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ONE of the gravest defects in our political system is the violent and ultra-radical way in which we attempt to improve on methods and processes which have proved only measurably deficient. The populace will have no more of it, or them, as soon as a chance arises for making a change. Away with it! Off with his head! is the demand of a political party as soon as a victory at the polls enables it to get at its predecessors in power and their works. Actual efficiency and faithful endeavor have no standing at the bar of political opportunism, so each political overturn sees the dismissal for party reasons of public servants who have fairly discharged their duties, and have acquired a knowledge of their work and familiarity with its details, which no prudent man of business would reward by turning its possessor adrift at the very moment he could be of most value to the work in hand. Of the several public servants in whom our profession has an interest, it has a more intimate concern with the Supervising Architect of the Treasury Department than with any other. His fate just now, *more politico*, hangs in the balance, and the President-elect has, since his election, been visited by applicants for the office which they hope will be vacated next March. In certain, perhaps in many, cases it would be nothing less than a moral scandal to appoint to so important a post one of these self-seeking gentlemen. Unfortunately President Cleveland has not been able to bring within the scope of the Civil Service Rules the position of Supervising Architect, though the latest extension in Civil Service Reform has thrown its protection around the greater part of the employés in that bureau. Mr. Aiken, the present incumbent of the office, has, during his short term, developed qualities and capacities which deserve the recognition and demand the support of his fellow-members in the profession. It must be known to the President-elect that the office of the Supervising Architect is distinctly in a transitional state and that it will by force of public opinion be kept in a transitional state until it can be permanently modified, reformed and improved in consonance with the demands of an awakened and educated public demand. It would, therefore, seem to be the part of good public policy to retain at the head of the department a man who thoroughly realizes that the office is in a transitional state, and is, from the inside, honestly working out the solution of a very difficult problem by doing what he can under existing restrictions to bring the methods and workings of his department into keeping with the recommendations which the profession and public are urging from the outside. Mr. Aiken, far more than any of his recent predecessors, has been willing to sacrifice his personal ambitions and a desire to make a name, and has devoted himself to the execution of his many-sided duties in the spirit of a good executive official. He has been willing to introduce into the office several men who very likely are much better designers than he is himself, and has not, like his predecessors, given chief attention to "impressing his own individuality" on every design prepared in the office. The result is that the designs, which will be shown in his forthcoming annual report, will be found to be markedly superior to recent governmental buildings in all that concerns propriety, sobriety and common-sense. It is our belief that the President-elect could do no more judicious thing than to reappoint Mr. Aiken, on the distinct understanding that he should, during his second term, carry forward with more activity than ever the very beneficial and generally satisfactory transitional movement he has already inaugurated.

THE Manufacturers' Accident Association of France has issued a card, to be posted in all factories where electric currents or electric apparatus are employed, giving warnings and suggestions in regard to the safe and proper use of such things. In general, it is prescribed that no work not connected with the electric machinery shall be carried on in its neighborhood; that no iron tools or other objects shall be brought near them, and that workmen shall not stand in the neighborhood of the machines except in performance of their duty. For those who are obliged to be about them, it is recommended that rubber carpets or mats should be spread, entirely covering the floor near the machines. If these cannot be afforded, insulating platforms of boards, standing on glass feet, or even on brick, should be put about the machines. India-rubber gloves, though useful, have their protecting power destroyed by a hole, even so small as to be imperceptible, and they do not last long. Persons handling wires should use one hand only, keeping the other free, and as far as possible from any wire, machine, pipe, or piece of metal of any kind. In case fire should appear around any wire, switchboard, or other electrical apparatus, it is absolutely forbidden to throw water or wet cloths on it, or to allow anything of the kind to come in contact with any wires or electrical apparatus whatever, until the current has been shut off from the locality by cutting the wires or otherwise. High tension wires are not to be touched on any pretext, however thick the insulation; and no person is to be allowed to enter, without special authority, the place where transformers are installed, or to carry a light, or smoke, in a room containing accumulators. In regard to the latter, it is explained that the action of accumulators is accompanied by the evolution of hydrogen gas, so that explosions may easily occur, unless the place is well ventilated, and fire kept out of it.

SEVERAL of the foreign technical journals give illustrations of the roof-trusses of the Machinery Hall at the Geneva Exposition, which deserve the most careful attention of architects and engineers, since in them as in the similar trusses of the Mines and Mining Building at Chicago the cantilever principle, so successfully used for bridges of wide span, has first been applied to roofs, although it was evident, when the first cantilever bridge was built, that it would not be long before the same system would be used in roof-trusses, for which it is still better adapted than for bridges. Every one knows that the cantilever bridge consists essentially in a girder of the most economical shape, which, for iron work, is that with the upper chord horizontal, and the lower forming an obtuse angle, balanced on the apex of the lower chord, which is supported by a pier. The arms of the girder extend each way from the pier, one forming the shore end of the bridge, while the other extends over the waterway, toward the corresponding arm of a similar cantilever on the other shore, an ordinary girder being usually hung between the two cantilever arms which project over the waterway, to make up the total span. This construction gives necessarily a bridge in three spans, a shore arm to the cantilever being needed to balance the arm extending over the waterway; so that it would not be applicable to a roof of a single span; but for a building with nave and aisles, separated by piers or columns, it enables the designer to use a roof, consisting of inclined cantilevers, balanced on the columns or piers, with what

may be called the shore ends resting lightly on the outside walls, while the other ends meet at the ridge of the roof, pressing together, if the cantilevers are accurately balanced, with the merest touch. As the horizontal thrust of a roof is, roughly speaking, equal to the force with which the two sides push against each other at the ridge, it is evident that a roof of this sort, if properly designed, needs no tie-rods, either above or below ground, as it exerts no thrust whatever; while its form gives a perfectly unobstructed space under the ridge, where the ordinary trusses are most encumbered with members. The aisles, moreover, are not obstructed by the springings of the arched ribs once in common use for roofs of wide span, and yet, the weight on the outside walls, which may, if necessary, be reduced to nothing, is, in any case, so small as to give the utmost freedom in placing windows. Such is the roof of the Geneva building, and it seems to us that this will, for a long time to come, be the accepted type for wide roofs. Judging from what has been accomplished with cantilever bridges, it would be easy to design and construct a roof of this type over a building a thousand feet wide or more, where the space could be divided by piers into three spans. The middle span would naturally be twice as wide as the side spans, but the construction allows much latitude in this respect.

A GREAT commotion has been raised in London by the disclosure of the way in which public works have been carried out under the present method of administration. Some time ago, with the view of conciliating "Labor," the London County Council fell into the plan of being its own contractor, and thus, by dealing with "Labor" directly, of depriving the "capitalists" and their "hirelings," who have hitherto done the city's work so efficiently and economically, of the opportunity to become further "bloated" at the expense of the "toiling millions" to whom they paid wages. With this idea, they appointed a Works Committee, of which Mr. John Burns, M. P., apparently from a vague notion that a labor champion would know something about labor, seems to have been a member. This Committee had under it a Works Department, and in the care of the Works Department were put the building and other operations of the municipality. Some of the proceedings of this Department have now been made public, and we commend the story to the students of municipal government. As one instance, it appears that, some months ago, additions were to be made to an insane asylum at Colney Hatch. When the plans were ready, advertisements were published, inviting tenders from contractors. The lowest bidder was a certain firm, which offered to do the work for £18,812. On the publication of the bids, the representative of this firm inquired at the proper office, and was told that none of the bids would be accepted, as the Works Committee found that they could do it themselves for a smaller sum, which they estimated at £17,500. By what process of estimating they arrived at this result does not appear, but the evidence certainly indicates that the Committee never took the trouble to make any estimate at all, but deluded the bidders into measuring the quantities and getting prices, and then got rid of them by impudently professing to have made an "estimate" lower than the lowest honest one received.

AS might have been predicted, the skill and prudence with which this alleged "estimate" was prepared, and the work carried out under it, turned out to be quite of a piece with the sense of honor and integrity displayed in the beginning of the transaction. Very recently, suspicion having been excited as to the way in which the new Department was carrying on its philanthropic work of wresting from Capital its ill-gotten gains, an expert was deputed to examine its books, and, among other things, it was discovered, as appears from the newspapers, that the work at the Colney Hatch Asylum had already cost six thousand pounds more than the estimate. A still more interesting discovery was made, however, in the fact that the Department, fearing apparently that sordid considerations on the part of the tax-payers or the County Council might give occasion for embarrassment to its great career against the consuming classes, had systematically falsified its books, charging work really done on buildings, the cost of which had greatly exceeded the estimates, to others, which were either unfinished, or had made a better financial showing. In regard to the Colney Hatch Asylum, it was found that material was sent from the docks to the asylum without any charge; that nearly ten thousand dollars' worth of material was credited as having been transferred from Colney Hatch to another asylum, and to certain sewer works, which had never been transferred at all; and that other material, which was really transferred, was credited at a fictitious valuation, nearly fourteen hundred dollars in excess of its real value. In regard to the transfer which was totally false, circumstance had been given to the lie by the filing of certificates of the transfer of the material, signed by two of the foremen on the work. These certificates were obtained, as the evidence showed, by the chief clerk of the Department, who pleaded in his defence the orders of the manager. The manager somewhat furiously repelled the intimations of the chief clerk, but a document in the manager's handwriting was produced by the book-keeper, giving a list of suggestions for arbitrary alterations of cost, which proved to have been approximately followed, so that his disclaimer does not seem to have produced much impression on the investigating committee. What will be the end of the affair remains to be seen. It is fair to say that the investigating committee did not find any reason to suppose that either the manager or his subordinates took advantage of the falsification of the books to put any money directly into their own pockets, and the affair seems to have been a manifestation of the weak moral sense generally characteristic of those concerned in carrying out socialistic experiments, acting in connection with the desire to retain their positions by making a good financial showing, and also, probably, with political designs.

A PERIODICAL with which some of our readers should make acquaintance, unless they already know it, is known as *Home Study*, and is published by the Colliery Engineer Company, Scranton, Pa., at one dollar and a half a year. It is a well-written and well-illustrated little journal, devoted to giving instruction in various matters of engineering, electrical, mechanical and architectural, and in architectural drawing. To the experienced reader of cheap journals, alleged to be devoted to popular architecture, and science for the million, this description will call up only visions of monthly publications, made up, with the help of scissors, mainly out of old receipt-books, with the addition of original articles, characterized by frightful ignorance of the first rudiments of scientific knowledge, and adorned with "models" for architectural drawing, consisting of rudely-drawn designs for jig-sawed ornaments, adapted for use either on "village churches in the Queen Anne style," or on æsthetic chicken houses, according to circumstances; and we hasten to say that *Home Study* bears no resemblance to these productions. Amongst recent illustrations, it gave a plate which is substantially Vignola's Doric order, including the diagram for working out the entasis, all beautifully drawn on a sheet about three times as large as one of the Vignola pages, and accompanied by an excellent text, with an invitation to readers to draw the plate in the proper proportions, and send it to the editors for correction; while the other articles, on plumbing, engineering, etc., are explained by beautiful cuts, clear, modern and numerous. The science shown in the various departments is unexceptionable, and most of it is so far new as to give evidence that it has not been copied from a book. Even architects can learn something from the very practical paper about the use of mortar and cement in freezing weather, and we should say that a good many steam-engineers would find the papers on the theory of heating, expansion and evaporation useful, as well as interesting. It is, perhaps, unfortunate that the proprietors should have chosen the name of *Home Study* for their magazine. The world is so accustomed to see the name of "Home" perverted to advertise so many abominations that it creates a certain prejudice at the outset. Every one knows that, in auction advertisements, "a beautiful country home" means a tottering barrack in a malarious swamp, while the "Home Chicken Feeder," the "Home Hair-Brush," or the "Home Stable Lantern," are generally the worst of their kind; and, in literature, Shakespeare's opinion, that "Home-keeping youth have ever homely wits," seems to be fully shared by publishers, who adapt their "Home" periodicals to the presumed intelligence of their customers. In *Home Study*, however, there is no appeal to homely wits; on the contrary, unless the students of plumbing and steam-heating are of a superior class, some of the writing in it is likely to be a little above their heads; but this is a fault, or, rather, a virtue, which will highly commend it to people of real intelligence and ambition.

THE CHATEAU DE BLOIS.[1] — III.

THE WING OF FRANCOIS I. — III.

IN the old engraving by Du Cerceau of the court-yard elevation of this north wing the staircase is shown in the centre of the façade, with its entrance, as at present, at the level of the court-yard. On both sides of the staircase are carefully drawn galleries or arcades, work of Henri II, the one on the left affording communication with a terrace occupying the western half of the court-yard, the *Perche aux Bretons*, and the staircase. That on the right, if it ever existed, could have been used only as a balcony or terrace, and entered from the *Salle des Etats*, it being useless as a means of communication, owing to its abutting against the staircase midway between two runs. Of the existence of this arcade there is doubt, as only the drawings above mentioned can be cited in proof, and a few holes in the architrave course above the basement window lend but little additional evidence. Of the west gallery alone — the one shown on the left — three or four arches remained until a few years ago.

The unreliability of Du Cerceau may be illustrated in this instance, finding he has for symmetry's sake supplied the right-hand arcade. Or, being of his own epoch, he could possibly have been their author and the work never completed. However, the existing one was so inharmonious with the earlier work, though of value in emphasizing the meagre base, that the restorer considered it advisable to remove all traces of this later Renaissance work.

Complex as the composition of the staircase appears with its great piers, many arches and rich balconies, it is simple in conception, the plan being that of an octagon with three sides imbedded in the body of the building. The external angles are marked by four great piers placed radially, while a central newel supports the inner ends of the risers, the outer ends resting on the wall or being carried by the arches between the piers. The soffit of this run is concealed by a barrel-vault, which springs from a moulded cornice on the outer shell to a corresponding one winding around the central newel. Whether this simply conceals the soffit of the run, or is the true supporting member, can hardly be definitely determined, there being no way of readily examining it throughout, while the drawings of the old work can be interpreted in either way.

Where the run passes the openings between the piers, the vault and risers are carried by an inclined arch of peculiar character, the

Newel of the Staircase of Francois I, Chateau de Blois.

[1] Continued from No. 1079, page 68.

central and longest part of which is straight or inclined, according to the position of the burden it supports, always being parallel thereto, while the haunches turn abruptly in a quarter circle to the impost cap. The vault is divided longitudinally by two ribs and is crossed by radial ones, which spring from the newel to the internal angles of the piers and wall, and are received on the drum of the newel by small colonettes and in the angles by half columns. The intersection of these ribs is marked by discs bearing a variety of ornaments, emblems of François I and of his wife, Claude.

The vault sweeps down to the ground at the base of the newel and at the top of the run abuts an arch of the same section, the risers there leading to a platform, which is guarded by a solid rail.

The columns in the angles do not directly support the cornice at the spring of the vault, but receive an arch of similar character to those described, the quarter circle of which springs from the necking of the capital, the straight portion being parallel to the cornice it supports. The abacus of the capital is at right angles to the axis of the column, and not inclined as are those of the small colonettes on the newel. This arch acts as a pendentive in the transition from the octagon to the circular plan of the vault itself.

The newel has a hand-rail carved from the solid, which extends from the base-mouldings at the foot to the solid rail of the highest landing, at which level it encircles the newel in a horizontal band. The colonettes, receiving the radial vaulting ribs, divide the newel into a series of panels, each crowned by a shell and richly ornamented. The bases of these small columns are horizontal, while the capitals are inclined parallel to the lines of the vault, and between the plinths the base-moulding of the newel appears. The colonettes above the last landing rest on the horizontal band formed by the moulding of the hand-rail and support the capital or crown of the newel, from which to the wall springs a circular vault of the same character as the inclined soffit of the stairs and ornamented in the same manner. On each landing open two doors of the same height, crowned by circular pediments, the intersection of which with their cornices and with the angle columns gives rise to a problem that would resist solution at the hands of all save Gothic workmen. The top landing opens on the *chemin de ronde*, which extends around the staircase, making a continuous promenade along the entire façade. The roof of the staircase is supported by the circular vault mentioned, and is a flat deck, access to which is gained by means of a dormer in the roof of this wing.

The exterior is marked by strong piers extending from the ground to the cornice with a strong moulded base. They are interrupted at half their height by a strong band of mouldings that, so far as appears, bears no relation to the façade or to any structural feature of the staircase. These piers are crowned by a small capital and a cushion. An architrave band intervenes between the capital and the soffit of the corona of the cornice, the modillions and dentil band, and lower members of the cornice being cut in between the piers. The dentil course is only blocked out, no dentils having been cut.

Between the piers there is a crude attempt to imitate a Classic arcade: not having width enough, the designer was compelled to combine impost and pilaster, thus giving rise to this characteristic feature. The arris or edge of the impost and archivolt has a quarter-round moulding, doubtless intended to be ornamented by a guilloche, since in several places it has been advanced to various stages of completion.

The three piers towards the entrance of the court-yard are richly decorated at their base by arabesques and, above, carry rich corbels supporting statues with elaborate and delicate canopies.

The balconies which add such richness to this picturesque composition, are inclined at a slighter angle than arches supporting the run of the staircase, giving rise to an awkward-shaped panel. The railing of these balconies above the first run is divided by small piers into panels, which are decorated by the emblems of François I carved in high relief and penetrated. The soffit of the balcony is decorated and at its lowest point adjoining the pier is a gargoyle. The present ornaments of the railings of these balconies are creations of the restorer, and one is inclined to doubt the existence of them at the time of erection of the staircase; its being an afterthought is not improbable, passing as it did through the hands of so many workmen. The panels on the two sides not now filled by balconies have a simple salamander in high relief.

The entrance-door is low and insignificant, but it is richly ornamented, the details being similar in character to the richer portion of the façade. The interior details are crude and of much earlier date, bearing every mark of the same hand that surrounded the tower on the north with its galleries.

Above the cornice the piers are reduced to simple pilasters, affording space for the *chemin de ronde*, which, as already mentioned, extends around the staircase with its rich balustrade of the same design as the façade. The upper story, or attic, is crowned by a cornice and balustrade, the angles of which are ornamented by a salamander between pilasters.

To those interested in the architecture of this period nothing is more instructive than a comparison of the different staircases of this epoch. If one compares those of the period of Louis XII at Blois with this *chef d'œuvre*, it will be clearly seen that in every constructional point the designer of the Renaissance copied the work of his Gothic predecessor, clothing his frame with a veil of Renaissance detail that reveals rather than conceals the Gothic spirit.

W. T. Partridge.

ELECTRIC WIRING.[1]

IT is only a comparatively short time since the introduction of electricity for light, heat and power, and as a result of the introduction of this force, it has been necessary to meet conditions that previously did not exist.

When electric lighting was first attempted, the wire used was not properly insulated, the appliances, such as switches, sockets, cut-outs, etc., were not only crude, but were absolutely dangerous to life and property.

Until within a few years, it was not considered necessary for an architect to make any special provision in his plans of a building for the electrical installation in the same. Formerly and, I am sorry to say, in some cases quite recently, while provision was made in the plans of buildings for water, gas and other pipes, proper provision was not made for the wiring, and when the time came to install the electrical wiring, etc., the electrical contractor was called in and, if I may be allowed to use a slangy expression, was practically told to "get there" the best way he could. Even then, if he was fortunate enough to find locations for his wires that were fairly satisfactory, there was no surety that the plumber or the gas or steam fitter might not come along and run pipes in the location selected for the wires, or in such close proximity to them that the pipes would be in contact with them, in which cases the wiremen would have to change the location of their wires, or else allow them to remain under conditions that might at any time be the cause of a fire; the rights and necessities of the wiremen being considered secondary to those of the mechanics previously mentioned.

Many of the fires in the past few years have been directly traceable to defective wiring, or defective electrical appliances installed in buildings, and it was with this fact in mind, as well as the supervision of overhead wires, etc., that the Legislature of 1890 took action to place "every wire over streets or buildings, in a city, and all wires within a building when such wire is designed to carry an electric light or power current," under municipal supervision.

Electricity has become such a factor, that a building erected at the present time would be considered incomplete if provision had not been made for the use of electricity in the same; this holds true from the modest little home, with its wiring run on porcelain insulators or through porcelain-bushed timbers, to the mammoth hotel or office-building in the heart of the city, wired in the so-called conduit or drawing-in system.

As regards the duties of the Wire Department in reference to the interior wiring of buildings, I would say that to it is delegated by law the supervision of all wires designed to carry a current of electricity for light or power, and of all supports, attachments and appliances used in connection with the same.

The Wire Department is absolutely impartial in all its decisions, it having the welfare of the owners and architects of the buildings, and of the electrical contractors and the public-at-large, mutually at heart.

There is no body of men in this city who can be of greater assistance to the Wire Department in its attempt to improve the standard of interior wiring, than the architects from whose fertile brains are evolved the plans of the massive and beautiful buildings that are constantly being erected around and about us, and in the electrical fitting of which thousands of appliances and hundreds of miles of wire are used.

As we all know, the present method of wiring the modern office or hotel building is the conduit system.

In the plans of a building of this class, I would call your attention to the advisability of providing proper shafts or wire-ways for the main or feed wires, so that they may be run on porcelain or glass insulators, a type of work which is undoubtedly superior to any other method at present in use.

The location of switches, safety cut-outs, etc., should also receive careful attention; this is especially the case as regards the location of cut-outs. We would not for a moment think of putting the safety-valve of a boiler in such a position that it would be practically inaccessible for the purposes of inspection, etc., but this is precisely what is done in many cases with the cut-outs and safety-fuses of an electric circuit. The natural results of having safety-fuses located in out-of-the-way and inaccessible places is that after they have operated once or twice, the attendant, janitor or other interested person, through ignorance or otherwise, puts a very heavy fuse or possibly copper wire in the cut-out, thereby doing away with its functions and inviting a fire.

It would surprise you, gentlemen, if you should see the amount of copper wire and excessively large fuses that are removed from cut-outs by the inspectors of the Wire Department in the course of a year, and in the majority of the cases the cut-outs improperly fused are in out-of-the-way places.

Another subject that I desire to say a few words about is the electric motor. At the present time there are about five thousand motors with a total capacity of over fifty thousand horse-power in use in Boston. When properly handled, there is no piece of machinery that gives less trouble than the electric motor. On account of its simplicity of handling and its universal usefulness, it is placed in many cases in charge of persons that do not understand the necessity of giving the motor proper attention, and who would not

[1] A paper read before the Boston Society of Architects, December 4, 1896, by Mr. Thomas W. Flood, Commissioner of Wires for the City of Boston.

be considered competent to handle a piece of machinery dependent on steam for power.

Among the requisites for the satisfactory operation of motors is absolute cleanliness.

If a motor is located in an out-of-the-way place, the motor is not apt to receive proper attention, is liable to get oily and dirty, and the brushes are liable to wear and get to sparking, for want of proper attention. This is especially liable to be the case if the switch and starting rheostat are located away from the motor, as is considered desirable in many cases where the motor is used for operating a ventilating-fan or an elevator. It has been the policy of the Wire Department in the past to insist, except in a few exceptional cases, that the starting rheostat and switch be located in close proximity to the motor, so that in case of trouble at the motor when it is started, the person operating the rheostat and switch will observe the same. I would suggest that in all cases where it may be necessary for you to plan for the installing of a motor, that a location be provided for it as accessible as possible, and if it be necessary that the motor be located in one place and the starting rheostat and switch be located away from it, for instance on a different floor, that a fireproof room or location be provided for the motor.

The question of fittings is an important one and one that demands considerable attention.

Competition between manufacturers and dealers of fittings for use in electrical construction have been so sharp that the tendency has been to cheapen them at the expense of safety and durability.

We are at the present time making exhaustive tests of switches and cut-outs, the results of which we expect to be productive of much good. We find that many that are at present on the market are totally unfit for the uses for which they are on sale.

I would suggest that in future, in all specifications for electrical installations in buildings within the city limits, a clause be inserted that all work and material used in the same will be subject to the approval of the Wire Department of the City of Boston.

Different Classes of Work. — Conduit system, consisting of non-combustible pipe or tube which is continuous from one outlet to another, and which serves as a race-way for the wires which are not supposed to be drawn into the conduit until after all mechanical work in the building has been as far as practicable completed.

To conform with Wire Department rules, conduit tubes must have sufficient mechanical strength to afford protection from saws, chisels, nails, etc.

Open-work. — This class of work is exposed to view except where wires pass through floors and walls, at which places the wires must be protected by an approved tubing, such as glass or porcelain. In all other places, to be approved, the wires must run on porcelain or other approved insulators or cleats, which keep wires of opposite polarity, with a difference of potential of 150 volts or less, at least 2½ inches apart; for higher voltages, distance between wires must be proportionally increased.

In breweries, packing-houses, stables and other buildings especially liable to moisture, and also where wires are run directly under a roof, wires for 150 volts or less must be kept at least 6 inches apart and be supported on porcelain or glass insulators; for higher voltages, distance between wires must be increased.

Moulding Work. — This class of work is not allowed in locations damp or liable to be so, or in locations concealed from view. Mouldings must be of a substantial character, must have at least ⅜ inch of solid insulation between grooves for parallel wires, and at least ¼ inch backing between wires and walls and ceilings; the moulding must also have, at least, two coatings of waterproof paint or shellac.

Concealed Work other than Conduit Work. — There are several kinds of work that come under this class. There is the building that is wired during construction, the wires being run on porcelain or other approved insulators on the studding or on the sides of, or run through porcelain-bushed holes in floor timbers, short pieces of tubing being used at the outlets. This class of work is used in the majority of dwelling-houses that are wired at the present time: it is also used to a large extent in many old buildings that are wired, portions of the floor being taken up for this purpose. In this class of work in old buildings, the wires are usually run from between the floors to the wall outlets, in an approved flexible tube that is fished between walls.

In some old buildings where it is for various reasons impracticable to run the wires through porcelain work, the wires are run in an approved flexible tubing that is fished from outlet to outlet: this a type of work that is discouraged by the Wire Department and is only approved in such cases as where, in the judgment of its inspectors, the conditions are such that trouble from the wiring is very unlikely.

Then there is what might be called combination types of construction, such as conduit work for branch circuits and porcelain work for the mains, or bushed timbers and concealed porcelain work for branch circuits, and moulding or open-work for mains, etc.

The insulation of all wires used for interior wiring as called for by the rules of the Wire Department is as follows:

The insulation must be solid, at least $\frac{3}{64}$ of an inch in thickness, and covered with a substantial braid. It must not readily carry fire, must show an insulation resistance of four megohms per mile after two weeks submersion in water at 65 degrees Fah., and three days submersion in lime-water, with a current of 150 volts, and after three minutes electrification.

NIAGARA ON TAP.[1]

IT is a curious fact that the proposal to transmit the energy of Niagara a long distance over a wire should have been regarded with so much doubt and scepticism, and that the courageous backers of the enterprise should have needed time to demonstrate that they were neither knaves nor fools, but simply brave, far-seeing men. We have to-day parallel instances to Niagara in the transmission of oil and natural gas. Oil is delivered in New York City over a line of pipe, which is at least 400 miles long, and which has some thirty-five pumping-stations *en route*, the capacity of the line being 30,000 barrels a day. All that oil has first to be gathered from individual wells in the oil region, and delivered to storage-tanks with a capacity of 9,000,000 barrels of oil. Chicago, Philadelphia and Baltimore are centres for similar systems of oil-pipe, running hundreds of miles over hill and dale. Now, how improbable such a plan would have seemed if propounded at the beginning of this century to the plain captain of a New Bedford whaler. As for natural gas, that is to-day sent in similar manner over distances of 120 miles, Chicago being thus supplied from the Indiana gas-fields, and the gas has its pressure raised and lowered several times on its way from the gas-well to the consumer's tap, just as though it were current from Niagara.

We must not overlook some of the fantastic schemes proposed for transmitting the power of Niagara before electricity was adopted. One of them was to hitch the turbines to a big steel shaft running through New York State from east to west, so that where the shaft passed a town or factory, all you had to do was to throw on a belt or some gear-wheels, and thus take off all the power you wanted. More reasonable, though, perhaps, not much less infinitely expensive, was the plan to have a big tube from New York to Chicago, with Niagara Falls at the centre, and with the Niagara turbines hitched to a monster air-compressor, which should compress air under 250 pounds pressure to the square inch in the tube, as under the other plan, all you had to do, if needing power, was to tap this compressed air-tube and get what you wanted. But Niagara certainly was not destined to blow her own trumpet in that longitudinous way.

So far as actual electrical long-distance transmission from Niagara is concerned, it can only be said to be in the embryonic stage, for the sole reason that for nearly a year past the Power Company has been unable to get into Buffalo, and that not until recently has it been able to arrive at acceptable conditions, satisfactory alike to itself and to the city. Work is now to be pushed at once, and, in less than a year, power from the Falls will be in regular delivery to the local consumption circuits at Buffalo, 22 miles away. For the transmission of the first 10,000 horse-power to Buffalo it has been decided to use the pressure or potential of 10,000 volts, with such arrangements at each end that 20,000 volts can be used if necessary. There will be no difficulty about this work. The company has carefully secured rights of way for its pole lines, and the conditions have already been dealt with in other places, as many of you are aware. The 105 miles transmission from Lauffen to Frankfort, in 1891, was at the pressure of 40,000 volts. Many mines in this country, up in the mountains, now have their power brought to them over miles of line. From the San Antonio Cañon, in Southern California, electric power, generated by the melting snows of the mountains, is sent at a potential of 10,000 volts to San Bernardino, nearly 30 miles away, for both light and power. At Guadalajara, Mexico, the General Electric Company has a transmission circuit of 18 miles and 11,000 volts; and it has another at Pachuca, under construction, of 23 miles. A famous high-voltage, alternating-current transmission in Europe is that from the Falls of Tivoli, on pole lines, to Rome, a distance of 17 miles. This year has witnessed the celebration, by the City of Sacramento, Cal., with beating of drums, firing of cannon, street parades, per-fervid oratory and lavish illuminations, of a transmission of power at 11,500 volts from Folsom, 23 miles away. Salt Lake City is now to be supplied with power from eight lakes up in the famous Wahsatch Mountains. It will be seen that the Buffalo problem is well within easy handling, and, with growing knowledge and better apparatus, the conditions for such work improve all the time. For example, the circuits are carried by triple-petticoated insulators of porcelain, and these are now cured to withstand a pressure of 90,000 volts before a puncture can be made. In short, a line efficiency between Niagara and Buffalo of at least 90 per cent is looked for, so that for every 10,000 horse-power passed into the step-up transformer on the brink of the canal at Niagara, 9,000 horse-power will be taken off by the step-down transformers in the receiving station at Buffalo. It is also believed that the power can similarly be sent to Albany, on poles along the Erie Canal, at a loss of about 60 per cent, so that 10,000 horse-power at Niagara would represent 4,000 horse-power available for distribution at the junction of the Erie with the Hudson, 300 miles away.

But the question arises, and has been fiercely discussed, whether it will pay to send the current beyond Buffalo; whether it is worth while to reach out to Rochester, Syracuse and Albany; whether, in fact, it is even worth while to take it to Buffalo, the centre of cheap coal, cheap oil and cheap natural gas. I, for one, cannot help thinking that Niagara power will compete favorably with other power in Buffalo: for recent official investigations, made by Mr. H. A. Foster, have shown that steam-power in large bulk, under the most favorable

[1] Extract from a lecture by Mr. T. Commerford Martin before the Franklin Institute, Jan. 3, 1896, and published in the *Journal* of the Institute.

conditions, costs to-day in Buffalo $50 per year per horse-power, and upwards. Evidently, Niagara power, starting at $10 on the turbine shaft, or, say, $18 on the line, has a good margin for effective competition with steam in Buffalo.

Now, as to the far-away places. The well-known engineers, Professor Houston and Doctor Kennelly, have made a most careful estimate of the distance to which the energy of Niagara could be economically transmitted by electricity. Taking established conditions, and prices that are asked to-day for apparatus, they showed that even in Albany or anywhere else in the same radius — 330 miles from the Falls — the converted energy of the great cataract could be delivered cheaper than good steam-engines on the spot could make steam-power with coal at the normal price there of $3 per ton. I do not now propose to go into controversy or details, but I do make bold to say that when such conclusions are reached and find support, the time is certainly on us when we must deal with these long transmissions of electrical energy as new factors in the industrial commercial life of the State and Nation.

You must have been impressed with the fact shown in this brief running comment on the situation, that what this enterprise at Niagara aims to do is not to monopolize the power, but to distribute it; and that in this way it makes Niagara more than it ever was before the common property of the citizens.

After all is said and done, very few of us ever see the Falls, and then only for a chance holiday once in a lifetime; but now the useful energy of the cataract will be made cheaply and immediately available, every day in the year, to hundreds and thousands, even millions, of people, in an endless variety of ways. If this be not to make Niagara a common heritage, then I do not know what the phrase means.

Perhaps some of you remember the story about Miss Porter, a member of the family that was once in possession of the Niagara region. She was travelling in Europe, and at dinner one night her companion said: "Oh, if you are an American, I suppose you have seen Niagara Falls." She turned on her escort haughtily, and fixing a stony glance on him, said, "I own them." We can now all say with Miss Porter, "We own them."

We must not omit from our survey the Erie Canal, in the revival and greater utilization of which, as an important highway of commerce, Niagara power is expected to play no mean part. In competition with the steam railway, canals have suffered greatly the last fifty years. In our own country, out of 4,468 miles of canal built at a cost of $214,000,000, about one-half has been abandoned, and not much of the rest pays expenses, which is what you might expect when you race a mule barge against a fast freight train. Yet, canals have enormous carrying capacity, and a single boat will hold as much as twenty freight-cars can, so that obviously if you give the canals cheap, good power, you can do for them what has now been done for the street-car lines, by devoting the horses to the canning industry. In other words, give the canals cheap electric power and we shall again have them a powerful factor in the equalization and minimizing of freight rates. I am glad to say that this has already been recognized by our own State authorities, who have agreed to conditions by which Niagara energy can be used to propel the canal-boats at the rate of $20 per horse-power per year. Where steam-boat haulage for 240 tons of freight now costs about 13 cents a boat-mile, it is estimated that electric haulage will cost not to exceed 10½ cents, while, with the energy from Niagara at only $20 per horse-power per year, it will cost much less. Evidently this is a task worth attempting. Some two years ago the first attempt was made in this country and on the Erie Canal, with the canal-boat *F. W. Hawley*, when the trolley system was used with the motor on the boat, as it is on an electric car, driving the propeller as if it were the car wheels. But the better and cheaper way is to modify the plan of hauling your boat from the tow-path, and this is what is now being done with the electric haulage system of Mr. Richard Lamb on the Erie Canal at Tonawanda, near Niagara. Imagine an elevator system working lengthwise instead of vertically, and you will get a rough idea of the arrangement. There is placed on poles a heavy fixed cable, on which the motor truck rests, and a lighter traction cable is also strung, that is taken up and paid out by a sheave, as the motor propels itself along, and pulls its canal-boat to which it is attached. If boats come from opposite directions they simply exchange motors, just as they might mules or locomotives, and go on without delay. There is no reason why the whole of the Erie Canal should not be equipped this way for freight, and if the canal be deepened, a so much higher rate of speed can be obtained that it might even pay poor people to travel again by canal-boat as it once did our grandfathers and fathers. I can imagine worse travelling experiences than a trip along the picturesque Erie without dust or smoke, at the rate of 5 or 6 miles an hour on the broad deck of a comfortable "canal greyhound."

We might digress on many such pertinent and allied themes; as, for example, the operation of the New York Central Railroad by electric power from Niagara, but must leave them, not only for the present moment, but also for the coming years, which alone can show all the wonderful possibilities of this noble and, I am firmly convinced, profitable enterprise. Before I close, there are two other points, however, to which I ought to direct attention. One is to the fact that, on its property at Niagara, the Power Company has already begun the development of the new village, called Echota, a pretty Indian name, which signifies "Place of Refuge." I believe it is Mr. Howells who, in kindred spirit, speaks of the "repose" of Niagara. It was laid out by Mr. John Bogart, the New York State Engineer, and embodies all that is best in sanitation, fighting and urban comfort. That which was waste wilderness blossoms as the rose, not figuratively, but literally, and it does not need the eye of faith to see here the beginning of that which is destined to be the beautiful centre of one of the busiest, cleanest, prettiest and healthiest cities in the Union. The workingman, whose factory is not poisoned by smoke and dust, whose home was designed by McKim, Mead & White, whose streets and parks were laid out by distinguished engineers, and whose leisure is spent within sight and sound of lovely Niagara, has little cause for grumbling at his lot.

My final comment is upon the interesting strategy with which our American company has also preëmpted the great utilization of the Canadian share of Niagara's energy. Thus far I have dealt only with the work done and contemplated on our own side of the river, but I now show you the plan appproved by the Canadian Government for the Company's work on their side. This plan, not yet carried out, proposes the erection of two power-houses of a total ultimate capacity of 125,000 horse-power. Each power-house is fed by its own canal, and is, therefore, an independent unit. Owing to the better lay of the land, the tunnels carrying off the water discharged from the turbines will have lengths, respectively, of only 300 and 800 feet, thus avoiding the extreme length and cost unavoidable on our side. In one of the designs it has been suggested to put the dynamos underground alongside the turbines, at the bottom of the shaft; but I hardly think that this damp, rheumatic, but ingenious scheme will be adopted. With both the Canadian and the American plants fully developed, no less than 350,000 horse-power will be available, while the stationary engines now in use in New York State represent only 500,000 horse-power. Yet the 350,000 horse-power are but one-twentieth of the 7,000,000 horse-power which Professor Unwin has estimated the Falls to represent theoretically. If the 350,000 horse-power were estimated at $20 per year per horse-power, and at Niagara should replace the same amount of steam-power at $50, the annual saving for power in the State would be more than $10,000,000 per year — an accomplishment that within a very few years may give Niagara a stronger claim to the admiration of the Empire State than it has ever had before.

Let me not transgress any longer on your time and attention with diagrams and data, but once more, by way of conclusion, emphasize the truth, that this splendid engineering work leaves all the genuine beauty of Niagara untouched. It may even help to conserve the scene as it exists to-day, for the terrific weight and rush of waters over the Horse-shoe Fall is eating it away and breaking its cliff into a series of receding slopes and rapids; so that even a slight diminution of the whelming mass of wave will, to that extent, lessen disruption and decay.[1] But be that so or not so, those of us who are lovers of engineering can now, at Niagara, gratify that taste in the unpretentious place where some of this vast energy is reclaimed for human use, and then, as ever, join with those who, not more than ourselves, love natural beauty, and find with them renewed pleasure and delight in the majestic, organ-toned and eternal cataract.

SOCIETIES

DETROIT ARCHITECTURAL SKETCH-CLUB.

AT the last meeting of the Detroit Architectural Sketch-Club, Mr. John Chase, of Boston, was a guest of the Club, and gave a short address and a criticism of the sketch problems of the previous meeting of the Club. At the second regular meeting, Mr. Alexander Trowbridge, of Detroit, criticised the summer sketches, and supplemented his remarks with many points of interest to those studying color work.

The Club has added a Modelling Class to its Saturday afternoon work, and the large attendance at all of the classes vouches for the interest taken by the Club members.

The first competition given by the Detroit Chapter A. I. A., and open only to Club members, is now in the hands of the Club, and the drawings must be handed in before December 21, 1896. The programme calls for a Gate Lodge and Arch Entrance to the new Palmer Park, located at the end of the Hamilton Boulevard. The cost of the structure was limited to $25,000. The prizes are: First, Gold Medal; Second, Silver Medal; Third, Honorable Mention.

E. A. Schilling, *Secretary.*

SOCIETY OF BEAUX-ARTS ARCHITECTS.

The annual meeting of the Society was held on Monday, November 23d, at the Café Fleuret, New York City. Twenty-eight members attended and an unusual interest was shown.

The business meeting opened with an address by the retiring President, John M. Carrère, who referred to the progress made by the Society during the past year in its educational work, its relations

[1] Professor Shaler, of Harvard, has suggested the buttressing of the cavities under the falling sheet of water, with masonry, so as to hold up the superincumbent strata.

with other societies and its own individual strength. He added a word of caution and advice, urging the Society to pursue a conservative course in endeavoring to extend its influence, and especially counselling it to maintain and strengthen its friendly relations with other societies.

Report of officers were read and the annual election held, which resulted as follows: *President*, Walter Cook; *Vice-President*, Edward P. Casey; *Secretary*, Edgar A. Josselyn; *Treasurer*, Joseph H. McGuire; *Corresponding Secretary*, John E. Howe; *Executive Committee* (to fill vacancy), Ernest Flagg; *Committee on Education*, Thomas Hastings, Edward L. Tilton, Thornton F. Turner.

The new President, Mr. Cook, made an address endorsing the principles that had governed the past administration, and further expressing his own conception of the proper sphere of action for the Society. He particularly emphasized his belief that the members, in their individual work, should follow and express the fundamental principles of architecture as taught at the École des Beaux-Arts, but at the same time not feel bound to adhere to any set of forms, but to seek to interpret these principles with the same variety of expression that characterized the differences in the work of the different ateliers. He also entertained a hope that some coöperation with the architectural department of Columbia College might be brought about.

Minor items of business were transacted and four new members were elected, Messrs. Blake, Laflin, Totten and Atherton.

EDGAR A. JOSSELYN, *Secretary.*

SKETCH-CLUB OF NEW YORK.

THE regular monthly meeting of the Sketch-Club of New York was held in the Club-rooms, No. 3 East 14th Street, Saturday evening, December 5, 1896.

Mr. Robt. C. Sconce, Vice-President, occupied the chair.

The class in Architectural Research reported considerable work and progress by its members; a full meeting of this class was held Saturday, November 14th, when the papers were read and drawings submitted. They were all carefully prepared, but those especially worthy of praise were by Messrs. Housemann, Kriss, Field and Ginsburger. The next meeting of this class will be held Saturday, December 12th, 8 P. M.

Mr. Nolan reported that the Monday and Saturday evening Life Classes had a full complement of members and that four applications had been received for a third class, proposed for Wednesday evenings.

Mr. J. J. McGinnis will meet his class in Pen-and-ink Rendering, Thursday, December 10th, 8 P. M.

A "Xmas smoker" was announced for Saturday, December 19th.

The meeting adjourned at 9.15 P. M., when refreshments were served in place of the dinner which usually precedes the business meeting. HARRY P KNOWLES, *Recording Secretary.*

THE T-SQUARE CLUB OF PHILADELPHIA.

PROBABLY the most enjoyable and enthusiastic regular monthly meeting ever given by the T-Square Club was held on December 2d, at the offices of Mr. Guy King, 431 Walnut Street. The Club tendered President David K. Boyd, who had recently returned from an extended tour through England, France and Italy, a very cordial reception. An interesting programme had been arranged, entitled "General Waiting-room in an Important Terminal Station," treatment to be monumental, by Mr. F. M. Day, who also lead the criticism of the evening. The force of Mr. Day's unflinching criticisms in referring to the utilitarian and artistic aspects of this problem met with much approval and admiration. He also commended very highly those who considered a good general arrangement paramount to minor and insignificant details. First Mention was given to Oscar Wenderoth; Second Mention, John Molitor, and Third Mention, W. C. Hays. CHAS. E. OELSCHLAGER, *Secretary.*

ILLUSTRATIONS

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

HOUSE OF MRS. T. B. WILLIAMS, 304 COMMONWEALTH AVE., BOSTON, MASS. MR. J. A. SCHWEINFURTH, ARCHITECT, BOSTON, MASS.

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

THIS house, which has a frontage of 35′ and a depth of 105′, is built of light Indiana limestone.

STAIRCASE OF FRANCOIS I, CHÂTEAU DE BLOIS, FRANCE. MEASURED AND DRAWN BY MR. W. T. PARTRIDGE, NEW YORK, N. Y.

[Issued with the International and Imperial Editions only.]

SEE article elsewhere in this issue.

SECTION OF THE SAME STAIRCASE.

DETAILS OF THE SAME: TWO PLATES.

THE OLD ROYALL HOUSE, MEDFORD, MASS.

THIS old mansion, which dates from 1737, received much attention during the "Historic Festival" which was held in this old Massachusetts town during the month of October last. A full history of the building itself may be found in our issue for Oct. 13, 1888.

PROPOSED ALTERATION AND ENLARGEMENT OF THE STATE-HOUSE, COLUMBUS, O. MESSRS. YOST & PACKARD, ARCHITECTS, COLUMBUS, O.

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

SOUTH AND WEST ELEVATION OF ROYALL HOUSE, MEDFORD, MASS. MEASURED AND DRAWN BY MESSRS. A. C. FERNALD AND F. C. ADAMS.

DETAILS OF WEST ELEVATION OF THE SAME.

DETAILS OF EAST ELEVATION OF THE SAME.

[Additional Illustrations in the International Edition.]

DETAIL OF THE FACADE OF THE RAILWAY-STATION, FRANKFORT-ON-THE-MAIN, PRUSSIA. HERREN EGGERT & FAUST, ARCHITECTS.

[Gelatine Print.]

BASE OF ELECTRIC-LIGHT MAST IN FRONT OF THE RAILWAY-STATION, FRANKFORT-ON-THE-MAIN, PRUSSIA. HERREN EGGERT & FAUST, ARCHITECTS; HERR F. KRÜGER, SCULPTOR.

[Gelatine Print.]

HOUSE, NO. 8 MOZARTSTRASSE, LEIPSIC, SAXONY. HERR HUGO FRANZ, ARCHITECT.

[Gelatine Print.]

UNION BANK OF AUSTRALIA, CORNHILL, LONDON, ENG. MR. GOYMOUR CUTHBERT, ARCHITECT.

BANKING HALL IN THE SAME BUILDING.

COMMUNICATIONS

[*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.*]

TESTS OF THE STRENGTH OF OLD TIMBERS.

NEW YORK, December 2, 1896.

TO THE EDITORS OF THE AMERICAN ARCHITECT:—

Dear Sirs,— I enclose herewith a summary of the results of tests made by me, believing them to be of sufficient interest to the profession. These tests were conducted at my own expense to determine some values for these materials, and while they have not been sufficient to determine these as standard, they have proven that this material, after having been in use several years, has not the strength advocated by experimentalists upon newer materials. I hope later on to continue these tests under varying conditions.

I was led to inaugurate these tests by a dispute with the Department of Buildings in a case, the determination of which involved a decision affecting the existence of a large number of buildings in this city, and I must confess myself surprised at the low results attained.

THE results of this series of tests on the transverse crushing strength of old timbers used in factory construction give further light on this important subject, and have a direct bearing upon the question of the strength of existing structures. These tests were conducted with the intention of obtaining some data with which to judge the allowable strength for those parts of existing buildings in which such strains occurred, as where wooden columns and girders

are used, the latter being sandwiched between the columns without dowels or pintels, and being compelled to transmit the vertical strains; also bolster caps and bases, ends of headers and tail-beams, the area of bearing of beams in bridle-irons and of some of our patented bridle-irons on the beams. The point of strain taken was at failure, and although after this the specimens, excepting white pine, would stand strains up to the limit of the testing-machine (2,000 pounds per square inch), the increase of pressure would be followed by such increased smashing that it would be impossible to determine the value for the strength of the piece. While the factor-of-safety should be variable, depending upon the location of the member in the structure, still the New York and Brooklyn laws require a factor of four, and, consequently, one-fourth of these values should be taken.

Yellow Pine, 974 lbs.	per	square	inch.
White Pine, 550	"	"	"
Oak Pine, 1,200	"	"	"

In other words, when such material is subjected to greater strains than one-quarter of the above values, it is loaded beyond its safe limit.

Oscar Lowinson.

THE FAIRMOUNT PARK ART BUILDING.

To the Editors of the American Architect: —

Dear Sirs,—About a year ago a competition was held for designs for an "Art Building in Fairmount Park, Philadelphia, Pa."

The competition attracted much attention, as the building was to be a large, monumental structure, one of the conditions being that it should "at least be equal, if not superior, to any similar building in the world." The estimated cost was four to five millions of dollars.

About one hundred designs were received, and the Park Commission instructed a jury of prominent architects to select the best eight designs, presumably intending to choose from these one design for execution and three others for the stipulated award of premiums.

The jury selected the eight designs and also designated the four, which appeared to them the best, in their order of merit. Upon opening the sealed envelopes containing the names of the architects, it was found that three designs were by New York architects and one by a French architect.

Objection was raised by the press to the contemplated award, the claim being made that the jury exceeded its authority in doing more than select eight designs as instructed, leaving the selection of the four best to the Park Commission. What action, if any, has been taken by the Park Commission since then is not known; in fact, it is not certain that the above information is entirely correct, as it has been obtained from somewhat contradictory newspaper reports.

If you can give any reliable information regarding the present status of the competition, it would be appreciated by

"Competitors."

[We have ascertained that within a short time after the making of the awards the premiums were duly paid to the several architects, but that nothing further has been done, presumably for the reason that the city has made no appropriation that would enable any further steps to be taken. It also appears from the minutes of the jury, under date of November 26th, that "the directions of the committees to the Board of Experts and the further instructions given them in Philadelphia, would seem to require them to select: (1) The eight best of the plans submitted, and (2) The four plans which under the given conditions should receive the prizes." We apprehend that as the award was made on this understanding, competitors have no reason for assuming that the Board of Experts exceeded its delegated powers.—Eds. American Architect.

THE WIDTH OF HORSE-STALLS.

New York, N. Y.

To the Editors of the American Architect: —

Dear Sirs, — In Mr. C. H. Blackall's very excellent article on "Stables," in your issue of November 14th, I notice the following:

"A single stall more than 5′ wide is not advisable, as a horse is very apt to become stalled therein and rendered perfectly helpless. A good width is 4′ 6″, though experience in large boarding-stables shows that 4′ will answer, etc."

In "*Kidder's Pocket-book*" (edition of 1891), under miscellaneous memoranda appears the following:

"*Horse-stalls.* — Width, 3′ 10″ to 4′, or else 5′ or over in width, . . . Width should never be between 4′ and 5′, as in such cases the horse is liable to cast himself."

You will notice there is some discrepancy and, perhaps it would be useful to many of your readers to know which is to be taken as correct.

Yours truly, James Pickles.

[It is not possible to fix a least dimension for stalls which will suit horses of all heights and sizes, and of all degrees of intelligence and activity. Horses are cast in many complicated positions and when found in the morning, it is not easy to find out either why or how the accident should have happened. As a rule, the manner in which the horse is tethered is quite as often the cause of accident as is the width of the stall. Ordinarily, the question for owner and architect to decide is whether they will permit to the horse any temptation to roll in his stall. When this luxury is to be risked, the width of 6′ 2″ recommended by an English writer is little enough. For horses of ordinary size and reasonable intelligence, if properly tethered, we believe the figures given by Mr. Kidder will afford sufficient safety and comfort. — Eds. American Architect.]

A CORRECTION: "ADJUSTABLE FACING."

Because of a somewhat obscure chirography, the name of the writer of a communication under the above caption in our issue for November 28th, was given as John Louis Pelton, whereas, the middle name might have been correctly read as "Cotter."

NOTES AND CLIPPINGS

Ceramic Stone. — The name of "Ceramic Stone" has been given by M. Garchey, a French inventor, to a new building-stone obtained by him from broken glass. The glass — broken bottles, window-panes, etc., — is reduced to powder; different kinds are mixed if variegated color is desired, and the pulverized material is devitrified by passing successively through two furnaces, the second being one of high temperature. The pasty mass is then passed under a press, which gives it shape and consistence. — *The Churchman.*

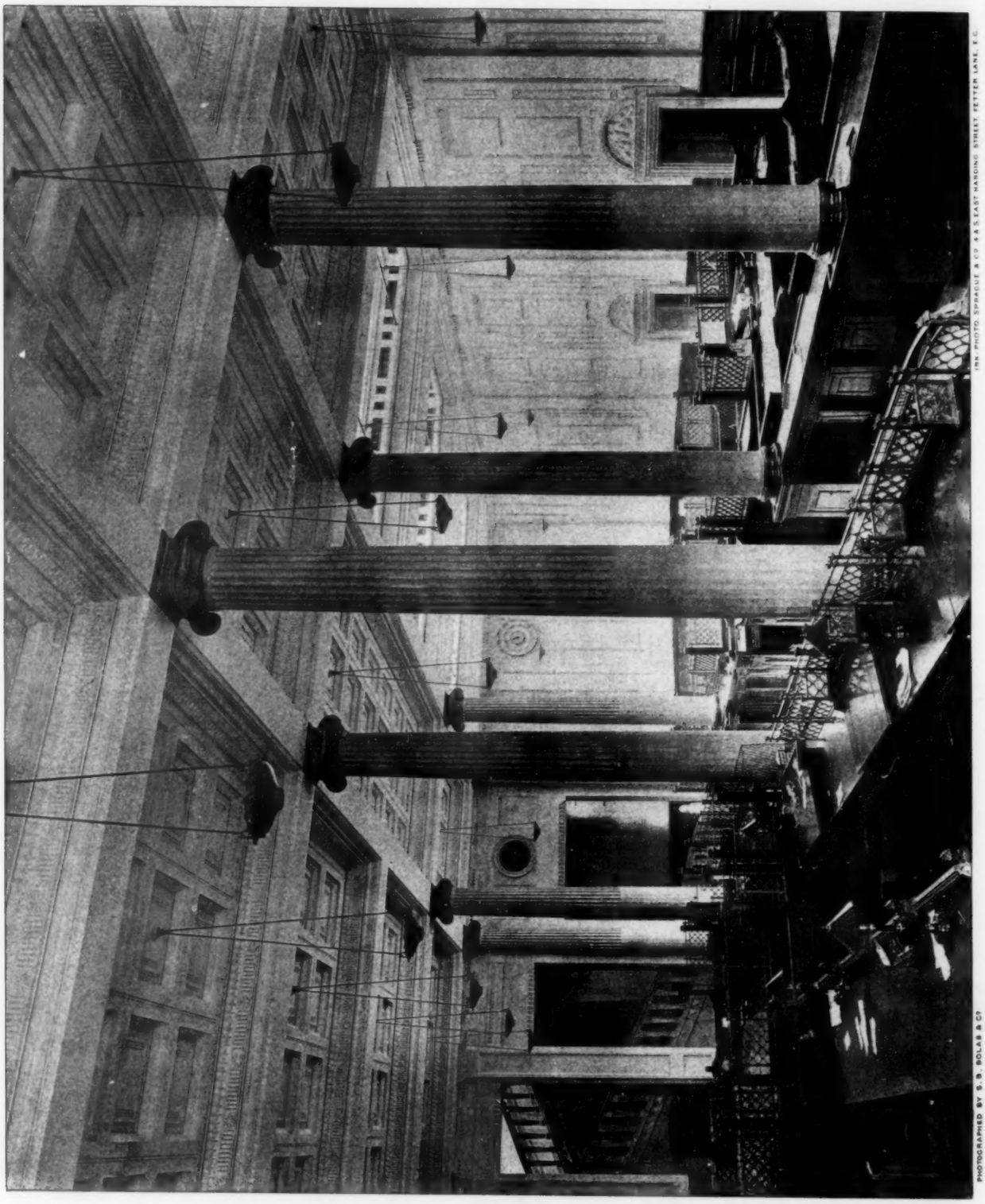
Antwerp's Prix de Rome. — Antwerp's great art school is regarded by that city's inhabitants as its most important institution, and to win the Prix de Rome there is to become the object of stately municipal honors. This year the prize fell to a young artist named Arthur Sterck, and he has just been made the principal figure in a procession that recalled the triumphs of conquerors of nations. In a landau drawn by four magnificent horses, decorated with the colors of Antwerp, preceded by three regimental bands, and followed by the mace-bearers of the Academy, numerous groups of citizens, with the banners of their respective societies, he was escorted to the Academy, where speeches of congratulation were delivered. From there he was conducted to the Hôtel de Ville, where the Burgomaster and Aldermen, in their robes of office, congratulated him in the name of the city. — *N. Y. Times.*

Sea Baths and the French Salt-tax. — A great amount of criticism is being levelled at the present moment against the French authorities along the seacoast, for their action in forbidding the bringing of sea-water into the houses for bathing-purposes, and the newspapers are asking whether the Government is afraid that the sea may be emptied. The *Journal officiel*, at Paris, however, explains that the officials are only doing their duty. There is a tax on salt. Sea-water contains salt, and sea-water is, therefore, liable to the salt taxes on that basis. By Clause IX of the law of 1840, enacting the salt dues, it is forbidden to "take or transport salt-water or saliferous matter for any other destination than that of a factory regularly authorized by the State for the purpose, unless special permission has been obtained from the revenue authorities." It is the existence of this law which prevents the removal on the French coasts of even a single pail of sea-water from the ocean. — *N. Y. Tribune.*

William II as an Architect. — As a statesman, soldier, sailor, preacher, painter and musician, the Kaiser has afforded to the contemporary world successive glimpses of his many-sided genius. It is probable, however, that posterity will be most concerned with William II, as an architect. He is endowing Berlin with a couple of buildings which bid fair to rival in their colossal proportions the monuments of Nineveh and Babylon. On the far from ample space at the end of the famous Unter den Linden Avenue, between the Schloss and the Museum, is being reared the new Lutheran Cathedral — a gigantic structure in the form of a Greek cross. The dome, it is said, will eclipse that of St. Peter's at Rome, and only in the length of the nave will the older basilica have any advantage in size. As the scaffolding already indicates, this mass of stone, embodying a curious variety of styles, must completely crush into insignificance the adjoining palace. To complete the work of effacement, the Brobdignagian memorial of William I is in process of erection within fifty feet of another front of the castle. The huge hemicycle, which forms a sort of pedestal, runs up to a height of nearly eighty feet and dwarfs everything in its neighborhood. However uneventful his reign may prove, William II will certainly have left his mark on the Prussian capital. — *St. James's Gazette.*

M. Pasteur's Tomb. — The tomb of Pasteur, which is now in course of construction under the direction of M. Charles Girault, may be said to have some affinity, although it will be on a much smaller scale, with the great tomb of Napoleon in the Invalides. It forms a part of the Institut Pasteur in the Rue Dutot, for the crypt which is to contain the sarcophagus has been excavated to a depth of about sixteen metres, or fifty-three feet, below the vestibule. The approach will be down a vaulted staircase. Above the entrance to it is a cartouche containing as an inscription a thought of Pasteur's, to the effect that "He is happy who carries in his mind and obeys a God, an Ideal of Beauty, an Ideal of Art, an Ideal of Science, an Ideal of Patriotism, an Ideal of the Evangelic Virtues." The central part of the floor of the crypt is raised to form a daïs in mosaic for the sarcophagus, which will be of Swedish porphyry. Over it is a cupola, supported by twelve porphyry columns with Ionic capitals. Facing the staircase is a small chapel or apse. The cupola is covered with mosaic. In the centre are four winged figures, designed by M. Luc Olivier Merson, symbolizing "Faith," "Hope," "Charity" and "Science." Around are figures of the vine, hop and mulberry, which suggest Pasteur's discoveries in fermentation, and figures of animals that were the subjects of his later investigations. The walls are veneered with marbles, while the steps, as well as the bases and capitals of the columns, are in white marble. The whole structure is worthy of the man it commemorates, and in his Institut it has a significance which it could not possess if it were erected in one of the Parisian cemeteries. — *The Churchman.*

S. J. Parkhill & Co., Printers, Boston, U. S. A.



THE BANKING HALL, THE UNION BANK OF AUSTRALIA, CORNHILL.

PHOTOGRAPHED BY S. B. BOLAS & CO.

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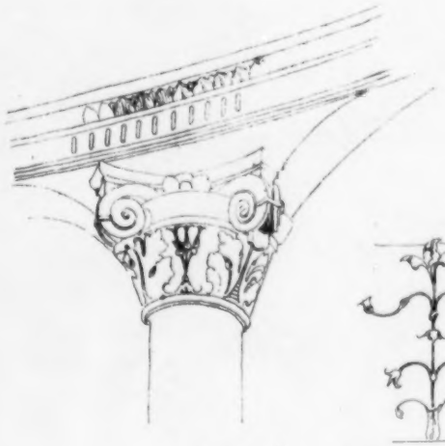
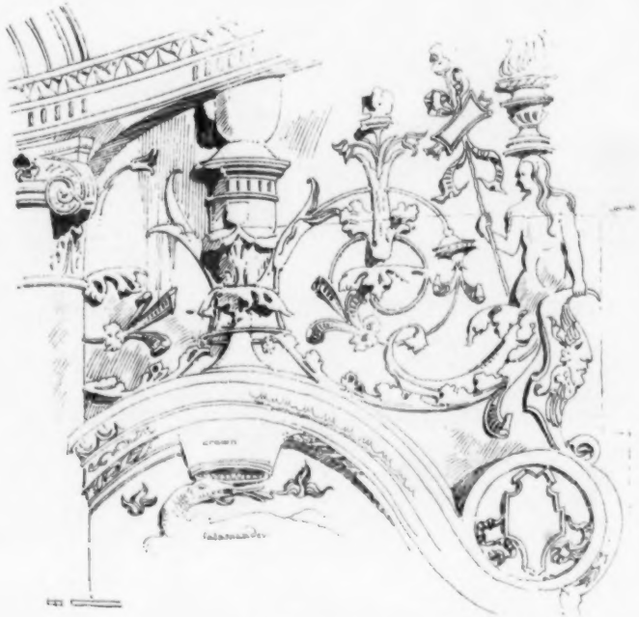
THE UNION BANK OF AUSTRALIA, CORNHILL.

GOYMOUR CUTHBERT, A.R.I.B.A., Architect.

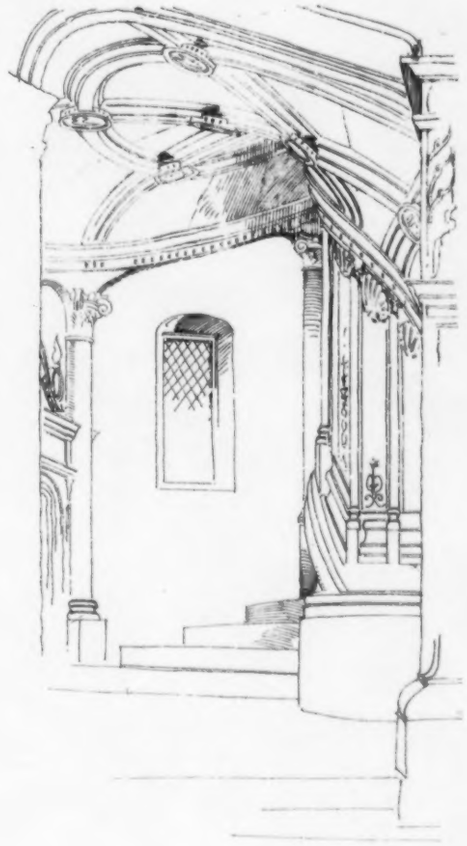
CHATEAU DE BLOIS



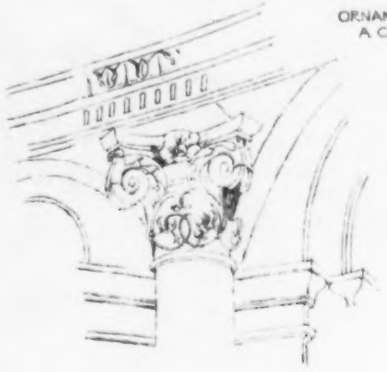
ORNAMENT FROM A CAPITAL



PEDIMENT OVER DOOR



ENTRANCE TO STAIRCASE

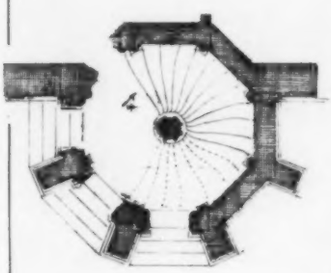


CAPITALS UNDER VAULT

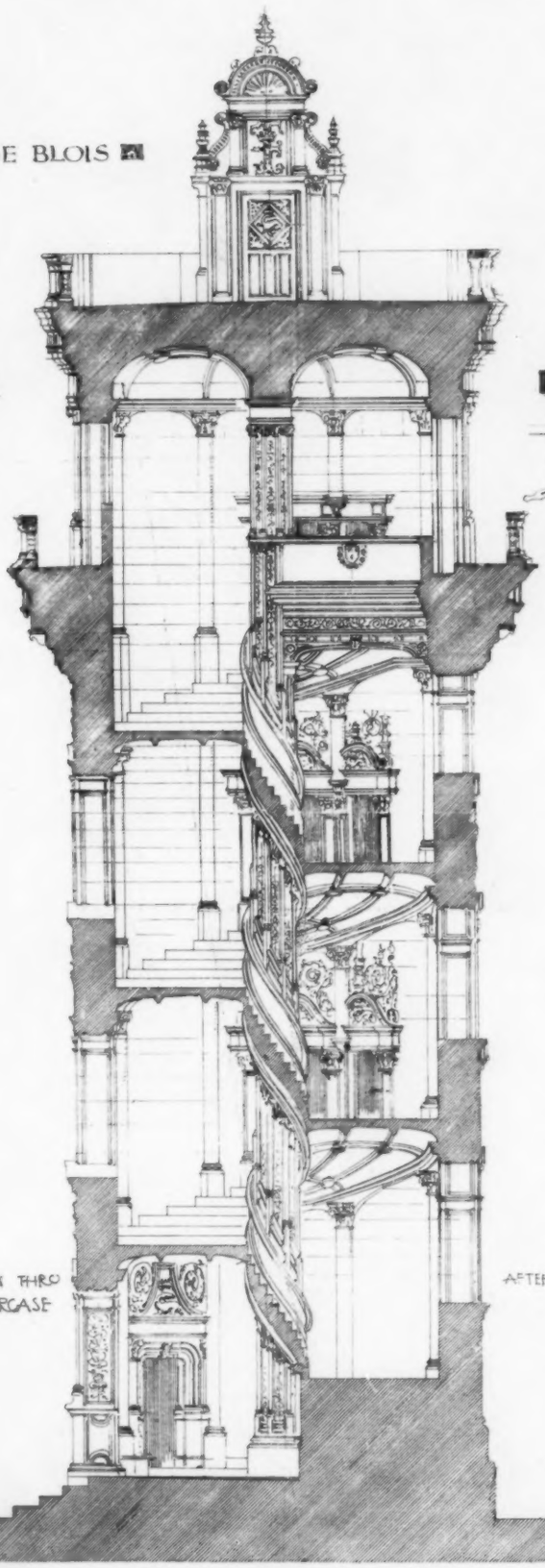
CAPITALS FROM DOORS

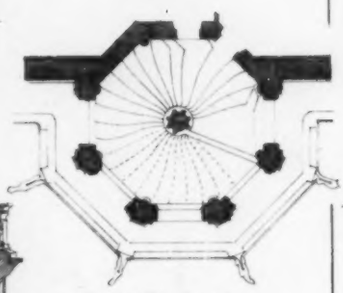
STAIRCASE - FACADE FRANCIS I - DETAILS

CHATEAU DE BLOIS



PLAN AT LEVEL OF COURTYARD





PLAN AT LEVEL OF CORNICE

SKETCH SECTION THRO GRAND STAIRCASE

AFTER DRAWINGS FOR THE PRESENT RESTORATION.

AMERICAN ARCHITECT AND BUILDING NEWS, DEC. 12 1896. NO. 1094.

CHATEAU DE BLOIS

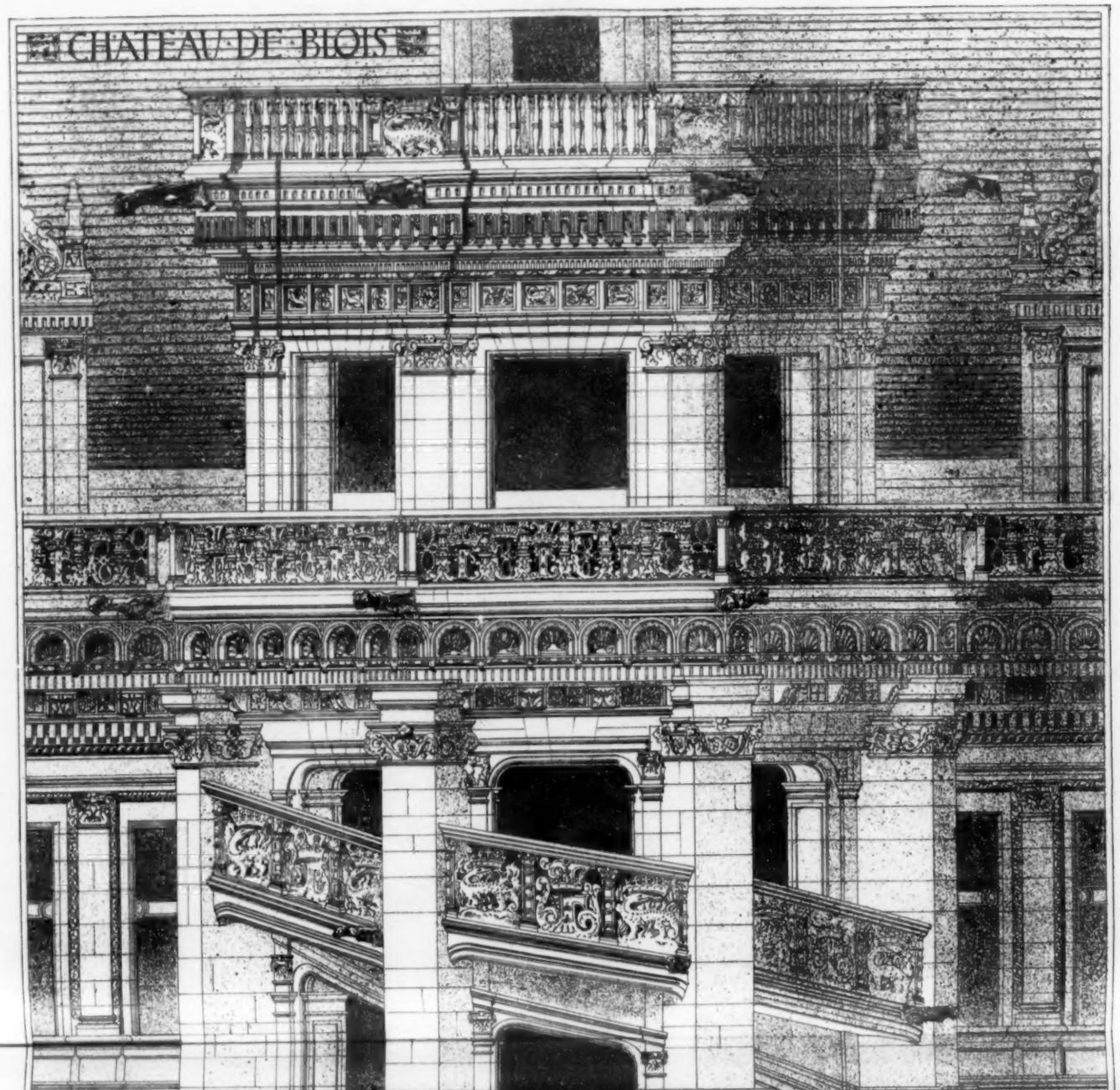
DOOR ON LANDING

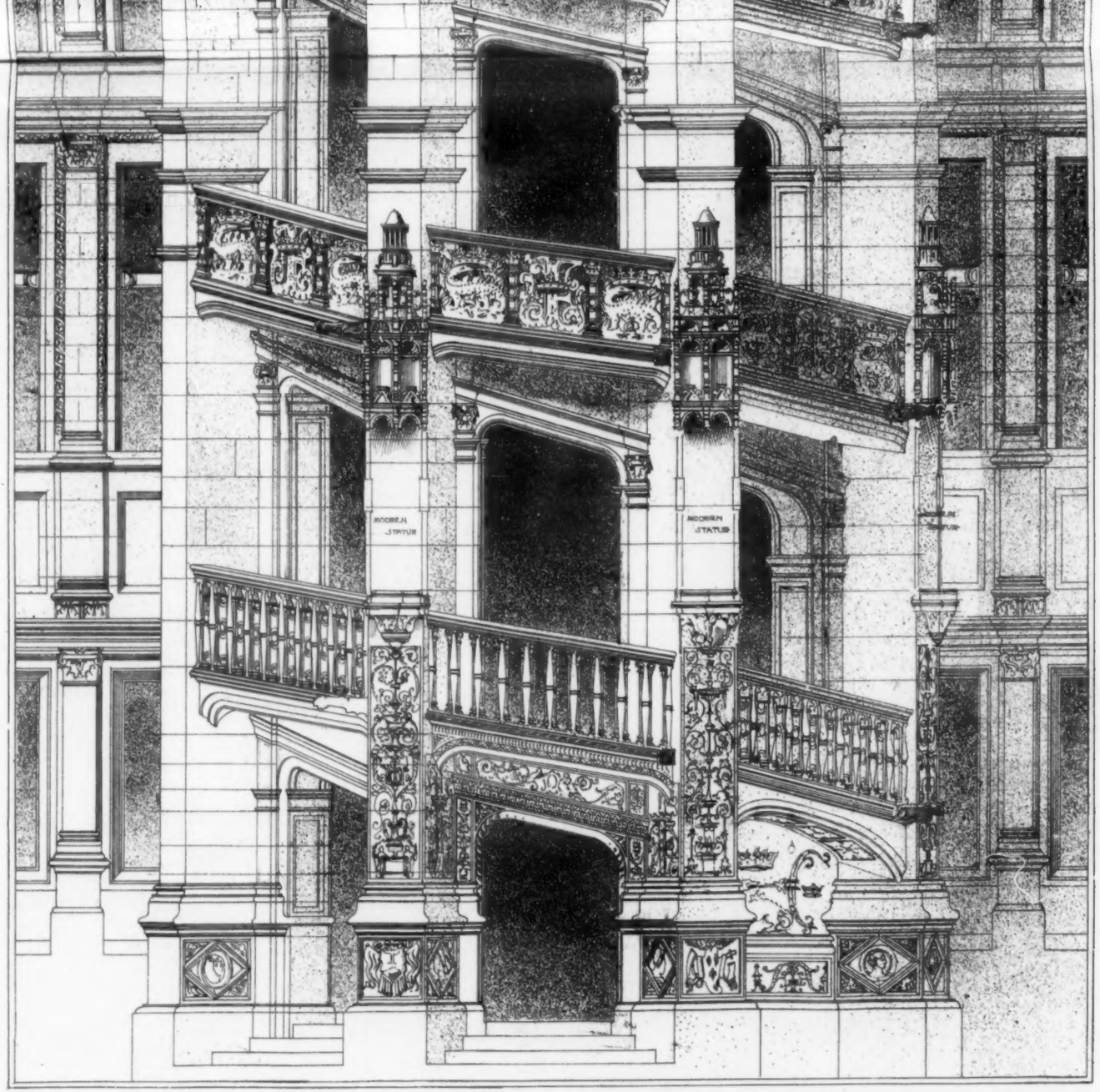
SECTION

PLAN

DOOR ON LANDING

DETAILS OF STAIRCASE - FACADE OF FRANCIS I

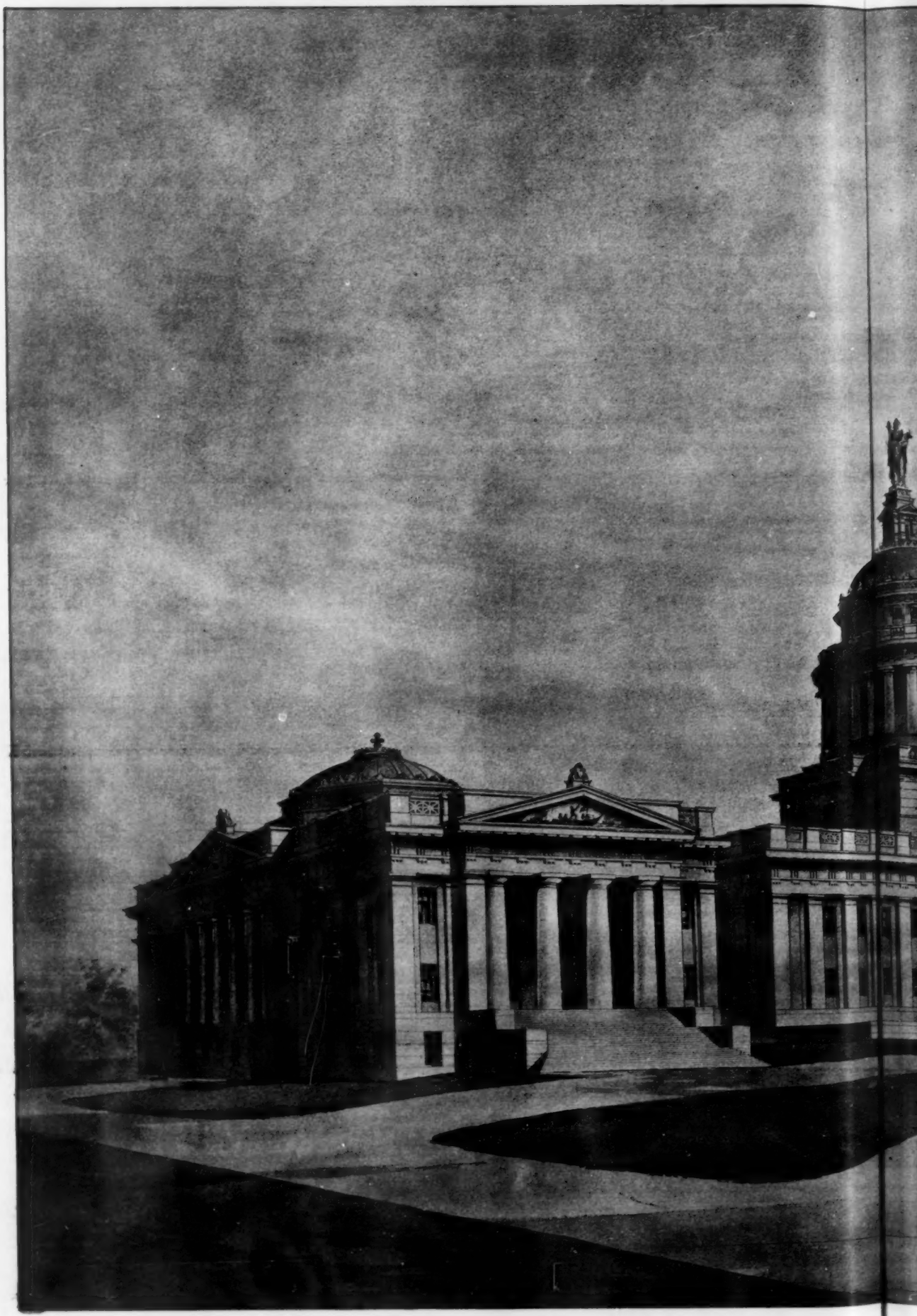




THE GRAND STAIRCASE . CHATEAU DE BLOIS.

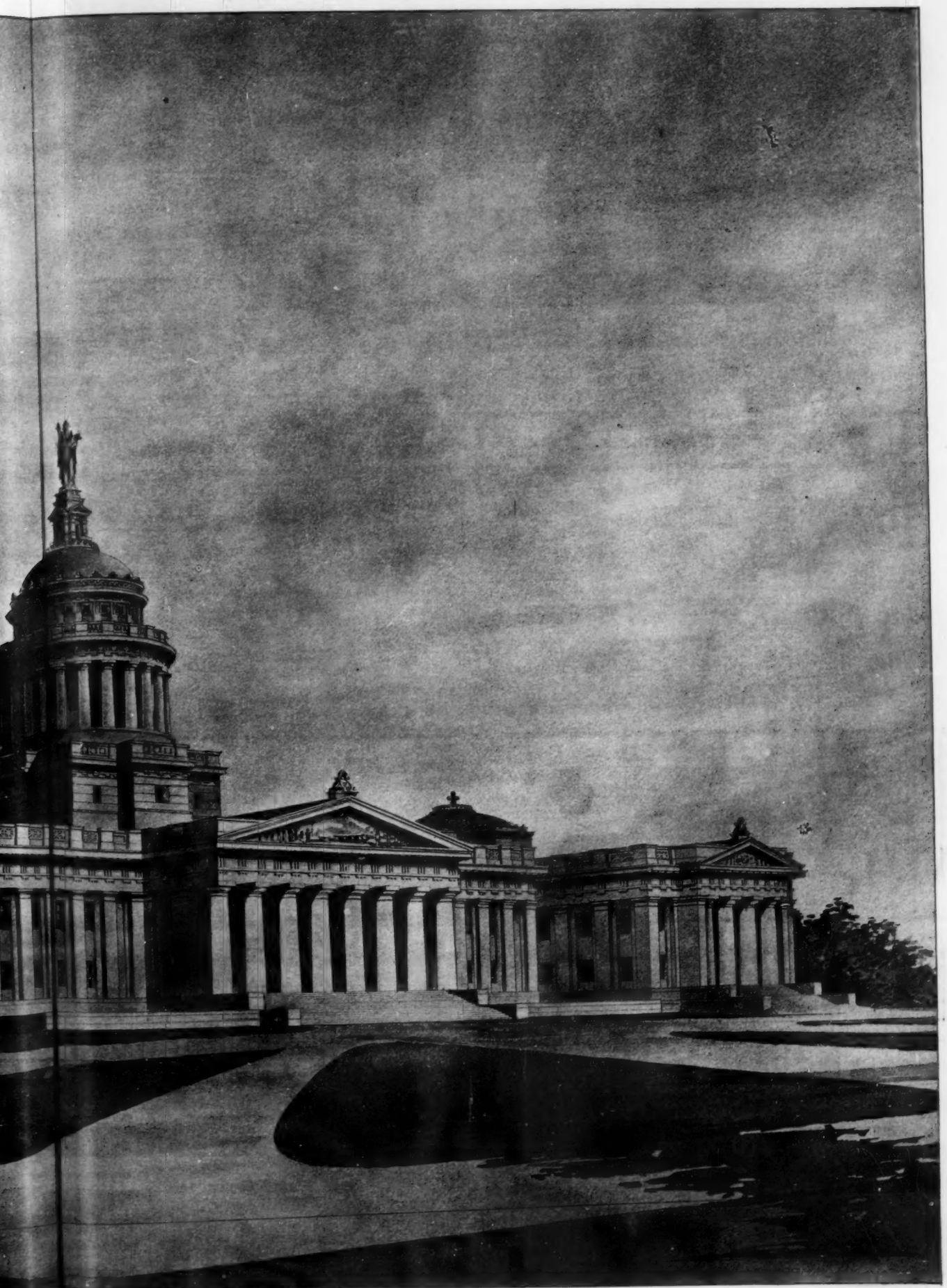
MEASURED AND DRAWN BY W. T. PARTRIDGE

Heliotype Printing Co. Boston



PROPOSED ENLARGEMENT AND ALTERATION OF

Yost & Packard, A



TERATION OF THE OHIO STATE-HOUSE, COLUMBUS, O.
T & PACKARD, ARCHITECTS.

THE HELIOTYPE PRINTING CO., BOSTON

HOUSE OF MRS. T. B. WILLIAMS, 304 COMMONWEALTH AVENUE, BOSTON, MASS.

J. A. SCHWEINFURTH, Architect.

Blätter für Architektur Neumann & Co., Berlin.

Base of Electric-Light Mast in Front of the Railway Station, Frankfort-on-the-Main, Prussia.

Eggert & Faust, architects: F. Krüger, sculptor.

Blätter für Architektur

Neumann & Co., Berlin.

Detail of Façade of Railway Station, Frankfort-on-the-Main, Prussia.

Eggert & Faust, Architects.

Blätter für Architektur

Neumann & Co., Berlin.

House, No. 8 Mozartstrasse, Leipsic, Saxony.

HUGO FRANZ, ARCHITECT.