two coats, the architect received word from the owner of the factory that the paint had all worn off the roof, and the tin was rusting; he insisted on having it painted again without expense to himself.

The painters were a well-known firm and in good standing, and they stated that they had simply put on the paint that had been specified, and if it did not last, it was not their fault.

The architect then came to us to have the matter fixed, and we opened correspondence with him in the endeavor to try and avert the necessity of sending the owner of the factory twenty-five gallons of paint free of charge to repaint the roof; at the same time we desired

to keep the good friendship of the architect.

After putting up as strong a defence as possible, so far as the quality of the paint was concerned, we found that both the owner of the factory and the architect were determined to make somebody stand the expense of repainting the roof.

We thereupon set out to find where the painters had bought the Dixon paint for the job. We found that they had purchased five gallons of Dixon's Silica-Graphite Paint from a local dealer, who carried it in stock, and that the balance of the paint used on the job was a paint called the "X. & Y.," of which it was judged they used about forty gallons.

The matter is now nicely adjusted; and the painters are going to repaint the roof at their own expense, and Dixon is relieved of any responsibility in connection with the job, and we retain the friendship of the architect, and also the friendship of the hardware firm who have been handling our paint in the city where this occurred, and who sold the five gallons mentioned above.

As our representative puts it: "This is one of the cases where the guilty parties came near sticking the innocent, but didn't."

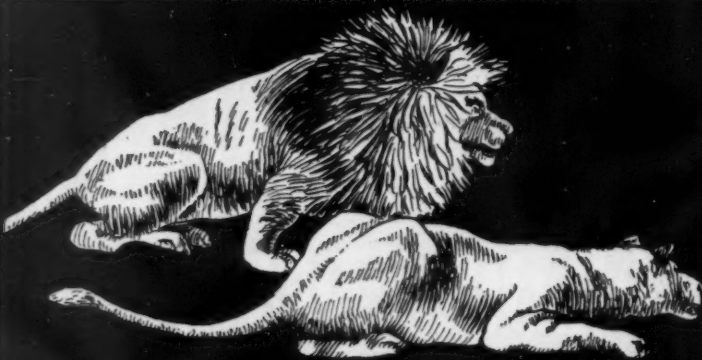
We have of course withheld the names of the architect and painters, and the name of the town, as these are not necessary in pointing the moral.

*Specification of Paint.* — Architects, consulting engineers, owners and persons interested in the subject of protective paint for steel structures will receive a handsome card illustrating several eighteen-story steel structures upon which Dixon's Silica-Graphite Paint has been used, if they will send their address to the Joseph Dixon Crucible Co., Jersey City, N. J. The card also contains suggestions for specification of the paint, and its well-known durability has led to its specification and use upon many immense steel viaducts, bridges and manufacturing plants all over the world.

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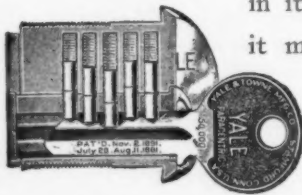
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(Continued on page 3.)

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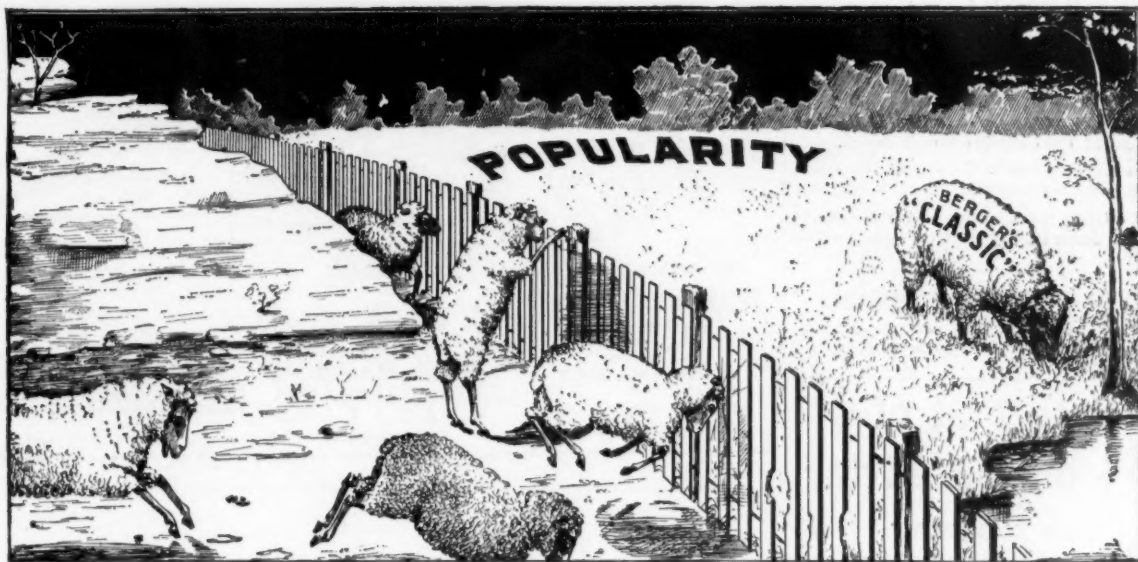
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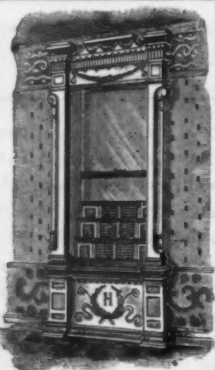
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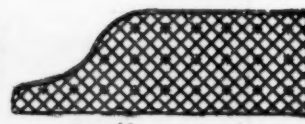


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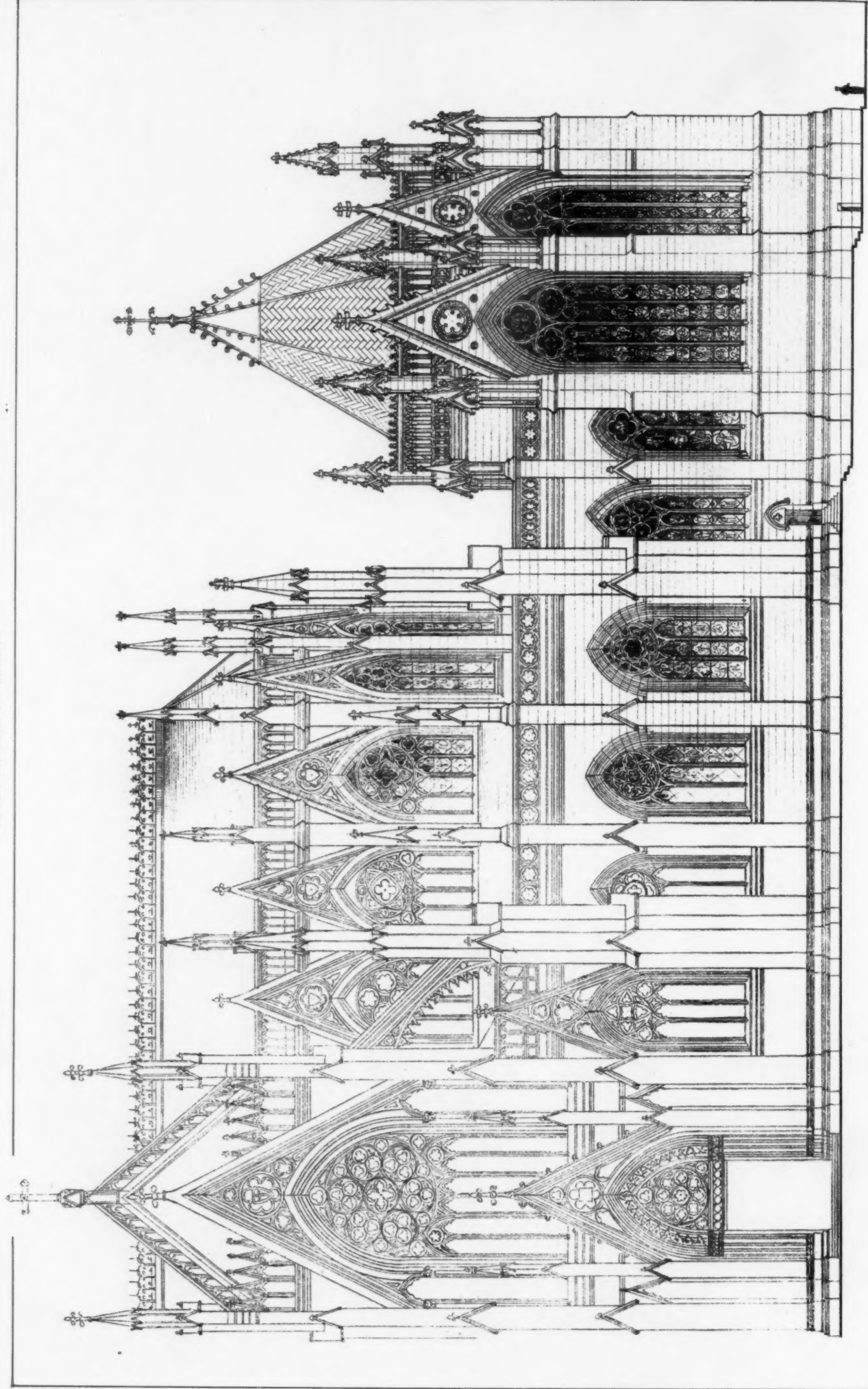
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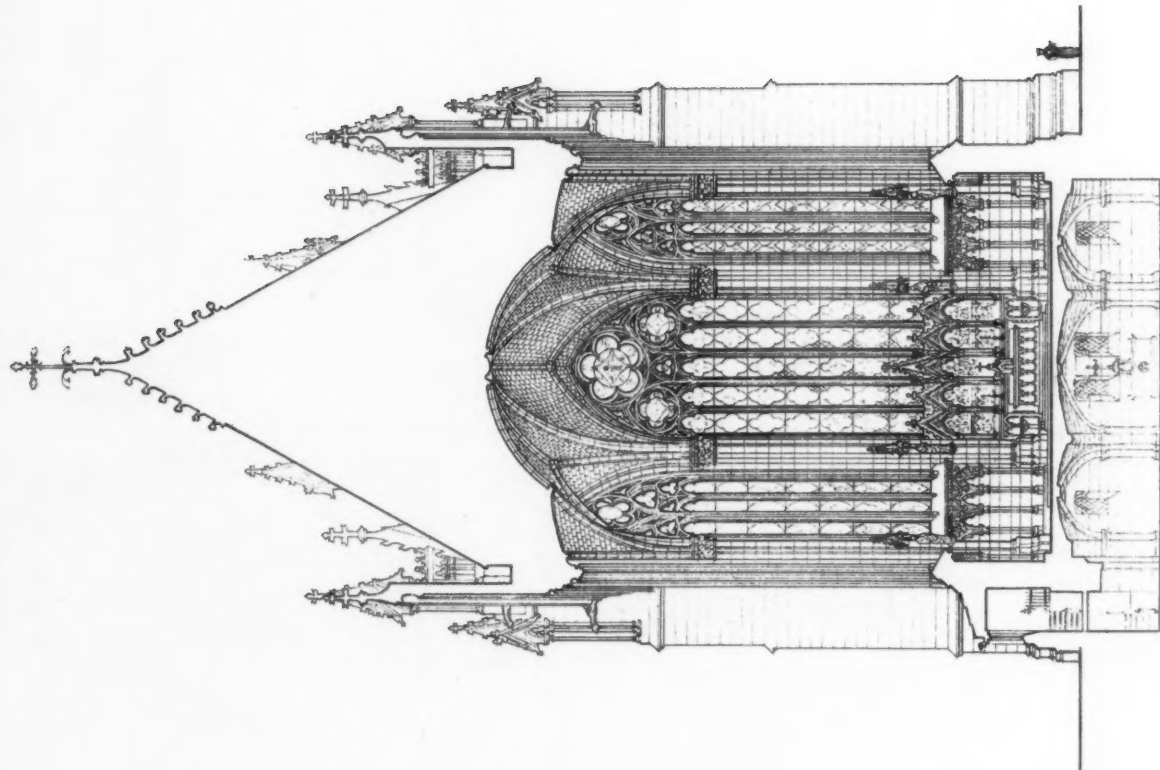
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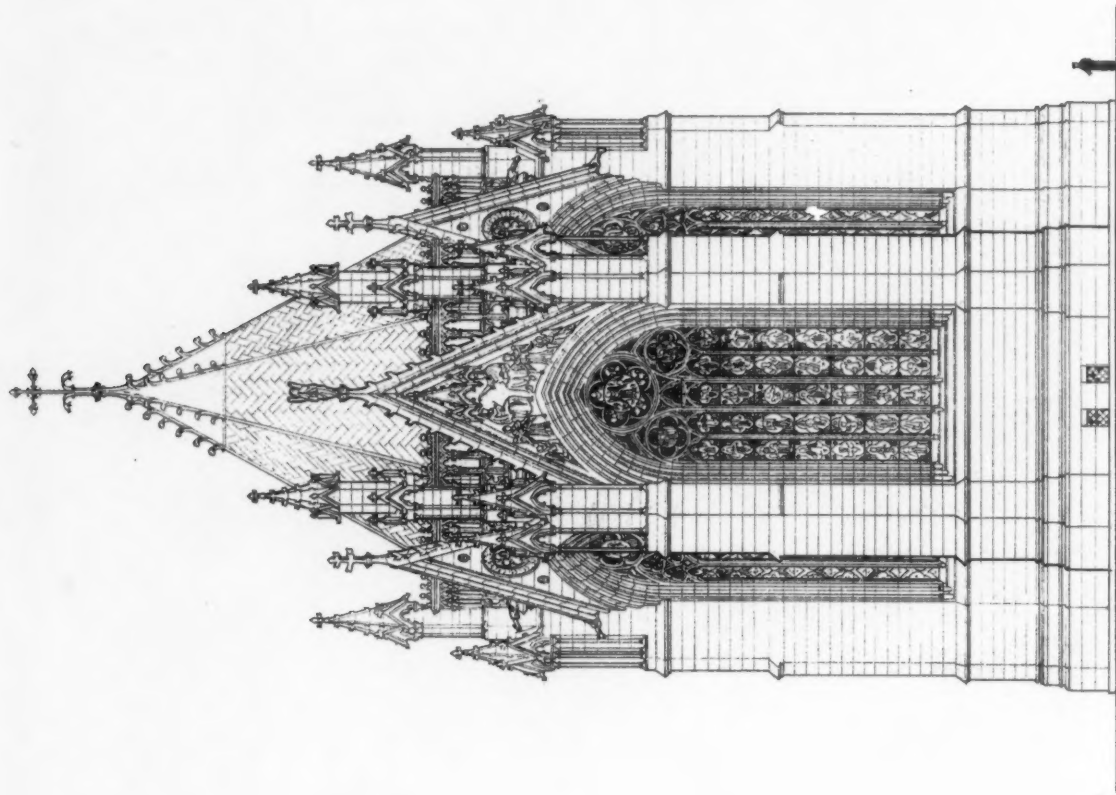


Southern Elevation

Southern Elevation



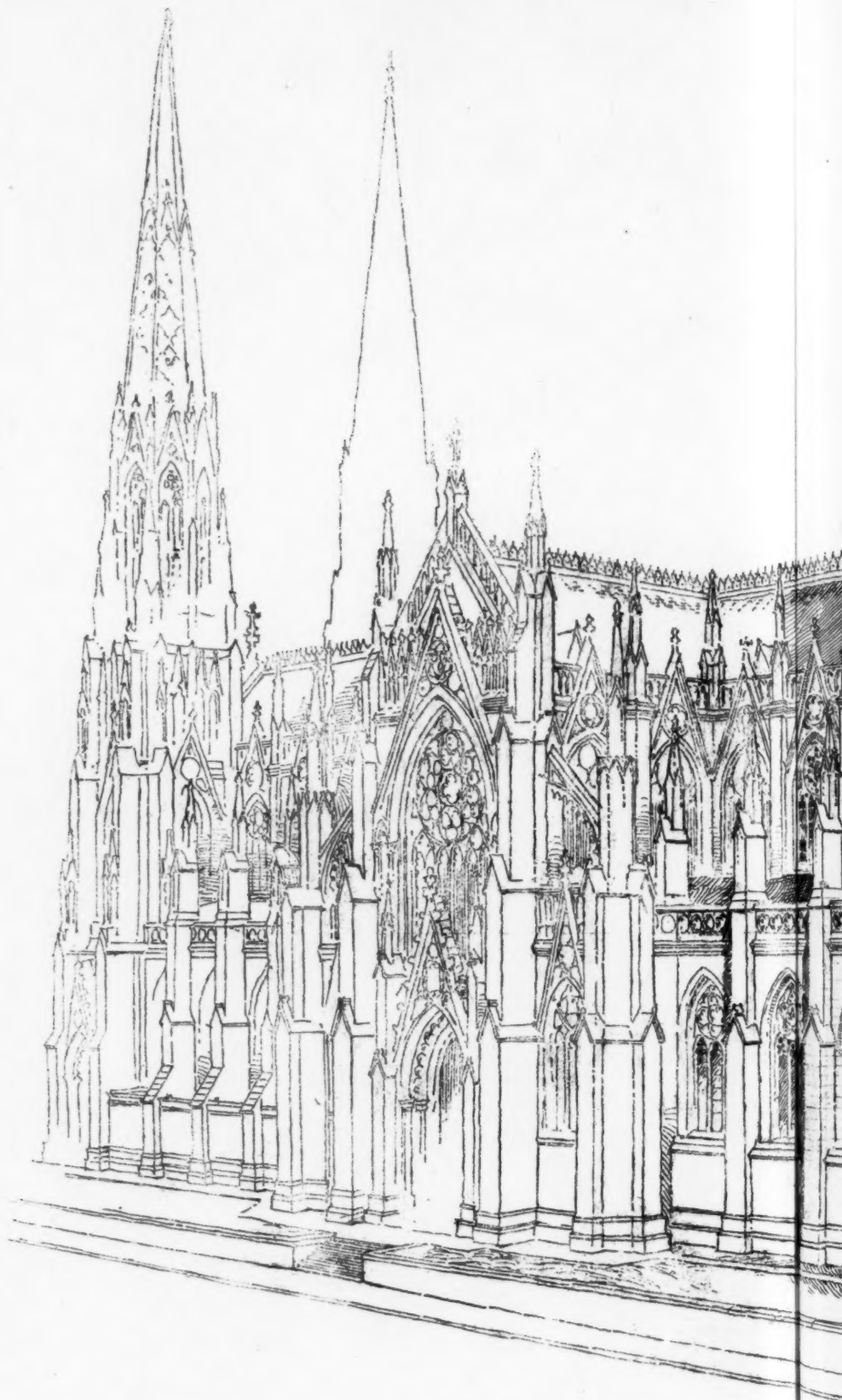
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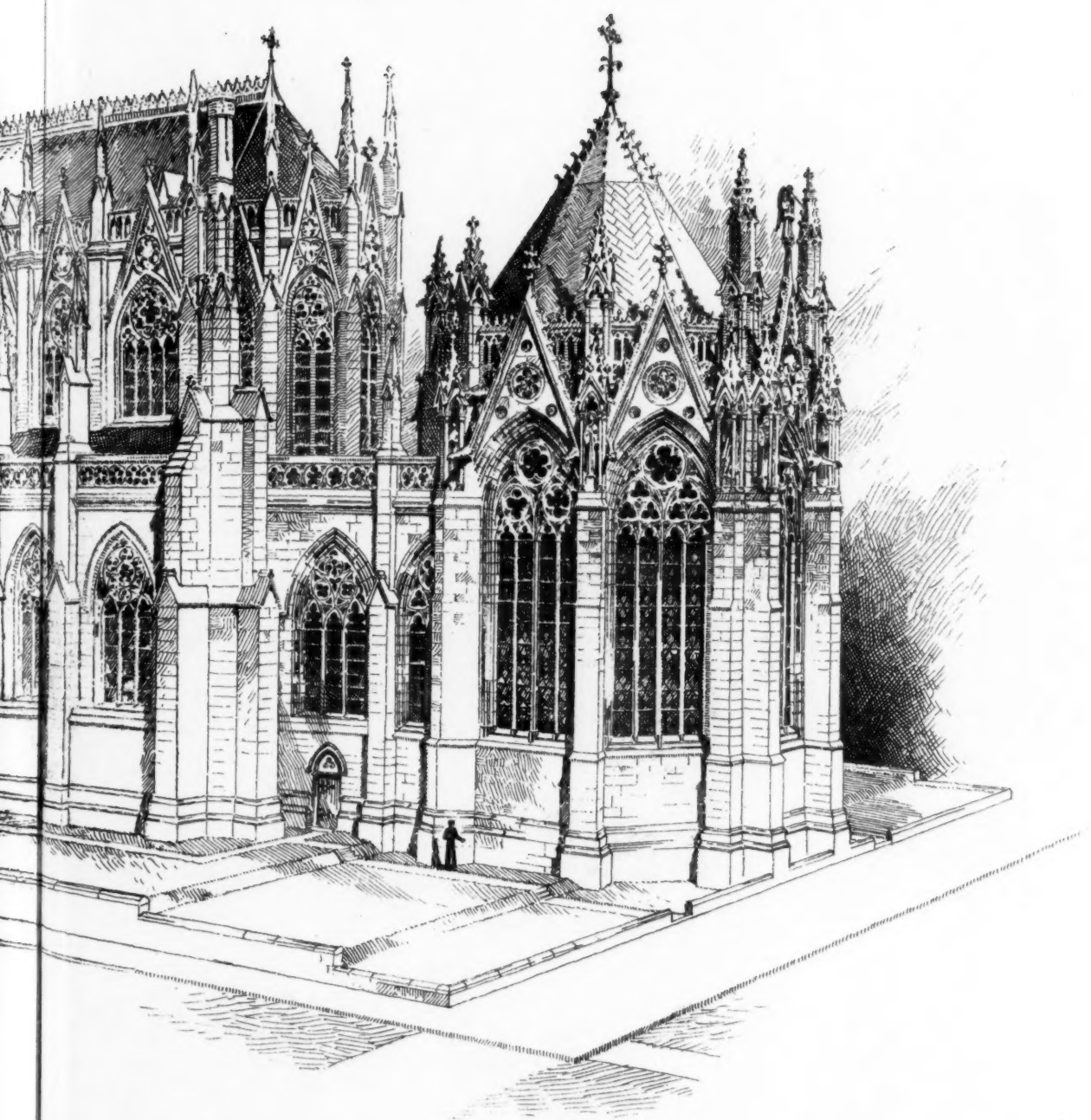
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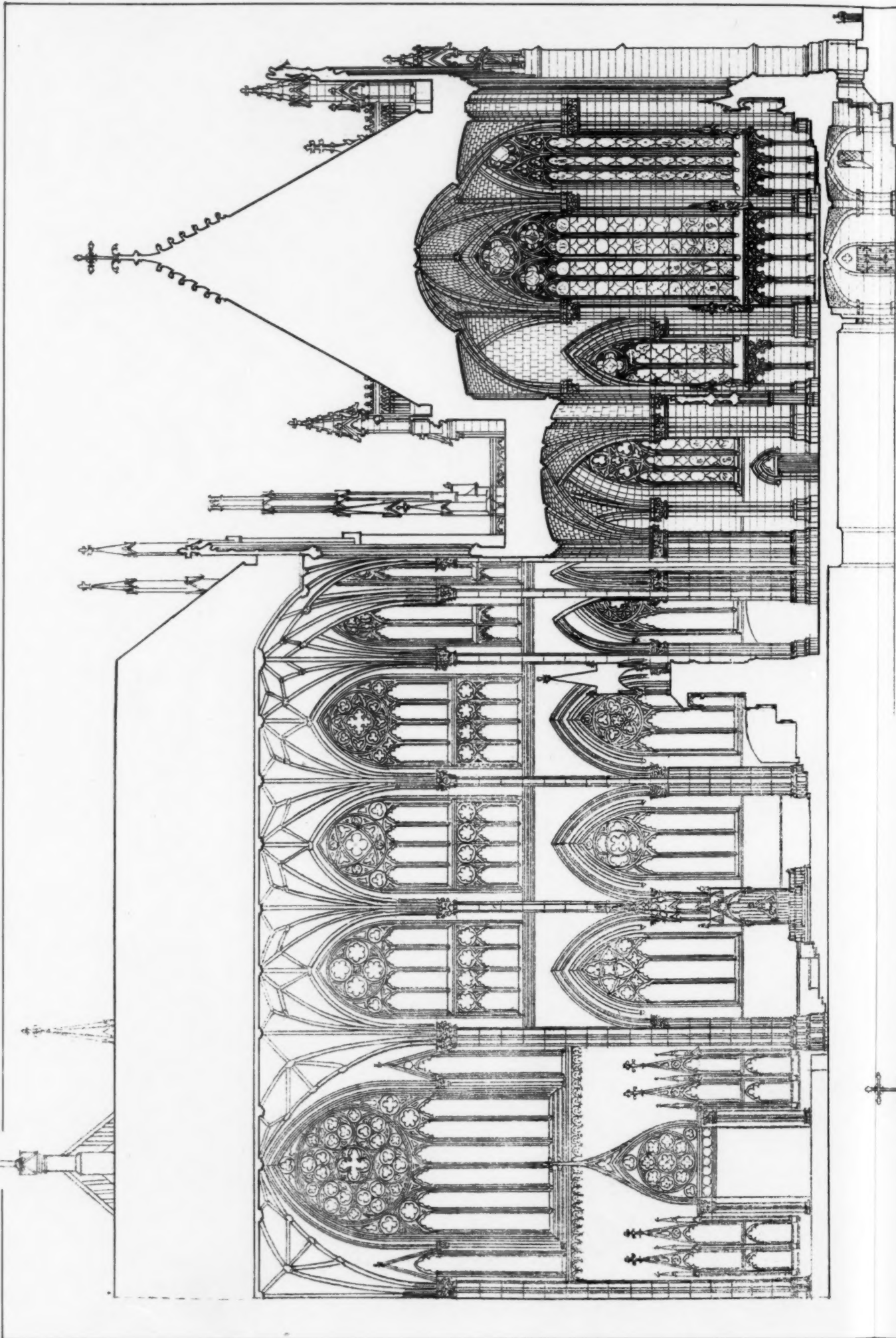


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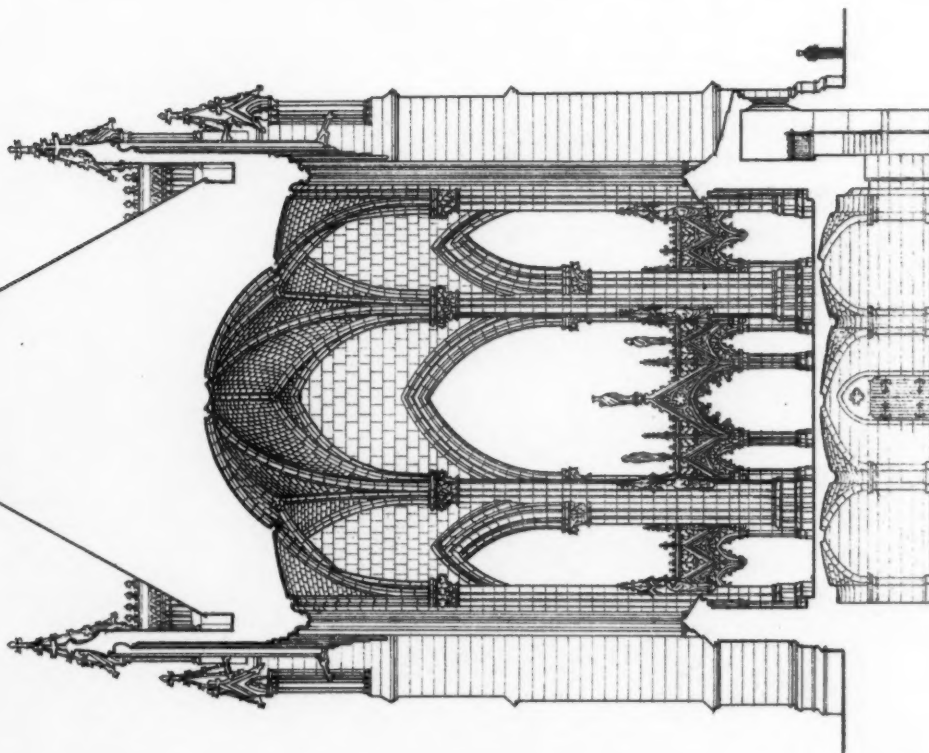
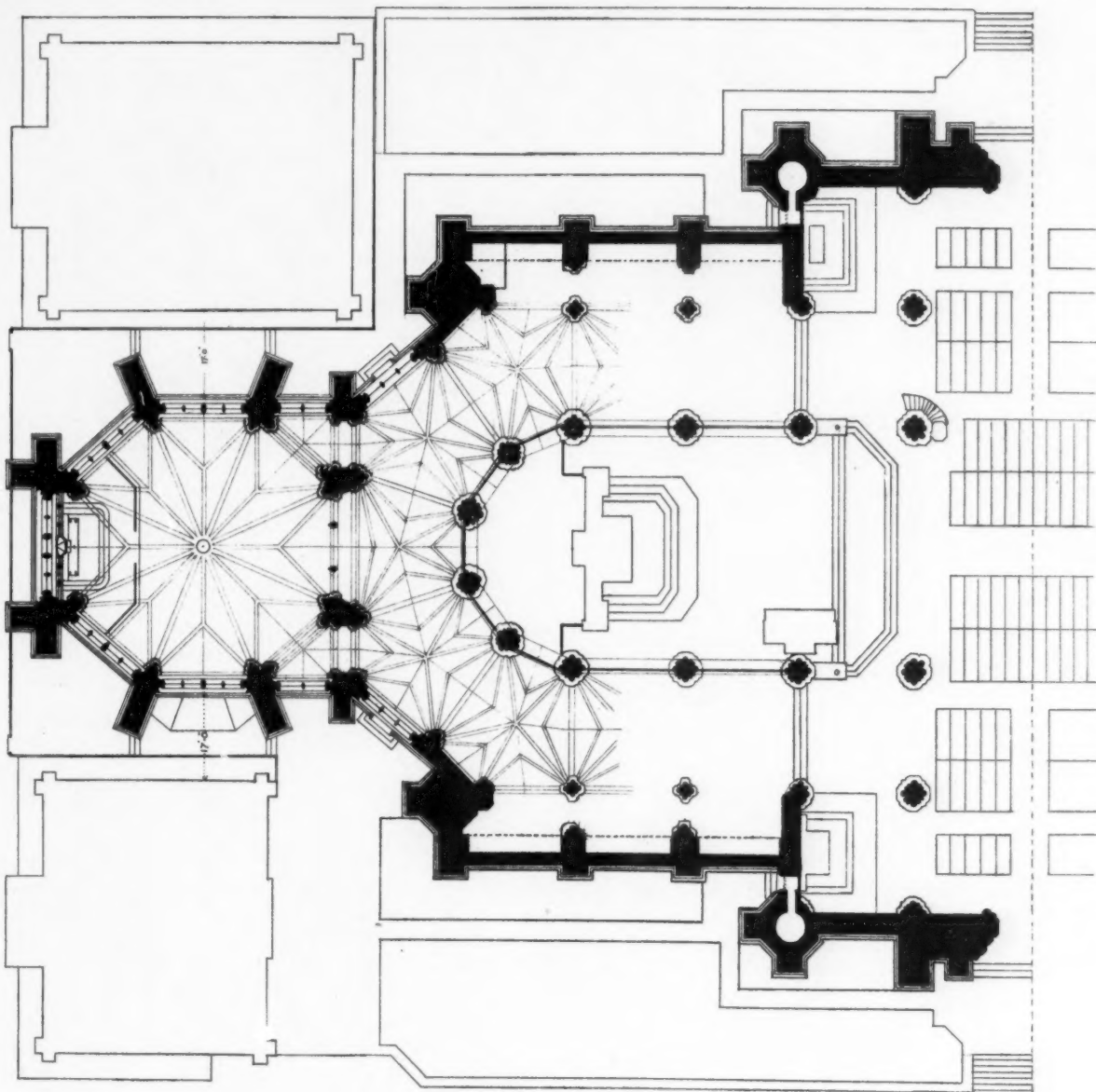


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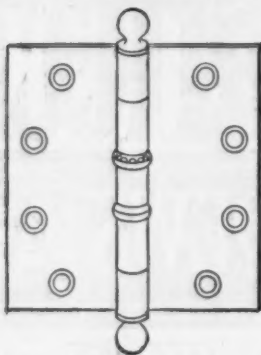


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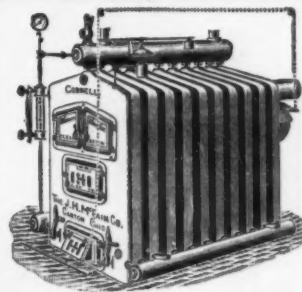
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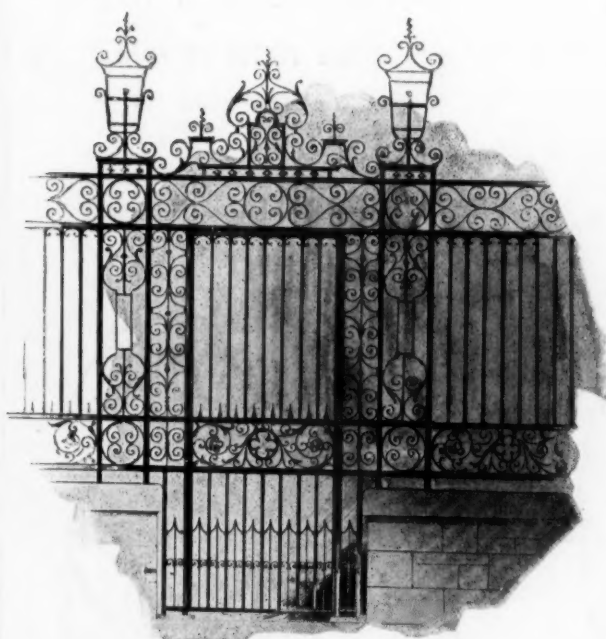


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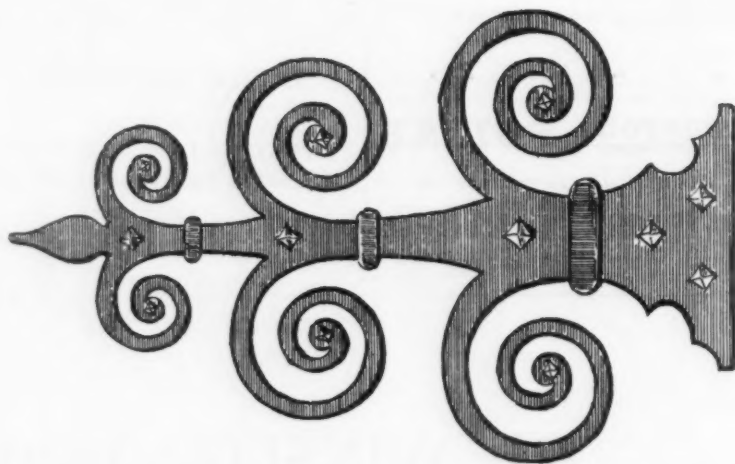
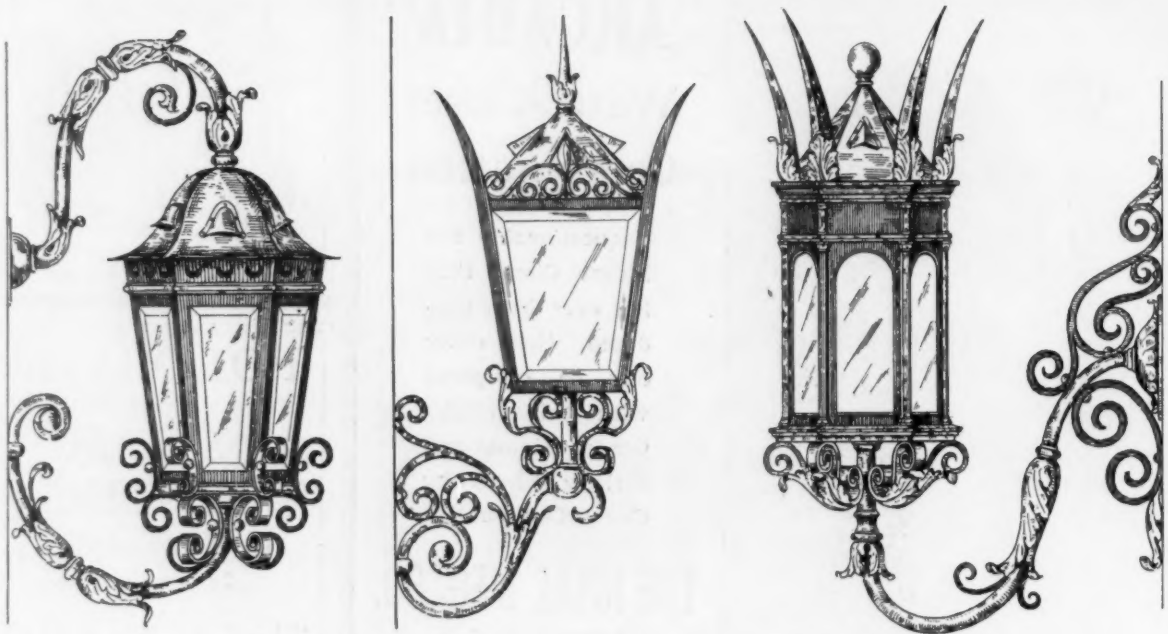
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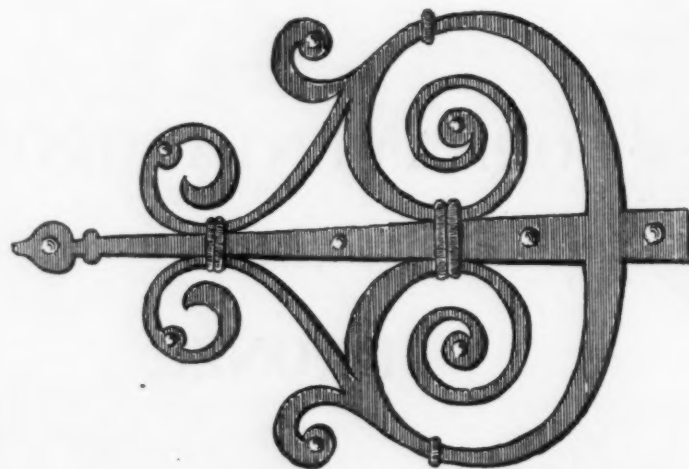
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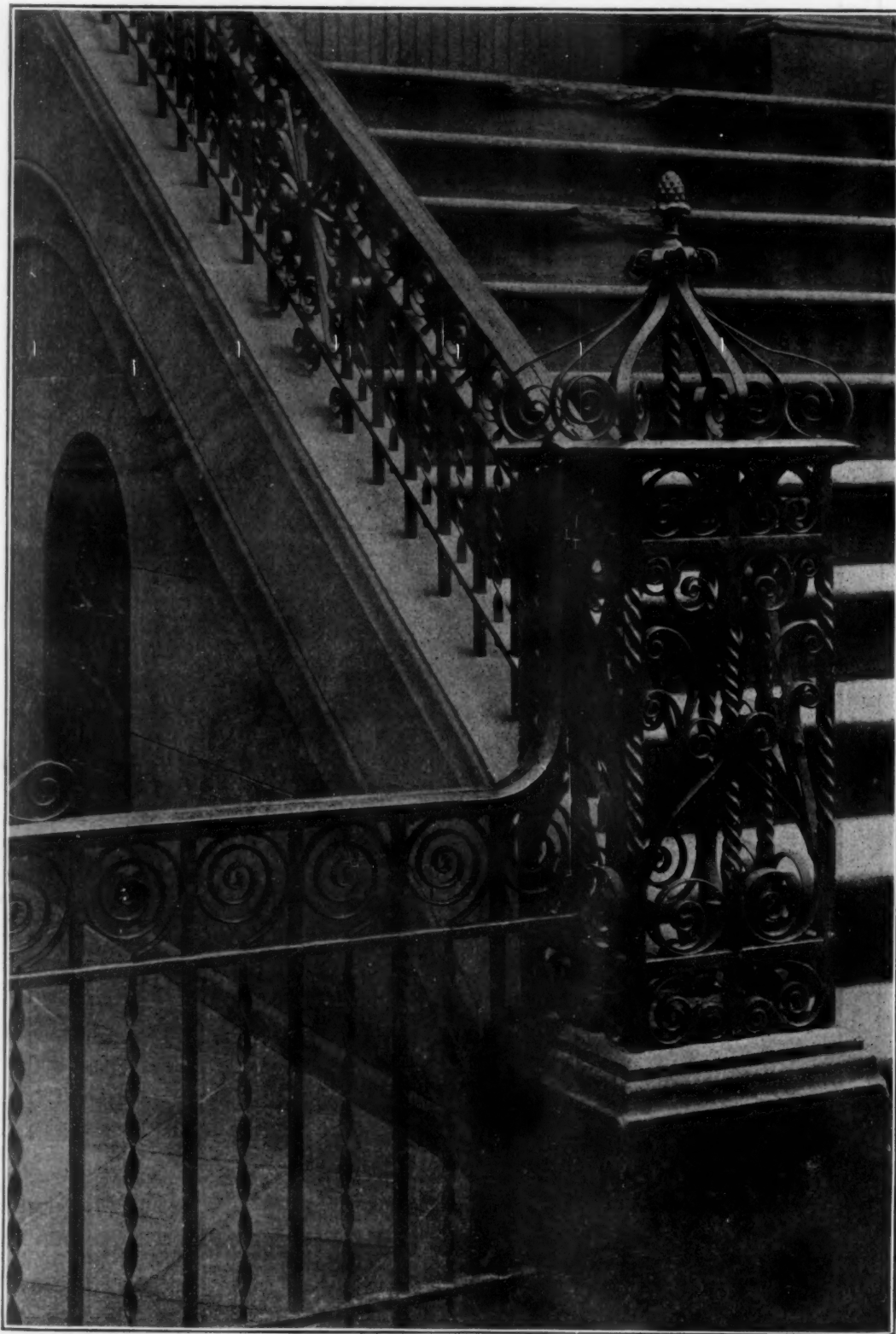
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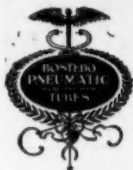
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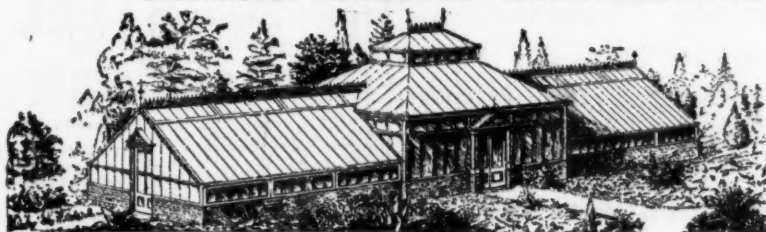
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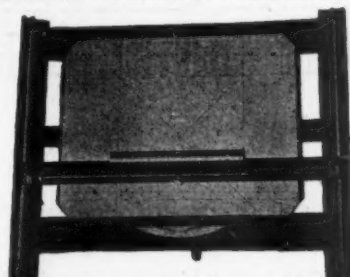
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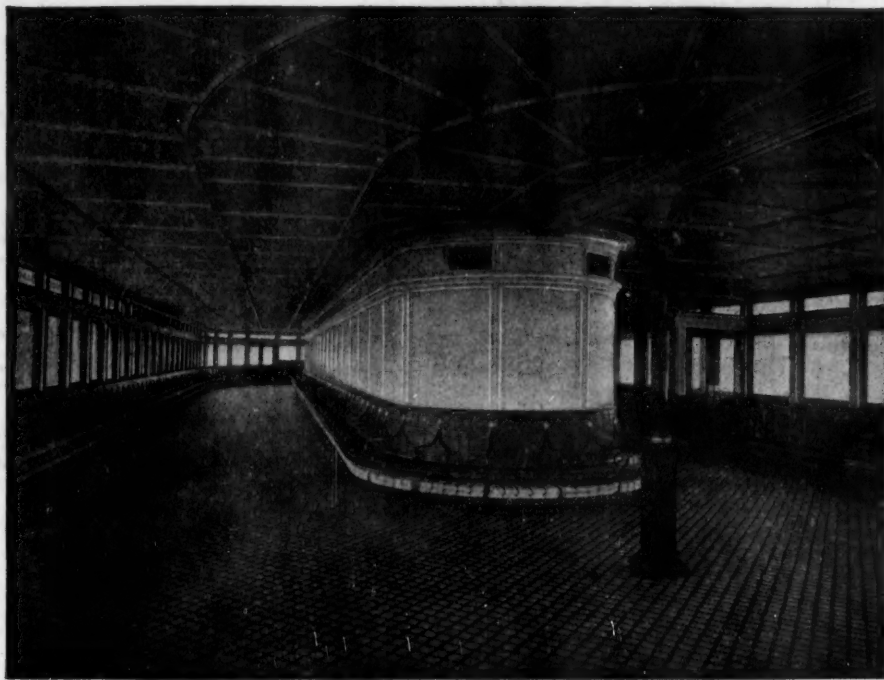
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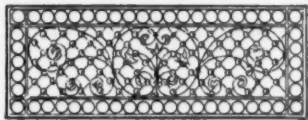
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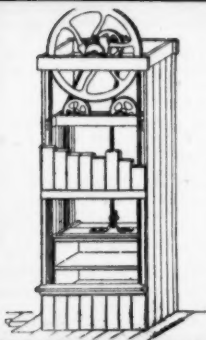
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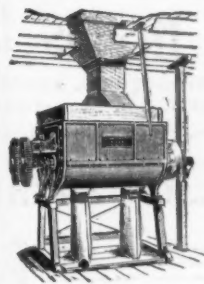
that are self-retaining under certain conditions and at certain points, are numerous.

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#### BUILDING INTELLIGENCE.

(Advance Rumors Continued.)

Muskegon, Mich. — J. H. Daverman & Son, of Grand Rapids, have prepared plans for a four-story brick furniture warehouse and salesrooms, to be erected on Western Ave., to cost \$15,000.

North Uxbridge, Mass. — Fred B. Whitin will erect a new house from plans drawn by Barker & Nourse, Worcester, Mass., to cost \$5,000.

Oldtown, Me. — W. E. Mansur, Bangor, has drawn plans for a new public school building. It will be a brick structure, 57' x 61', and will cost about \$20,000.

Payson, Utah. — Architect Watkins is stated to have prepared plans for a \$14,000 brick and stone school.

Philadelphia, Pa. — Preliminary plans are being made by W. B. Powell for the extensive alterations to the 1st Regiment armory which will cost between \$40,000 and \$50,000.

Portland, Me. — The Grand Trunk R. R. and the

#### BUILDING INTELLIGENCE.

(Advance Rumors Continued.)

Dominion Coal Co. are making arrangements, it is said, to establish a modern coal-pocket here, to cost about \$100,000.

Providence, R. I. — Of five plans submitted those of Saunders & Thornton for the new police-station have been selected by the Committee on City Property and will be sent to the Board with a favorable recommendation in the hope that construction may be started at once.

Sayville, L. I., N. Y. — The members of Hose Company No. 1 propose building an opera-house. The structure will contain quarters for the firemen themselves. Efforts are being made to secure a building fund.

Springfield, Mass. — The Wesley M. E. Society has adopted plans for a new church by Architect F. R. Richmond. The edifice will be on State, opposite Buckingham St. It will be 90' x 150', and will be built of red brick with brownstone trimming.

Worcester, Mass. — Barker & Nourse are to pre-

#### BUILDING INTELLIGENCE.

(Advance Rumors Continued.)

pare plans for a new hotel at Vernon Sq., for Michael E. McGady. It will be of brick, four stories.

Cutting, Carleton & Cutting, architects, have awarded the contract for the J. B. Johnston block in Whitinsville to E. B. Ward. The price is about \$13,000.

#### APARTMENT-HOUSES.

Chicago, Ill. — S. Park Ave., Nos. 5534-38, three-sty' bk. flat, 72' x 132'; \$55,000; o. Morris Curtan, b. Frank Burke, 573 E. 62d St.; a. Bishop & Co.

Michigan Ave., Nos. 4016-18, four-sty' bk. flats, 30' x 70'; \$25,000; o. A. B. Williams; b. Geo. Williams & Co.; a. L. E. Stanhope.

Princeton Ave., No. 6201, three-sty' bk. flat, 48' x 88'; \$28,000; o. E. Melville; b. J. E. Winblad; a. Bishop & Co.

N. Halstead St., Nos. 1183-85, three-sty' bk. flat, 48' x 125'; \$40,000; o. R. Brusch; b. Wm. Ritchie, 92 La Salle St.; a. J. E. O. Fridmore.

#### HOUSES.

Boston, Mass. — N. Margin St., No. 31, three-sty' bk. dwell., 27' x 28', flat roof, stoves; \$9,000; o. b. Barnett Bennett; a. C. A. Halstrom.

Harold St., Nos. 27-29, 2 three-sty' bk. dwells., 20' x 48', flat roofs, hot water; \$14,000; o. John McWeeney; b. T. J. Connelly; a. C. A. Halstrom.

McLellan St., No. 52, 2 1/2-sty' fr. dwell., 30' x 63',

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### BUILDING INTELLIGENCE.

(Stables Continued.)

loft, 25' x 93'; \$7,000; o. & a., Fred Schilling, 1073 Third Ave.  
Chicago, Ill. — W. Ravenswood Park, Nos. 1081-95, one-st'y bk. barn, 70' x 150'; \$8,500; o., Borden Condensed Milk Company; b., J. M. Darling & Son; a., J. J. Flanders.

### STORES.

Bloomington, Ill. — N. Main St., three-st'y & base. bk. store building, 25' x 100', gravel roof, hot air; \$12,000; o., Lyman Graham; a., Arthur L. Pillsbury.  
N. Main St., three-st'y & base. bk. store & office building, 90' x 98', comp. roof, steam; \$75,000; o., Mrs. Sarah D. Swayne; a., Geo. H. Miller.  
W. Jefferson St., four-st'y bk. store, 46' x 110', tin roof, steam; \$30,000; o., C. W. Klemm; a., Paul O. Moraz.  
E. Jefferson St., four-st'y bk., steel & fr. store building, 23' x 110', flat roof, steam; \$12,000; o., Mattie M. Marble; a., George H. Miller.

### TENEMENT-HOUSES.

Brooklyn, N. Y. — Gerry St., nr. Throop Ave., three-st'y bk. tenement, 25' x 45'; \$6,000; o. & b., Simon Bauer, 76 Gerry St.; a., H. Vollweiler.  
W. Prospect Park, nr., 11th St., 2 four-st'y bk. flats, 33' x 85', steam heat; \$36,000; o., W. H. Murphy, 517 Fifty-second St.; a., T. Bennett.  
Patchen Ave., cor. Lexington Ave., 4 three-st'y bk. flats, 25' x 60'; \$35,000; o., J. Voelbel, 992 Greene Ave.; b., G. L. Wills, 22 Stockton St.; a., W. B. Wills.  
Sterling Pl., nr. Classon Ave., four-st'y bk. tenement, 25' x 58'; \$6,000; o., John Reilly, on premises; a., H. L. Spicer, 326 Fifty-sixth St.

New York, N. Y. — First Ave., Nos. 1628-1630, 2 six-st'y bk. tenements, 25' 6" x 85' 4"; \$50,000; o., August Knatz, 19 Avenue A; a., M. Bernstein, 245 Broadway.

One Hundred and Twelfth St., nr. 8th Ave., 2 five-st'y bk. tenements, 33' 4" x 87'; \$71,500; o., Carrie Belle D. Lanchantin, 206 Hawthorne St., Brooklyn; a., Torstrick & Lamster, 217 W. 125th St.

Melrose Ave., cor. 154th St., five-st'y bk. tenement & store, 20' x 95'; \$16,000; John J. O'Brien, 2177 Bathgate Ave.; a., F. Jaeger, 717 Tremont Ave.

Melrose Ave., cor. 163d St., five-st'y bk. tenement & store, 19' 5" x 95'; \$28,000; o., Baldwin & Green, 60 W. 109th St.; a., W. C. Dickerson, 149th St. & 3d Ave.

E. Tenth St., No. 211, six-st'y & base. bk. tenement, 25' x 80' 1"; \$26,000; o., Jno. Kafka, 231 E. 72d St.; a., C. B. Meyers, 1 Union Sq.

One Hundred and Eighteenth St., nr. Madison Ave., 4 five-st'y bk. tenements, 25' x 87'; \$100,000; o., Jno. F. Kuchler, 88 E. 132d St.; a., Henry Andersen.

Anthony Ave., nr. 176th St., three-st'y fr. tenement, 30' x 70' 6"; \$9,000; o., Wm. B. Schorer, 1806 Anthony Ave.; a., J. J. Vreeland.

Marcy Pl., nr. Prospect Ave., 2 three-st'y bk. tenements, 21' x 57'; \$16,000; o., Theo. M. Macy, on premises; a., W. C. Dickerson.

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### BUILDING INTELLIGENCE.

(Houses Continued.)

pitch roof, hot water; \$8,000; o., Thos. Keane; b., William Tobin; a., Thomas R. Hughes.  
Harvest St., two 2½-st'y fr. dwells, 24' x 36', pitch roofs, furnaces; \$8,000; o., Isabella Munn; b., M. Munn; a., Z. M. Stevens.  
Harold St., cor. Hollander St., 2½-st'y fr. dwell., 25' x 2', pitch roof, furnace; \$5,000; o., French & Shea; b., C. F. Brown; a., P. A. Tracy.  
Ruggles St., Nos. 98-100, three-st'y fr. dwell., 40' x 70', flat roof, steam; \$6,000; o., House of Angel Guardian; a., P. A. Tracy.  
Quincefield St., Nos. 12-14, two 2½-st'y dwells, 25' x 51', pitch roofs, furnaces; \$10,000; o. & b., J. E. Wilber; a., C. A. Russell.  
Romey St., No. 35, 2½-st'y fr. dwell., 27' x 50', pitch roof, steam; \$6,000; o., William Farrell; b., W. A. Williams; a., T. J. Lyons.  
Newton, Mass. — Chase St., two-st'y dwell., 37' x 40', furnace; \$8,000; o., Mellen Bray; b., C. E. Thompson; a., Kendall, Taylor & Stevens.  
Worcester, Mass. — Moore Ave., two-st'y fr. dwell., 32' x 40'; \$4,500; o., Lillian W. Carter; b., E. J. Cross; a., Frost, Briggs & Chamberlain.

### LIBRARIES.

St. Joseph, Mo. — Two-st'y & base, st. & bk., steel-fr., fireproof building, 96' x 106', tile roof; \$85,000; o., Board of Education; a., E. J. Eckel.

### MERCANTILE BUILDINGS.

Muskegon, Mich. — Western Ave., four-st'y st. & bk. business building, 45' x 154', gravel roof, steam;

### BUILDING INTELLIGENCE.

(Mercantile Buildings Continued.)

\$15,000; o., N. G. Vanderlinde; a., J. H. Daverman & Son, Grand Rapids.  
OFFICE-BUILDINGS.  
Bloomington, Ill. — N. Main St., six-st'y & base. office-building, 69' x 120', gravel roof, steam; \$60,000; o., Wolf Griesham; a., Arthur L. Pillsbury.  
E. Jefferson St., three-st'y & base. lodge & office building, 98' x 115', gravel roof; \$30,000; o., Remembrance Lodge I. O. O. F.; a., Arthur L. Pillsbury.  
Boston, Mass. — Liberty Sq., cor. Water St., seven-st'y bk. office-building, 49' x 82', flat roof, steam; \$750,000; o., Appleton Est.; b., A. C. Whitney; a., Andrews, Jaques & Rantoul.  
Duluth, Minn. — Five-st'y st. & bk. steel construction office-building, 60' x 120', tin roof, steam; \$80,000; a., W. T. Townner, St. Paul.  
New York, N. Y. — Fifth Ave., 46th to 47th Sts., three-st'y bk. store, office & studio building, 97' 8" x 200' 10"; \$300,000; o., Elbridge T. Gerry, 261 Broadway; a., Chas. I. Berg, 10 W. 23d St.  
Philadelphia, Pa. — Second St., cor. Chestnut St., one-st'y & loft bk. & st. bank building, 46' x 57'; \$40,000; o., Corn Exchange Bank; b., J. E. & A. L. Pennock; a., Newman, Woodman & Harris.  
STABLES.  
New York, N. Y. — E. One Hundred and Fifteenth St., No. 23, five-st'y bk. stable, 25' x 96'; \$20,000; o., Fanny Weil, 151 E. 117th St.; o., Jobst Hoffmann.  
E. Sixtieth St., No. 410, three-st'y bk. stable &





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Bids are wanted August 22 for alterations and  
repairs to the Convention Hall. R. G. PARSONS,  
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#### HEATING, ETC.

[At Cincinnati, O.]  
Bids are wanted August 27 for ventilating and  
heating apparatus for a school to be erected at Kil-  
gour and Ellen Sts. JACOB E. CORMANY, Chmn.  
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#### COLLEGE BUILDING.

[At Ames, Ia.]  
Bids are wanted August 15 for an engineering  
hall at Iowa State College. E. W. STANTON, Secy.  
Bd. Trus. 1285

#### TEXTILE SCHOOL.

[At Agricultural College, Miss.]  
Bids are wanted until August 13 for a dormitory  
and textile school for the Mississippi Agricultural  
College. R. C. KINGS, secretary. 1285

#### JAIL.

[At Bennettsville, S. C.]  
Sealed proposals will be received until August  
18, for erecting a jail. D.-J. EASTERLING, county  
supervisor. 1285

#### COURT-HOUSE.

[At Marietta, O.]  
Sealed bids will be received until August 21 for  
the erection of the new court-house for Washington  
County, according to plans prepared by S. Hannaford  
& Sons, Hulbert Block, Cincinnati, O. The structure  
will be about 100' x 125', three stories and basement

### PROPOSALS.

high, of steel construction, and will cost approxi-  
mately \$100,000. W. A. PATTERSON, county audi-  
tor. 1285

#### SCHOOL-HOUSE.

[At Seattle, Wash.]  
The Board of Directors of District No. 1 will  
receive sealed proposals until September 7 for the  
construction of a senior grammar school. LYMAN  
BANKS, secretary. 1286

#### ADMINISTRATION BUILDING.

[At Fort Washington, Md.]  
Sealed proposals, in triplicate, will be received  
until August 21st for erection and completion of  
an administration building and guard-house at Fort  
Washington, Md., at the office of Constructing Quar-  
termaster, 419 N. Washington St., Alexandria, Va.  
ABE S. BICKHAM, major and quartermaster, U. S.  
Vols. 1286

#### ASYLUM.

[At Decatur, Ill.]  
Sealed bids are wanted until August 9th for the  
erection of an asylum building for Adams County  
CUNO KIBELE. 1284

#### SCHOOL-HOUSE.

[At Athens, Wis.]  
Sealed proposals will be received until August  
10th, for the erection of a school-house. JOHN H.  
CHESAK, clerk. 1284

Treasury Department, Office Supervising Architect,  
Washington, D. C., July 23, 1900. Sealed proposals  
will be received at this office until 2 o'clock P. M. on  
the 13th day of August, 1900, and then opened, for

### PROPOSALS.

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the Supervising Architect, by applying to this office.  
JAMES KNOX TAYLOR, Supervising Architect. 1284

Treasury Department, Office Supervising Architect,  
Washington, D. C., July 19, 1900. Sealed proposals  
will be received at this office until 2 o'clock P. M. on  
the 21st day of August, 1900, and then opened, for the  
construction (except heating apparatus and electric  
conduits and wiring) of the U. S. Post-office at St.  
Cloud, Minn., in accordance with drawings and speci-  
fication, copies of which may be had at the discre-  
tion of the Supervising Architect by applying to this  
office or to the Postmaster at St. Cloud, Minn.  
JAMES KNOX TAYLOR, Supervising Architect. 1284

Treasury Department, Office Supervising Architect,  
Washington, D. C., July 17th, 1900. Sealed proposals  
will be received at this office until 2 o'clock P. M. on  
the 20th day of August, 1900, and then opened, for the  
construction (except heating, electric wiring and  
conduits) of the U. S. Post-office building at Elgin,  
Illinois, in accordance with the drawings and speci-  
fication, copies of which may be had at this office or  
at the office of the Postmaster at Elgin, Ills., at the  
discretion of the Supervising Architect. JAMES  
KNOX TAYLOR, Supervising Architect. 1284

#### COURT-HOUSE.

[At Blue Ridge, Ga.]  
Sealed bids will be received until August 21st,  
for the erection of a court-house for Fannin County.  
THOS. J. WILSON, ordinary. 1284

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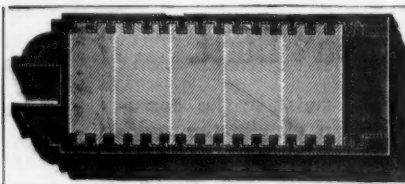
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SECTION 1. No Member should enter into partnership, in any form or degree, with any builder, contractor, or manufacturer.

SECTION 2. A Member having any ownership in any building material, device or invention, proposed to be used on work for which he is architect, should inform his employer of the fact of such ownership.

SECTION 3. No Member should be a party to a building contract except as "owner."

SECTION 4. No Member should guarantee an estimate or contract by personal bond.

SECTION 5. It is unprofessional to offer drawings or other services "on approval" and without adequate pecuniary compensation.

SECTION 6. It is unprofessional to advertise in any other way than by a notice giving name, address, profession, and office hours, and special branch (if such) of practice.

SECTION 7. It is unprofessional to make alterations of a building designed by another architect, within ten years of its completion, without ascertaining that the owner refuses to employ the original designer, or, in event of the property having changed hands, without due notice to the said designer.

SECTION 8. It is unprofessional to attempt to supplant an architect after definite steps have been taken toward his employment.

SECTION 9. It is unprofessional for a Member to criticize in the public prints the professional conduct or work of another architect except over his own name or under the authority of a professional journal.

SECTION 10. It is unprofessional to furnish designs in competition for private work or for public work, unless for proper compensation, and unless a competent professional adviser is employed to draw up the "conditions" and assist in the award.

SECTION 11. No Member should submit drawings except as an original contributor in any duly instituted competition, or attempt to secure any work for which such a competition remains undecided.

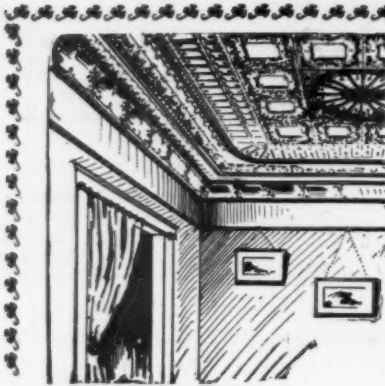
SECTION 12. The American Institute of Architects' "schedule of charges" represents minimum rates for full, faithful and competent service. It is the duty of every architect to charge higher rates whenever the demand for his services will justify the increase, rather than to accept work to which he cannot give proper personal attention.

SECTION 13. No Member shall compete in amount of commission, or offer to work for less than another, in order to secure the work.

SECTION 14. It is unprofessional to enter into competition with or to consult with an architect who has been dishonorably expelled from the "Institute" or "Society."

SECTION 15. The assumption of the title of "Architect" should be held to mean that the bearer has the professional knowledge and natural ability needed for the proper invention, illustration and supervision of all building operations which he may undertake.

SECTION 16. A Member should so conduct his practice as to forward the cause of professional education and render all possible help to juniors, draughtsmen and students.



## Steel Ceilings

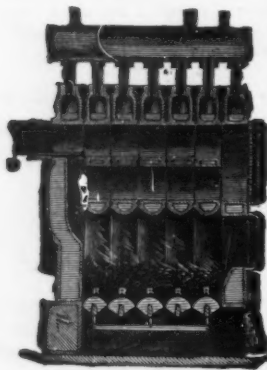
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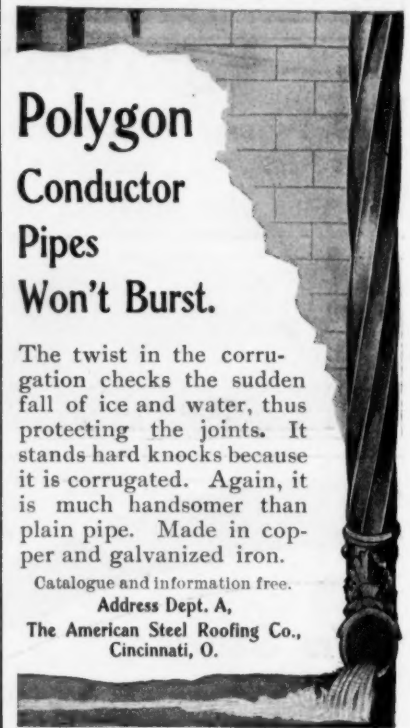
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