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ARCHITECTURE

ENGINEERING

DECORATION

211 TREMONT ST.

CONSTRUCTION

BOSTON MASS.

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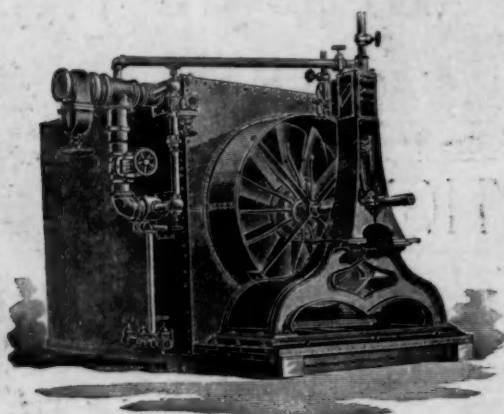
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APRIL 14, 1894.



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IT would seem as if the comparative statement as to Governmental and private building work made in our last issue must have an awakening effect on the authorities at Washington, to whose attention it was, of course, brought, and it would further seem that the statistical statements and tabulations of Mr. Brown's paper were hardly called for in the face of the impressive object-lesson afforded by the illustrations which accompanied it; but we fear greatly that neither the one nor the other will have the desired effect without a great deal of insistent effort on the part of the individual members of the profession and those of its lay friends who feel with them the great and real importance of the agitation which must now be begun anew and carried on aggressively. It should be the duty of every architect who has a friend connected with the daily press in any town — and who has not such desirable acquaintance? — to bring our last issue to his attention and urge him to aid in stimulating the aroused public opinion and in applying the lash to those at Washington who are wilfully blind. If this is done, something may be accomplished speedily; if it is not done, the political wire-pullers will find it the easiest of tasks to outflank the architects. To architects, or to most of them — for we must admit that there are architects who are not able to see wherein our Government buildings are not worthy specimens of architecture — it seems incredible that there can be two opinions on the matter of the architectural character of our Government buildings, but we must remember that there is nothing that the half-educated American resents so strongly as that any one should presume to give him instruction in matters of taste. As this is a common failing, it is certain that our legislators at Washington have their share of it, and we believe it hardly possible to make much impression by holding up before them one design which we tell them is good, and another which we assure them is bad. They will use their own taste in the matter, in spite of any argument we can use, and they will approve oftenest the one which seems to their taste the most showy. But if we cannot work upon them through their eyes, we may through their commercial perceptions, and, if it were not for politics as now practised, we might hope that they might be influenced by the proof presented in our last issue that present methods are unbusinesslike and extravagant. Politics, however, play so large a part in the matter, it can be so easily shown that the party in power must have jobs and offices at command in order to reward party service, that there is not too much reason to hope that much can be accomplished in the face of official opposition, unless it can be shown that a

strong public opinion exists which positively demands the reform that architects seek to bring about.

UNTIL we had before us the full text of the correspondence that had passed between the Secretary of the Treasury and the President of the American Institute of Architects, we were disposed to think that the latter had shown want of tact and self-control, where the presence of these two qualities might easily have brought the negotiations to a more desirable issue. But the correspondence on the Treasury side appears to show, from first to last, a fixed determination not to allow the Secretary of the Treasury to be shorn of the smallest item of patronage, and to have sought every pretext for quibbling — from the manner of folding a letter to the absolute denying the existence of facts plainly stated. We now feel that there was a sort of rough-and-ready propriety in using the unusually plain language employed by Mr. Burnham in his last letter, as it was the means of bringing to the view of all a matter which has been too long conducted in the depths and labyrinths of officialdom. As we may be held to be prejudiced against the Government methods, and so our opinion on a matter of ethics may be considered unduly colored, it may be interesting to know how a layman regards this unfortunate correspondence, and so we quote the remarks of the Boston *Herald*, which says: "It is difficult to see how the latter [Mr. Burnham], when he found that the matter under discussion had been deliberately misrepresented in the last letter from Mr. Carlisle, was not bound, out of respect to his position as the official head of his profession, to reply as he did. . . . But when the Secretary, by his abrupt termination of the correspondence, tacitly assumes responsibility for the clear misstatements of fact that appeared over his signature, it is evident that if either party to this controversy merits the epithet of 'offensive and ungentlemanly,' applied by Mr. Carlisle in his last letter, it is not Mr. Burnham." It has its significance, too, that these words are not quoted from a Republican paper, hostile to the present administration, but from one that is distinctly friendly to it and its best intentions. We must, too, call attention to the cartoon, bearing on this subject, in the current issue of *Life*. Speaking plainly, this reform — one which is demanded by motives of economy, by the reasons there are for expediting the work, and by the true requirements of art, is now delayed solely by the action of two men, one of them a busy politician, overburdened at the moment by cares of the gravest moment, a man whom education and training do not fit to judge the matter at all from an aesthetic standpoint, the other his natural and responsible adviser upon such matters, who, after a brief experience of a little more than a year in office, has seen fit to give advice in absolute contradiction to the advice of his predecessors in the same office which had been reached by them during a much longer term of office, as the result of a far greater experience. It is impossible to escape the deduction that the responsibility for the delay rests less with the Secretary of the Treasury than with his Supervising Architect, whose advice is possibly instigated by his desire to defend his own design for the Buffalo building, the ultimate cause of the present dead-lock.

PROPOS of this building, we did not notice, until too late to correct the oversight, that in the hurry of gathering the material for the illustrations of our last issue, we had neglected to provide any illustration of the proposed Government building at Buffalo. The design, however, finds a place in another column this week. It also escaped our notice that we had included amongst the group of private buildings the design for the proposed City-hall at Boston, which was the work of the "city architect," and so afforded an excellent example of what official architects are capable of producing when the right kind of a man can be persuaded to take the place.

THE whole world of art will mourn the death of Sir Philip Cunliffe-Owen, the creator, one might almost say, of the modern artistic movement in England, through his unwearied zeal in collecting, and putting to practical use, the splendid treasures of the South Kensington Museum. At the time of the foundation of this great national museum, hardly

anything remained of English art but a few mangled remains, over which the critics and sentimentalists were still growling and screeching. It occurred to Sir Philip Cunliffe-Owen, to Prince Albert, and a few others, that it might be advantageous for the English people to see for themselves what art was like, instead of depending on the critics' description of it; and modest collections of pictures and other works began to be brought together, under the auspices of the Government, in different parts of the kingdom, for the public benefit. The advantage of affiliating these scattered museums to a central administration, under whose direction exchanges and loans could be made from one to the other, was soon evident, and the plan of the National Museum of Science and Art was formed. Land was secured at South Kensington, then a rural suburb of London, and buildings erected, at first on a rather unpretending scale. The British public is, however, rich, and generous when it can see that it is doing good with its money, and the buildings were rapidly extended to contain the avalanche of scientific and artistic treasures which poured in, by private gift or by purchase with the money which Parliament, on the public demand, liberally appropriated.

PERHAPS only those who were in England twenty-five or thirty years ago can fully appreciate the fever of enthusiasm of which the new museum was the centre. The beautiful building in which the collections first found a worthy resting-place, itself a masterpiece of scientific experiment, as well as a monument to the artistic talent of its designer, Lieutenant-General Scott, must have done much to encourage rational freedom in artistic methods, and Sir Philip Cunliffe-Owen, who was placed, as Director, at the head of the administration of the Museum, was untiring in his devices for disseminating the advantages to be derived from it. Regular courses of instruction in the arts and sciences were organized; teachers were trained at South Kensington, and, when qualified, were sent out, under what had now become the Department of Science and Art, to teach in the principal provincial towns what they had learned. A system of loaning the Museum property to the provincial towns was organized, and annual exhibitions were held in London of the best work from the subsidiary schools, and valuable prizes awarded. Besides this, hand-books to the different departments of the Museum were prepared, so as to give as much information as possible on the general subject to which they related, using the Museum collections as illustrations; and text-books, for use in the lecture-courses, some of which are, even now, among the best works of the kind that we possess. In perfecting this vast system, Sir Philip Cunliffe-Owen was the principal agent. Undoubtedly, he was at first assisted by the advice of Prince Albert, one of the truest and most enlightened advisers who ever lived, and, after the death of that great man, the Queen and her children continued the friendly and affectionate interest which had done so much to encourage the Director in his work. Notwithstanding the gibes with which those who liked talking about art better than practising it pursued Sir Philip, his plan proved extremely successful. It did not produce a copious crop of geniuses, for men of genius are rare in any generation; but it taught many thousands of the English people how to draw and paint and design more than tolerably well, and, what is even better, it taught them to judge of works of art intelligently, instead of being blinded by the critics. The result is to be seen in the immense advance in English taste during the last quarter-century. The æsthetic craze of fifteen or twenty years ago was perhaps a rather ludicrous manifestation of the delight with which the more sensitive part of the community found their souls awakened to the charms of form and color, but it was a symptom of a very salutary development, and it may be truly said that, during the twenty-five years of Sir Philip's administration of the South Kensington Museum, English taste and artistic capacity, from the laughing-stock of all the Continental nations, became a subject which even the French, who, although they are conscious of leading the world in art, are quick to recognize merit in others, treated habitually with respect, if not with admiration. It may be imagined that so remarkable an achievement did not pass unnoticed among civilized nations, and Sir Philip was honored with the highest distinctions from the Governments of France, Germany, Italy, Austria, Spain, Portugal, Belgium, Sweden, Russia and Turkey, as well as from our own, which bestowed on him one of the three medals struck for presentation to the persons who

had been of the greatest service in organizing the Philadelphia Exhibition of 1876.

THOSE of our readers who do not find the American climate cool enough in winter, may like to combine physical gratification with intellectual improvement by taking part in the Congress of Architects which is to be held in Moscow in December next. We do not learn the exact character of the subjects which will come before the Congress for discussion, but, for the entertainment of visitors, two exhibitions have been arranged, one of architectural drawings, models and other illustrations of professional work, and the other of materials of construction. These two exhibitions will remain open for a month, but the sessions of the Congress will occupy only seven days, beginning December 9. The affair is undertaken entirely by the Architectural Society of Moscow, which deserves the applause of the whole profession for its enterprise.

LA CONSTRUCTION MODERNE answers a question in regard to the responsibility of architects, which many of our readers will find interesting. A correspondent says that in a building erected under his direction last year, the mortar is found not to have become as hard as it should be. The rubble-stones of which the walls are built are not properly cemented together, and, if some of them are removed, the mortar between them falls into dust. He accounts for this state of things by saying that last summer was a very dry one, so that not a drop of rain fell during the construction of the walls, and he thinks that the mason, either through negligence, or for the sake of economy, neglected to wet the stones and bricks, so that they absorbed the water from the mortar. He says that the contract required that the work should be executed with materials of the first quality, and according to all the rules of the art, and wishes to know if the architect can be held responsible for the bad work, and if so, to what extent.

M. RAVON, for *La Construction Moderne*, replies that for the results of furnishing bad materials and workmanship, after he had agreed to furnish them of good quality, the contractor is alone responsible. The architect's responsibility can, under French law, be engaged only when he has himself been in fault, either by negligence or want of skill in carrying out the work entrusted to him. According to the French decisions, the limit of the architect's responsibility for his own faults is the amount of his commission, and nothing further can be recovered from him, but there is an article in the Code Civil which provides for the joint responsibility of the builder and the architect in certain cases, and this is interpreted by the French courts to mean that where the defects have been due partly to the fault of the builder, and partly to that of the architect, the latter may be obliged to pay the builder's share of the damages, as well as his own, in case the builder should be insolvent and unable to pay them himself. In the present instance, M. Ravon says that the contract and specifications having provided for suitable workmanship, the architect could only be held responsible, either on his own account or *solidairement* with the builder, if he had given bad directions, or had been negligent or unskilful in supervision; and, if it were possible to commit the faults in question, notwithstanding such supervision as skilful and intelligent architects are accustomed to give, and it could be shown that the architect gave such supervision, but that the contractor profited by his absence to do bad work, which ordinary supervision would not afterwards detect, the architect's responsibility would not be in any degree engaged. Most practitioners would say at once that with lime-mortar, which is almost always used in France, the wetting of the bricks and stones would so rarely be necessary that the architect could not reasonably be expected to have it on his mind, and, in fact, we should say that the circumstances pointed much more directly to the contractor having made his mortar with bad or air-slaked lime than to any such extraordinary dryness of the other materials as would prevent the proper hardening of the mortar. Even in this case, however, it would be impossible for the architect to see the quality of more than a small part of the lime used for making the mortar, if the contractor tried to conceal it from him, and it would be difficult to detect air-slaked lime in masses of rubble masonry laid with lime mortar, until several weeks, or months, had passed by, and the work had begun to dry.

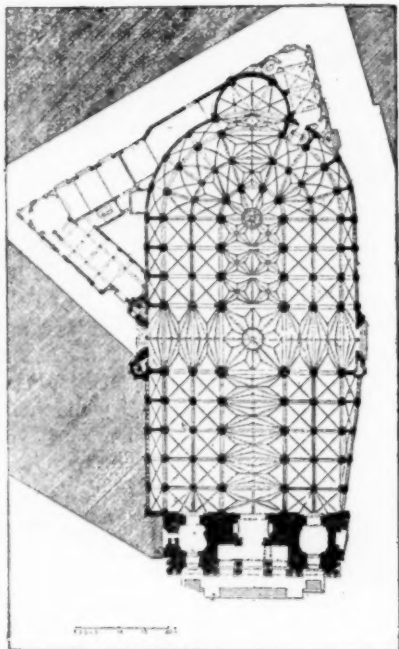
THE FRENCH RENAISSANCE.¹—VI.

Fig. 22. Saint-Eustache, Paris.

We will close this study with a brief notice of each of the categories mentioned above.

The churches were the monuments that had least to gain with the Renaissance and those with which the Renaissance made the least progress. Notwithstanding the looseness of ecclesiastical customs, stubborn opposition was made to any concessions by the French liturgy, and possibly the architect of Saint-Eustache, at Paris, deliberately set out to prove to his contemporaries that such concessions were not absolutely indispensable. With clustered columns and pilasters, with Ionic and Corinthian orders reduced to the most charming proportions and modules and invested with the most unwonted functions, and with arches depressed in height or breadth, he realized, without any sacrifices, the sections and elevations of Notre-Dame of Amiens and of the basilica of Saint-Denis on the ground-plan of Notre-Dame of Paris (Figs. 22 and 23). Such daring conceptions, though variously estimated by good judges, cannot fail to attract one both to the edifice and to its creator. This is the only large French church in the Renaissance style that was built at a single effort; but the façade and towers are still lacking; the designs, however, are in existence. We encounter also similar tendencies, though less marked and less logical, in the more or less important fragments of religious structures erected at the same period. The façade of Saint-Michael at Dijon, the only one completed, might in this respect be compared to Saint-Eustache. The choir with a deambulatory and radiating chapels and the windows pierced beneath lofty vaults, elements that had contributed powerfully to the creation of Gothic architecture and that still gave it great authority, have never been abandoned in Paris, as Saint-Sulpice shows; these elements retained down to the close of the sixteenth century, and in some cases even later, the ribbed system, and, ribbing set aside, the more or less ill-shaped flying buttress. Notwithstanding the concessions granted the Renaissance in the distribution of exterior decorations, everything was not turned over to it unreservedly. The Greco-Roman door, poor in composition, could not prevail at the very first over the rich Gothic portal; the characteristic dispositions of the latter—jambs with colonnettes or statues, archivolts with manifold covings adorned with statuettes—were long maintained. Brittany engrafted on mediæval traditions a type of porches with huge statues of the apostles. The spandrels of the windows followed either Flamboyant contours, somewhat less complicated than in the past, or angular outlines inspired more or less distinctly by ancient types. The rose-window, with more or less cleverly designed

tracery, still occupied the centre of the façade. The towers were erected at the same points, with the same distribution of stories and bays, and often, particularly in Brittany and Normandy, with the same spires as in the past; the lantern-tower of St. Pierre at Coutances, in Normandy, evidently emanated from the celebrated central tower of the neighboring cathedral. In the balustrades, Gothic designs were abandoned, but the most varied patterns of open-work were admitted, among which should be noted the colossal letters forming pious invocations, as at Caudebec and La Ferté-Bernard, which belong to the Norman School, and in Notre-Dame at Havre. This disposition seems to have been a triumph of the Norman genius, as well as the vaulting with flat soffits on ribbing, the most striking application of which, if not the most suitable for a church, is found at Tillières; the sculptures with which the panels are lavishly adorned are very far from being conducive to devotion.

At the top of the bell-towers cupolas were very successfully used, accompanied by decorative flying-buttresses and turrets, and varied by mouldings, carved in crockets or festoons along the arrises; a few judicious applications of the Doric frieze were also made in the time of Henri II.

The sepulchral chapels are likewise worthy of attention; they are generally circular in form and are always successfully decorated.

Among civil monuments we include palaces and castles, public buildings, such as court-houses and town-halls, and private mansions and dwellings. The castle had ceased to belong to military architecture, of which it maintained only certain chosen features; it went over wholly to civil architecture, or rather seized possession of it and directed its developments.

The lords, who were eager to maintain the prestige of by-gone military power—and who were soon to have an opportunity in the religious wars to prove that this power was not wholly Platonic—were very careful at first not to alter the external appearance of their dwellings; occasionally, moreover, the fortification wall was constructed from foundation-stone to crowning, and sometimes the huge round towers, with their battlements and machicolations, were faithfully reproduced. Usually, the outline, if not the wall, was respected, which accounts for the incoherency and lack of symmetry in the courts and buildings. The king was not obliged to trouble himself about survivals, and, therefore, did not hesitate to replace the towers with square pavilions, or to endeavor, so

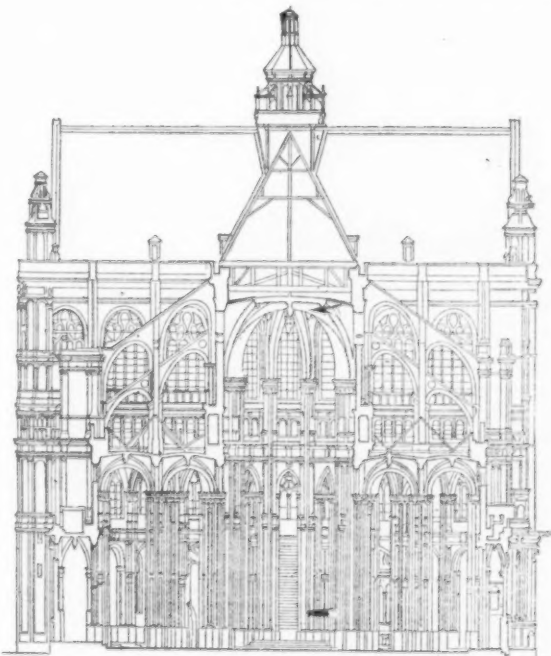


Fig. 23. Saint-Eustache, Paris.

far as the tastes of the time would permit, to secure the charms of symmetry and the appliances of comfort for his residence. This was a step toward the modern palace.

A few barons, in the latter part of the reign of François I,

¹From the French of Anthyme Saint-Paul, in Planat's *Encyclopédie de l'Architecture et de la Construction*. Continued from No. 952, page 137.

ventured to follow the example of the king in the castles to which their chief nobiliary title was attached: for example, the Constable of Montmorency at Écouen. Chambord, which seems to have been designed to combine all the eccentricities of the Renaissance rather than to form a pleasant dwelling, possesses enormous round towers that are without utility and without significance; François I suppressed them everywhere else, as, for better reasons still, did Henri II at Anet, Charles IX at Chambord and Catherine at Monceaux and the Tuileries. Where towers exist, that is to say in the majority of cases, each encloses, as in the past, a spiral staircase; the main staircase is often simply a spiral staircase of larger dimensions in a turret-shaped, circular or polygonal cage. Some of these constructions are marvellous works: famous examples are to be seen at Blois, La Rochefoucauld and above all at Chambord. The chapel of a château, in accordance with a custom two centuries old, was usually so situated that the semi-circumference of one of the towers served as an apse; it was, therefore, indicated on the outside and was recognizable by the windows which were similar to those of a church. The

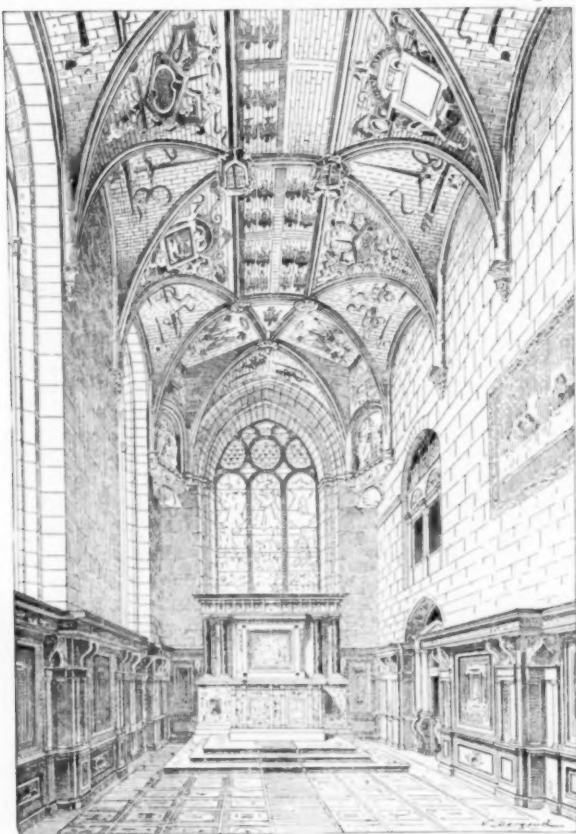


Fig. 24. Chapel of the Château d'Écouen.

vaults of these chapels were either Pointed, as was still the case in churches, or they resembled those covering large halls; at Écouen, we have a sort of transition between ribbed-vaulting and barrel-vaulting with covings and penetrations (Figs. 24, 25).

A rectangular fore-part or a square tower enclosed the main entrance, which for a long time yet retained its double draw-bridge. Under François I, the small entrance reserved for pedestrians had its counterpart on the opposite side of the great *porte cochère*, so that, as a whole, the entrance sometimes recalled the ancient triumphal arches with three openings. This front of the castle was often without any habitable structure; the latter was simply replaced by a wall, or by an open-work gallery, as at Sarcus, Verneuil, near Creil, and at the Tuileries as conceived by Philibert Delorme.

The vaulting of civil monuments rapidly fell away from Gothic methods, approaching more and more nearly the Italian, as at Fontainebleau, or the ancient methods. The semicircular or *anse de panier* barrel-vault, adorned with panels and caissons, acquired the predominance. At Saint-Germain, as an exception, we find vaults with ogival intersec-

tions; they were doubtless designed to support terraces and they are themselves, owing to a flagrant defect in the buttresses, supported in the Italian fashion by iron tie-beams.



Fig. 25. Vaulting and Gallery of the Chapel of the Château d'Écouen.

Town-halls and private mansions are, aside from the towers, diminutives of castles; symmetry is generally wanting in them, though this was not true of the Paris Hôtel de Ville — reproduced in the central portion of the present structure — which was perfect in this respect.

The *bourgeois* houses, with their narrow façades, are little else than a more or less happy combination of details. These may be studied especially at Orléans, Blois, Troyes, Dijon, Bourges, Rouen, Caen, Saint-Malo, Morlaix, Fontenay-le-Comte and in a few other cities. At Blois, Orléans, Dijon

and Fontenay, they are largely of stone; elsewhere wood predominates.

The third class of French Renaissance monuments includes productions of wonderful variety: altars, tabernacles, altar-screens, stalls, rood-lofts, enclosures, baptismal fonts, pulpits,



Fig. 26. Tomb of François I, Saint-Denis.

holy sepulchres, reliquaries, tombs, Breton calvaries and ossuaries, stone crosses, fireplaces, wells, fountains, etc.; the manner of treating them is equally varied. Were we to

attempt to describe them here, we should be compelled to reproduce the articles devoted to each separate subject throughout the encyclopædia. We cannot, however, refrain from asking the student to note especially the tombs of Louis XII, François I (Fig. 26) and Henri II at Saint-Denis, of the cardinals of Amboise, at Rouen, and of François II of Brittany, at Nantes; they belong to a type in which the French Renaissance has at no time found a rival.

ANTHIME SAINT-PAUL.

ELECTRICAL SCIENCE FOR ARCHITECTS.¹—IV.

OHM'S LAW.—THE BASIS OF WIRE CALCULATION.

THE prediction of results in electric circuits and the laying-out of systems of distribution are greatly facilitated by the simplicity of the law controlling the relation of the different quantities. To quote an expression of this law: it "is a special statement of the results of ordinary observation and it may be generalized thus: a result is equal to the effort put forth, divided by the opposing resistance or opposition." This general law is easily applied to electric circuits because of the independence of the factors. The law applies to water flowing in pipes, but upon attempting calculations, one at once sees the complicated nature of the resistance. It depends not only upon the size of pipe, but upon the number and sharpness of the bends, and even upon the velocity of the water itself, so that what promised to be a simple determination, becomes an involved mess of dependent factors. With electricity, however, except under special conditions, the velocity may be considered as always the same and does not affect the resistance, (the bends in the circuit make no difference), and we have to deal with only the three factors, effort, resistance and result, in their simplest form.

This one law, called "Ohm's law," is so widely applicable in engineering work, and is the basis of so much of the calculation, that its expression in the form of an equation is the symbol chosen as most appropriate for the membership badge of the American Institute of Electrical Engineers. The electro-motive force is the effort and is usually represented by E . The resistance is the opposition to this effort and is represented by R . The current is the result and is represented by C . Thus the general law, "a result is equal to the effort put forth, divided by the opposing resistance or opposition,"

when applied to electric circuits takes the simple form ($C = \frac{E}{R}$).

It is of course necessary to know only two of these qualities to determine the third.

Supposing there is to be a current of ten amperes in a circuit that is known to have a resistance of two ohms. The substitution in the formula shows at once that the electro-motive force or pressure

necessary to give this result is twenty volts ($10 = \frac{E}{2}$). Or, there

may be an electro-motive force of ten volts, and the circuit may be composed of a coil of copper wire .135 inch in diameter and 2,000 feet long. Copper wire of this size and length is known to have a resistance of 2.03 ohms, so that with ten volts' pressure and with the

In the illustrations given, the complete circuits were taken, but it is applicable also to any part, if the resistance of this part and the portion of the electro-motive force used in overcoming this resistance be taken alone in the formula.

The "drop" in pressure may be shown graphically, as in the diagram which illustrates the loss of pressure between wires leading to incandescent lamps.

Suppose the dynamo or other source of electricity is at A , and that the pressure at that point is 110 volts. Suppose that at C , 500 feet away, there is a cluster of 20 lamps, each requiring one-half ampère to make it burn at the proper candle-power. Then there should be a total of 10 amperes flowing in the circuit. If the lamps were at A , attached directly to the dynamo, they would of course have the benefit of the full pressure, and the whole resistance of the outside circuit would be only the resistance of the lamps. But if they are 500 feet away from the dynamo, leading-wires will have to be used; these will have a certain amount of resistance, and a certain amount of electro-motive force will have to be used up in overcoming this. Let it be assumed that No. 10 copper wire is used to connect the lamps to the dynamos. 500 feet of this wire will have a resistance of almost exactly one-half ohm. The wire runs to the lamps and back again, however, so the resistance of the wire part of the circuit will be one ohm. It will be necessary then, to force 10 amperes through this one ohm resistance as well as through the lamps. The amount of electro-motive force that it will take to force 10 amperes through one ohm resistance can be seen at once by substituting in the formula,

$$C = \frac{E}{R}, \quad 10 = \frac{E}{1}, \quad E = 10 \text{ volts.}$$

Ten volts then will be used up in the wires, and since there is but 110 volts' pressure at the dynamo, there will be left only 100 volts for forcing the current through the lamps to produce light.

By letting $A-C$ in the figure represent the distance between the lamps and dynamo, and the perpendicular lines the amount of pressure at different points, it can be seen how the pressure falls along the line. If the lamps are made to burn properly at 110 volts' pressure only, the wire must be 10 times as large in sectional area or else the dynamo must be made to give 120 volts, so that there will still be 110 volts left at the lamps after the resistance of the line has caused a loss of 10. But the effect of raising the pressure at the dynamo can be seen by imagining all but one of the lamps turned off. There will now only be one-half ampère flowing and only one-half volt will be used up in forcing this against the resistance of the wire ($\frac{1}{2} = \frac{E}{1}$). This will leave 119.5 volts at the lamp, which is

such an excess over the voltage for which it was made, that it would soon be destroyed. If, on the other hand, the wire is made ten times the sectional area, it will have only one-tenth the resistance or .1 ohm. When all the lamps are on, the pressure lost in the wire will be one volt ($10 = \frac{E}{.1}$), and if the pressure at the dynamo is 110

volts, there will still be 109 volts left for useful effect at the lamps. When one lamp is on, the pressure lost in the wire will be .05 volt

($\frac{1}{2} = \frac{E}{.1}$), and there will be 109.95 volts at the lamp. Thus, if the

resistance of the wires leading to the lamps is kept as low as .1 ohm, either one lamp or twenty may be turned on and there will not be a difference in the pressure of more than .9 volt, an amount so small that no change in the strength of the light could be detected by the eye. Even at the dynamo or at any intermediate point, a lamp would have practically the same pressure.

It can be seen from the examination of this case how necessary it is to satisfactory service, that there be equality of pressure at all lamps at all times. The calculations are often somewhat complicated by the number of branches and the positions of the lamps, and experience assists one to see quickly what will probably be the best arrangement, but the loss may always be found by an application of Ohm's law, and even with experience one must in the end rely upon this to ascertain the exact sizes of wire.

The first cost of a plant and the cost of maintenance may in several ways be affected by the method of proportioning the wires. The wires may be so small that a large part of the energy delivered by the dynamo is wasted in worse than useless heat, as has been shown. The conductors may, however, be of sufficient size to prevent excessive loss and to keep the pressure constant at the lamps, and yet be arranged so that a much larger amount of copper is used than is necessary. Since the length of the wire, as well as the sectional area, makes a difference in the resistance, there is need of judgment in placing the main wires, in choosing "centres of distribution," and in dividing the circuit into the different branches. There should always be equality of pressure at the lamps for another reason that is not commonly considered. All lamps are not made of the same "efficiency." That is, for a light of sixteen candle-power, some will require more energy than others—more coal will be burned under the boilers. The most efficient lamps require an almost constant pressure of the amount for which they are designed. If the pressure rises more than a small amount above this, the lamps have a "short life," and it is only in plants where the regulation at the dynamo is of the best, and where the wiring is

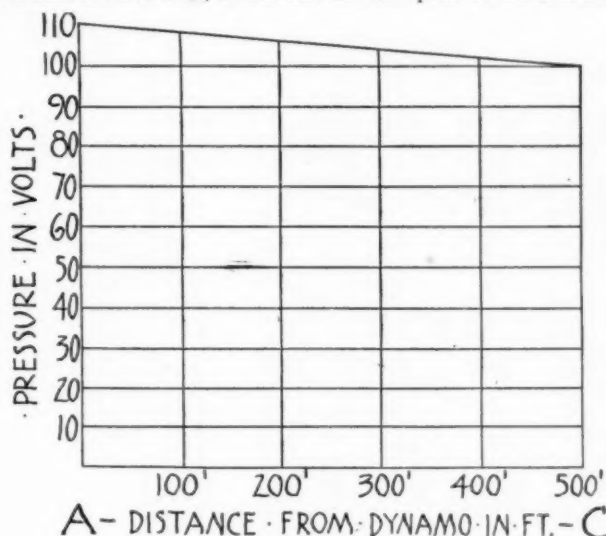


Illustration of the Loss of Pressure in Electric Circuits.

2.03 ohms' resistance there will be a current of about five amperes ($C = \frac{10}{2.03}$). With the aid of this law, circuits and parts of circuits may be examined, and losses or results determined with exactness.

¹ Continued from No. 951, page 127.

calculated for a very small loss, that they can be used. If the wires are so small that turning off a number of the lamps causes the pressure at those remaining to increase several volts, the more efficient lamps cannot be used on account of the expense of renewals, and it is necessary to use those that will not be too much affected by the variation. Such lamps can be had and are widely used, because there has been much poor engineering and the breakage must be kept small. Their use is, however, made necessary only by the variation of the pressure, and they are a constant expense because of the greater cost of operating them. RUSSELL ROBB.

[To be continued.]

THEATRES. — I.



Daly's Theatre.

SHORTLY after the conclusion of my last series of articles upon "Theatre Regulations" in this journal, the editors asked me to prepare for them further papers upon the architecture and descriptive history of the various important theatres at home and abroad. I have been some time collecting the material, but am now ready to lay before the readers of the *American Architect* the result of my labors.

It is a matter to be regretted that it has not been found possible to recast in a common form and reduce to a uniform style of treatment and rendering all the illustrations that will be used with this series. But, in spite of this defect, it is hoped that these papers will go far toward supplying the demand so frequently expressed by architects, both American and English, for plans and data concerning really notable play-houses.

As the two series of papers on "Theatrical Architecture" and "Theatre Regulations" have been so recently published in this journal, it is supposed that readers of the present series can easily bear in mind the explanations and recommendations therein made and, hence, that it will not be necessary here to waste time and space in retracing the steps so lately taken.

Before beginning so important a task, it would be well, perhaps, to plan out some definite lines upon which to work, and to confide in my readers as to this, so that we may start with mutual understanding.

The object of these papers is this—to make a collection of theatre plans of all countries, to obtain elevations, sketches and constructional details, to illustrate any particular or peculiar feature in the design, construction, or planning, and at the same time to compare, as far as possible, the sizes of the various theatres illustrated. In this comparison of sizes my greatest difficulty has arisen. The architects who have placed their drawings at my disposal have not, of course, all made their drawings to one scale: English plans are drawn to different proportions of a foot; Continental plans to the metre. In order, however, not to lose all idea of proportionate sizes, I propose to give a block plan in most of the cases, which block plan shall always be to the same scale, and, where possible, I shall also produce the general plans and drawings with a scale upon them.

It is usual when concluding a lecture or paper to acknowledge any help the author has obtained, and I wish to reverse the order of things, and at the outset thank all those architects who have so kindly laid their drawings at my disposal, for the benefit of the readers of the *American Architect*. The gentlemen to whom I have appealed have one and all granted me permission to make selections from their drawings for reproduction in this journal. Without their aid these papers could not have been written; their

names will be given with their work as it is illustrated. I have also to acknowledge and to sincerely thank Mr. Edwin O. Sachs for the valuable assistance he has afforded me in procuring plans of Continental theatres.

I have not chosen for my first chapter a theatre of great magnitude or one with any extraordinary feature, but I have selected a very good type of a moderate-sized London playhouse, the proprietor of which is the noted American manager, Mr. Augustine Daly. In selecting "Daly's Theatre" I acknowledge that I have been mindful that I am an Englishman and am writing for my American professional brethren, and I am, therefore, more than pleased that we are able to start together upon common ground, in considering the plans of a London theatre run by an American of such note as Mr. Daly.

The origin of the playhouse in Cranbourne Street was undoubtedly the great success that Mr. Daly's Company had scored during their various visits to the Gaiety Theatre, London. The idea of an American theatre in London was thereby created in Mr. Daly's mind, and at the conclusion of one of their visits, Miss Ada Rehan laid the foundation stone of this house, which was christened by our famous comedienne, Mrs. Bancroft.

I am indebted for the complete set of plans, sections and elevation which are here produced, to the kindness and courtesy of the architect, the late Mr. Spencer Chadwick, whose recent death has been deeply lamented by his professional friends. To Mr. P. G. Pilditch, his partner and successor, I am also indebted for much information and help.

This theatre, as far as the planning goes, may be looked upon as a very fair example of the average London theatre, where comedy fills the bill. It was not built for opera, it was not built for spectacle, it was built for Mr. Daly's Comedy Company, and this my readers must remember when examining the plans. The success of the house as a convenient and comfortable theatre has been acknowledged on all hands; there are no complaints here of seats, from which the action of the play cannot be seen, and the audience is endowed with a sense of security and safety on account of the well arranged and numerous exits.

The section will show that part of this theatre is below the street level, and that the dress-circle is at that level, being entered from Cranbourne street through a vestibule and hall; the stalls are approached by staircases leading from either side of this hall. The pit is below the street level. This excavating for the theatre is done in order to equalize the distances to be travelled by the public from

their seats to the street, and sinking the pit allows the gallery to be so much nearer the pavement-level.

It will be noticed that the house consists of pit and stalls on the basement level, dress-circle and private-boxes on the ground-floor level, upper-circle and private-boxes on the first-floor level, and gallery on the top floor. Each of these divisions of the audience is provided with two separate exits, one of which is of course the entrance, and these are very clearly marked and numbered on the plans. The arrangement of the various divisions of the audience is one that is usually to be found in a London theatre of this character.

The width between the main walls is just sixty feet, and the distance from the front line of the dress-circle to the curtain line is 34' 6", upper-circle front to curtain 39' 0", gallery front to curtain 45' 6", the tiers receding back one from the other as shown on the section. The full depth of the house from curtain line to the back wall of the pit is 79' 0".

The construction of the auditorium is fire-

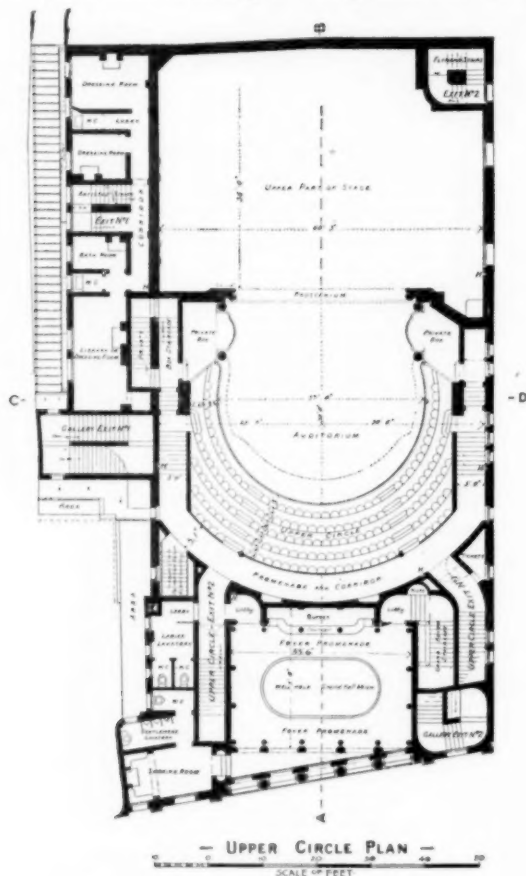
resisting throughout, all the staircases being of solid concrete steps and landings, the corridors of concrete and the tiers of concrete on steel cantilevers. There are no columns obstructing the view of the spectators. When describing another London theatre, I may have



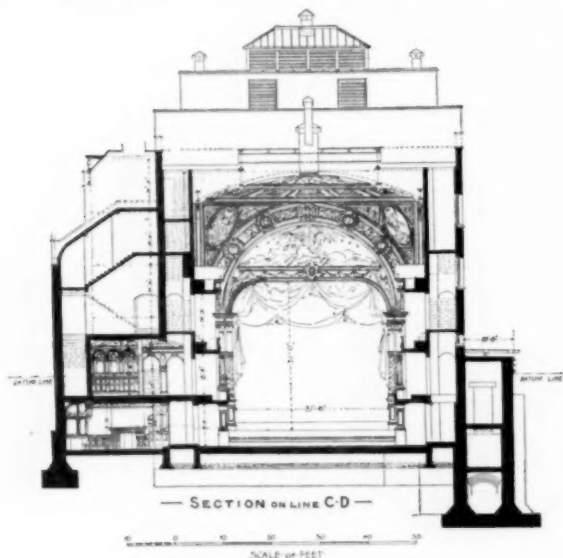
Daly's Theatre, London. Spencer Chadwick, Architect.

this. The decorative idea originally sketched out and approved by them was much lighter in treatment.

So much for the auditorium—now let us glance at the stage, the chief feature of which is its height. The gridiron over the stage

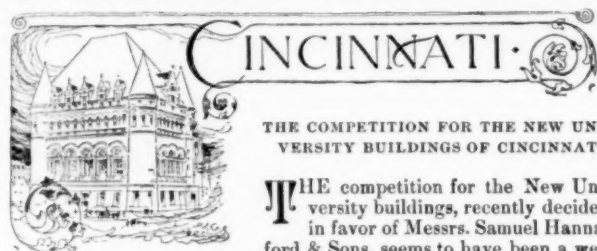


has been placed at a height equal to twice the height of the proscenium-opening, thus allowing the scenes to be taken up without folding, saving wear and tear of the scenes and risks from fire. The stage is 60' 0" wide by 42' 6" deep, with a proscenium-opening 31' 0" in width. The dressing-rooms are conveniently situated at the side of the stage with separate entrance and staircase, and entirely cut off from the stage as a distinct fire-risk. The lighting throughout the house is by electricity, with a subsidiary system of gas to be ready on emergency. There is a very ample supply of hydrants for fire protection, which can be traced on the plans at points marked H.



There is a fireproof curtain dividing the stage from the auditorium, and over the stage is a large ventilator or smoke extractor to draw the smoke away from the auditorium, should at any time a fire occur on the stage.

(To be continued.)



THE COMPETITION FOR THE NEW UNIVERSITY BUILDINGS OF CINCINNATI.

THE competition for the New University buildings, recently decided in favor of Messrs. Samuel Hannaford & Sons, seems to have been a well conducted affair as competitions go, and a short review may not be uninteresting.

The conditions were copied from the New York City-hall competition programme, but they were not quite so elaborate.

There were three prizes offered, \$500, \$300, and \$200 respectively, to the three designs judged most meritorious. The only difference from the usual method of making such awards being that the architect who got the \$500-prize also got the job at the usual rate of five per cent upon the cost, whereas all architects who go into these phantom-chasing expeditions well know that the \$500 should go to some competitor not fortunate enough to get the execution of the work at the usual rate; the committee, however (from lack of good architectural advice, no doubt), thought otherwise, and so heaped riches and honors upon the head of the successful aspirant.

The committee, who considered themselves competent to judge in matters architectural, were selected from among our best citizens, judges, doctors, merchants and professors, men above reproach, so that we can heartily say that the competition was conducted with perfect fairness, and if any errors were made they were of the head and not of the heart.

The profession must have felt that they were in good and safe hands, or else there would not have been so liberal a response to the



call. As it was, twenty-six architects responded, and each submitted about 200 square feet of paper, for the most part covered with results of labor and brain work, the latter not of the highest grade in all cases. The lack of brains, however, showed in only three or four designs, as, for the most part, the designs were very meritorious.

There can be no doubt but the committee arrived at a just conclusion in awarding the first place to Messrs. Hannaford & Sons, at least, so far as the plan is concerned, as it is simple, well studied, and as the different rooms, halls, stairs, etc., are all placed in their proper places; well disposed, well lighted, and well arranged, it is without question the best plan of the twenty-six. We wish as much could be said of the exterior; but architectural truth and justice will not permit such a statement, as there were, at least, half a dozen exteriors that an unprejudiced architect would place ahead of the one that the committee put the ribbon on. As a rule, committees look more to the plan than to the elevation, and in competitions of this kind if the competitor will lay himself out on his plans and feel sure that the subject has been exhausted, he need not be so particular about his elevations. After all, they are only to be judged by architects and as architects do not build houses (except for other people), why, what's the difference? So, hereafter, O, Ye Competitors, take care of the plan—the elevations will take care of themselves.

After the first place was awarded, the committee awarded the second place to J. W. McLaughlin and the third to Mr. S. S. Godley, so that Cincinnati carried off all the honors, and had there been a few more prizes, no doubt she would have secured them also, as there were several other Cincinnati architects in the list of competitors, and a man on the ground is worth two in New York or elsewhere, for the reason that he has a better chance of ascertaining the needs of such a building, and can interview the faculty; this fact accounts for the fact that outsiders, for the most part, put their main lecture-hall (about 50' x 70') on the second or even the third floor, which

while not exactly contrary to instructions, yet was not what the building needed, and it is strange that even several of the Cincinnati architects fell into this same error. The committee, no doubt, thought architects should know as much as they (the committee) about the building, or else the said instructions would have contained another line stating that the hall, containing 36,000 square feet or thereabouts, must be on the ground floor.

The instructions stated that the main building was to cost about \$100,000 and the wings about \$75,000; it may be that this sum will do the work, provided all decorative work, approaches, etc., are left to be considered as outside the pale of the building proper. Messrs. Hannaford's plans will come as near the mark in this regard as any of the designs submitted; however, several manifestly would go far beyond the limit of cost, and, therefore, no matter how meritorious they might otherwise be, this one thing would militate against them.

There were eight designs that were Gothic (some more so than others), four Romanesque, so-called, and eight Classic or bordering thereon, and the rest it would be hard to name, except one design, the authors of which were bold enough to strike out into the hitherto untrodden path of the Persians and made a blind stagger at some temple or another at Persepolis. This was, we are glad to say, the only real freak in the exhibition.

The following is the list of architects who were attracted by the light, in the hope of getting a rather good job at five per cent:

1. Samuel Hannaford & Sons, Cincinnati: placed first. Drawings well rendered. Elevations bordering on Classic.

2. James W. McLaughlin, Cincinnati: awarded second place. Plan entirely different from those placed first and third, and that is what strikes a critic as being strange. Did not follow instructions in several particulars; outside, Romanesque, after McLaughlin. Two exterior designs, and one wondered why, as they were so near alike.

3. S. S. Godley, Cincinnati: placed third by the committee, where in our judgment it rightfully belonged. Rendering, very good. Exterior, free Classic and good. Violated instructions, in that the approaches were shown. Wings on different level from main building. Front colonnade, useless and very expensive.

4. Des Jardins & Hayward, Cincinnati: should have been placed second. Rendering, good; elevations, good, plain, clear-cut Classic. Plan nearer to first prize than any one in the room, except the one that "got there."

5. A. O. Elzner, Cincinnati: Perhaps the best showing of any so far as the mechanical part is concerned. Exterior, Romanesque. Large dome, evidently the result of the World's Fair, very expensive. The whole design shows much study but too much effort after the unattainable.

6. H. E. Siter, Cincinnati: Well prepared set. Romanesque, perhaps, but with enough English Gothic here and there to make it difficult to say just what it was. Hall on third story; plan otherwise good.

7. Raymond & Rabenstein, Cincinnati: Persian; beyond analysis or criticism.

8. Sweeney & Robinson of Cincinnati.

9. Paul C. Pape, Cincinnati.

10. F. E. Townsend, Hamilton, O.: Gothic.

11. W. B. Bigelow, and H. D. Hooker, New York: Rendering, good. Gothic; whole thing good, but entirely too expensive. Plan well studied, but not on the right track.

12. John Lyman Faxon, Boston: Classic. Hall on third floor, expensive colonnade entire length of the main building, on the rear up to, but not connecting with, the wings. This was a stumper to the critical eye. Design and rendering not up to the average.

13. Glover & Carrel, Brooklyn, N. Y.: Hall on third floor, plan not suited to purpose, too much waste room at entrance. Exterior, Classic, the best of its class in the exhibit, and barring the theatre-like low dome, the exterior was pleasing in the extreme.

14. Vivian & Gibb, Ithaca, N. Y.: Gothic and very good, in fact the best Gothic design in the room; perhaps not just suited to the quiet dignity of a college building, but nevertheless good. Hall on the second floor; rendering, good.

15. Alfred H. Granger: Gothic, and would have been good except for having too much window. Gothic, like every other style, requires some wall-surface for dignity and repose; hall and library, top floor; rendering, good.

16. G. W. Bunting & Co., Indianapolis: Romanesque. Two immense vent-stacks on front, the most prominent feature of design, whereas such should have been very subdued.

17. W. S. Dutton, Cleveland, O.: Gothic. Design and rendering, good.

18. Chas. I. Williams, Dayton, O.: Classic. Design and rendering, fairly good. Plan not much studied, and rendering what the boys in the office would call "sloppy."

19. Wilson & Shuster, Pittsburgh, Pa.: Classic, with court-house dome. Plans, passable. Rendering, passable.

20. Samuel A. Ballard, Springfield, Ill.

21. Makepeace & Faber, Syracuse, N. Y.: Hall on second floor. Good Gothic exterior. Rendering, passable.

22. Wesley Arnold, M. A., Clinton, Iowa: Romanesque, so-called.

23. W. E. Farra, McConnellsville, O.: Did not follow instructions. Rendering, passable. Plan and elevation, bad.

24. Jas. B. Nettleton & W. B. Stratter, Detroit: Gothic. Rendering, poor.

This affair teaches one that it is no use to go into a competition, unless he lays himself out for all he is worth—either let the thing alone, or give it the study and work it demands, for some one or more competitors are sure to do this, and then the poorly gotten-up plans look forlorn alongside of their more serious neighbors. These competitions come high, but it seems that we must have them: one of the competing architects said that their set cost them \$150.00 good and lawful money of the United States. There were others that certainly cost more, and some that may have cost less, so that it would be within reason to say that \$4,000 were spent in this competition, besides wear and tear of brains, and at least twenty-two persons getting their feelings hurt.

THE ARCHITECT AS LANDSCAPE PAINTER.



Second Prize Design for Monument to Doudart de Lagree.

EVERY season of the year has its recurring subjects, just as it has its returning flowers. As we expect Christmas roses, and Lent lilies—"fair maids of February," and daffodils that "take the winds of March with beauty,"—so we look, a little later in the year, for the annual crop of reproaches addressed to architects who do not color or shade their own perspectives. "In the charming month of May, when the breezes fan the trees, full of blossoms rich and gay," comes the annual lecture to those exhibitors in our art, whose "trees" are not home-made. How improper of Mr. A to show in the Royal Academy a sketch of his last new house, with foliage and foreground

put in by somebody else! How shocking of Mr. B to call himself the designer of a church, when he did not and could not draw the sky behind that very church-tower! And how contrary to every principle of rectitude for Messrs. C and D, and E and F to exhibit views which they did not even outline themselves! Why does not the Academy rise and expel such impostors?

In this way, every spring, a quantity of good indignation is wasted. What calls it forth? Nothing but the popular delusion that picture-making alone is art. It has been dinning into the ears of this generation that the literal rendering of natural facts is all that makes the artist what he is. So far as he is an exact transcriber of them he gets universal homage. The critics praise the truthfulness of his forms and colors, and the populace with gaping mouths crowd round a view which they can hardly distinguish from reality. If he stops there, it will be well with him. But perhaps unluckily, he may possess the power of invention as well as of imitation. Like great men in all ages, he may try, not only to copy, but to create. Then he soon finds himself in the wrong century. He is like a human being evolved before the time, in some far-off Simian age. If he is to live and flourish, he must suppress the man within him, and cultivate the monkey; he must act "as if his whole vocation were endless imitation." Now the architect, if he deserves the name, cannot act so. His business is essentially an inventive one. Here and there he may suggest some natural form, and he will aim everywhere to let his work harmonize with the world around it. But at its highest it is an extension of nature, and not a copy of it: the making of something never made before—and yet the making of it in the same spirit in which all the beauty of the earth has already been made.

This making of the new is a terrible shock to people who only ask for a copying of the old, and when they see the two things together in a picture—when they find, for instance, a drawing of some clever architectural composition represented with its natural surroundings—it is the surroundings, and not the architecture, which really interest them. The creative element they cannot appreciate: it is foolishness to them. So, leaving this, they turn to the grass and the shrubs, the sky and the hills, and ask if the architect of the building really drew these things himself. If he did, they think him an artist, better or worse; if he did not, they cannot understand what business his drawing has on the walls of the Royal Academy. In their most violent seizures—perhaps when the moon is at the full—they will even advise that no architectural views shall again be admitted there, except those which each architect has produced from first to last with his own hand.

One would think that everybody who has considered the question for a moment must see how, in the very nature of things, architecture must always be at an overwhelming disadvantage in an exhibition, apart from arbitrary rules like this. Just as a painter is a man who

produces a painting, and not the mere sketch or wood-cut of a painting; just as a sculptor is a man who produces sculpture, and not mere studies in the flat for sculpture — so an architect is a man who produces architecture, and not mere views of architecture in one or more of its myriad aspects. Now the painter can exhibit his work easily. It is made in most cases, for the very purpose of being exhibited in a gallery of some sort or other; it is portable, and when it is hung on a wall, there, before the eyes of the spectators, is the very thing which the painter has produced. It is almost the same with the sculptor. What he does is less portable; but with rather more trouble than the painter, he, too, can set the very work he has made in the view of everybody who enters the exhibition. The architect is in quite a different case. His productions are not portable at all, and, if they were, no gallery ever yet opened would hold them. They are scattered over the country, or over many countries. The best of them, perhaps, are seen by few. To people in general they are only known by such faint reflections, in one or two of their aspects, as can be drawn and hung up or published. They may be full of excellence, inside and out; fresh points of view may bring out fresh beauties in them, and beauties which their maker carefully studied and provided for. They may have picturesqueness of grouping seen afar, and force combined with delicacy of detail in a nearer view; and yet of all their merits, such sketches as it is possible to exhibit cannot, perhaps, show one in a dozen. Is not architecture already handicapped enough by these unavoidable conditions? Cannot our imitation-mongers let it alone, and must they also try to add the artificial condition, that even the exhibition-views themselves of a building must be drawn by its architect?

It may happen that an architect has a turn for drawing from nature, just as he may chance to have a turn for chemistry, or chess-playing, or private theatricals. If he has, so much the better for him. He is likely to carry away popular applause, even from better men. He knows — what a landscape artist or even a painter of architecture rarely knows — under what lights his building looks best. He can bring out its strong points and slur over its weak ones, and make in this way an ideal view of it. This is reason enough why any architect with a gift for landscape painting will find it pays to cultivate the power he has. But it is not a reason why some still better architect with no gift for landscape should be made worse off in comparison than he already is. When he has produced his building, he has done his part. If that is bad, no cleverness in producing views of it will make it good. If he makes an attractive perspective of it, that may prove him to be an able sketcher, a good pen-and-ink draughtsman, or even a promising colorist. But it does not prove him to be a good architect, any more than his inability to shade or color views in an attractive way would prove him to be a bad one. The two faculties are totally distinct; and though some exceptions will suggest themselves, one might even say that the cultivation of either faculty generally tends to weaken the other. The architecture of painters and the paintings of architects are both things which the world can very well do without.

There is a tendency in these times to be for ever adding to the list of subjects which architects are expected to understand. They are to know a little about construction, and a little about design; a little about arches, a little about girders, a little about roofs; a little about iron, and a little about steel; a little about churches, and a little about baths and wash-houses; a little about Classic, a little about Gothic, and a little about Renaissance; a little about decoration and sculpture, and a little about sewers and grease-traps; a little about law, and a little about landscape painting. A thousand other things, which there is not space to enumerate, are thrust upon their attention perpetually, and they are warned that to be ignorant of one is to be either a professional or an artistic failure. The architect, according to the cackle of the day, must be a Jack-of-all-trades. The inevitable result is that he will be a master of none. The wonderful complexity of modern life demands of him all sorts of capabilities. It leaves him no chance to know a few things, and to know them well. But it does not really demand of him that when he has produced a building, he and nobody else shall also produce the views of it. It does not really insist that he, with incomparably more varied duties than architect ever had before, and with incomparably more difficulties in the doing of them, shall leave his own art every now and then, and experiment a little in another art, which was by itself big enough to fill the life of a Gainsborough or a Turner. It does not really require him to do what the greatest architects of old neither did nor attempted. They put all their power and knowledge and invention into their buildings, and so left them. Having produced a work of architecture, they evidently thought their labors with regard to it were at an end; and they never dreamed that there was a glorious nineteenth century coming, which would hold them cheap unless they drew and shaded on paper a view of the building which they thought they had finished and done with. — *Building News*.

EXCAVATIONS AT JERUSALEM TO BE MADE. — After long delay, a firman has been granted by the Sultan to the Palestine Exploration Fund to excavate for two years in Jerusalem. The work, so fruitful of results when carried on by Messrs. Wilson, Warren and others twenty-five years ago, will now be resumed under the charge of Mr. J. F. Bliss, who has done very successful work at Lachish. Prof. T. F. Wright, No. 42 Quincy Street, Cambridge, Mass., is secretary for the United States, and will give further information if applied to. — *N. Y. Tribune*.



THE SKETCH CLUB OF NEW YORK.

THE regular monthly meeting and dinner was held at the club-rooms, 1473 Broadway, Saturday evening, April 7. President E. A. Josselyn occupied the chair; fifty members and seven guests were present. Mr. W. G. Brown, chief designer of the Bigelow Carpet Company, was the guest of the Club. Mr. Brown entertained the Club for an hour with a very interesting and instructive talk on the history, manufacture and designing of carpets. He illustrated his lecture with pieces of carpet, designs and photographs of the machinery used in its manufacture.

A letter of criticism and award by Mr. John H. Duncan for the monthly competition was read by the Secretary. Mr. Clarence A. Fullerton received first place in the "Village Church and Parsonage" competition, Mr. Sieder receiving first place in the "Mausoleum" competition.

Treasurer Willard Hirsh, who is now with Mr. Schweinfurth in Cleveland, O., sent in his resignation, which was accepted with regrets. Mr. A. Schoenagel was elected to succeed Mr. Hirsh.

After the reading of committee reports and other minor business, the meeting adjourned at 11.15.

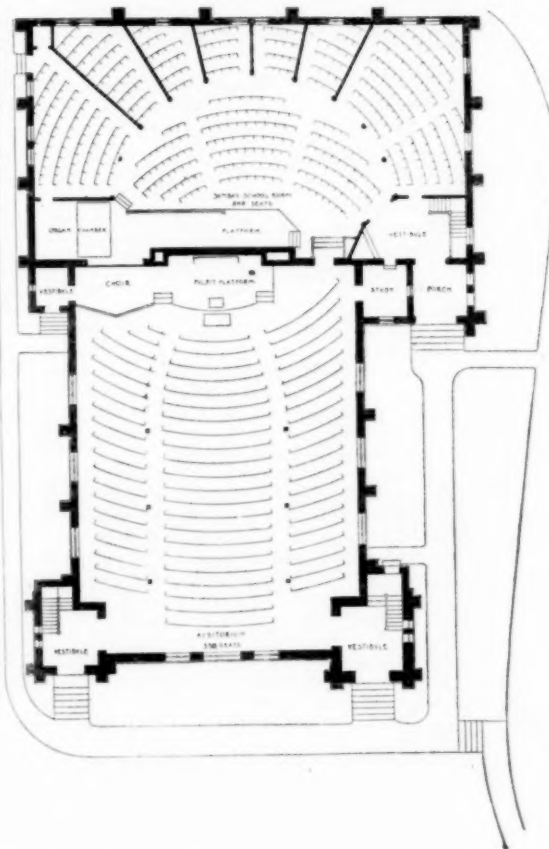
H. C. PITTMAN, Recording Secretary.



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

FIRST PRESBYTERIAN CHURCH, EAST CLEVELAND, O. MR. W. W. SABIN, ARCHITECT, CLEVELAND, O.

[Gelatine Print issued with the International and Imperial Editions only.]



THE East Cleveland Presbyterian Church is the oldest organization of the Western Reserve. The first log church was built in 1810; replaced in 1816 by a frame building which, in turn, gave way in 1893 to the present structure of buff sandstone. The Sunday-school room only is finished at the present time and was dedicated Feb. 4, 1894. The building will cost when completed about \$35,000.

ST. MARY'S LUTHERAN CHURCH, SILVER RUN, MD. MR. J. A. DEMPWOLF, ARCHITECT, YORK, PA.

This church, now in course of erection, will be built of gray free-stone in broken range work, rock face, with all the trimmings tooled. The roofs are covered with blue Peach Bottom slate. The interior is finished in hardwood throughout, with panelled and ribbed ceiling, wainscoting and rough plaster tinted buff. The cost of the church, complete, is \$13,000.

REJECTED DESIGN FOR THE FIRST CHURCH, PLYMOUTH, MASS. MR. J. E. CHANDLER, ARCHITECT, BOSTON, MASS.

The site for which this design was intended is one of the most interesting which any New England town can offer. It is at the foot of the old Burial Hill, in Plymouth, Mass, and facing Town Square, which is the termination of Leyden Street—the first street laid out in New England—on which are several quaint old houses of modest Colonial type. The First Parish Church, still holding the original charter, has had three edifices, and is about to build another. The first was in, and formed a part of, the Old Fort erected in 1621 on Burial Hill, directly back of the site in question. Of the two succeeding church edifices, the first was Colonial—somewhat like the "Old Ship" in Hingham—and the second, recently burned, was a wooden Gothic structure.

If the most were made of this opportunity to secure a remarkably beautiful ending of Leyden Street and Town Square, the church would be built elsewhere, and the winding path leading to the crest of the hill could then be turned to the centre and head of the Square and entered by appropriate iron gates. A most interesting and charming view, distinctly New England in character—that of a steep, tree-crowned hill, thickly covered with old slate grave-stones, rising directly from the business portion of the town and framed by fine old elms in the foreground—would then be saved for the enjoyment of coming generations.

The plans published herewith were approved and advanced by the second building-committee, but were rejected by the parish.

PROPOSED CHURCH AND PARISH-HOUSE FOR THE GROVE HALL UNIVERSALIST SOCIETY, DORCHESTER, MASS. MR. P. G. GULBRANSON, ARCHITECT, BOSTON, MASS.

FIRST BAPTIST CHURCH, PERU, IND. MR. E. N. LAMM, ARCHITECT.

[Additional Illustrations in the International Edition.]

FIREPLACE IN THE HOUSE OF H. G. MARQUAND, ESQ., NEW YORK, N. Y.
[Copper-plate Etching.]

A LOGGIA OF THE ELECTRICITY BUILDING, WORLD'S COLUMBIAN EXHIBITION, CHICAGO, ILL. MESSRS. VAN BRUNT & HOWE, ARCHITECTS, KANSAS CITY, MO.
[Gelatine Print.]

"ASCOTT," BUCKS, ENG. MR. GEORGE DEVEY, ARCHITECT.

THE SAME FROM THE ROSE GARDEN.



PROPOSED U. S. POST OFFICE
NEW YORK, N. Y.



[The editors cannot pay attention to demands of correspondents who forget to give their names and addresses as guaranty of good faith; nor do they hold themselves responsible for opinions expressed by their correspondents.]

BLEACHING SALT-PRINT DRAWINGS.

PHILADELPHIA, PA., March 31, 1894.

TO THE EDITORS OF THE AMERICAN ARCHITECT:—

Dear Sirs,—Please inform me in your next issue of the *American Architect* how to remove the sensitising from a photograph after the

outlines have been put in, in ink, and what kind of ink will not wash by the application? Very truly,

PHILADELPHIA SUBSCRIBER.

[We bleach salt-print drawings with a saturated solution of bi-chloride of mercury (corrosive sublimate). Higgins's waterproof ink can be used safely.—EDS. AMERICAN ARCHITECT.]

WANTED: MARBLE.

March 31, 1894.

TO THE EDITORS OF THE AMERICAN ARCHITECT:—

Dear Sirs,—Competition designs are being made for a two-million-dollar building, required to have exterior of granite or marble, and the competing architects are required to furnish estimates. In the columns of the *American Architect*, which goes to the office of nearly every one of the competitors, being taken by almost every respectable architect in the United States, there is not a single advertisement of a marble quarry, or a dealer in building-marble. How are the competitors to get careful estimates for the marble-work? Do the quarry-men imagine that their circulars and calendars are kept on file in the offices? It looks to me as if the marble quarry-owners had let the opportunity of their lives go by.

Very truly yours, SUBSCRIBER.

[Our correspondent has overlooked the cards of two dealers that may be found on our first page; but two out of a possible hundred is a small representation.—EDS. AMERICAN ARCHITECT.]

AN IMPROPERLY "SIGNED" BUILDING.

TO THE EDITORS OF THE AMERICAN ARCHITECT:—

Dear Sirs,—If it will not be imposing upon you too much, we would like your opinion on the following question, which has arisen in our practice:

We were employed last spring by a client to prepare complete plans, details, specifications, etc., for a business block in this city, and after performing these services, we, under the direction of the owner, sent invitations for bids, received the bids and opened them with him, in his presence. Then, under the direction of the owner, who changed plans and specifications, cutting down the cost of the building, and later made the plans over entirely, on account of an additional ten feet added to the length of the building. Upon these last drawings contract was made, and the building was built. But when we asked the owner for a payment on the amount due us he refused to allow us more than one-fourth of the regular minimum charge, as per schedule of the American Institute, without giving any reason, and ordered us not to superintend the building, and, furthermore, engaged a foreman to look after the work, and placed in the most conspicuous place in the outside wall a stone tablet with the above-mentioned foreman's name as architect. Of course, we have sued the owner for our commission, but the point we would like to know about is, can we, in your opinion, compel him to remove this lying tablet which he has placed there from pure malice.

An answer to the above through the columns of the *American Architect*, or by mail, will be considered a personal favor.

Yours very respectfully, THE REJECTED STONE.

[We do not know how you can compel the removal of the obnoxious stone, but, as we assume that you can establish the fact that the building was designed by you and is being erected in conformity with your design, you might establish a claim against the foreman for wrongful impersonation of character; but, if the person whom you style a foreman claims to be himself an architect, he might maintain his right to have his sign, with the owner's permission, on any building being constructed under his charge and the word "architect" being part of such sign could not be removed at your compulsion.—EDS. AMERICAN ARCHITECT.]

BOOKS.

PHILADELPHIA, PA., March 26, 1894.

TO THE EDITORS OF THE AMERICAN ARCHITECT:—

Dear Sirs,—Can you publish in your paper what you consider the best books on "Interior Decoration" (including furniture) with especial reference to the subject historically treated?

Very truly yours, ALBERT M. WHITMAN.

[LITCHFIELD'S "Illustrated History of Furniture," published by Estes & Lauriat, Boston, and Meyer's "Handbook of Ornament," published by Hessler & Spielmeier, New York, are good books for your purpose.—EDS. AMERICAN ARCHITECT.]

A QUESTION OF COMMISSION.

CALIFORNIA, April 4, 1894.

TO THE EDITORS OF THE AMERICAN ARCHITECT:—

Dear Sirs,—You have been very kind in the solution of difficulties between architects and clients: may I lay the following case before you? A gentleman bought a piece of very rough, unimproved property, but a rarely fine building site, of about ten acres in the outskirts of a small town, for which he paid about \$25,000, also a piece of an acre and a quarter nearer town for which he paid \$11,000. He went to an architect and said, substantially, as follows: "I want you to draw me a plan for a house for my new lot. I don't know when I shall build, I may never build, but I want a plan; you go ahead and make me a plan for what you think the right sort of house for that place for a man with a family of a wife and six small children. I want it of stone, but plain and simple, something in the Spanish-American style, around three sides of a court, and I like

good-sized rooms. I won't give you any of my ideas; I want to get yours. Then, when you get through with that, I want a plan for my other lot, a smaller house for my daughter with a family of two children. That of stone also. Now, remember, building is all in the air. I want to show them the plans and talk it over in the East. I may never build at all; I won't for a year anyway. You go ahead and make the drawings and I will pay you for them and I will use them, or not, as I like, but of course you will superintend the work if I use your plans."

Before the first plan was finished the man came and said that he wanted an alternative plan for the large lot, in case he decided to build there for his daughter, so three distinct plans were ordered with no other programme or limitation of price than has been mentioned above. The architect laid out his work by the value of the lots and what he knew of his client's taste. He sent in two sets of drawings for the alternative houses for the large lot. They consisted each of ground-plans to one-eighth-inch scale, line-drawings of elevations to same scale, and one perspective of each, scale three-sixteenths-inch, fully rendered in pen-and-ink. Except for interior detail, everything was indicated so that full working-drawings might be made from the drawings. The estimated cost of the larger house was \$40,000, of the smaller \$30,000. The estimates were not by contractors, but were certainly lower than the actual cost would be. The client was pleased with the plans and suggested no alterations, and no comment was made upon the estimated cost, but the architect's bill was considered too large. What should be the architect's proper fee, taking all things into consideration.

Respectfully yours.

[TAKING the story as it is stated, it seems to us that a client who expressly warned his architect that he might never build at all, could hardly have expected to be charged the rate that usually applies to abandoned work. Our correspondent was by this statement put upon inquiry and it was for him to ascertain the terms of the bargain, and not the client, as would be the case under ordinary circumstances. It is unfortunate that the terms of the bargain were not properly prearranged, but judging from internal evidence it seems to us that such a client as this, who is pleased with his site and satisfied with his design, is more likely to build eventually than to abandon his project. We advise a settlement on a fair per diem charge for the work done, giving receipt for a payment on account of full commission in case the work is ever carried out.—EDS. AMERICAN ARCHITECT.]

CORRECTIONS.

WASHINGTON, D. C.

TO THE EDITORS OF THE AMERICAN ARCHITECT:—

Dear Sirs,—In the article "Comparing Government to Private Buildings," I said "unfortunately the correspondence became acrimonious between Mr. Burnham and the Secretary." I should have said "fortunately," as only in this way could the matter be brought before the country, and I find that the most conservative men in this section are taking that view of the case, and congratulating the Institute upon the fact, and Mr. Burnham and his advisers upon their management.

It has been suggested to me that the cost of architectural service to the Government, when the reduced rate at which they should build is taken into consideration, would actually be fifteen per cent instead of nine per cent. Time of construction of the Government Building at Pittsburgh, under the illustration, should have been eleven years instead of 216 months.

The percentage of third-class private buildings and their rate per cubic foot does not agree with text, on account of the omission of one or two of the private buildings which were originally in the manuscript. This error is in favor of Government buildings.

Yours truly, GLENN BROWN.

BOSTON, MASS., April 10, 1894.

TO THE EDITORS OF THE AMERICAN ARCHITECT:—

Dear Sirs,—In Table II of the article on Government Buildings, etc., published in your last issue, it is stated that the floors in the Allegheny County Court-house are of iron and terra-cotta and the roof of iron, terra-cotta and slate. These statements are both in error, as the floors are of brick arches and the roof of Akron flat-tile, wired with copper wire to iron purlins. As I had the pleasure of superintending that work I take an interest in having this corrected.

Yours truly, CHAS. D. AUSTIN.

In the last paragraph of Mr. Bragdon's paper on "Colonial Architecture in the Genesee Valley" the Greig mansion at Canandaigua was by error called the "Grey" mansion.



BOSTON, MASS.—Annual Spring Exhibition of Water-colors, Pastels, Black-and-Whites, and Sculpture: at the Boston Art Club, April 9 to April 28.

Oil-paintings by J. Appleton Brown and Mrs. Agnes A. Brown: at Doll & Richards, 2 Park Street, April 9 to April 18.

Loan Collection of Paintings by William Morris Hunt: at the St. Botolph Club, April 3 to April 21.

Oil-paintings by R. L. Newman and J. A. McNeill Whistler: at the Museum of Fine Arts, March 27 to April 17.

Several hundred Specimens of Textile Designs of all countries, from the second century to the present time, from the collection given by Denman W. Ross; also a collection of Japanese Color-prints: at the Museum of Fine Arts, during April.

Sketches and Portraits by Mrs. W. L. Mathews and Miss Emma H. McLauthlin: at Chase's Gallery, 7 Hamilton Place, April 12 to April 20.

BROOKLYN, N. Y.—Third Annual Exhibition of Architectural and Decorative Drawings of the Department of Architecture of the Brooklyn Institute of Arts and Sciences: at the Brooklyn Art Association Galleries, 174 Montague Street, March 30 to April 21.

BUFFALO, N. Y.—Exhibition of Architectural Drawings: at the Buffalo Library building, now open.

CHICAGO, ILL.—Annual Exhibition of Water-colors: at the Art Institute, April 3 to May 6.

Sixth Annual Spring Exhibition of the Chicago Society of Artists: at the Society's Galleries, April 16 to April 28.

NEW YORK, N. Y.—Sixty-ninth Annual Exhibition, National Academy of Design: 23d Street and Fourth Avenue, April 2 to May 12.

Sixteenth Annual Exhibition of the Society of American Artists: at the Galleries of the American Fine Arts Society, 215 West 57th Street, March 12 to April 14.

PHILADELPHIA, PA.—Fourth Annual Exhibition of Water-colors and Pastels: at the Art Club Galleries, March 26 to April 22.



STEAM AND WATER-POWER ELECTRICITY.—According to an article by United States Consul Monaghan, appearing some time since in the *American Machinist*, if Switzerland, or any country with streams and climate like hers, is to win her way into the world's markets and take a place in the front ranks, it must be by some better method than the use of electricity gained and transmitted from rivers and waterfalls. The following table, recently published in Chemnitz, shows what 50, 300 and 500 steam horse-power costs in England, Germany, Bohemia and Switzerland per annum.

Country.	50 horse-power.	300 horse-power.	500 horse-power.
England.....	\$24.24	\$12.58	\$ 9.88
Germany....	29.21	15.52	13.51
Bohemia....	27.50	14.74	12.97
Switzerland..	46.82	29.61	25.54

Compared with the above, the cost of the same amounts of horse-power of electricity transmitted 3.1068 miles (5 kilometres) in an air-line in Switzerland, according to results published in connection with the foregoing table, is as follows: Fifty horse-power, \$30.88; 300 horse-power, \$16.98; 500 horse-power, \$12.54. But to this must be added the transmission cost, which will make the total as follows: Fifty horse-power, \$57.68; 300 horse-power, \$31.27; 500 horse-power, \$25.48. It is only by building a big plant, 500 horse-power at the very least, that electricity begins to show any profit that would commend it as a substitute for steam.

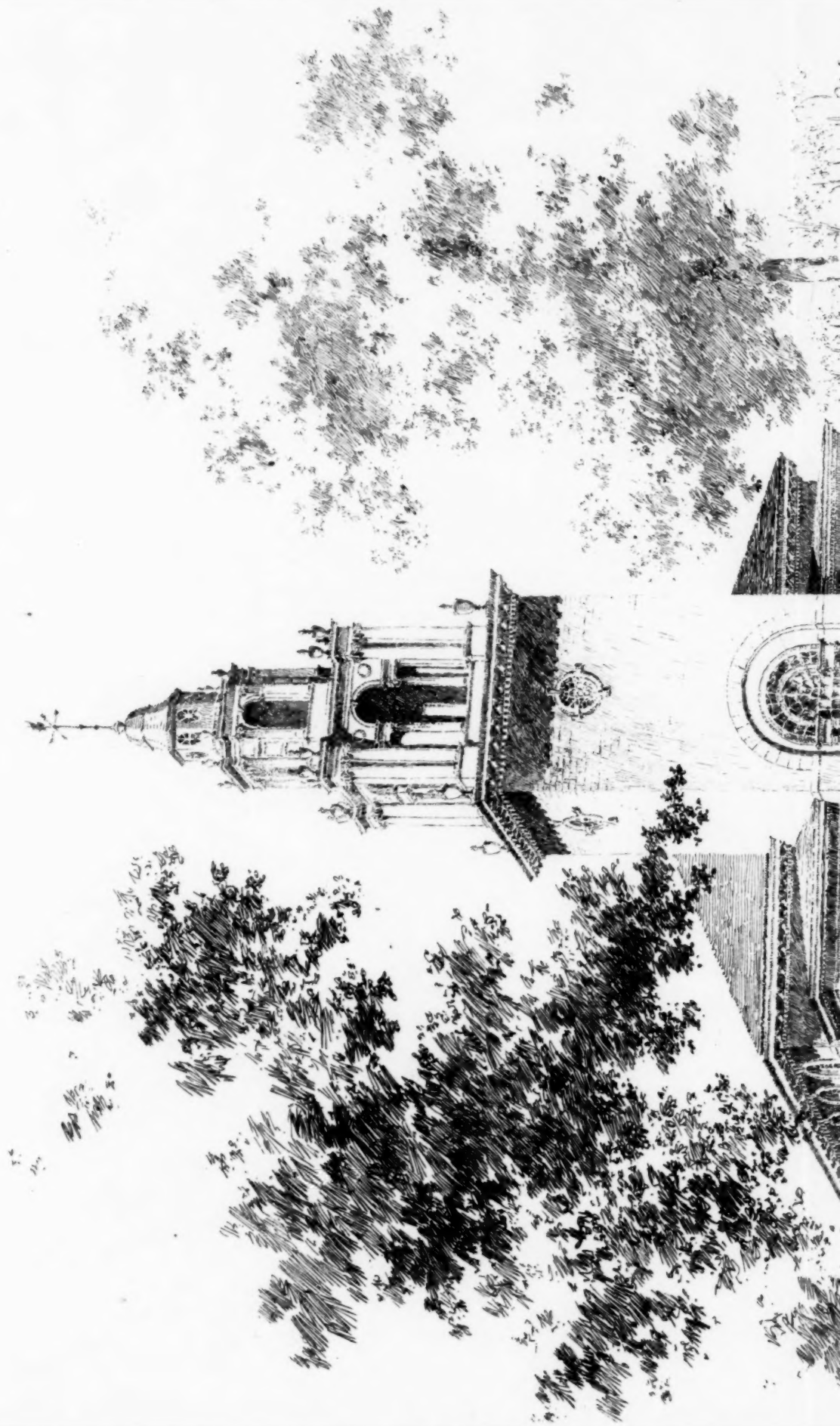
MAPLE FLOORING.—Among the noteworthy features of recent lumber-trade development is the rapidly-increasing demand for maple flooring. Improvement in the method of manufacture has kept pace with the growth in demand for product; or perhaps it is more exact to say that the recognition of maple flooring has been forced on the attention of consumers by the enterprise of manufacturers in turning out a perfected product and urging it on public attention. A few years ago all the maple flooring used was worked out on orders by a few planing-mills. The hardwood dealers carried maple strips in their yards, and had them dressed and matched when they happened to receive an order for flooring. Now great manufactories have been established for the sole purpose of producing maple flooring. Exact, strong and swift machinery has been invented to work out the stuff. The boring machine has rendered nailing easy, and now comes the end-matching invention. Maple flooring has come to be regarded as the thing indispensable in most public buildings and is used largely in private dwellings. Such an extent has the demand reached that the larger dealers are obliged to make contracts for millions of feet far in advance of requirement, the same as is done with pine, or any other wood of extensive sale and consumption in the building trades and manufacturing. — *Northwestern Lumberman*.

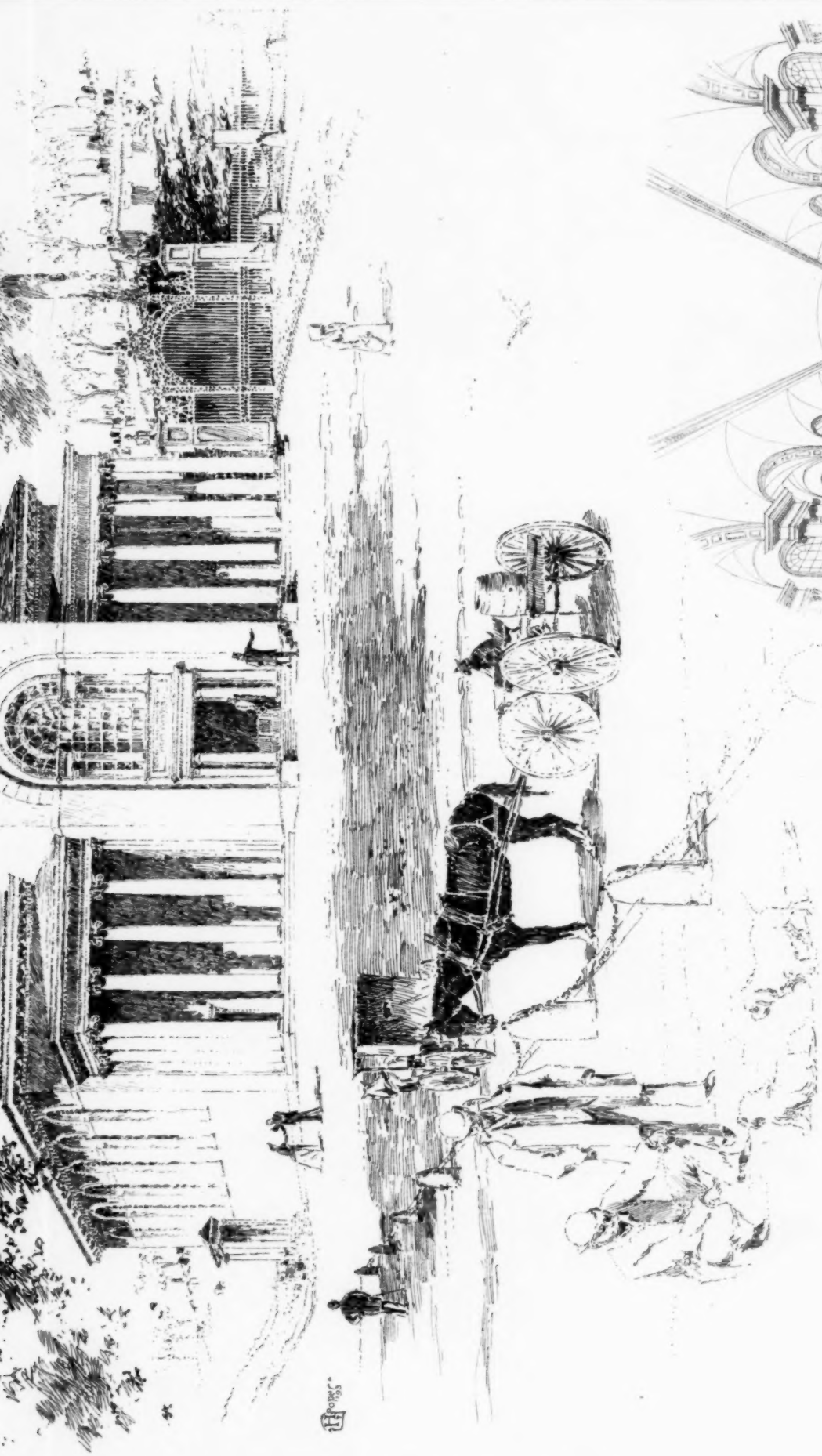
DEATH OF DR. LOLLING.—Greek archaeology suffers an irreparable loss in the death, on February 23, of Dr. Lolling, for the last ten years director of the department of inscriptions in the National Museum of Athens, editor of Baedeker's "Greece," and, since 1879, librarian of the German Institute in Athens. He excelled most in epigraphy, and the Greek Government fittingly recognized his astonishing achievements in this field by making him custodian and editor of the enormous body of inscriptions which the eager excavations of recent years have brought to the central museum at Athens. His catalogue of these inscriptions, a work evolving enormous and ingenious labor, is well advanced in MS., though only the first part, on votive inscriptions, is published. Many American scholars remember gratefully the unselfish kindness of this modest, sad man, and regret that attainments and achievements such as his should have been haunted by a sense of defeat and failure. — *N. Y. Evening Post*.

No. 955.

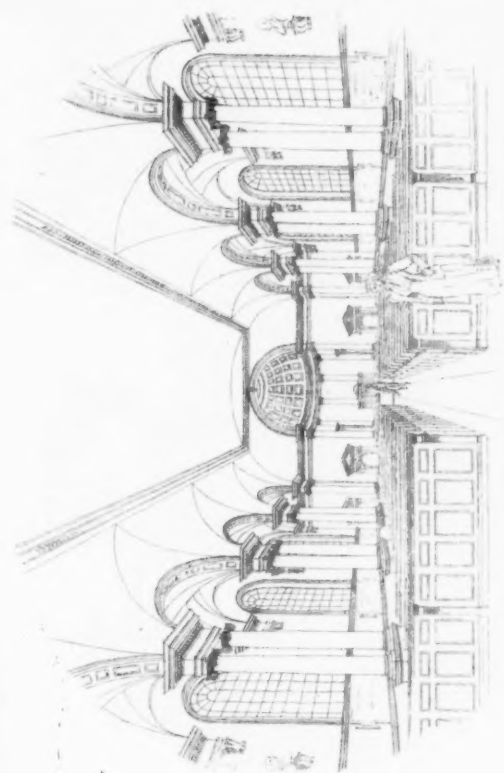
AMERICAN ARCHITECT AND BUILDING NEWS, APR. 14. 1894.

REPRESENTATION BY THE AMERICAN ARCHITECT & BUILDING NEWS CO.

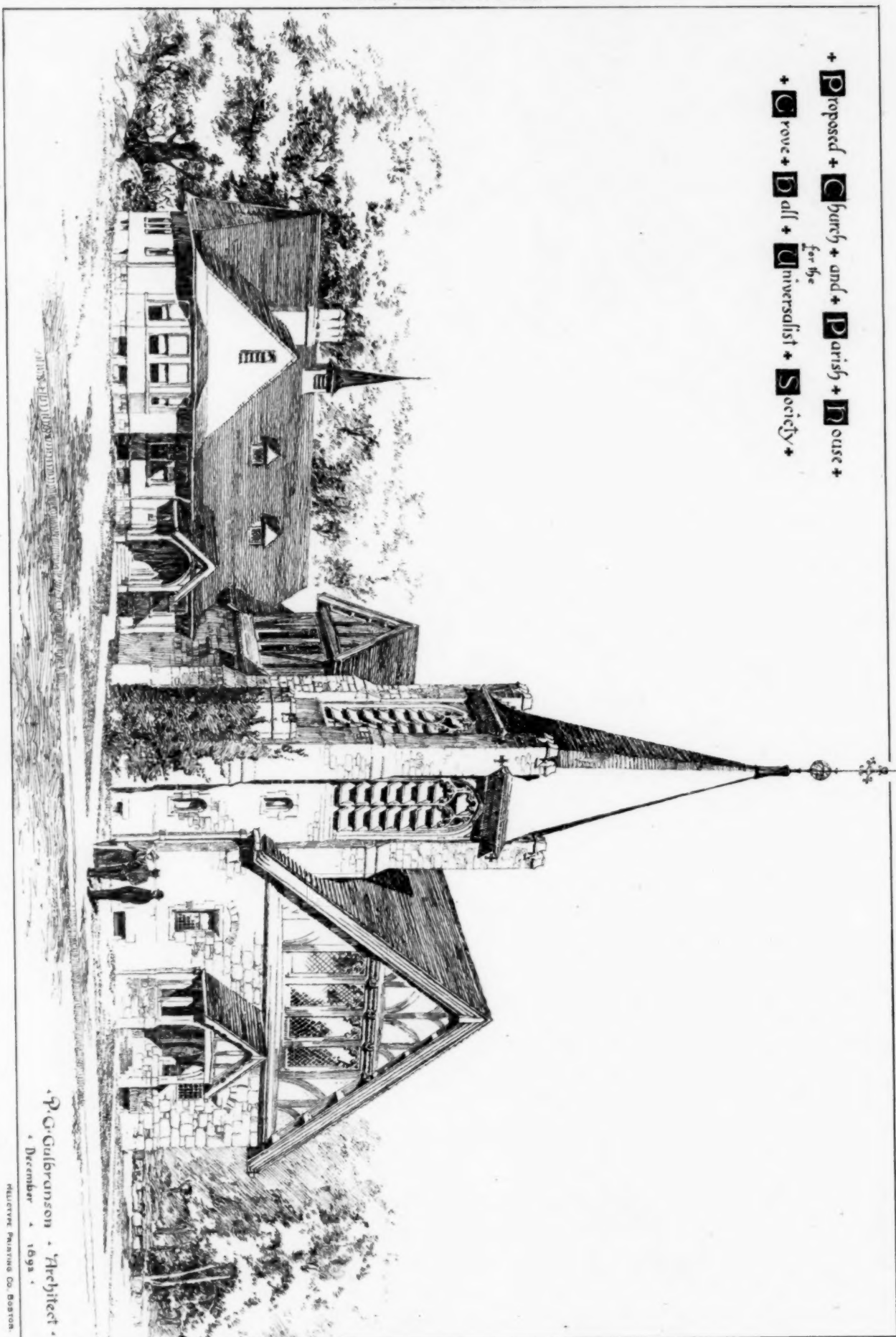




(REJECTED)
 DESIGN FOR THE FIRST CHVRCH
 AT PLYMOUTH MASS.
 JOSEPH EVERETT CHANDLER ARCHITECT
 9 PARK ST. BOSTON.



+ Proposed + Church + and + Parish + House +
+ for the +
+ Grove + Ball + Universalist + Society +



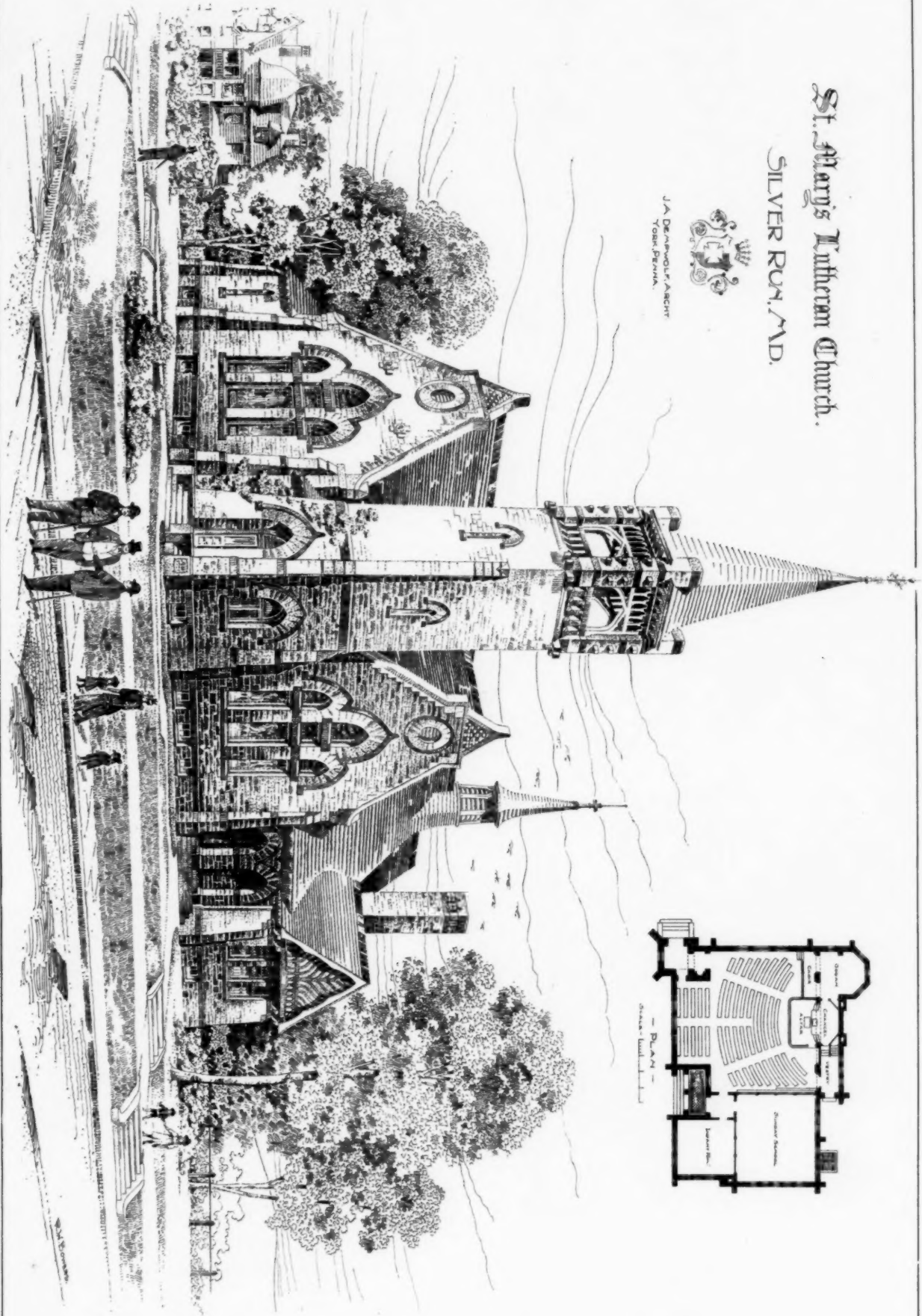
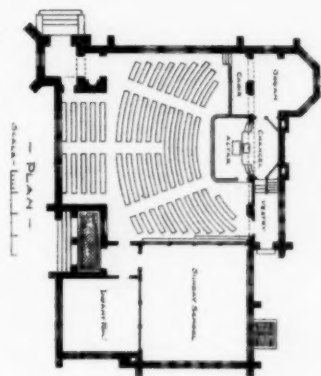
P. G. Gulbranson - Architect -
December - 1893 -

ILLUSTRATION PRINTING CO. BOSTON.

St. Mary's Lutheran Church.

SILVER RUM. MD.

JA DEWOLFE, ARCHT
YORK, PENNA.



No. 955.

AMERICAN ARCHITECT AND BUILDING NEWS, APR. 14, 1894.

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