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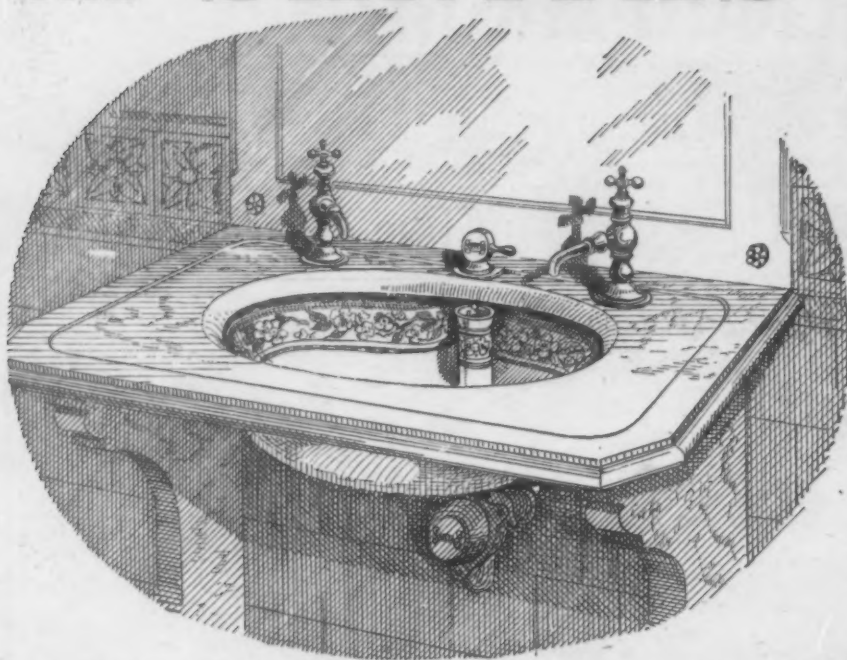
ENTRANCE TO HOUSE OF E. V. R. THAYER, ESQ., BOSTON, MASS.
[Gelatine Print issued with the Imperial and International Editions only.]
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SUMMARY:—

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ADVANTAGE has been taken of the beginning of a new volume to again increase the edition of the International Edition of this journal—the second time within six months that this agreeable step has been forced upon us by its popularity with those who measure values by real worth, irrespective of mere nominal costliness. This time, however, the increase is not retroactive, as it was in the earlier instance; that is, although we can now welcome new subscribers to this edition, we cannot supply them with the issues for the first six months of the year. It is not a season of the year when publishers naturally expect many new subscriptions, and we make this announcement mainly in the interest of those subscribers to other editions who replied to our original circular with the statement that they did not care to promise support to an uncertain undertaking. As their minds must by this time be disabused of their doubts as to our being able to carry the scheme into execution, they may now like to take advantage of the present opportunity, and have their subscriptions transferred to the International list from July 1 onward.

THE case of Smithmeyer and Pelz against the United States, to which we have before referred, has been tried and decided by the Court of Claims, and, although the plaintiffs have appealed from the decision to the Supreme Court of the United States, the interpretation of the law which the Court of Claims lays down is of extreme importance to architects. According to the printed report of the case, the facts, as found by the Court, were that in March, 1873, the Commission on Plans for the proposed Congressional Library building issued an invitation to architects to submit sketches for the building, and offered a prize of fifteen hundred dollars for the one adjudged best by the Commission, one thousand dollars for the second, and five hundred dollars for the third. In response to this invitation, Messrs. Smithmeyer and Pelz submitted a design, in Italian Renaissance style, which was adjudged the best, and the first prize was paid them. Soon afterwards, at the request of the chairman and members of the

Committee on the Library, the plaintiffs submitted a new design, involving some changes of plan and a change in the elevation. Five new drawings were submitted, including a colored perspective, a front elevation and portions of floor plans. About 1875, at the request of the chairman of the Joint Committee on the Library, the plaintiffs prepared plans on an entirely new basis for a library building in the Gothic style. Seven drawings were made, only four of which were submitted to the Committee. The next year, five more drawings, showing modifications of the Gothic design, were made and submitted at the request of the chairman, although the designs of the previous year were acceptable to the Committee. About 1877, at the request of the chairman, the plaintiffs made new drawings, using the same general plan as in the previous Gothic design, but fitting to it elevations in the French Renaissance style, and interchanging the first and second stories. At the time of the preparation of these plans, it was thought possible that the building might be placed on Judiciary Square, and the plaintiffs made, by request, cross-sections of the Square showing the buildings, with grades, sewers, etc.

THE next whim which seized the Committee was to have a design for the building in the Romanesque style, and drawings were made and submitted accordingly. About 1879, the Committee had again changed its views, and requested the plaintiffs to prepare a fresh design in the German Renaissance style, which they did, submitting a finished perspective and eight other drawings, including some modifications and improvements upon the previous floor-plans. A year later, the Joint Select Committee on Additional Accommodations for the Library, requested Mr. Smithmeyer individually to make full general drawings for a building in the Italian Renaissance style, embodying all the improvements which had been made by the plaintiffs since the original competition of 1873. These plans, shown by forty finished drawings, were made by the firm to which Mr. Smithmeyer belonged, and submitted, and, with a slight modification, were adopted by Act of Congress of April 15, 1886, and re-adopted by Act of March 2, 1889. This, however, was not all the work that the plaintiffs did in obedience to the whims of Congress. In 1882, at the request of the same committee that ordered the plans of 1880, the plaintiffs remodelled the Gothic designs made several years before, and submitted the new drawings, which were adopted by the Senate in a bill which failed to pass the House. Even this was not the end. In 1885 or 1886, the Committee asked for new exterior elevations and perspectives, showing the design of 1880 with a more ornate treatment, and these, also, were made and submitted. It may be readily imagined that, after 1874, the plaintiffs abandoned nearly all other business to attend to the demands and fancies of the Committee on the Library, and from that time to 1886 they devoted themselves almost exclusively to that work, losing in this way the private business which, as the Court found, they had not regained up to the time of the commencement of the suit; while, in 1882, Mr. Smithmeyer, at the request of the Committee, travelled through this country and Europe for the purpose of obtaining information about the architecture of the great library buildings of the world.

AS our readers know, work was begun on the building from the plaintiffs' designs, and under their direction, and continued for two years, Mr. Smithmeyer being appointed architect of the building, at a salary of five thousand dollars a year, and Mr. Pelz principal draughtsman, at a salary of three thousand dollars. In October, 1888, the construction of the building was, by a new Act of Congress, placed under the direction of the Chief of Engineers, with orders to reduce the cost. This he did by the simple process of leaving out a part of it, and summarily dismissed Mr. Smithmeyer, retaining Mr. Pelz, who is still employed. The claim made by the plaintiffs is for a commission of two and one-half per cent on the estimated cost of the building, amounting to one hundred and seventy-five thousand dollars, in accordance with the schedule of the American Institute of Architects. The Court quotes the schedule, and finds that "These are the rates and rules established by the custom and usage of the profession, and are never deviated from by architects in good standing,

except under exceptional circumstances, and then only by a special and express contract." It finds, further, that "The plans under which the building for the Library of Congress is being constructed are designed and intended for a monumental building within the meaning of the paragraph of the foregoing schedule, which describes additional rates for such plans," and says that "In a number of cases the executive branch of the Government has employed architects at the rates prescribed by the foregoing schedule of the American Institute." The Court found that the plaintiffs notified the chairman of the Joint Select Committee, previously to 1886, that they intended to charge for their plans, but did not notify Congress or the Commission that they intended to charge according to the schedule of the Institute.

ON this showing, one of the judges is "of the opinion that compensation should be measured by the general rule and usage which govern the compensation of the profession"; that, "in legal effect, the claimants proffered their plans to Congress, through the intervention of the Joint Select Committee, for inspection, coupled, nevertheless, with the implied condition that if they were used their services should be paid for, as like services are paid for by other persons; that when Congress adopted the design by the Act of 1880, the case reached the condition *Tilley v. County of Cook*; and that when the defendants proceeded to give effect to the statute by actually using the plans in the erection of a building after their design, the case entered the third stage, in which, as the Supreme Court intimates, the legal liability of the employer at last becomes fixed, and the obligation to pay for the service becomes legally binding." This judge thinks, "too, that the decisions of the Supreme Court holding that the usage of architects extends to and is binding upon a body-politic erecting a public building (*Tilley v. County of Cook*), and that it has a recognized and established existence in the District of Columbia (*District of Columbia v. Cluss*, 103 U. S. R., 705) are authority for holding the usage obligatory upon the Government for a building erected in the City of Washington." The majority of the judges, however, were of the opinion that the acts of the parties indicated that the services should be estimated according to the rule of *quantum meruit*, and not according to the schedule of charges of the Institute of Architects. Inasmuch as the plaintiffs "departed from the general rule of architects of measuring their compensation by the customary fees of their profession," and accepted salaries amounting to eight thousand dollars a year, these judges thought that the preceding part of their services "should be estimated according to the same rule which the parties have themselves adopted," and gave the decision of the Court: that the plaintiffs should recover forty-eight thousand dollars, this being approximately equivalent to salaries of eight thousand dollars a year from October, 1874, when the plaintiffs gave up their other business to devote themselves to perfecting their plans, to January, 1881, when the plans were submitted to Congress. We shall make no comment on the decision except the obvious one, that if the Committee had kept the plaintiffs dancing attendance on them, to the neglect of all other business, for a few years longer, they might have starved them into accepting eight hundred dollars a year salary, instead of eight thousand, and this would then have been the "rule" for computing the value of their professional services in previous years. After an architect has spent fifteen of the best years of his life in trying to please such a committee, and has seen all his private clients leave him, never to return, it is not surprising that, with the prospect of old age and poverty not far away, he should be willing to accept a salary of five thousand dollars a year, rather than get nothing; but the doctrine that one who owes a professional man a large bill for services already rendered, and can keep him out of his money until he is willing to accept a reduced rate for continued service, is thereupon entitled to scale down the bill already incurred to the reduced rate, is a singular one to be announced by the highest court but one in the United States.

THE New York *Star* has been devoting its attention to architects and underwriters, and has published one or two editorials about them, containing the usual amount of nonsense, which, unfortunately, is of a sort likely to be believed by people who know nothing about the matter, to the injury of

a class of skilful and hard-working men, who have suffered too long from the misrepresentations of newspaper reporters and editors. The *Star* says, first, that "The fire-insurance companies have done their best to bring conviction to the minds of doubters" (of the financial expediency of fire-resisting construction) "by materially reducing their rates on buildings constructed according to approved methods"; and follows this statement by another, that "Experienced underwriters, who have given careful attention to all plans calculated to assure more or less complete resistance against their great enemy, fire, have written pamphlets telling how buildings ought to be constructed, and detailing the advantageous terms on which their respective companies will insure them." Not knowing much about underwriters, we will not attempt to call either of these statements in question, but we should be very glad to know the name of any company taking general risks, which ever "did its best," or did anything, to "convince doubters," by reducing rates on fire-resisting buildings, not only in any sort of proportion to the reduction in the risk, but in such proportion as to pay even the taxes on the increased cost, to say nothing of interest on the extra outlay; and would like to know where a copy of any pamphlet can be procured, written by any underwriter, and "detailing the advantageous terms" on which any company doing a general insurance business will insure buildings constructed in any way whatever. We had supposed that city rates were fixed by the underwriters' associations, who made some feeble concessions in rates in consideration of certain great improvements in construction, more because they were compelled to do so by public opinion, and the fear of seeing special companies started to insure fire-resisting buildings, than from any zeal for convincing unwilling architects and real-estate owners; and if any company has really had the independence to fix premium rates so as to make it "advantageous," in the matter of insurance, to build solid and fire-resisting buildings, we hope that company will send its calendars around among the architects without delay.

THE excavations of the British School at Athens for the present season have closed, according to the *Builder*, after some months of successful work. As we have before mentioned, the School chose Megalopolis for the scene of its explorations, attacking first the site of the theatre, reputed to have been the largest in Greece, which could be plainly traced at the foot of a hill, near the river Helesion, which intersects the town. The stage and orchestra, which were, of course, on the lowest part of the site, were found to be covered with from ten to twelve feet of soil, forming a fine bit of cultivated land, while the auditorium, most of which was on the hillside, was covered with trees and brushwood. The first thing done was to cut trenches across the stage and orchestra, directed toward the auditorium. In this way the stage walls were found, and the general plan determined, and the two front rows of seats, which were permanent affairs, of gray marble, were brought to light, as well as two overturned pedestals, one near each end of the front of the stage, which were shown by inscriptions on them to have supported statues. Owing to the shortness of the season during which excavations can be safely carried on in the malarious climate of the Greek river valleys, and the depth of the earth covering the main part of the building, nothing more was accomplished than the determination of the main features of arrangement; but work is to be resumed in October, and, after removing the rest of the earth from the structure, operations are to be begun on the opposite bank of the river, where indications of important constructions remain.

BOSTON architects will hear with very great regret of the death of their late associate, Mr. Herbert P. Kenway, which took place in Wales a few days ago. Mr. Kenway was an Englishman, coming to this country, we believe from Manchester, some fifteen years ago. His skill as a draughtsman and his amiable disposition advanced him rapidly in his profession, as well as in the regard of his friends and associates. He soon formed a partnership with Mr. F. R. Allen, and the firm of Allen & Kenway has since executed many important commissions. Within a short time, the anxieties and responsibilities of business had begun to tell upon a constitution never very robust, and a few weeks ago he sailed for Europe with his wife and child, but died soon after reaching the other side.

RELIGIOUS ARCHITECTURE.¹—XV.

ROMANESQUE PERIOD.

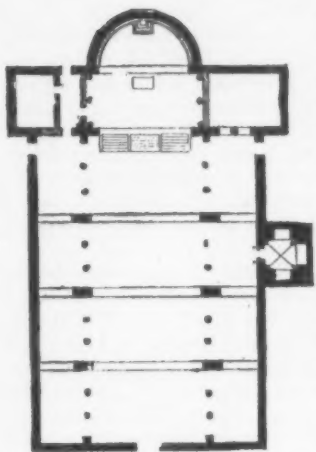


Fig. 1.—Plan of the Basilica of S. Prassede, Rome (9th Century).

WE have already indicated the ancient roots in Byzantine art, as well as its original forms, at the same time noting its development and the unquestionable influence which it exercised widely down to the tenth century, and even later. We are now about to see the West gradually liberate itself from this influence, and, becoming creative in its turn, produce a style of architecture which, in technical conception and general disposition, as in ornamentation, will follow a hitherto untrodden path.

This new style of architecture did not spring all at once into existence. In fact, it freed itself by a slow process from Byzantine art, passing through a series of transformations which can be traced step by step. In the eleventh century, and the beginning of the twelfth, though Byzantine forms and plan dispositions were in large measure retained, the decorative system had already been so radically modified as to give an entirely Occidental physiognomy to structures which could never be confounded with Byzantine art, even from the most cursory examination.

Then another transition was effected. Not only did the system of ornamentation take on a more and more original stamp, but the discovery of a technical solution of the problem of covering the naves of those vast ecclesiastical edifices which were being reared on all sides led to a complete modification of their general arrangement. After a period of grouping, in which various solutions had been attempted and abandoned, the solution was at length reached which opened up entirely new architectural resources; these were thenceforth freely drawn upon, and the transformation was accomplished in all the essentials of the art.

At the beginning of the eleventh century, a mighty change declared itself in the Occident. It is well-known through what a period of despair Christian peoples passed at the approach of the year 1000, when it was believed that the world would come to an end; it is also well-known that this terror was followed by an access of hope and confidence. This was the starting-point of an entire renovation of church architecture, and marks exactly the date of the advent of the so-called Romanesque style.

The Cluniac monk, Raoul Glaber, has described this peculiar outburst of religious ardor in the oft-quoted passage beginning: *Infra supradictum millesimum tertio jam fere imminente anno.* . . . "As the third year after the year 1000 was drawing near, Christians all over the world, and especially in the Gauls and Italy, set about renewing the church edifices, although most of them were sumptuously enough appointed to do without such a renovation. But Christian nations vied with one another for the possession of the most remarkable temple. The world seemed to rouse itself to shake off its age and deck itself in a white robe of churches. In short, almost all ecclesiastical structures, whether cathedrals, or monasteries of the saints, or mere village chapels, were converted by the faithful into something better than they had been originally."

Though usually sumptuously appointed, as Glaber remarks, a reason for the renovation or replacement of the old structures existed in the fact that they were disappearing one after another by fire. The basilicas were roofed and ceiled in wood; it was difficult, in fact, considering the great breadth and height of the naves, to make use of the vault, as it would have required walls of extraordinary thickness for its support. There is but one known example of a vaulted Roman basilica, namely, the old Temple of Peace or Basilica of Constantine; and but one edifice of the kind, it is said, was reared by the early Christians; this was built about the year 500 at Geneva. The presence of wood in such great quantities became, as years

went on, a permanent and more and more threatening danger, which, we may say, not a single basilica escaped. It may also be added that it was not easy to reconcile this mode of covering churches with the grandeur and richness of aspect that were already beginning to be demanded.

East and West alike were called upon to solve the problem of covering directly, with a mass of masonry, the wide, lofty halls designed for worship, thus completely isolating them from the outer roofing which, in case of accident, might be destroyed without endangering the rest of the building. We have already noted the Byzantine solution; it was wholly unlike that reached in the West.

At S. Prassede in Rome (Figure 1), which dates from the first part of the ninth century, traces are found of the earliest attempts made for protection against fire. The structure was at first partitioned off, in a fashion, by cross walls, pierced in the lower part by broad openings for the aisles and naves, but reaching from floor to roof, where the gables were expected to act as barriers to the flames. They do not appear to have been efficacious, and recourse was had to masonry vaults.

All the early trials of vaulting were made timidly. First the apses were attacked, then the choir, then the small bays of the aisles, which were narrow enough to admit of the application of the old Roman system of vaulting, without endangering the stability of the structure. With the naves it was different. Here the breadth and height rendered the thrust of the vault especially dangerous. In proof of this it may be noted that practically none of the religious edifices of the first Romanesque period exists; here and there a part of a wall, an apse, a tower, or a row of arches remains; but wherever an effort was made to introduce the vault over the nave, the edifice perished at the end of a few years. Moreover, written evidence of such destruction abounds.

It was necessary to narrow the naves, and make the side walls and pillars of extraordinary thickness; the transverse ribs, or supporting arches thrown from point to point under the barrel vault, were made much heavier after the manner once employed by the Romans, as also were the former ribs; and shafts were added to the pillars to bear the various additional arches. All this brought about a modification of aspect and gave rise to architectural dispositions and new forms and motives, which in a short time created new types and a new style of architecture.

When once the vault had been adopted for covering the nave, it became necessary to buttress it. The aisles naturally presented themselves as the places where the required points of support were to be found.

The vaulting might be differently constructed according as use was made of the semicircular or the less dangerous pointed cylindrical vault, or of the intersecting vault, which, though more elegant and varied in its effect, required more delicate handling, since the thrust was concentrated on four isolated points. This period, therefore, exhibited a very great variety in the covering of ecclesiastical edifices, with timber roofing preserved over certain parts, and with the different forms of semicircular, pointed and intersecting vaultings. However, the intersecting vault was never applied during the Romanesque period to the nave, since architects did not understand buttressing it properly; but all the varieties noted above were employed in the aisles. Here, too, even the half-barrel vault occurred, and in this the origin of flying-buttresses may be found; these were carried along the entire side of the church and were very efficacious in bearing the thrust of the nave toward the buttressed exterior walls.

J. Quicherat, whom it is well to follow in the study of all this period, has undertaken a classification² of Romanesque structures; it is certainly based on facts which, though somewhat complicated, are abundant and carefully coördinated. It is especially important to note the following characteristic and essential distinction set forth by Quicherat:

Sometimes the principal vault is supported by independent buttresses in such fashion as to have no need of the aisles, sometimes it is buttressed by the latter. In the first case the nave is lighted through bays above the aisles; in the second, all the light comes from the aisles. A mixed construction also exists in which the support from the aisles is carried sufficiently low to admit of small bays opening on the nave.

The first system was adopted in the part of France north of the Loire and extending as far as Forez; the second, in the region stretching between the Loire and the Rhone; the

¹ From the French of P. Planat, in Planat's "Encyclopédie de l'Architecture et de la Construction." Continued from page 21, No. 759.

² "Fragments; l'Architecture Romane."

mixed system is confined to the section between the left bank of the lower Rhone and the Alps. These three divisions, as Quicherat remarks, correspond to the three great provincial divisions whose bounds were fixed by the Romans, to wit: Celtic Gaul, Belgian Gaul and Aquitania and Provence. This classification, answering so perfectly to race distinctions as well as to important difference in the technical solution of the great constructional problem, certainly deserves to be retained.

To solve the question of supporting the thrust of vaults, the Romanesque architects, then, established both exterior and interior buttresses at intervals; transverse ribs were also added, dividing the vault into sections, and furnishing points of support for it. In other words, an effort was made to distribute the weight and pressure of the central vault on a few points which could be conveniently buttressed.

This solution proved inadequate, and became practicable only when, at a later date, buttressing by means of the aisles was brought into play. The sole means of attaining the proposed end would have been to have recourse to intersecting vaults; in these the weight and pressure are thrown upon the diagonal ribs, and transmitted thence to the supporting points at the angles. The latter being thoroughly buttressed, no difficulty is experienced in supporting the vault.

The intersecting vault was known to the Romans and Greeks, and employed by them in Asia and Egypt. It was in use in Palestine in the fourth and fifth centuries. It was imported into the West at an early period, but assumed a peculiar form there, which realized, from the standpoint of religious art, the first notable progress, whence Gothic architecture soon sprang into being. Under the old method of construction, the voussoirs, being very thick, and all equal to the thickness of the diagonal, required to be cut with great skill: those along the arris called for especial care. The vault was heavy and difficult to build. It is clear that it would have been poorly adapted to the covering of the broad and lofty naves of churches. The important step forward, to which reference has been made, consisted in freeing the diagonal arch and making it a rib independent of the under surface of the voussoirs. This simplified the construction to a marked degree, since the voussoir joints on the diagonal rib now presented but a single plane, normal to the rib itself. As for the vault proper, borne at the same time by the transverse ribs, formerets and diagonal ribs, it was no longer anything but the filling-in of the network of supporting arches. The simplified structure was lighter. The independent diagonal arches could be made as heavy as was necessary, while the vaulting proper could be reduced as much as desirable in thickness. These conditions, of course, diminished the pressure, and made the vaulting of broad spaces practicable.

The next and last step was to remove the buttresses of the nave from the inside of the church, and lighten the nave walls by placing the necessary abutments outside; in a word, to clear the interior of the mass of masonry accumulated there by the Romanesque architects in their efforts to support the thrust of wide vaults. This final transformation was accomplished by means of flying-buttresses. The intersecting vault, borne on independent diagonal arches, and the flying-buttresses furnish the two fundamental principles from which Gothic architecture in large measure sprang.

We can then understand why archaeologists attach so much importance to the determination of the exact date when such an essential element as intersecting pointed arches appeared. The oldest examples known in France are to be found in the porch of the church at Moissac, the porch of St. Victor and the rotunda of St. Croix at Quimperlé, of the eleventh century. Unfortunately, the first two examples can hardly be counted as such, since the diagonals, and more especially the disposition of the key, are very defective. As for the church of Quimperlé, the researches of M. Ruprich-Robert have demonstrated that it has undergone a restoration which can hardly date back of the beginning of the twelfth century. "At a period which cannot be fixed precisely," says J. Quicherat in his "*Fragments d'Archéologie*," "but which cannot have been far from the date of the crypt of St. Gilles,¹ the ogival framework was introduced into several important churches which were reconstructed at Paris and farther north, within a radius which does not appear to have extended beyond the basin of the Oise."

St. Etienne at Beauvais, St. Germer at Fly, and St. Evremond at Creil, though Romanesque in their external appear-

ance, have ogival vaults in the interior. It is, moreover, probable that earlier edifices built on the new type once existed in the same region. It is, then, in the Ile-de-France that the solution, whose origin we are seeking, had its point of departure. "Most of the Romanesque churches of Normandy, and several of those in England and in the Rhine valley, were originally covered with visible woodwork, which was replaced later by ogival vaulting, in which there is a glaring imitation of the French method, as exhibited in the structures cited above. Careful observers of all countries have, therefore, no difficulty in recognizing in these restorations the adoption of a construction derived from France, although the precise date of its importation is as unknown to them as the appearance of the construction itself is to us."

The system had been fully adopted by the second half of the twelfth century, as is proved by churches whose date is determined: the Cathedral of Noyon, rebuilt in 1131; the abbey-church of St. Nicholas at Blois, begun in 1138; that part of St. Denis which was reconstructed by Suger, and consecrated in 1143; and in the western part of the Cathedral of Chartres, dating from 1145.

We must, however, take into account a few facts which seem at first sight to contradict what has been stated above. Quicherat himself writes as follows: "Being unacquainted with the monuments of Italy, I leave others to determine whether or not the Lombards were the inventors of it.² I have confined my researches to Transalpine Gaul; within these limits, it seems to me probable that the Germans along the Rhine were the first to carry diagonal arches beneath their vaultings. One reason for this conclusion is based on the relative skill displayed by them in the construction of such framework in churches known to belong to the eleventh century. As early as this, they evidently understood running the ogival and transverse ribs together at the springers, thus being enabled to make use of only one pier for the three arches. . . . At that time, also, they carried the same principle to its final results in low vaults, like those in crypts. . . . If, on account of this marked superiority of the Rhenish architects in constructing the ogive, we accord the initiative to them, an old tradition, by virtue of which Germany long claimed the creation of the Gothic style, will be justified. Though false in its expression, there is some truth in this claim in that Germany might have invented the one member but for which Gothic architecture would never have existed."

Here, again, we shall not insist too strenuously on these almost unsolvable questions of origin. In spite of the dogmatic assertions of a few archaeologists, in spite, occasionally, of apparently convincing evidence, such as stones commemorative of consecration,³ it is still very difficult to fix the exact date of most Romanesque churches. If one were required to settle a question of priority within a few years, it would be almost impossible to do so with any degree of certainty. Moreover, it always remains true that many churches of this period have either completely disappeared or have been subjected to subsequent restorations; even though an edifice be discovered in which the date of its ogival vaulting can be rigorously fixed, it is perfectly allowable to affirm that some edifice of earlier date must have existed to which the claim of priority should pass.

The question seems to us to possess only a restricted interest, if an attempt be made to settle it too precisely, for such precision is itself contrary to truth. The theoretical discoveries and practical inventions from which Gothic art sprang are not centred in a single special disposition; it was the result of successive acts, innovations and partial perfectings, which, when once grouped and handled with genuine skill, produced the full flower of thirteenth-century art.

Whether the invention of the pointed arch had its origin here or there, in the Orient among the Assyrians, Persians, Byzantines or Arabs, or in the West on the banks of the Seine, the Rhine or, if you choose, the Thames; whether ogival vaulting first appeared in the Ile-de-France or the Rhenish district, created by an architect whose nationality would, moreover, remain to be established, whether flying-buttresses were employed for the first time at such or such a point, are questions the full responses to which would still not enable one to declare that Gothic art originated at a certain spot.

[To be continued.]

¹ "De l'Architecture Romane."

² Stones now and then found belonging to a primitive edifice, and built into the walls of a later construction.



THE SHEFFIELD MUNICIPAL BUILDINGS.—
THE *Spectator* ON THE ARCHITECTURAL
EXHIBITION AT THE ROYAL ACADEMY.
—DISTRICT SURVEYORS AND THE
LONDON COUNTY COUNCIL.

THE competition for the Sheffield Municipal Buildings has now been finally decided, and we have to congratulate Mr. E. J. Mountford, F. R. I. B. A., on securing the prize in this somewhat severe contest. This Sheffield competition is remarkable principally from the scrupulously fair manner in which it has been conducted. We all know what competitions only too frequently are, and it is, therefore, a pleasant, albeit a novel sensation, to find a competition, concerning which no one, not even a disappointed competitor, has ventured to make the slightest charges of unfairness. Mr. Mountford describes his design as of modern Renaissance style. Modern it certainly is, and perhaps the design does exemplify that peculiar phase of Renaissance which has lately become the fashion in England for buildings of this character, and which shows fair promise of developing into a distinct style, if such a thing can exist in these days of eclecticism. The Sheffield building is in plan a trapezoid, with one of the irregular sides rectangular with the two parallel sides. The view that is published shows the two principal sides, a tower being placed at their junction. The main front may be very well examined as a fair example of the style of the building. It is, indeed, an *olla podrida*. A round-arched ground story, almost Romanesque in conception, is surmounted by an adaptation from the architecture of the Elizabethans, wherein we see the mullioned window, crowned by the Classic pediment. Then follow architrave, frieze, cornice and balustrade, truly Italian, backed by a steep roof and flanked by steep gables, in a style which would not be regarded as unfamiliar by the French King François I, had it not been considered necessary to impart Catholicity to the design by a little bit of early round-arched wall arcading and some English fourteenth-century heraldic griffins. And so the queer jumble goes on, till one is perhaps tempted to exclaim, "*C'est magnifique, mais ce n'est pas l'architecture.*" But, after all, what is architecture? But perish such carping thoughts. Go on Mr. Colcott and Mr. Mountford, disciples of a new style. Build your novel buildings, and, if at times thoughts cross your minds of your early days, when you innocently thought there *was* such a thing as architectural grammar, don't mind. Your conceptions are admired by the profession, admired by the public, and what do we build for nowadays but for admiration?

The Royal Academy architectural room this year is not remarkable for its good designs or for its bad designs, but for a wonderful article upon its merits and demerits that has actually appeared in a lay paper, the *Spectator*. This article is such capital reading, and speaks in a way so plain and blunt that even our redoubtable *Builder* will have to look to its laurels, and I cannot refrain from giving you one or two extracts:

"Few people reach the architectural room at the Academy before they are blind with pictures, and outside the profession very few, even if they go there first, are capable of understanding and appreciating. There is the initial difficulty that an architect's drawing is usually a very conventional affair, and gives little idea of the real building; and it is often a misleading thing, distracting the attention by its merits or faults as a drawing. It is notorious to architects that their patrons are apt to be the victims of mere neatness of pen-and-ink or prettiness of washes; of the merits of a design as such they seldom have the faculty for judging. This is the real reason for want of interest in architecture. Its interest is one purely of design; of proportion in line and space and mass. A man may suppose himself to possess this sense while he is looking at pictures, because there are all sorts of outside qualities to divert him. He will infallibly be found out when he comes to architecture, just as the man with no sense for music will feel blank before a symphony, though he may have done very well with an opera.

"But the masses of our people are getting to tolerate good music; in time, perhaps, they may be tamed to suffer architecture also. Their architects begin to deserve it. The breath of art is unmistakably blowing among English architects, more strongly perhaps than among those of any other country. And it seems a shame that, while the fifth-rate painter is so painfully famous, the names of artists like Messrs. Norman Shaw, Bentley, Bodley and T. G. Jackson are hardly known outside the ranks of the profession. Some beginning of recognition might be made if buildings, like pictures, were habitually signed.

"The most encouraging mark of health in our architecture is the richer and more flexible life it begins to show. We have had to pass through a terrible time, when our architects were learning a forgotten grammar. They could put up a dry, pedantic revival of

Gothic walls and tracery. But when they came to touch those co-operating arts of sculpture and painting and other decoration that a living architecture gives occasion for and gives direction to, they were pitifully at a loss. They were wanting in the sense, in the habit, in the craftsmen. Shops sprang up, indeed, to execute the architect's want of ideas with a tradesman's absence of feeling; and there is hardly a church in the country that has not some dull monster in so-called sculpture, or stained-glass, or furniture, to attest an abortive birth. There is still enough and to spare of this kind of work being done; but then the art of architecture is also alive and begins to nourish the others.

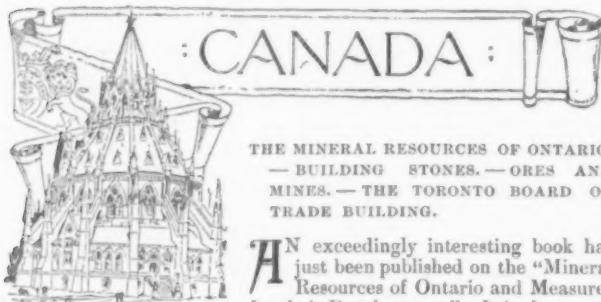
"Let us point to a design in the present exhibition which is an illustration of these remarks: 'The New Font and Canopy, Benham Church, Lancashire,' by Mr. W. R. Lethaby (1,717). The readiest praise that occurs to one is that it looks like old work. But that is only because it is good; we know of no old font really like it. The lower part is in alabaster, with a light band of carving running round the rim, and left as simple as possible without mouldings. Elaboration is reserved for the canopy, and this is treated like the cover of a well within which the lid of the font works on a pulley, as the bucket might in the other. All this is in woodwork, and the supports of the canopy are carved in floral designs. Our only objection is to the choice of some of the natural forms here, which do not lend themselves well to architectural design. The canopy itself is delicate and beautiful. . . .

"Of the bad work it would be unprofitable to speak at length, but one or two names deserve to be singled out because of their prestige. Mr. Alfred Waterhouse's, R. A., is a serious case, because he has done so much. We know him too well in London, but London is large and can swallow many monstrosities. But one building by such a master of the ungainly were enough to spoil places like Oxford and Cambridge. He has been the darling of both. Now, not content with this, he is going forth to invade Scotland. Glasgow has never had any need to borrow architects; what has she done that she must suffer from the hand red from St. Paul's School? When the 'offices of the Prudential Assurance Company' (1,828) stand in West Regent Street, the Glasgow weather of the past will seem to have been a cheerful thing. Sir A. W. Blomfield, A. R. A., is again a serious case, because one of his designs this year is for the restoration of St. Savior's, Southwark; the other for the ruin of Dean's Yard, Westminster. The first (1,730 and 1,804) might, in other hands, have been worse no doubt; it is a mixture of the correct and the trivial. But the other design is an active offence. It is not only a miserable design in itself, but it will make the fourth side of Dean's Yard as horrible as two sides are already, and a great part of the third. At present the fourth side is filled by a terrace of brick houses in the sober, pleasing old London style, and age has given to the terrace itself considerable sweetness of curve. All this is to make way for the 'Church-house' (1,889). The scheme, if we remember right, was a jubilee scheme, and may be in itself most admirable. But one is fain to wish that when so much else was thought of, it had been arranged to found a little separate planet in which to store what our loyalty did in art. There Mr. Lockhart's jubilee picture might hang in the church-house with many another thing of price. But this insufficient earth groans."

I fancy that these criticisms will rankle none the less because they run little chance of being traversed by the profession. There are many things which English architects say that do not often find their way into print; therefore, the plain speaking of the *Spectator* cannot but do some good. It does seem a pity that the artistic qualities of the two genial and accomplished gentlemen named do not shine forth at more frequent intervals, but the fact remains that those whom England has, in her innocence, in a special degree delighted to honor, do produce work that at times almost distresses one by the total absence of artistic feeling.

The London County Council decided to-day to make some considerable reforms with regard to district surveyors. It may be convenient to explain briefly what position this officer holds in London. England, I may say, possesses two distinct forms of official supervision over buildings erected. The first is the simpler, and is in great favor in the provinces. A provincial architect, when he begins to plan a house, has, first of all, to take into account certain "Building By-Laws," which consist of various restrictions as regards materials, construction, sanitation, etc., and which, though differing in almost every town, are generally founded on a set of "Model By-Laws," published by the Local Government Board. It then becomes his duty to submit the plans of the buildings he proposes to erect to the local authority, who examines them as to whether the requirements of its by-laws have been met, and, as the case may be, approves or disapproves them. If they are disapproved, the building, of course, cannot be erected. If, however, the local authority's decision is favorable, the work goes on, notice being given to the local authority at certain specified times, when an official attends, and sees that the building is being carried out in accordance with the plans. The course of procedure in the metropolis differs. The "by-laws" of a county town are replaced by the Metropolitan Building Act, and the local authority is represented by the London County Council. It is not, however, necessary to submit any plans to the Council unless it is desired to set aside certain of the clauses of the Act. This necessitates an appeal to the Council. Otherwise, all an architect has to do is to see that all the requirements of the Act are fully met in his plans and building, and then no one will

trouble him. He is, however, being constantly watched by an official termed a "district-surveyor," who is an architect in practice, appointed under the Act to officially supervise the erection of all buildings within his particular area. These areas, or "districts," as they are called, are between seventy and eighty in number, and embrace the whole of London and its suburbs. A "district-surveyor" is paid by fees which are paid by the builders, and amount to an average of some £700 a year, though, of course, the amount varies greatly in different districts. They hold a very independent position, and are very little under the control of the Council; indeed, so much so is this the case, that they have established a sort of official tribunal among themselves, called the District-Surveyors' Association, in which cases of difficulty are discussed and a corporate opinion expressed, upon which the appellant surveyor usually takes action. The new London County Council, in its zeal for reform, soon turned its gaze upon these district-surveyors with a two-fold object: viz., the reduction, first of all, of their fees, and, second, of their independence. Its first endeavor was to make them simply salaried officials of the Council, stationed for the purposes of convenient inspection of buildings in various parts of London; but this hardly came within the law, so it compromised matters by passing a code of rules which will have to be accepted by all future candidates for vacancies, and which will not only debar them altogether from private practice, but impose a great many other restrictions upon them. It remains to be seen what class of men these posts, restricted as they are, will attract, and whether the problem of a really efficient supervision of buildings erected in the metropolis will have been brought any nearer solution by the energetic action of the Council.



AN exceedingly interesting book has just been published on the "Mineral Resources of Ontario and Measures for their Development." It is the report of the Royal Commission appointed in 1888 by the Ontario Provincial Government, who by their labors have put before the public, a very comprehensive statement of the mineral wealth of the Province, the reasons why it has not been fully developed and very practical suggestions as to future conduct both of the Government and private individuals with reference to this end.

The mineral deposits of the Province are shown to be very great, including every mineral, except coal, useful in commerce and manufacture. They are spread over a very large area and in the limited time at the disposal of the commissioners only a few of the interesting districts were visited, although abundance of evidence was obtained from a great cloud of witnesses, so that their report is not only comprehensive but complete and of very great value.

The commissioners, were five in number, John Charlton, M. P. for North Norfolk, Lynedoch; Robert Bell, M. D., LL.D., Assistant Director of the Canadian Geological Survey, Ottawa; William Coe, explorer and miner, Madoc; William H. Merritt, F. G. S. Assoc. Royal Schools of Mines, Toronto; and Archibald Blue, Deputy Minister of Agriculture and Secretary of the Bureau of Industries for Ontario, and to each one was assigned a special department in their scheme of inquiry.

The evidence taken before the commission forms most interesting reading: accounts are given, not only of the districts, but of the whole nature of their contents, descriptions of mining operations, of machinery in use and the manner and processes of working the various products. I cannot here, in this limited space, propose to review the whole subject, but I think a glance at the report in reference to those minerals and products connected with the building trades will supply a good deal of interesting and useful information.

As in the history of mining operations in all countries, the earlier attempts of mining speculators met with disastrous failure; but great profit is to be derived from the misfortune of a predecessor, and his successor generally succeeds where he has failed. The government, has, hitherto, pursued an enlightened and liberal policy in reference to the development of the resources of the soil, but the report shows there is room for a good deal of improvement in our mining laws and regulations, room for even greater liberality and less stringency. Our existing laws, "stand in the way of exploration and discovery, favor the moneyed man at the expense of the prospector and facilitate the locking-up of large areas for speculative purposes."

Joseph Van Norman was the father of the mining industry of the Province. He, in the year 1822, started a blast-furnace for the smelting of bog-iron ore in the County of Norfolk. A little later a furnace was erected at Marmora in Hastings County, by Mr. Hayes, who obtained a grant of 14,000 acres for mining and charcoal-making purposes. But neither of these ventures aroused much interest in

mining affairs and as Mr. Hayes did not make a success out of his scheme, there was little done for the next twenty years in the sale of mineral lands or the search of ores.

In 1845, Mr. John Prince (Hon.) secured permission to explore the upper lake region and was followed by several other applicants and in the forty years preceding 1889, 709,335 acres were sold for mining purposes at an average cost of 61½ cents an acre before confederation (1867) and \$1.35½ an acre since, netting \$810,955.

The mineral products of Ontario, then in which we are especially interested in the year 1888, were as follows:

MINERAL.	QUANTITY.	VALUE.
Cement, bbls.....	42,000	\$1,500.00
Copper ore, lbs.....	2,860,760 }	286,076.00
Nickel ore, lbs.....	1,222,040 }	
Iron ore, tons.....	16,000	48,000.00
Building materials, including stones, granite, marble, brick, drain-pipes, tiles, pottery and lime, about.....		2,000,000.00

Of building materials the Province possesses some of the finest that could be desired, and some of the principal will be described.

At the Forks of the Credit River there is "a great body of sandstone" brown in color, with gray bands often mixed with the brown and in places the colors are blended. It is an excellent building stone and very suitable for ornamental works and now very extensively used. There is practically an unlimited supply, but a great deal of it is covered with a layer of limestone 150 feet thick, suitable for rough walling and for lime.

Granite quarries at Kingston produce red quartz granite (or syenite) with occasional large crystals of pyroxene; a little copper-pyrites is seen, but large masses are free from crystal blemishes. Of this also there is an inexhaustible supply. It takes an exceedingly handsome polish and is very durable; being considerably harder than the average, it costs from 15 to 20 per cent more in working.

From the Port Arthur district comes a valuable building stone, a red sandstone, especially from Vert Island, Wipigon Bay. From Manitoulin Island, we get a very good building stone from a bed of dolomite 6 feet thick.

Marble from the Madoc Marble Quarries, from a bed 900 feet wide, is of fair quality, crystalline and dark colored, polishing almost black; there are various colored bands in it, chiefly gray, or gray and white mixed and white in border bands in gray, which can be sawn out; its specific gravity is 2.782 and it is especially suitable for monumental purposes.

Bridgewater Marble Quarry has a bed of pure white marble 500 feet wide. In places tints of clouded blue and green are visible and in others bands of pinkish or salmon hues. These latter bands may be sawn out 12" to 18" wide. It is closely crystalline and compact and very durable. A church and portions of houses built in the neighborhood of this material have stood for twenty years without any sign of weathering. The finest quality is sold for \$2.00 a cubic foot, and the poorest at 50 cents. Its specific gravity is 2.751.

The town of Renfrew is situated on a wide bed of crystalline limestone, easily quarried in large pieces of solid and massive stone, free from checks and dries, and stands working, sawing and trimming for marble purposes. The color is of a grayish hue, slightly tinted in places with hornblende crystals, and in other places crystals of mica are visible. It is very durable, stands weather better than any stone except granite, and even better than some granites. One building erected forty years ago of this Renfrew marble shows no sign of weathering, except that there is a faintly darker tint where it is exposed, but this is only to be seen by very careful inspection.

Another marble is from the Arnprior Quarry, of a bluish tint, with dark-blue, wavy lines; it is a wide band of crystalline limestone of excellent appearance and quality, and its principal use is for decorative features in buildings. A close-grained, hard stone that takes an excellent polish is found at Garden River and Echo Lake, of shades of pink and green, blending by very soft gradations to white.

Cement and clay works.—The well-known cement mills of Thorold were not visited by the Commissioners, nor the works at Limehouse, Halden County; nor yet the works at Keppel, Grey County. Evidence was not taken about the cement-rock in the eurypterid beds at Cayuga, from which formation most of the celebrated Buffalo cement is manufactured. The works at Napanee were, however, visited. These are worked very cheaply as an open quarry, with kilns having a capacity of 90 barrels a day. The capacity of the cement mill in connection with the quarry is from 400 to 600 barrels a day. Clays obtained are used for red and white bricks, tiles and terra-cotta, and there is at Napanee a species of fire-clay, an alluvial deposit, lying just below the cement bed.

Fibrous serpentine, or "actinolite," for roofing purposes, is found at Bridgewater, and a fossil shale at Madoc, supplying us with slate of very good quality. Of the copper and nickel mines, the new works at Sudbury are, of course, the principal. They have been mentioned in earlier letters. The rocks, as a rule, consist of quartzites, chloritic, hornblende and talcose schists, and diorites coarse and fine in grain. Copper occurs in a highly pyroxenic diorite belt, and is generally associated with nickeliferous pyrrhotite. The average composition is 3 to 7 per cent copper pyrites, 2½ to 3½ per cent nickel, about 63 per cent pyrrhotite, and 30 per cent

rock. Ore occurs irregularly in large lenses. The belts can be traced for a long distance through the country, and the ore bodies occur at uncertain intervals. The ore is hard, and the ore lenses form hills and mounds. There are cases where chalcopyrite forms veins and masses, with breccia of diorite associated, with which native copper has been found in Caffonu. Free gold has also been found with the diorite in which the copper occurs.

The Commissioners visited only one iron mine which was producing ore. All the others were either undeveloped, or lying idle and full of water.

Of the iron-carrying districts, those on the north shore of Lake Huron appear to be the best. In one is found an extremely fine quality of specular and micaceous hematite, and in another a vein or bed of iron ore occurs in quartzite about 8 feet thick of banded ore and quartzite. The ore varies in this district from crystalline to compact specular; where solid, the ores are of excellent quality.

The Commissioners visited the Vermillion range in Northern Minnesota, because it is believed that this bed of iron ore extends to Ontario, and that its valuable deposits will be developed on this side before long. Samples obtained were chiefly magnetic ore, but there has been little done towards exploring on the Ontario side.

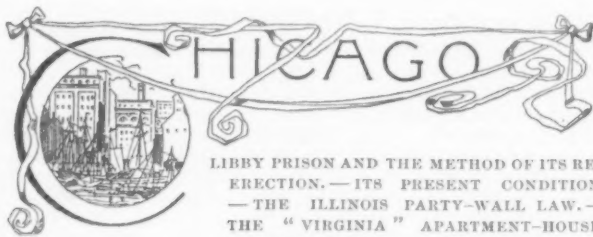
Mines of Eastern Ontario all give a valuable ore, but the account given in the report is too lengthy to attempt even to epitomize it.

Lead.—Lead mines are found in many parts of the Province, but none are now being worked, and as yet none have been properly developed.

It would appear from this report that we are very far behind the times in mining industries, but that there is a great future before the Province when our economic minerals are properly developed. What capital there is at present invested in mining operations is more than one-half of it American, the rest being Canadian and English, the Canadian being a larger proportion than the English.

There is nothing much in the way of news. The hot weather is on us, and nobody feels up to much excitement.

The Board of Trade Building, Toronto, is going on under new management, and we are not likely to hear more about it. The last item of news concerning it is that the action brought by the contractor for wrongful dismissal, with a claim for \$28,000, was settled out of court, the Board paying him \$22,000. The Board have had an experience in building that is likely to teach them a lesson. In expending some \$90,000 in rectifying mistakes, they can only blame themselves for an unusual instance of "buying their own experience."



PROBABLY few people not in the immediate vicinity of Chicago, if they ever give a thought to the old Libby Prison, where so many of our Northern soldiers experienced such dreadful suffering, think of it as anywhere but in Richmond. So closely was this horrible institution associated with that city, that but few remember that it now rests, a monument for all time in a Northern State. There was but little enthusiasm evinced at the thought of bringing the old building away from its original site, and many considered that in becoming a store-house for fertilizers a fitting ending had been found for its inglorious career. However, the least enthusiastic must admit that it is a very fitting setting for the large and interesting collection of war relics that now find space within its walls.

That the undertaking was a stupendous one, will readily be admitted when one stops to consider it.

The building is a low, long, red brick edifice, three stories and garret on the side towards the street, four stories and garret on what was the James River side. The structure contains six hundred thousand bricks, stone caps and sills. In tearing the building down these had each to be numbered, as well as each shingle, board and nail-hole, so when the work of reconstruction was commenced, nothing should be found out of place. It is said that even the old mortar was collected, ground up and used over again. The walls had written over them innumerable names of the occupants once imprisoned within this dreary enclosure, and many of them have been lost to sight by the frequent coats of whitewash the building has received, but those that were cut in the walls, as well as the checker-boards cut in the floor, and the games of fox and geese and draughts in the same place, have all been preserved.

A Washington architect made careful plans and drawings of the old building and then the work of demolishing commenced. Box-cars were kept on the York River side-tracks near the building and as soon as a car-load was ready for shipment it was sealed and switched on to a regular freight train. Over one thousand box-cars

were used for this purpose. The roof and other heavy timbers had to be handled with derricks and in that way loaded onto the cars. While the work was being pushed on at Richmond, the surroundings for the future museum were being constructed in Chicago. The prison-yard occupies nearly half a block, surrounded on all sides by high walls, the front one being in the style of military construction of the fourteenth century. This front consists of a wall and arched gateway of rough cut oil-stone. The wall is high enough to allow only glimpses of the upper part of the old prison, wall and gateway with their square towers and turrets, being a very satisfactory building of its kind. With the flags flying from the battlements, the cannon mounted at the gate and the heavy portcullis at the entrance, the whole has a very military aspect. One enters the prison-yard through the fine arched gateway, and at present the old building faces one in all its uncouth roughness. The mine, the old dungeon, now fortunately free from the vermin that made such names as "Rat Hell" appropriate for it, and the cellar out of which it opened, have been preserved, and the placing of the building at the same angle as regards the points of the compass has also been adhered to, so the east windows are still the same ones from which the prisoners used to watch the sun rise over the James River.

Altogether, the work has been well done, and the question as to whether it were wise to undertake it seems to be answered in the affirmative, especially as the intense feeling which the sight of the old rooms and walls was expected to raise has not been perceptible. The Northern impression of atrocities practised at Libby and Andersonville will never be lessened or increased by the mere sight of the building where they were committed.

One of the laws peculiar to the State of Illinois is that pertaining to the line wall, and is the exact opposite of the law in several of the Eastern States. When an architect commences work on a lot adjoining one on which a building stands he sends word to the owner of said building that operations are about to be commenced and warns him to protect his foundations. Should he fail to do so, and because of excavations made for the new building, the whole or a portion of the old one should fall on the lot on which is the building in process of construction, the owner of said lot and building may sue his neighbor for trespassing and obtain damages as has already been ruled by the Supreme Court. It is a law which amuses and enrages the ordinary property-owner, according as he is an active participant in the fray or merely a passive observer.

Partly out of this same law some amusing scenes have been enacted recently on the North Side, in which parties in the immediate vicinity have taken unusual interest. The family of one of the "oldest inhabitants" has for years enjoyed in its spacious mansion all the sunshine which could penetrate through the thick down-town atmosphere. Now come along the heirs of another one of the "oldest inhabitants," and plan further to obstruct the light and sunshine, by erecting fifty feet from the old mansion a ten-story apartment-house. To the outside public this might have been worse, as one of the large manufacturing buildings, which are slowly encroaching on this part of the city, might have been erected on the lot where the flats now stand, which bear the name of "Virginia." However this may be, the abused party decided to build a wall upon the lot-line, which brought it a few feet from the side windows of the apartments, the construction being so high as to at least shut off the light from the first four stories. All went well until about the second story was reached, when the "Virginia" owners began to make excavations for their steam apparatus, and the wall was advised to protect itself. This put a stop to operations for a while, but they have since been renewed, and with them hostilities. An injunction has been applied for to stop the erection of the barrier, which it is pleasantly stated is being constructed entirely out of spite, with the aim of materially injuring the "Virginia" property by depriving part of the first four stories of light.

This "Virginia" apartment-house is rather an exceptional one among the vast number of them in Chicago. It is so planned that in every way these apartments shall have the greatest number of conveniences in the way of electric-bells, lights, gas-ranges, gas-logs, and many of the inventions which make life in a small flat attractive and comfortable. The thrifty housewifely souls of the women, often descendants from a long line of New England grandmothers, are a little shocked to find the kitchen in many of these apartments exactly opposite the front-door, and the parlor and living-rooms back where the kitchen usually is. Perhaps the French do have these kitchens by the front-doors, but their houses and apartments are so differently arranged that it would scarcely do to copy that one feature without any of the rest. It may be inherited prejudice with our good dames, or it may not be, but it would be an extraordinary kitchen, indeed, that in such close proximity to the front-door did not send its fumes to greet you as you entered, and to assert that the kitchen-door would be always closed, would be to assert something that every one would know to be a little straining of the truth. However, a large and fine restaurant is connected with the building, and every effort is made to induce the owners of apartments to use this instead of having individual cooking, and the tendency is to convert the whole place into something like a family hotel. One excellent feature of the building is that the apartments vary in size and elegance, and consequently in expense. Pleasant bedrooms are kept furnished at the top of the house, so the occupants of the apartments in case of extra guests can rent them at their pleasure. There is, also, a beautiful suite of rooms in the building, so those

living in the small flats and wishing to entertain, can rent them for an evening or afternoon. Outside, the building is a very simple one of pressed brick, quite free from any extreme ornamentation. The fact that pressed brick is used even on the sides not abutting on the streets indicates the good sense not only of the architect, but of the builder. One might almost have expected that this would have appealed to the wall, but no, no kindly effect seems to have been the result in this quarter.

Injunctions, or at least "prayers" for them, seem to be the order of the day, and this kind of piety seems at present to have struck deep into the heart of Chicago. The owners of property along South State Street, in the vicinity of the largest dry-goods store, that of Marshall Field, are becoming somewhat excited. Mr. Field needing more room in his store has planned to build out on the sidewalk bay-windows which will occupy five feet of what has heretofore been available sidewalk space. The neighboring merchants assert that there is not enough sidewalk space as it is, and if Mr. Field has a right to use five feet of it, there is no reason why some one else cannot appropriate ten. Consequently an injunction has been sought for, although a permit was granted by special action of the Council several months ago. In the meantime, the building of the bays goes on.

Much has been said, and well said, too, of the beauty of the Auditorium proper, but the decoration of the hotel seems to have received but little notice, artistic and successful as it is. People who know what a good thing it is do not expect to find it, and consequently do not look for it in a hotel, and the average visitor to the place is disappointed in not finding the usual glare and glitter and plate-glass mirrors which so ordinarily abound in similar places. The designs for the furnishings, as well as the decorations, have been the work of the architects, and the result is an unusually harmonious and successful whole.

Much has been said about the originators of the Auditorium enterprise, but when one sees how very little the two men to whom, at least, more than half of the success of the whole is due are brought forward, one wants to reveal the blunders of the average man. The theme all through the building for decoration seems to be that of a fan palm, and in its various forms is very beautiful. It is especially noticeable in the hotel. Here the design is used in the iron for the stair balustrades, wrought in a bold and free manner in plaster friezes, which are afterwards painted to suit the general tone of the rooms, used in plaster for the capitals of interior columns and for the design of the wood carvings. A curious example of the latter use of the design is in the bar-room. Here the counter ends abruptly in a low, awkward oak column, which seems to grow out and be a part of the oak front of the counter. A fine palm design continues along the edge of the moulding, till reaching the pillar, it sweeps out on the broad oak surface in Elihu Vedder style, strictly conventionalized, but very free and pleasing. So, in the most unexpected places one continually finds this same theme, and the general thoroughness and careful study shown in the design makes it a great pleasure to look at the work. When one is forced constantly to listen to the complaints of the lack of mirrors and dearth of gold cornices, one is forced to exclaim with Bildad, the Shuhite, "How long wilt thou speak these things." The entrance hall and the main stairway are finished in onyx, the golden brown of which gives the theme of color to the room as well as to the café which opens upon it and which is charmingly finished in bird's-eye maple.

The effect of Chicago smoke is already to be seen on this work, discouraging as it may seem. We hear there is light ahead in this darkness in the shape of natural gas, but many are incredulous on the subject. It is rumored, even vouched for by the "best authority," that most shaky of all authorities, that the contract for laying the pipe through Indiana, the locality whence the gas is to be brought, has already been let, and those interested in the scheme hope the pipes will be laid to the State line by November 1. Also, it is asserted that the two pumping-stations which will be needed to give the gas sufficient force will be completed by the same time. It is understood that an Eastern syndicate is behind the natural-gas project, while several of our well-known business men are its local representatives.

During the past month one of the old landmarks has vanished from Chicago. When the great fire swept over the north side of the city it spread in its course just one building, that being an old-fashioned, square, wooden mansion situated in the centre of a block surrounded by large elm trees. It is this block where the Newberry Library is some day to stand. The trustees have erected a temporary building not far from this site, and the remarks of the public have been frequent and scathing because work on the permanent library has not been commenced. The first step seems to have been taken, however, and the old house that for so many years has been a landmark in that part of the city has this month been demolished and only a pile of bricks and beams is left.

STATE MUSEUM OF NATIVE WOODS.—The first instalment of a new department in the State Museum has been received. It consists of forty-three species of wood, native of this State. The design is to have uniform specimens of every kind of timber that grows naturally within our borders placed in the department. Each piece is thirty-nine inches long, taken from the trunk, and cut so as to show bark and grain, both varnished and plain. The collection is being made by Romeyn B. Hough, publisher of "American Woods," who is thoroughly familiar with his subject.—N. Y. Tribune.

ARCHITECTURE UNDER NATIONALISM.¹—II.



Architecture.

OUR next great item of waste comes from the failure of society to utilize the highest capabilities of women. Drudgery, which the nation should perform now falls upon her, and excludes occupations which would not only be more congenial, but which are absolutely indispensable for the highest development of society. In the year of the last census, out of the seventeen million of persons employed in all occupations, only two and a half millions were women. One of the leading principles of nationalism is that every individual shall be provided with the occupation for which he is best fitted, knowing that the greatest curse for the individual as well as for

society is to be condemned to an existence of idleness, and that the greatest blessing is to have a congenial occupation, relieved by suitable seasons of rest and recreation. Moreover it recognizes that the work of men and women are distinct from, and supplementary to each other, and that the work of each is equally necessary for the perfect health of the social state. Accordingly special occupations, scientifically adapted to their respective physical and mental natures, will be provided by the nation for each. No such absurdity as a question of women's right to suffrage will exist under nationalism. Her participation in the regulation of all matters affecting her own sex, or equally both sexes, will be needed by the nation, and being needed will be exacted of her. It is evident that the home and family will always claim a part of every woman's time, but the energy which is now unnecessarily spent in shopping and household drudgery, including that part of the training of children which can better be performed by scientifically trained instructors, as well as all the time which is now wasted in unprofitable idleness and luxury will be claimed by the nation. We may, I think, fairly put the nation's share at, on the average, one-half the working hours of every woman. But again, to avoid all possibility of over-estimating our items of waste, and to leave ample margin for differences of opinion in this matter, I will reduce the figure to one quarter, particularly as it is a fact that a large part of the home work of women in wealth production escapes census enumerations. Taking then a quarter of the time of the fourteen and a half millions of women now unemployed, in the sense above indicated, according to the census of 1880, we have the equivalent of three and a half millions available for the full working time, or about one-fifth of the entire working population of to-day.

Accordingly, our waste due to this item of the unprofitable employment of women amounts to a fifth of the whole productive energy now exerted.

It is difficult to estimate the loss to the art of architecture due to the exclusion of the female element from its actual practice, particularly under the favorable conditions induced by nationalism; but it is fair to say that at least half and probably much more than half of the inspiration which might have contributed lustre to our fair and noble art—ever symbolized by the female figure—have by this exclusion been sadly thrown away.

The next great unnecessary waste comes from the labor troubles, due to the evils of the competitive system and involving failures, business crises, gluts, strikes and lock-outs, speculation, speculation and gambling, and all the timidity and hesitation resulting from these evils.

Richard T. Ely says in his "Political Economy," page 260: "It appears that wage-earners are idle about a tenth of the working days in the year, on an average"; and it is a common saying, well supported by the facts, that for every success in business there are two or three failures. This means that over half of every business man's time is substantially wasted. Each must learn anew for himself by bitter experience and long struggle the secret of financial success. Each must create an independent policy, and work out a system of management alone and unaided, and very few succeed in this before their youth and power of enjoyment have passed away.

Each zealously keeps the secret of his success to himself, for to share it with a competitor would be financial suicide. The terrible nervous strain occasioned by this incessant warfare on the part of our business men, embitters their whole career, and deprives success of whatever sweetness mere money-making possesses. The struggle becomes more severe each year, and the ratio of insanity increases much faster than that of the population.

A short time ago a successful business man, of world-wide reputation, on being congratulated upon his unusual success remarked, "I

¹Continued from No. 759, page 25.

would rather have my head cut off with an axe than endure the worries and responsibilities of my business life again. It ended by driving me into nervous prostration of long duration, barely sparing my life." If such is the experience of an "eminently successful" man, what must be the life of the vast majority, who are eminently unsuccessful?

The loss of effective working power due to this great nervous strain forms an important element in the item of waste now under consideration.

Deducting now from the seventeen million workers those who have already been considered under our previous heads of *distribution and contention*, and also the professional men, we have a balance of about thirteen millions who must be included under the present class of wage-earners and business men.

We estimate that considerably over a tenth part of the time of these thirteen million workers is wasted in what we term *labor troubles*. This is equivalent to a loss of more than a thirteenth part of the energy of the whole body of workers. It is only necessary to add a thirtieth to more than make up our tenth on this item, and the want is quickly supplied by the timidity of capital and labor resulting from the great perils and hardships connected with all business undertakings and the mental and physical exhaustion which these evils produce.

Our next great waste comes under the heading of preventable crime and disease.

The census of 1880 places the number of defective, dependent and delinquent classes in the United States at 409,535, (including 168,854 insane and idiotic, 82,806 blind, deaf and dumb, and 157,875 prisoners and paupers). This makes, including their attendants and keepers, nearly half a million persons withdrawn from useful occupations, or about a thirty-fourth of the whole working population.

It is impossible to estimate how large a proportion of insanity and idiocy is due to the distress, poverty, and fearful nervous strain resulting directly or indirectly from the present system of industrial warfare. Perhaps nearly all; but I will place it at three-quarters, which may be taken as the lowest measure of the benefits of nationalism in this respect. Ninety-nine per cent of the prisoners and paupers would be liberated by nationalism, since ninety-nine per cent of the causes for both will disappear.

Add to the above wastes the losses due to intemperance and prostitution, both of which are directly traceable to the evils of the competitive system; and the losses coming from the preventable diseases, and from the competitive manufacture and sale of intoxicants, quack medicines, opium and other hurtful drugs, and we shall obtain a sufficient aggregate to raise our percentage of waste under this heading far above the tenth we have allowed for it.

Our margin of safety is here sufficiently large to cover that part of the waste enumerated which nationalism alone might be powerless to cure.

If the annual production and sale of drinks amount, as is estimated by Mr. Atkinson to \$400,000,000 or nearly a twentieth of the whole national income, and if we may place the waste of time and energy, direct and indirect, due to their consumption, at a figure at least as great as the loss due to their production and sale, then we have a yearly total loss, in this item of intoxicants alone, equivalent to nearly a thousand millions, or already one tenth part of the annual wealth production, without considering at all the other important items enumerated under this heading.

Now under nationalism, the manufacture and sale of all liquors being under the government, and no profit to individuals being obtained therefrom, and all incentives to drink coming from poverty or distress and idle luxury being removed, and the strong public sentiment coming from universal education being turned against drunkenness, the cause for this great waste will entirely disappear.

At least another tenth is wasted in *unfitting occupations*. A man can do twice as much work in the direction for which he is fitted as in any other. Yet in nine cases out of ten the choice of calling is regulated by other things than special aptitude. Fortune, favor and fashion are the governing factors.

The whole great mass of the laboring and poorer classes, deprived of the advantages of a liberal education, are practically excluded from all occupations in which education is an essential element, and countless talents are thus buried in obscurity and lost to the world. They are even deprived of a free choice in the realm of manual work, inasmuch as the fluctuations of supply and demand necessarily limit freedom in this respect under the competitive system and render any continuous employment in a given field extremely uncertain.

A prolonged "glut," so-called, in the market in any particular industry, or a decrease in the employing capacity of any individual or combination of individuals, involves the suspension of the work of many "hands" and their absorption into other lines after a great waste of energy has been sustained in making the change.

Money considerations debar countless numbers from following un-lucrative callings for which they have decided fondness. Family interest or personal favor opens opportunities to some to the exclusion of others who are better fitted or more justly entitled to occupy them. Fashion and social restrictions frequently exclude the college graduate from the only field in which he possesses a strong natural aptitude. Finally, with women, the restrictions are so great that only a seventh part of the whole possible number are reported by the census as employed at all.

All this would be changed under nationalism. For it is a necessary consequence of the system, and one of its most important characteristics, that every citizen will be employed by the nation in the line for which he is best fitted, and every possible effort and precaution will be taken, to ascertain correctly in each case, what this line may be. For it will be for the interest of all, that each shall contribute his utmost for the commonwealth, and in no other way can such a result be attained. Under the competitive system, on the contrary, every one considers it for his interest to reduce the productiveness of his competitor, inasmuch as his neighbor's failure contributes directly to his own financial success.

Accordingly under nationalism the standard of work of all kinds will be raised to the highest possible point, there being no incompetent ones, quacks, or humbugs to lower it. Industry and ability will be the only sure road to honor, and the most important commissions will be confided by general consent to those best fitted to execute them. Since every one will be directly benefited by such selections, the bitter feelings of rivalry and jealousy now existing will disappear, and a spirited but friendly emulation will take its place.

Nationalism would at once put an end to the use of our absurd weights and measures and replace them by the Metric System now adopted by the majority of civilized nations. "Private enterprise" has thrown the only practical obstacle in the way of its introduction during the last decade. For nearly a quarter of a century the Government has shown a disposition to meet the people more than half-way in joining the general march of progress among nations in this particular, and almost the only positive opposition has come from private owners of machinery and goods whose gauges and values would be affected by the change.

Thus the interests of the whole people have been sacrificed for the benefit of a few selfish and short-sighted, but influential individuals who have so far succeeded in working upon the ignorance and prejudice of the masses, and through them postponing the adoption of a blessing, the importance of which can hardly be estimated. The United States Government has always had a decimal coinage which is now also metric. Our five cent nickel weighs 5 grams; our dime 2½ grams; our twenty-five cent piece 6½ grams; and our fifty cent piece 12½ grams. Our Congress made the Metric System legal in 1866, and caused each State to be furnished with a set of the metric standards. And since then the metric system has been used exclusively in all the work done in the Assay Department of the United States Mint, in the United States Marine-Hospital Service, and the metre has always been used in the United States Coast Survey. Under nationalism, when all machinery and industries are owned by the nation, it is evident that no other than the metric system can possibly be used, because the simultaneous employment of two or more different systems will then be seen to be an absurdity and absolutely useless and inexcusable.

The metric system may be fully mastered in a few hours by any person of ordinary intelligence, whereas, on the contrary, no man exists who can master in a life-time, all the intricacies of the mutual relations of the weights and measures of our present tables.

It has been estimated by good authorities that the introduction of the metric system will save between one and two years in the school-time of every child enjoying a liberal education. In after life in all practical business and scientific research, the saving of time and money will be inestimable.

Especially important will this item be to the architect and engineer with whom the calculations of weights, measures and values of building materials form, or should form, an important part of their work, and they have accordingly for many years actively favored the adoption of the metric system, and in 1886, the Western Association of Architects voted to petition Congress to pass a law making the system compulsory after a reasonable period.

Foundations are measured in rods or perches of two or three different kinds, and other building materials in yards, feet and inches, or by weight in tons, hundred-weights, pounds and ounces of several different kinds, none having any scientific relations to each other, and computation which in the metric system may be accurately made with a few dozen figures often require as many hundred in our ordinary measures with only an approximation at accuracy.

I have before me the figures required by an architect to estimate approximately the weight of a quantity of material used in building. The operation required 380 figures. I solved the same problem with absolute accuracy by the aid of the metric system in 68 figures, and in doing so found that the inaccuracies of the first result were practically unavoidable.¹

Thus we find the waste in the various items we have enumerated amounts, at the lowest estimate, to nine-tenths of the whole annual national product, and yet by far the most important item has not yet been touched upon.

We have calculated the losses of energy sustained in selling and purchasing under the competitive system; in needless contention; neglect to utilize the capabilities of women; in the extravagance of our exclusiveness; in incessant labor troubles; in all kinds of preventable diseases and crime, and in the unwise allotment of the work to be performed.

But a far greater loss than any of these comes from the *anarchy of production*. "These points of which I have been speaking," says Mr.

¹ See the writer's treatise on "The Metric System of Weights and Measures," published in 1875 by the American Metric Bureau, Boston, Mass.

Bellamy, "indicate only negatively the advantages of the national organization of industry by showing certain fatal defects and prodigious imbecilities of the system of private enterprise which are not found in it. These alone, you must admit, would pretty well explain why the nation is so much richer than in your day. But the larger half of our advantage over you, the positive side of it, I have yet barely spoken of. Supposing the system of private enterprise in industry were without any of the great leaks I have mentioned; that there were no waste on account of misdirected effort growing out of mistakes as to the demand, and inability to command a general view of the industrial field. Suppose, also, there were no neutralizing and duplicating of effort from competition. Suppose, also, there were no waste from business panics and crises through bankruptcy and long interruptions of industry, and also none from the idleness of capital and labor. Supposing these evils, which are essential to the conduct of industry by capital in private hands, could all be miraculously prevented, and the system yet retained; even then the superiority of the results attained by the modern industrial system of national control would remain overwhelming.

"You used to have some pretty large textile manufacturing establishments, even in your day, although not comparable with ours. No doubt you have visited these great mills in your time, covering acres of ground, employing thousands of hands, and combining under one roof, under one control, the hundred distinct processes between, say, the cotton bale, and the bale of glossy calicoes. You have admired the vast economy of labor as of mechanical force resulting from the perfect interworking with the rest, of every wheel and every hand. No doubt you have reflected how much less the same force of workers employed in that factory would accomplish, if they were scattered, each man working independently. Would you think it an exaggeration to say that the utmost product of those workers, working thus apart, however amicable their relations might be, was increased not merely by a percentage, but manifold, when their efforts were organized under one control? Well now, Mr. West, the organization of the industry of the nation under a single control, so that all its processes interlock, has multiplied the total product over the utmost that could be done under the former system, even leaving out of account the four great wastes mentioned, in the same proportion that the product of those mill-workers was increased by cooperation. The effectiveness of the working force of a nation, under the myriad-headed leadership of private capital, even if the leaders were not mutual enemies, as compared with that which it attains under a single head, may be likened to the military efficiency of a mob, or a horde of barbarians with a thousand petty chiefs, as compared with that of a disciplined army under one general — such a fighting machine, for example, as the German army in the time of Von Moltke."

According to the tenth census the number of persons engaged in manufacturing, mechanical mining and agricultural industries, that is in wealth production, amounts to eleven and one-half millions, or two-thirds of the entire working force, and more than five times the number employed in distribution. All these "hands" and "heads" are working at cross-purposes and in the dark. Each head has to learn independently how to organize and lead its little squad of hands in its own imperfect way, where a single head and a single business system might be organized once and for all, and serve for the entire eleven and a half million. Each hand is needlessly duplicating work for the thousandth time in guiding one of a thousand small machines which could far better be supplanted by a single great machine. Each small factory or firm has its separate officers, superintendents and foremen, where thousands might be united in a single establishment under a single system of superintendence. Each part of the country is sending its raw materials to a thousand different places for conversion into marketable goods only to be returned again for consumption, where all this cross transportation might be dispensed with.

Eliminate this last and greatest waste, and the annual wealth production of the country might, as Mr. Bellamy truly says, be increased not merely by a percentage but many fold, even without taking into account at all the nine other great items previously considered.

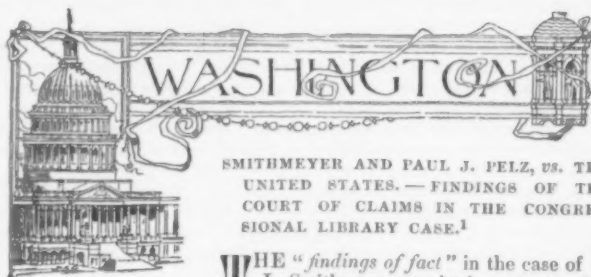
Accordingly I believe it would be nearer the truth to say that the nation will be twentyfold instead of tenfold richer when all these gigantic wastes together are abolished, when the people come to a general realization of the gigantic folly of the competitive system of industry.

Thus it is easy to see that the principles of nationalism involve no confiscation of property now owned by private parties. Land and machinery required by the nation will be obtained, as now, by fair purchase in the open market, and more than now, under voluntary sale, since justice and morality form the distinguishing characteristics of nationalism, and Government Bonds will be eagerly taken in exchange for private securities.

What will be the effect upon the architecture of our country, of this universal enjoyment of wealth and cultivation, this immeasurably improved condition of the whole people under nationalism? It will develop a national style of architecture which will surpass in splendor anything hitherto known in the history of the art, even as the superior social state of the ancient Greek Republic produced, in the midst of an age of comparative barbarism, the art of Phidias.

J. P. PUTNAM.

[To be continued.]



SMITHMEYER AND PAUL J. PELZ, VS. THE UNITED STATES. — FINDINGS OF THE COURT OF CLAIMS IN THE CONGRESSIONAL LIBRARY CASE.¹

THE "findings of fact" in the case of J. L. Smithmeyer to obtain remuneration for designs and plans made for the Congressional Library, has much of interest in it that may be at any time valuable to the profession. It was found that the architects devoted their whole time from 1873 to 1886 to making plans for a Library of Congress. The authority on which they did this work from time to time is noted in the Opinion, and the different pieces of work done during this time are duly catalogued. I give a brief summary which shows clearly the amount of work that must have been done.

First the competition won in 1873.

2d — Modifications of plans and elevations. New perspective of same scheme.

3d — Entirely new plans and Gothic elevations.

4th — Five modifications of exterior of Gothic design.

5th — Plans in French Renaissance, and cross-sections showing adaptation to another site.

6th — Design in Romanesque.

7th — New design in German Renaissance, new plans, perspective, etc.

8th — Claimants prepared full general drawings for a building in the Italian Renaissance. This set were finished drawings numbering forty.

9th — A new set of Gothic designs.

10th — More ornate Italian Renaissance designs.

In every case according to the findings of fact in the case, the work was done at the request of some Congressional Committee who had been empowered by different Acts of Congress to attend to the matter. The claimants gave up their private business and devoted their time almost entirely to the above work.

In 1886, the work was commenced, and Smithmeyer was appointed at \$5,000, per annum, as architect. "P. J. Pelz was appointed chief draughtsman." Quoting the facts: "Mr. Smithmeyer continued in the service of the defendants as architect of the building until October 3, 1888, when he was removed by the Chief of Engineers, Mr. Pelz is still employed."

The court states that it has been shown that the cost of draughtsmen, clerks and of office-room is usually about 50 per cent of an architect's business and that the cost of getting up plans in the Supervising Architect of the Treasury's office is about 2½ per cent of the cost of the building. These are both important facts to have on record, as they would be intelligible to even the average juror.

Another important matter which is found as a fact is that the schedule of the A. I. A., are rates established by custom and usage and "are never deviated from by architects in good standing except in exceptional circumstances and then only by special and express contract." This is a very interesting and important fact to have been established before a prominent United States Court. "The executive branch of the Government has employed architects at the rates prescribed by the foregoing schedule of the American Institute of Architects."

Judge Nott delivered the opinion of the Court and after a brief review of the above-mentioned facts, he states, that the claimants demand 2½ per cent on \$7,000,000. "It appears that the executive branch of the Government has repeatedly employed architects who are compensated at the prescribed rates. At the present time the architect (R. M. Hunt) at the Naval Observatory is employed upon these terms. The claimants, moreover, rely upon the decision in *Tilley vs. County of Cook* [103 U. S. R.], where the Supreme Court has said, that if the architects' plan has been used, evidence to show its usage would have been admissible, and has intimated that it would have been binding upon the County. In the *District of Columbia vs. Cluss* [ibid 705] the Court also said 'this was the ordinary rate of charge as compensation in the District.'"

The final point on which the decision rested was that the architects agreed to take a salary, and in this way fixed the value of their own services.

Judge Nott says, "Speaking for myself alone I am of the opinion that compensation should be measured by the general rule and usage which govern the profession. . . . I think, too, that the decision of the Supreme Court holding that the usage of architects extends to and is binding upon a body politic erecting a public building — *Tilley vs. County of Cook* [supra] — and that it has recognized and established existence in the *District of Columbia*. [*District of Columbia vs. Cluss*] [103 U. S. R. 105] are authority for holding the usage obligatory upon the Government for a building erected in the *District of Columbia*. The sum which would be recovered is large,

¹ Court of Claims — No. 16432.

\$136,355, but the services embodied in these plans extended through the best part of these men's business lives."

The majority of judges did not agree with Judge Nott. Instead of the schedule they decided that the "defendants elected to give and the claimants consented to take two annual salaries amounting to \$8,000 a year, as an equivalent for the percentage they would be entitled to according to the schedule. Having thus departed from the general rule of architects measuring their compensation by the customary fee of the profession, the Court is of the opinion that that part should be estimated according to the same rule."

The Judges also concluded that only six years actual work had been given to the Government, therefore, they awarded \$48,000. They were either unaware of or ignored the fact that when a salary was accepted by the architects all the office expenses were assumed by the Government, rent, draughtsmen, computers, clerks, typewriters, printing, etc., was all paid for by the Government. During the six years which the Court concedes that these architects devoted to this work and on which they award the payment, the architects paid all the expenses for offices, clerks, draughtsmen, typewriters, computers, printing, paper, blue-printing, etc., out of their own pockets. Now the Court put down as an established fact that the cost of running an architect's office is fifty per cent of his receipts. Taking the basis on which the award was made, it is difficult for a non-legal mind to see why they did not award \$8,000 a year for architect's services plus office expenses which according to the facts established in the case would be about \$72,000.

WIND PRESSURES.



Turret.

SOME three months ago *Engineering* drew attention to the high wind pressures which had from time to time been registered at the Bidston Observatory, Liverpool. Even greater pressures of wind have been recorded at that Observatory, however, than those which we then mentioned. For instance, on February 1, 1868, 70 lbs., on December 27, 1868, 80 lbs., on March 9, 1871, 90 lbs., stand on record. The last mentioned was brought forward by Mr. R. H. Scott, at the inquiry into the Tay Bridge disaster, as "the actual instrumental record of the pencil of one of Osler's anemographs"; though he virtually contradicted this assertion by adding "the instrument was graduated up to 40 lb., and the pencil was driven on beyond a distance that was estimated at about 90 lb."; which information indicates that the observation is not worthy of reliance. A well-known engineer, over the initials "B. B.," wrote to the *Times* that "an 80-lb. or 90-lb. wind at Liverpool is something" too ludicrous for a practical engineer to conceive; and he stated "A flank wind blowing with an effective pressure of 25 lb. per square foot would not merely upset every cab and omnibus in our streets, but would even render it necessary to stop the

traffic on our railways; for, having reference to the natural oscillatory movements on irregular portions of the road and on curves, the 25 lb. would inevitably lay a train flat on its side, or hurl it over the first exposed embankment." To the like purport commented Mr. John Dixon, anent the Obelisk; "Eighty pounds of wind pressure! What does it mean? The structure supporting an instrument that fairly registered such must have been strong enough to withstand itself such a strain, and as a practical engineer I unhesitatingly say no modern building exists in England that will bear anything like it, certainly not the Bidston Observatory. Twenty-eight pounds pressure per square foot of surface would send a man

flying through the air; it would sweep from the rails any passenger train."

The Committee on Wind Pressure reported that "the pressures at Bidston seem very abnormal, being much beyond what has been noticed at any of the other stations. The conformation of the ground on which the Bidston Observatory stands is such that the velocity of the wind might be greatly intensified." It is on the top of a range of hills on the south side of the Mersey, which rise abruptly on both sides, especially on the west. The anemographs are 56 feet above the ground and 251 feet above the mean sea-level.

At Greenwich Observatory the highest pressure recorded appears to be 53 lb. on October 14, 1881; but the Astronomer-Royal has repudiated such high pressures in his report for 1883, where he says: "A flexible brass chain has been substituted for the stiff copper wire connecting the pressure plate of Osler's anemograph with the recording pencil. The smaller pressures of $\frac{1}{2}$ lb. and less are now very satisfactorily registered, and as regards the larger pressures, the records hitherto obtained throw some doubt on the results with the copper wire. On the occasion of the gale of October 24, 1882, a velocity of 64 miles an hour was registered with Robinson's anemograph for two successive hours, being greater than any velocity previously recorded here, but the greatest pressure registered with the chain was only 29 lb. on the square foot, whilst on April 29, 1882, a pressure of 49 $\frac{1}{2}$ lb. was recorded with the copper wire at a time when the velocity was only 50 miles an hour. The stiffness of the copper wire appears to have exaggerated some of the largest pressures, and to have prevented the record of any of the very small pressures. The pressure scale on the paper was re-determined after the application of the brass chain, and was found to be almost precisely the same as before for large pressures. There were, however, some little differences in the portion of the scale applying to small pressures." A similar instrumental defect may require rectification in the Bidston pressure anemograph.

If the high wind pressures recorded in the British Islands are perplexing, those recorded in other countries are astounding. At Sydney, Australia, the astronomer reported on September 27, 1876, that "the wind in some of the gusts lasting several minutes attained the extraordinary velocity of 153 miles per hour, equal to a pressure of 117 lb. to the square foot." In tornadoes, or whirlwinds, says the *Shipping Gazette* of April 2, "the wind revolves with such violence as to uproot the largest trees, demolish the strongest buildings, and transport heavy bodies to a considerable distance. The United States Signal Service has published a report on the character of 600 tornadoes, and from this it is seen that there is no season of the year which is exempt from their occurrence, but the greatest frequency is in the spring and summer seasons whilst in winter they are rarely experienced. The width of the path of destruction with these storms is said to vary from 40 feet to 10,000 feet, the average width being rather over 1,000 feet. The velocity of progression of the storm cloud, as determined from the reports in 130 cases, varied from 12 to 60 miles an hour, the average rate being 30 miles. The velocity of the wind within the cloud vortex was variously estimated at from 70 to 800 miles an hour, the average being 390 miles."

Mr. Hawksley told the British Association, in 1881, that the powerful forces concerned in the erratic movements of tornadoes and whirlwinds "could not be introduced with propriety into calculations of the strength of structures intended to have a commercial value, because of the extreme improbability of any particular structure falling within the range of their destructive effects; they fall, in fact, within the legal category of *Actus Dei*." Engineers should make a clear distinction between ordinary cyclonic storms sweeping over a large area, whole counties, indeed whole countries, which every structure ought to be able to resist; and whirlwinds or tornadoes, varying in diameter from a few yards to a mile or so, rare in their occurrence in any particular locality, quite impossible to resist, and which would certainly blow away any anemometer that might be in their path.

Weather maps have made everybody familiar with isobars. Their distance apart is an index to the strength of the current of air between them. Thus, for a cyclone the velocity of the wind may be inferred for any part of it. But there are secondary cyclones within the primary, and these barometers barely indicate. These in certain sections intensify the wind of the cyclone. Were barometers planted in every square mile, and all read at definite instants, it might be possible to localize and define tertiary cyclones, and it cannot be doubted that even smaller cyclones may exist, down to the smallest and most destructive whirlwinds. Their causes might thereby be ascertained, but there would still be wanting a remedy for their effects. Probably their immediate cause is instability of atmospheric temperature and condensation of vapor. However this may be, such a combination of storm within storm, each more intense in its violence, as its area is less, is apparently sufficient to account for the unsteadiness of violent winds, and the powerful gusts which accompany them, for the smallness of the area in which they operate, and for the shortness of their duration, though they may be numerous throughout a primary cyclone or in any particular region of it. Some consideration is also due to exceptional rushes of air, constituting gusts, caused by obstacles on the earth's surface. The pressure anemograph is the only instrument which gives a record of gusts of wind; hence it is desirable to make it as perfect as possible. — *Engineering*.

THE OWNERSHIP OF PLANS.



The Tower of the Old Bourse, Antwerp.

THE value which an architect sets on his plans ought to be that of their actual use to him. When a building has been executed from a set of drawings, their use has, it is thought, been fulfilled, and they have served their purpose. They can be of little further use to the architect except as documents of reference in the case of alterations or additions. These are the arguments that may reasonably be expected to come from a building owner who wishes to retain the plans of his own building; but the architect attaches another value to his design besides their actual use to him in carrying out the building. The design is a kind of prescription of what might be done under similar circumstances, the plans are records of thought and experience, the elevations artistic expressions of these ideas. Apart from the actual value of these records, whatever it may be, there are two other considerations which weigh heavily in the mind of the architect. First, the retention of the plans by the

owner enables him or any of his friends to make use of them without employing their author; second, they yield up evidence to the owner that may be prejudicial to the architect. That these are considerations of weight cannot be denied, hence the legal decree which vests in the owner the property of plans has always been a bitter one among the profession, and its objections are valid. We may suppose the plan is for a house detached: the same arrangement can be adopted on a similar site elsewhere. If it is the plan of a house in a street, a similar use can be made of it. Perhaps the design may be for a laborer's cottage, a school, or a model farm, in which case the drawings would be of value to any one who contemplated erecting any of these buildings. Slight alterations only would be required to make the same plan suit another site. Why should an architect part with the instruments of his calling, if they can be used a second or third time, or the same plan multiplied indefinitely? He was paid a commission for designing and carrying out a building for a certain individual. Is it fair that the same plans should be made use of without payment in other cases, either by the same individual or by others? In reply it may be said that the architect is paid to prepare a design, and if this design be repeated it does not follow he should receive another commission. The payment he receives covers the design, which becomes the property of the owner who employed him, and who is at liberty to utilize the idea. There are thus two ways of looking at a set of plans: the architect regards them as embodying his own ideas or invention, which he prescribes for a particular purpose, and to which prescription he has an individual right, and that, therefore, he is entitled to charge for every time they are used, just as a patentee of an invention has a right to compel every one who uses his invention to pay a royalty. The lawyer's view is that of the public generally. The design or plans are considered to be a marketable commodity, and once being paid for, belong entirely to the employer, who can thus repeat the design as

often as he pleases, or lend it to others to use. Which of these views is the right one?

The sooner the question of ownership of plans is settled, the better it will be for the peace of mind of the profession and the public. The decision in the case of the plans made for the Houses of Parliament, and the imported case of "Ebdy vs. M'Gowan," represent the legal mind on the question, and have, indeed, made it illegal for an architect to refuse to give up the plans that he has made and been paid for. But though, in the face of these decisions, it would be difficult for an architect to refuse to give these documents up, he is not obliged to agree to such an arrangement. The custom of retaining them has been pronounced not to be reasonable; but that is no argument why architects should submit to the ruling of the courts, and make no special provision on the subject. Every now and then we hear of a disagreement between a professional man and building owner on some question of contract, or as to the carrying out of the work in some particular; sometimes it is a question for arbitration, and the owner to support his case has to produce evidence. The plans and specifications are all-important witnesses to prove the owner's contention, but the architect refuses to render up documents that may weaken his own case. The owner thereupon says he has paid for the plans: they are his property, and he ought to have them. How is the architect to act under these circumstances? Is he compelled to part with documents which may be as valuable to him as to the owner? Can he destroy them without making himself amenable to the law, as an architect did the other day, and which was the subject of a case ("Clarke vs. Macnamara") heard at the Altrincham County Court? The decision of the judge in this case was to the effect that the architect had a very mistaken view as to his rights, and that the plaintiff might have claimed vindictive damages if the action had been one of trespass, because to destroy the property of another person was a very serious offence which the law visited with ample damages. The architect, at the suggestion of the judge, agreed to make tracings of the duplicate plans deposited with the local board, and to meet the plaintiff in all that was required. The points of the particular case to which we are referring were reported in *Building News* June 13 (p. 854). The plaintiff employed defendant to prepare plans and specifications, and superintend the erection of two villas. Litigation arose about something in the work, and the defendant architect was applied to for the plans and specifications, they being necessary to have the work checked. The architect refused to give them up until he was paid his charges, which was one of the points in dispute. The result of the litigation was favorable to the plaintiff, who was awarded £25 damages by reason of breach of contract, and he thereupon renewed his application for the plans, the defendant replying that they were destroyed. The architect, however, paid three guineas into court, which was thought insufficient by the plaintiff, who valued the plans at ten guineas. The payment into court was an admission of liability. These facts only support the decisions hitherto given as to the building owner's right to the plan; they also indicate the value set by owners on these documents. The intrinsic value of the plans was a point raised. The plaintiff sued defendant for £10, which he estimated their value to be to him, and £5 for detention. The judge said their value could be appraised by calling in an architect or builder! A very commercial way of looking at the matter, certainly. Apart altogether from the merits of the case decided, the architectural profession has some cause for complaining of the circumstances. That an architect should be called upon to give up his drawings to enable his employers to substantiate a claim against him is certainly a proceeding which is rather aggravating. A number of disagreements might arise during the erection of a building, and at each juncture it might be argued that the architect ought to deliver up the plans to the owner. A point might be raised as to the dimensions of a certain room or the thickness of a wall. It would be preposterous for the client to demand the plans at such a stage, as the architect is the only and proper judge of what he intended. Demands of this kind are often made by clients when they happen to quarrel with their architect about the execution of a part of the work or some detail. We remember one instance where an architect in good practice, A, received a letter from a brother professional, B, saying that Mr. A's client had placed the matter in dispute between himself and A in his hands, and requesting him to hand over the plans and specifications to enable him to check the work about which the dispute had arisen. Mr. A was astonished at so unprofessional and unbusiness-like a proceeding, and, of course, declined to adopt this mode of settling the dispute, which by the terms of the contract he alone could do.

If these documents are by law held to be the property of the building owner, what is there to prevent him demanding the plans whenever he is so disposed?—a course of action that would subject the architect to an immense amount of trouble and inconvenience unless duplicates were prepared in each case. Every architect would resent such a claim during the performance of the work and before he had given his final certificate. The client, if of a cantankerous disposition, might be continually comparing the executed work with that described in the plans and specification, and be finding out all manner of trivial and fancied discrepancies. It would be preposterous and detrimental to imagine such interference during the time of carrying out a contract; the architect would no longer be the arbiter between the contracting parties if the client wished every now and again to pass his judgment on the work. Therefore, we conclude

that the ownership of plans ought not to be claimed, or the right to claim them ought at least not to take place till after the completion of the building, and the architect has discharged his obligations to client and builder. It is not, certainly, till after completion that the claim for plans is generally made, and as the architect's use of them has been then served, he can, with more magnanimity give them up to his client. Tracings of them at least can be made for the owner, having reference mainly to the drains or other matters required for examination or future alterations. Unfortunately, it is not often a voluntary act, but a compulsory rendering up of documents, generally made for getting some advantage, and resisted on the same grounds. A more decided authority on the question is necessary in the interests of both parties. The profession can do something towards the matter by making it a stipulation in an agreement with their clients, that the plans are their property, and that if copies are required for reference as to drains, etc., they may be had on payment of a small fee. The matter would then be made one of contract, and no possible difference could arise. If a client expressly makes it a condition that he should have copies of the plans after the work is completed, it ought to be stipulated that they are not to be used for any other building without the architect's consent, but only for reference. If stipulations of this nature were more generally adopted, there would be fewer disagreements between architects and their clients. As the custom of ownership of plans stands, there is some uncertainty as to its prevalence. Cases in the law reports are not to be found, and the only decision that is of any value is that in which it was held that the custom referred to is not a reasonable custom — namely, that plans prepared by an architect whose services are not required, should remain his property after being paid for. The profession would be strengthening its position if it can show a more united opinion on the question. — *Building News*.



[Contributors are requested to send with their drawings full and adequate descriptions of the buildings, including a statement of cost.]

ENTRANCE TO HOUSE OF E. V. R. THAYER, ESQ., GLOUCESTER STREET, BOSTON, MASS. MESSRS. STURGIS & CABOT, ARCHITECTS, BOSTON, MASS.

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

THE authorship of this design is accidentally attributed upon the plate itself to the old firm of Sturgis & Brigham, instead of to their successors.

TWO SHEETS OF SKETCHES BY A ROTCH TRAVELLING-SCHOLAR, MR. E. A. JOSSELYN.

[Issued with the Imperial and International Editions only.]

SKETCHES BY THE *American Architect* TRAVELLING-SCHOLAR, MR. T. F. LAIST. — IRONWORK NO. I.

[Issued with the Imperial and International Editions only.]

GRAHAM INN, GRAHAM, VA. MR. LINDLEY JOHNSON, ARCHITECT, PHILADELPHIA, PA.

The cost of hotel is as follows:—

Building	\$23,000
Heating-steam	1,850
Plumbing and drainage.....	1,900
Total	\$26,750

The contract is given out to Messrs. Adams & Woodson of Lynchburg, Va.

HOUSE FOR E. STOREY SMITH, ESQ., BROOKLINE, MASS. MR. C. H. BLACKALL, ARCHITECT, BOSTON, MASS.

HOUSE FOR W. I. BOWDITCH, ESQ., BROOKLINE, MASS. MR. C. H. BLACKALL, ARCHITECT, BOSTON, MASS.

BUSINESS BLOCK FOR MESSRS. O'DAY & ROCKEFELLER, BUFFALO, N. Y. MESSRS. GREEN & WICKS, ARCHITECTS, BUFFALO, N. Y.

DESIGN FOR EPIPHANY MISSION HOUSE AND CHAPEL, WASHINGTON, D. C. MR. ROBERT STEAD, ARCHITECT, WASHINGTON, D. C.

COTTAGE FOR CHARLES S. INGALLS, ESQ., SWAMPSCOTT, MASS. MR. E. T. HAPGOOD, ARCHITECT, NEW YORK, N. Y.

SKETCH FOR LADD OBSERVATORY FOR BROWN UNIVERSITY, PROVIDENCE, R. I. MESSRS. STONE, CARPENTER & WILLSON, ARCHITECTS, PROVIDENCE, R. I.

[Additional Illustrations in the International Edition.]

A WELL AT TOULOUSE, FRANCE.

[Etching.]

A VILLA AT BADEN, NEAR VIENNA, AUSTRIA. HERR ROTH, ARCHITECT.

[Gelatin Print.]

HOUSE OF HERR HURANY, ON THE SCHOTTENRING, VIENNA, AUSTRIA. HERR STURANY, ARCHITECT.

[Gelatin Print.]

SCUOLA HANBURY, VERMIGLIA. MR. W. D. CAROE, M. A., ARCHITECT.

HOME OF REST, LITTLEHAMPTON. MR. HALSEY RICARDO, ARCHITECT.

JAPAN, INDIA.

THESE panels are companions to those we published last week, as exemplifying some of the figure-work that is executed at Burmantofts.

AMBLE WESLEYAN CHAPEL, MINISTER'S HOUSE, ETC. MR. GEORGE REAVELL, JR., ARCHITECT, ALNWICK, ENG.

THESE buildings are being erected on a somewhat peculiar site, the fall from the street to the back being 16 feet, and this has been taken advantage of to allow the school and vestries to be built underneath the chapel and yet above ground, while the floor of the chapel is only 4 feet from the street level. The chapel is seated for 400 on the ground-floor and in a small gallery over the entrance lobby. The school-room is 36 feet by 44 feet, and by an arrangement of shutters the areas of two roomy vestries can be added to this. The interior fittings of the chapel, including the hammer-beam roof, are carried out in pitch-pine. The windows are filled with pale tinted quarry glazing. The work, as carried out, will cost about £2,300.

RESIDENCE OF DR. GIBBS, SURBITON, ENG. MR. R. LANO PEARCE, ARCHITECT.

THIS house was to have been erected in the main road on Surbiton Hill, but owing to the inability of finding a sufficiently central and large site for same the scheme has been abandoned, at least for a time. The walls were to be faced with red bricks, with white Mansfield stone dressings, etc., Broseley tiles of dark color for roofs and vertical tilework, the half-timberwork being varnished oak with light-brown stucco-work between. In arrangement every care was taken to make the business part of the house as distinct as possible from the main and private part, but at the same time within easy access from same, and so that, if necessary, the study could be made a consultation-room for the better class of patients. The first floor contains five bedrooms, large nursery, bath-room, etc., and in the roof three attics, cistern-room, etc.

BURNHAM THORPE CHURCH.

AS there appears to be some apprehension that the proposed restoration of Burnham Thorpe Church¹ may transform the building so that it will no longer correspond with what was seen by Nelson in his youthful days, Sir A. W. Blomfield, the architect, has found it necessary to offer the following explanation:—Nothing new can be said of the much-vexed question of church restoration generally. The arguments on both sides are perfectly well known to all interested in the subject, but it frequently happens that in individual cases there are circumstances which, if generally known, would go far to influence and modify the views of practical and moderate people. The church of Burnham Thorpe is a case in point. The decay caused by weather and long neglect has no doubt been going on for centuries, but by far the greater part — indeed, as far as I have been able to discover at present, the whole — of the destruction, spoliation and disfigurement which it is now proposed to repair, reinstate and remedy has been perpetrated within the last hundred years, and after the departure of Lord Nelson from the home of his youth, which he is not known ever to have visited again. The works carried out by his father — consisting chiefly of pulling down the south aisle and building up the side arches, rebuilding the ruined top of the tower in the most unskilful and barbarous manner, bricking up the arch between it and the nave and erecting in front of it an extremely ugly gallery, and, lastly, sweeping away whatever remained of the old oak seats, and replacing them with deal pews of the commonest kind — were not completed until December 1793, and could never have been seen by Nelson, who finally left Burnham Thorpe in January of the same year, nearly twelve months before.

¹ See *American Architect* for July 5, 1890.

Some years later the old oak roofs of the nave and chancel were removed and replaced by deal ones of the meanest character, covered with blue slate; and, finally, the peal of bells, which existed till after Nelson's death, disappeared, but when and how there is no record to show. It is thus evident that the church as we now see it is totally unlike that in which Nelson must have prayed as a boy. It is not proposed to alter a single feature which exists as he must have seen it, nor will anything be removed that can in any way be associated with his memory. The top of the tower and the south aisle will be rebuilt, all arches will be opened out, the modern deal pews and roofs will give place to oak of suitable character, and the only old roof remaining—viz, that over the north aisle—will be carefully preserved and repaired.

This brief statement of facts, if it fails to appeal to those who object to anything which comes under the hateful name of "restoration," will be held, I think, by most people to establish a strong case in favor of—let me say—"rehabilitation" in this particular instance.—*The Architect.*



ITS GROWTH.—COMMERCIAL CONDITIONS.—FRENCH QUARTER.—CATHEDRAL OF ST. LOUIS.—ORIGINAL BUILDING.—ITS PRESENT FORM.

THE growth of New Orleans has been rapid when compared with other American cities. We have seen that within five years of its foundation, contemporaneous with the close of "Queen Anne's War," that the portion of the city actually inhabited covered two-fifths of the amount that its founder had thought necessary to lay out. The remaining amount, however, was covered soon after the Spaniards had taken possession, but for years it was the policy of Spain to keep the rebellious colony within its walls, for there it was most easily controlled. On account of this, we find that the central part of the old town is very thickly built, and has been densely populated. Nevertheless, it was impossible to restrain the growing city, and when the French again resumed the government the walls went down, and the city, relieved of the pressure, expanded with wonderful rapidity.

Surrounded as it was by plantations of the most fertile and productive nature, worked with astonishing success by slave labor, it is not surprising that its citizens were wealthy. After the introduction of the first Mississippi steamboat (1812) the river trade was enormous, for, situated as New Orleans is, at the gateway of the longest system of fresh-water navigation on earth, it is likely always to hold its importance as a seaport of the valley of the Mississippi and the neighboring Southern States. This location rendered the city of utmost importance when it was acquired by the United States, and it soon spread itself out and absorbed the small surrounding towns of Carrollton, Jefferson City and, on the opposite bank of the river, Algiers (named by the merchants on account of the piratical manner of doing business indulged in by its citizens), and Gretna (called so on account of its frequent use after the manner of the original "Gretna Green").

The closing battle of the War of 1812 so stirred the patriotism of its citizens that, when the call for troops came in 1861, the city was deserted by its able-bodied men, and everything came to a standstill. The rich population gradually became poor as commerce came to an end, and when the slaves were freed the luxuriant plantation was no longer a success. In 1865, the penniless return of the once young and chivalric Southern soldier gave a feeble impulse to what has been for the twenty following years a very slow and plodding struggle for improvement.

But now for its architecture. The "city" of which our last letter and the beginning of this treat has now sunk into the insignificance of a [French] "quarter," and is of little or no commercial value. Though rapid to grow at first, it has been very slow to Americanize. This point, however, is what makes it of interest to us. Its public buildings remain in use unaltered, and we find the homes of wealthy merchants, as well as the city residences of rich old planters of years gone by still unchanged, though now presenting in most cases a very dilapidated appearance, stripped of their antique furniture, and allowed through neglect and poverty to fall literally into ruin.

Let us begin with the public buildings. We have the Cathedral of St. Louis, fronting the centre of Jackson Square. The site was chosen when the city was laid out, and the building was then considered the most important in the province. The original building of wood and adobe, erected soon after the foundation of the city, was destroyed, together with a large portion of the town, by a hurricane in 1723. It was replaced the following year by a building of

much the same nature, which existed until 1788, when it was consumed by fire. This conflagration was a disastrous one, and destroyed nearly the whole city. The colony was for a long time after this unable to build a new church.

In 1794, Don Andres Almonester, a wealthy Spaniard, rebuilt the Cathedral at a cost of \$50,000, on condition that a mass should be said every Saturday for the repose of his soul. This Cathedral, of the Spanish type of Renaissance, consists of a nave of three aisles and a choir without transepts. The aisles of the nave are separated by two rows of heavy Roman Doric columns supporting galleries, rendered necessary for the accommodation of a large congregation. A second tier of columns over the first, of the Ionic order, support the roof, consisting of a semicircular vault. The choir is separated from the nave by a semicircular arch resting upon pilasters, much after the manner of early Christian basilicas.

The high altar is of white marble, the reredos being composed of very delicate Corinthian columns, entablature and pedestals surmounted by statues of Faith, Hope and Charity, and bearing the words "*Ecce panis Angelorum.*" To the right and left, under smaller arches, are shrines dedicated to St. Francis and Notre Dame de Lourdes, the latter being a curious reproduction, the Grotto of Lourdes. Before the shrine of St. Francis is the tomb of the donor of the Cathedral, and from the old Spanish slab it is learned that he was a very benevolent man. "Here rests the body of Don Andres Almonester y Roxas, a native of Mayrenna in the Kingdom of Andalusia, died in the city of New Orleans on the 26th of April, 1798, at the age of 74 years. A knight of the distinguished order of Charles the Third of Spain, and colonel of the militia of the provincial troops, founder and donator of this church and of the St. Charles Hospital, founder of the hospital of the Lazarines, founder of the Ursuline convent, founder of the Girls' school and of the Presbytery, all of which he built in this city at his own expense. Rest in peace."

The exterior was originally after the manner of those cathedrals built by the Spaniards in South and Central America, with flanking towers surmounted with ogee domes of hexagonal plan. It was considerably altered, however, in later years by the French when they assumed control. They demolished the ogee domes and replaced them with sharp, hexagonal spires, and, besides these they added over the centre of the façade a larger and more massive octagonal spire, rising higher than the others, which together with a new pediment and supporting columns rendered an entirely new design, yet one of merit.

The rear façade is well treated, setting forth a delicately conceived arrangement of engaged Ionic columns supporting an entablature and crowned by the semicircular top of the end wall-pierced by an old-fashioned clock-face.

THE NEW YORK HEALTH BOARD AND THE STEAM-HEATING PIPES.



THE New York *Evening Post* of July 9 states that the Health Board on the day before adopted the following resolutions:

Resolved, That in the opinion of this Board the heat from the steam-mains that are laid in close proximity to the gas-mains, to the Croton water-mains, and to the sewers and vaults in the streets of the portion of the city thus far examined, creates new and dangerous emergencies and greatly increases the risk to the public health from the streets and street openings, sewers, and vaults in this part of the city; that the extreme heat coming from these mains is a menace to public health, and its effect on the basements of many buildings situated along the line of these steam-mains is productive of

conditions dangerous and detrimental to life and health.

Thereupon the following order was issued and served upon the New York Steam-Heating Company:

Whereas, The steam-distributing mains of the New York Steam Company laid under the roadway in Broadway in the city of New York, between 105 Broadway and 184 Broadway, are in a condition and in effect a public nuisance, and dangerous to life and health:

Resolved, That the reports of the Sanitary Superintendent, W. A. Ewing, and Chief Inspectors Cyrus Edson and Edward W. Martin, embodying the reports of the Medical Sanitary Inspectors, Charles F.

Roberts, Alvah H. Doty, and Alonzo Blauvelt, upon steam-mains' sewers, vaults, water-mains, and gas-mains, and the results of certain inspections made by them in the lower part of the city, be filed among the records of the Department, and in connection with a communication received from the Honorable, the Mayor of the city, enclosing copies of reports made to the Commissioner of Public Works, and in connection with other papers relating to the said inspectors, this Board regards the evidence sufficient to authorize its declaration hereby made, that the said steam-mains of the New York Steam-Heating Company in Broadway are a public nuisance; and this Board hereupon enters upon its records the said steam-mains in Broadway, between 165 Broadway and 184 Broadway, as a nuisance, and hereby orders that steam be shut off from the said steam-mains, and that the said steam-mains in Broadway, between 165 Broadway and 184 Broadway, be not used.

The action of the Health Board is based upon the report of an investigation of the company's pipes (owing to the number of explosions which have occurred lately) made at the Mayor's suggestion. That report is signed by Dr. Cyrus Edson and Edward W. Martin, sanitary inspectors, and some extracts from it are as follows:

"To ascertain the effect of the temperature in the steam-mains upon the contiguous earth, and upon other subway structures, such as sewers, gas-mains, etc., a large number of temperatures were taken by ourselves and by Medical Inspectors Charles F. Roberts, A. H. Doty, and Alonzo Blauvelt, who were detailed to assist in the investigation. For the purposes of comparison, also to ascertain how much of the heat in the sewers was due to exhaust steam and hot water from buildings containing boilers, a number of temperatures were taken of sewers in streets that did not contain steam-mains. It will be seen (from tables appended), that, stated broadly, the temperature of sewers situated in streets containing steam-mains is above that of the air at this season of the year, while the temperature of those in streets not containing the mains is under that of the air. The temperatures of the sewers in streets containing the steam-mains, however, are excessively high, and, of course, are present throughout the entire year. The vapor escaping from the man-holes was particularly offensive, and the pavement in the immediate vicinity of many of them was quite hot.

"To ascertain the cause of this high temperature, and to find the effect of them upon the gas-mains, on the 1st day of July excavations were made opposite the *Herald* Building on Broadway and in Barclay Street near the corner of Greenwich Street. The joints of the gas-mains at these locations were carefully examined, and the temperature of the earth contiguous to them taken. Opposite the *Herald* Building, in two excavations, the thermometric indications were respectively 155° and 200° Fahrenheit. In Barclay Street the earth in the bottom of each excavation was found to be 100° Fahrenheit. The depth of the former excavations was about five feet, distant fourteen feet from the steam-main, and of the latter about three feet, distant six feet from the steam-main. The gas-main in one of the Barclay Street excavations was found to be leaking; the gas escaping from the joint readily ignited. All the other joints exposed had been recently caulked, on account of leaks. In front of the *Herald* Building steam or vapor could be seen escaping from the earth as soon as the paving-stones were removed, and out of the openings the odor given off from the hot earth was extremely offensive. A curious formation resembling sandstone was noted upon the joints of the gas-pipes wherever they were inspected. This was composed of sand or dirt packed into a hard and almost homogeneous mass, to remove which the application of a chisel and hammer was necessary. The sample taken had a very offensive odor of gas. This formation is not seen in gas-main joints except in the streets where the steam-mains are situated. Two causes are to be ascribed for the high temperatures found; first, direct radiation from the steam-mains; second, escape of 'live' steam from leaks in the mains.

"The temperature of the steam in the mains at 80 to 87 pounds pressure per square inch is about 320° Fahrenheit. When the mains were laid, the joints, which were of the so-called expansion variety and very brittle, were keyed up on the foundations by means of oak wedges. The heat soon charred and destroyed these wedges, which caused the joints to settle, and a crack or leak occurred in each. It is safe to assert that every joint in the mains on Broadway, south of Reade Street, and a number of those elsewhere in the lower part of the city, permit the escape of steam into the earth, and that the loss of steam by this means is enormous. The penetrative power of live steam is very great, and affects the earth and subway structures (sewers, gas-mains, etc.) at great distances from the steam-mains, channelling its way through the soil. The Steam Company has endeavored to remedy these leaks by caulking the joints with lead, but the lead, under the influence of the heat, undergoes a chemical change, and no longer serves its purpose as caulking. We are informed that they have submitted this difficulty to experts, and have sought an alloy that can be used for caulking the joints effectively.

"The effect of the high temperature upon sidewalk-vaults and cellars was also investigated, and Table C, appended, shows the results. At No. 63 Wall Street, inspected on the 23d ult., the temperature of the wall close to steam-heating main was 150° Fahrenheit, and the air of the vault was extremely foul. At Nos. 69 and 71 Wall Street the temperature was 137° Fahrenheit. At No. 233 Broadway the vault under the street was 148° Fahrenheit. The steam-main here is about one foot distant from the vault wall. The engineer was sick and attributed his illness to the great heat of the vault. The street pavement in front of the last named number has been opened,

we are informed, ten or twelve times during the past three years, for the purpose of repairing the steam-mains. At No. 235 Broadway 118° Fahrenheit was noted in the vault. The vaults of the buildings on Broadway, west side of street, between Barclay Street and Park Place, were all excessively hot, as will be seen in Table C. At No. 284 Broadway the engineer complained that though in summer no trouble was experienced, in winter the vault was so hot that it could not be used. Opposite to Nos. 258 and 259 Broadway, in the old Arcade tunnel, the temperature was 110° Fahrenheit, and numerous leaks from the steam-main were noted escaping through these walls.

"At No. 247 Broadway the water-closets in the vault in Park Place cannot be used at times on account of the heat. At No. 130 Broadway a similar condition exists. The paint on woodwork lining the room is blistered by the heat from the Steam Company's mains. At No. 287 Broadway the vault during last winter, we were informed, was so hot it could not be used.

"Inspections were made of buildings in streets in which the steam-mains of the New York Steam Company are laid, for the purpose of ascertaining the effect of heat upon waste and soil pipes, and upon the water-service pipes. Where the water-service was found affected, orders were made upon the Steam Company to abate the trouble, and in one instance they have complied with the order. At Nos. 14, 16 and 18 Wall Street the Croton service-pipe was made so hot that it leaked a number of times, and the street opposite has had to be opened to repair the connections with the Croton water-main. This is due to expansion and contraction, caused by the heat from the steam-main. At Nos. 44 and 46 Wall Street the lead Croton service-pipe became disintegrated and rendered useless by the heat of the contiguous steam-main, and an iron pipe had to be substituted in lieu thereof. At Nos. 258 and 259 Broadway the temperature of the Croton, as delivered from faucet in the cellar, was 120° Fahrenheit. Hot water was also found at the northeast corner of Trinity Place and Rector Street, at Nos. 182 and 184 Broadway, and at the northeast corner of Broadway and Fulton, the water was delivered warm. The proprietor of the restaurant in the latter building stated that it became very hot unless it was kept running. It was running at the time of inspection. At No. 63 Broadway the Croton water was very warm when first drawn from the street-main, but became cool on being allowed to run. At Nos. 165 and 167 Broadway the steam-main leaks into the sidewalk vault, and hot water is delivered by the Croton water-service. It was stated that this condition had existed for the past four months.

"On the 21st ult., we inspected the premises on the northeast corner of Broadway and Fulton Street, where an explosion recently occurred, the basement of which is occupied as a restaurant, and the first floor as a hat-store. It was evident that steam from the Fulton Street main had blown into the cellar. The force of the steam was sufficient to carry quantities of earth into the premises. The walls of the cellar and of partitions in it were enamelled with dirt and sand to a depth of an inch or more, and dirt was blown into the hat-store and upon goods there. Adjacent to the south wall of the cellar a large pile of dirt was deposited, the temperature of which was about 100° Fahrenheit. The entire south wall of this building up to the first floor was hot, and the heat had blistered and peeled the paint from the woodwork lining the wall. We ascertained that the steam had been cut off at Fulton Street and Broadway on the night preceding the explosion, and as water of condensation was formed in the Fulton Street pipe when the steam was suddenly turned on, this body of water was forced against the cut-off, thus forming a water-hammer; and as the weakest spot in the steam-main was opposite the building at the northeast corner of Broadway, the main gave way at that point.

"The numerous explosions that have occurred, especially in the lower districts of the city, are mainly due to leakage of gas from the gas-mains, as would appear from the fact that the leakage is greater from the mains laid in streets in which there are steam-mains than elsewhere, and from the statements made by the officers of the gas companies, based upon their experience in the repair of their mains. The heat of the steam-mains is intermittent, and causes contraction and expansion of this system of gas-mains, thereby loosening the joints and causing them to leak. Where the temperature is very high, the lead caulking of the gas-main joints softens and disintegrates, just as it does in the steam-main joints, where caulking has been attempted, as previously described. The gas escapes into sewers and subway man-holes, forming an explosive mixture with the air. It becomes ignited, and an explosion ensues.

"The extreme degree of heat found in sewers is a constant menace to public health, and its effect upon the vaults of buildings situated along the line of steam-mains is productive of conditions dangerous and detrimental to life and health."

In writing to the President of the Steam-Heating Company, the Health Board wound up as follows:

"You will please take notice of this order, and if within three days after the service thereof upon you the same is not complied with by you (or so far complied with as said Board may regard as reasonable), and is not thereafter speedily and fully executed, or if the said order is not on due application suspended or modified, then said Board will make its order directing the execution thereof at your expense, and that of the parties liable therefor under said act, or either as the law authorizes, all being held responsible."

The Mayor had no comment to make on this subject. The action of the Health Board is final.

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.]

IN RE "NATIONALISM."

PHILADELPHIA, PA., July 14, 1890.

TO THE EDITORS OF THE AMERICAN ARCHITECT:—

Dear Sirs,—With reference to Mr. J. P. Putnam's article in No. 759. If, page 22, column 2, bottom, "these expensive and dangerous complications were, in many places, actually enforced by legislation" on those putting in plumbing apparatus "involving a pecuniary loss on the part of the public of a very large sum, in Boston alone. . . of about \$50,000 a year," (estimated) what guarantee has Mr. Putnam, page 22, column 2, middle, that "information" in regard to this apparatus embodied in a State price-list, "obtained in the interest of all the people at once, by the State," would be a whit wiser? The State is all of us now. It would be all of us then. If we change for the better, the "State" will change, if not, not.

Respectfully yours, TALCOTT WILLIAMS.

NOTES AND CLIPPINGS

INDIA'S NEW TUNNEL.—An article in the Allahabad Pioneer gives some interesting particulars concerning the tunnel that has been completed through the Khojak on the railroad from Quetta to Candahar. The Khojah Pass is 7,500 feet above the sea and about 2,000 feet above the level of the surrounding country. The tunnel pierces the range at right angles, and its course is therefore due east and west, and it enters the hill about 1,000 feet below the crest of the pass. The length of the tunnel is 12,000 feet, or two and a half miles approximately, and it will carry a double line of rails. For the first half the floor ascends about 1 in 1,000, and for the second half of the journey it descends at an incline of 1 in 40. There are two main shafts, one 318 feet and the other 290 feet deep, which were sunk in order to facilitate the construction of the tunnel. The chief obstacle to progress arose from the flooding of the tunnel at more than one point. A large spring was cut and the water flooded the shaft on the Candahar side to the depth of 180 feet. It took ten weeks to pump out the water, and in the western heading as much as 500 gallons a minute were constantly rushing out of the west mouth. In order to overcome this difficulty a side cutting had to be made. The magnitude of the work is testified to by the banks of shale and rock at the mouths of the tunnel and at the pit-heads, which are said to be quite altering the landscape in places. One curious discovery made during the progress of the work, as the result of investigation into the cause of certain mysterious explosions, was that it was proved that "combustion had arisen inside a case of blasting gelatine." —Philadelphia Record.

DRAINING THE VALLEY OF MEXICO.—The drainage of the great valley of Mexico, which has at last been definitely undertaken, will be one of the most interesting works in the history of engineering, whether we look at the stupendous proportions of the project or at the magnitude of the sanitary advantages which will accrue from its completion. A sanitary engineer would say that the capacious valley, in the middle of which lies the city of Mexico, was, notwithstanding its fertile soil and admirable climate, not intended by nature for the habitation of a teeming population. It is a deep cup-like depression, surrounded by a mountain rampart and possessing no natural outlet for water or sewerage. Nevertheless, for many centuries, not only since the Spanish conquest but in Aztec and the still more remote Toltec times, the valley has been densely peopled. The result is that the ground on which the large cities stand reeks with corruption, and the adjacent stagnant lakes are clogged with age-long accumulations of filth, engendering the most dangerous miasmatic and typhoidal conditions. If the masses of the Mexican people were not in the habit of drinking pulque instead of water they would be continually decimated, for it is impossible in the city of Mexico to procure pure drinking-water except by distillation. Under the Spanish viceroys, an attempt was made to drain the valley, and a tunnel for that purpose was driven through one of the rocky walls that hem it in. But through some miscalculation of the constructors, the opening was begun at too high a point and is now useless. The new boring will be made at a level low enough to effectually drain the lakes. —Invention.

USES FOR OLD NEWSPAPERS.—Here is an interesting suggestion which we find in a contemporary: Most housekeepers know how invaluable newspapers are for packing away the winter clothing, the printing ink acting as a defiance to the stoutest moth, some housewives think, as successfully as camphor or tar-paper. For this reason newspapers are invaluable under the carpet, laid over the regular carpet-paper. The most valuable quality of newspapers in the kitchen, however, is their ability to keep out the air. It is well-known that ice, completely enveloped in newspapers so that all air is shut out, will keep a longer time than under other conditions; and that a pitcher of ice water laid in a newspaper, with the ends of the paper together to exclude the air, will remain all night in any summer room with scarcely any perceptible melting of the ice. These facts should be utilized oftener than they

are in the care of the sick at night. In freezing ice-cream, when the ice is scarce, pack the freezer only three-quarters full of ice and salt, and finish with newspapers, and the difference in the time of freezing and quality of the cream is not perceptible from the result where the freezer is packed full of ice. After removing the dasher, it is better to cork up the cream and cover it tightly with a packing of newspapers than to use more ice. The newspapers retain the cold already in the ice better than a packing of cracked ice and salt, which must have crevices to admit the air. —Invention.

PIPES IN DEEP WATER.—Mr. F. S. Peck, a civil engineer at Watertown, New York, lately accomplished, in a very simple, cheap and expeditious way, what is usually a difficult and expensive operation—the laying of a long line of pipe in deep water. He had occasion to lay nearly 1,000 feet of suction-pipe at Rouse's Point. The water was needed for manufacturing purposes, and as it was found that water near the shore was more or less roily and impure, it was necessary to have the inlet a considerable distance out in the lake. He purchased for the purpose a steel pipe of 8 inches diameter, manufactured by the Spiral Weld Tube Company, at East Orange, N. J., and used for couplings cast-iron flanges weighing, with bolts and gaskets, about 65 lb. to the pair. Plugging the end of the first length, he pushed it out on the surface of Lake Champlain and connected the second length, pushing this out in turn until the whole line was coupled. It then presented the unusual spectacle of a line of 8 in. pressure pipe nearly 1,000 feet long, floating with a displacement of only $3\frac{1}{2}$ in. of its diameter. When the requisite length had been connected, the line was towed to position, the plug at the end removed, and the pipe sank easily in 16½ feet of water, without breaking a joint or receiving any injury. No buoys or floats were used in the operation, and no apparatus of any kind. The pipe is now in use as the suction of a steam-pump and gives perfect satisfaction. Work of this kind usually involves the use of expensive and troublesome flexible joints, and Mr. Peck's ingenious expedient is worthy of record. —Invention.

TRADE SURVEYS

MANUFACTURERS, tradesmen, transporters and money-lenders are in high spirits in this, the third week of July, over the indications of expanding trade, and the probability that the activity will continue up to the close of the year. It is safe to assert that the industries of the United States were never in a more thriving and healthy condition. Several things which the business interests desired have been done, the most important being the passage of the Silver Bill, through which money will become more abundant. It is not the mere fact of a greater abundance of money that will be of value to the business interests, but rather the confidence that will be created by the assurance that a monetary stringency is to be averted. For a year past, the possibility of stringency has hung like a cloud in the horizon. There is still considerable doubt in the public mind as to what is the wisest financial system and the safest basis. Whether a larger supply of money will increase business remains to be seen. Business men are anxious to have the experiment tried. The fears of the money-lenders that speculation will be encouraged and prices crowded up may not be realized. There is such an urgent need for more money for legitimate enterprises, that merely speculative ventures will probably be crowded to one side. Reports from 157 railroads for June show a marked increase in gross earnings and volume of traffic, as compared to June of last year. The banking interests report a very heavy demand for money from all sections of the country. Manufacturers throughout the New England and Middle States are having a rush of orders, and, so far as reliable information can be obtained, it seems probable that a heavy demand will continue throughout the year. The small shop men are particularly busy. The boot and shoe manufacturers, paper manufacturers, hardware manufacturers and a score of smaller interests are well supplied with work. Prices are firm, and likely to remain so. In the heavier industries, everything is favorable. The iron-makers are loading up with orders; the wages question has been practically settled for the coming twelve months. The coal-miners are busy in all sections of the country. Furnace and mill capacity is being increased, and shop-capacity is being added to, as fast as machinery can be made and put in position. The larger machinery-making establishments have more work in hand than ever before.

The rush of capital to the South for investment continues. Freight rates on Southern pig-iron to Northeastern markets have been advanced in the interest of Pennsylvania iron-makers. The textile manufacturers of New England report an active demand springing up for all kinds of goods. Southern cotton goods manufacturers have recently been declaring the usual good dividends, and the projection of new cotton-mills is going on as though there were no possibility of overdoing the industry. The commercial interests of the country will welcome the establishment of the proposed Monetary Union. The desire for reciprocity is growing, and the movement to establish closer relations with Central and South American countries will doubtless gain friends and force, as its importance to our country is better understood. At present, the subject is only receiving slight attention. But the movement in the right direction has been started, and will not cease until the proper steps are taken for the establishment of close commercial relations with the peoples to the south of us. A right monetary basis is the first essential; ship-lines are the second; business will follow in due season. There is no doubt that commerce with these countries can be very greatly increased. Commercial failures for the half-year show that business is being done upon a safer basis than ever. The increased volume of business has been done with fewer failures than usual and with lighter liabilities. Business methods are improving. Manufacturing interests are acting together without the form of organization. Markets are not overcrowded with stocks as they were years ago. The requirements of the country are carefully estimated, and when they are provided for, mills and factories shut down. The organization of the industries is quietly progressing; the most valuable organization being that which is not apparent on the surface—not manifested by conventions or associations, or by set agreements to expand or restrict production. In other words, it consists in the tacit agreement among manufacturing interests to be governed by an enlightened understanding of the requirements of the country.

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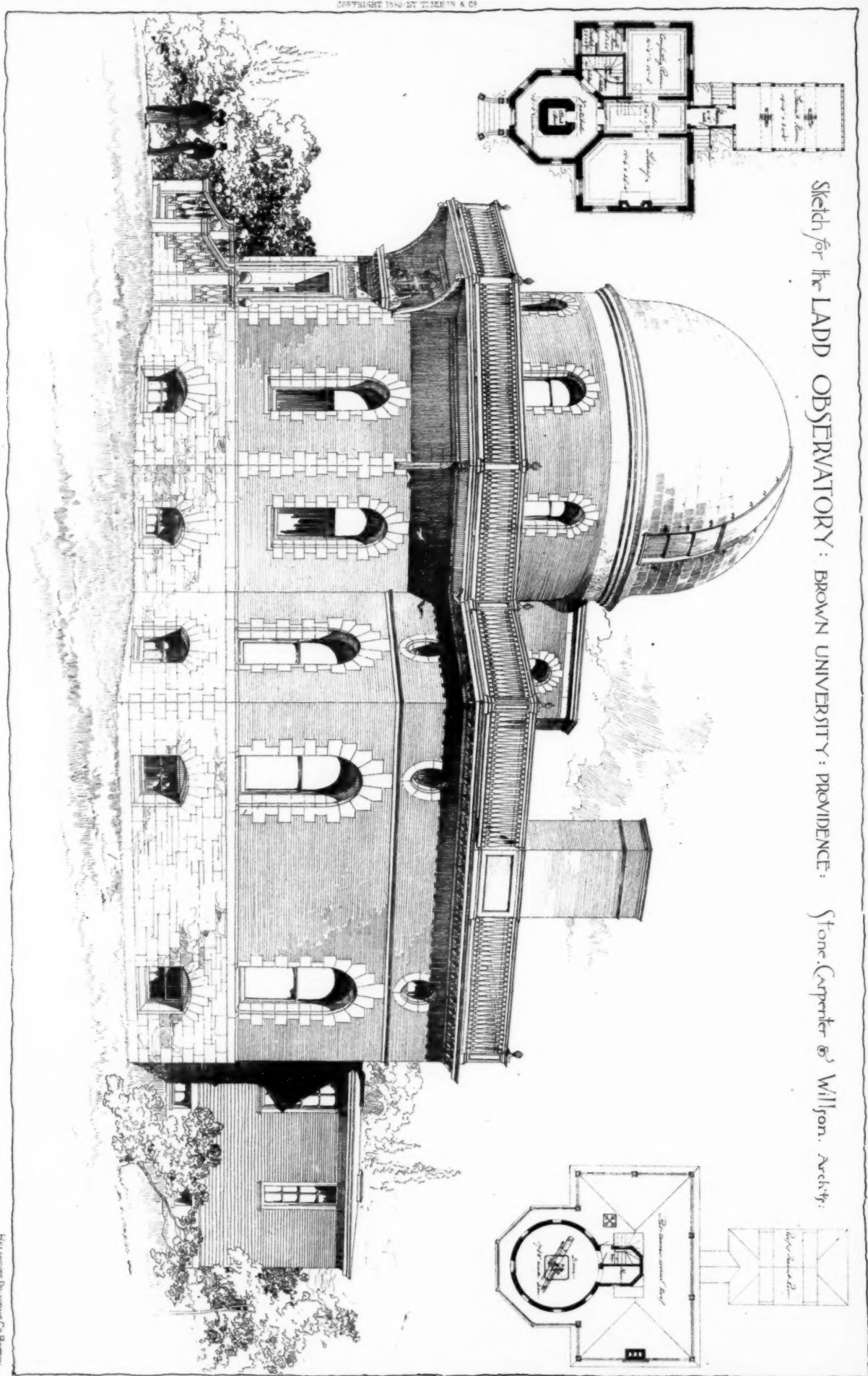
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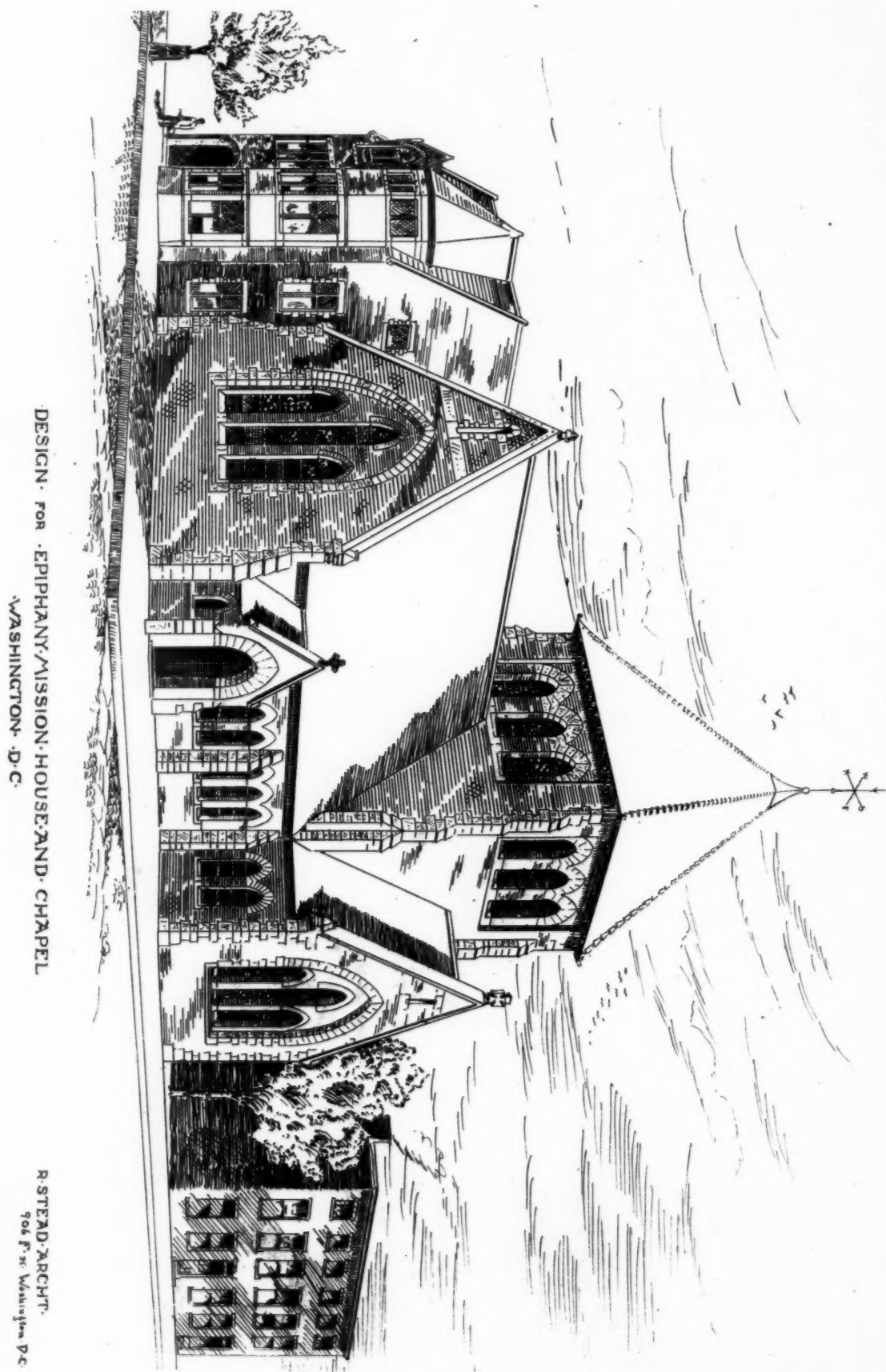


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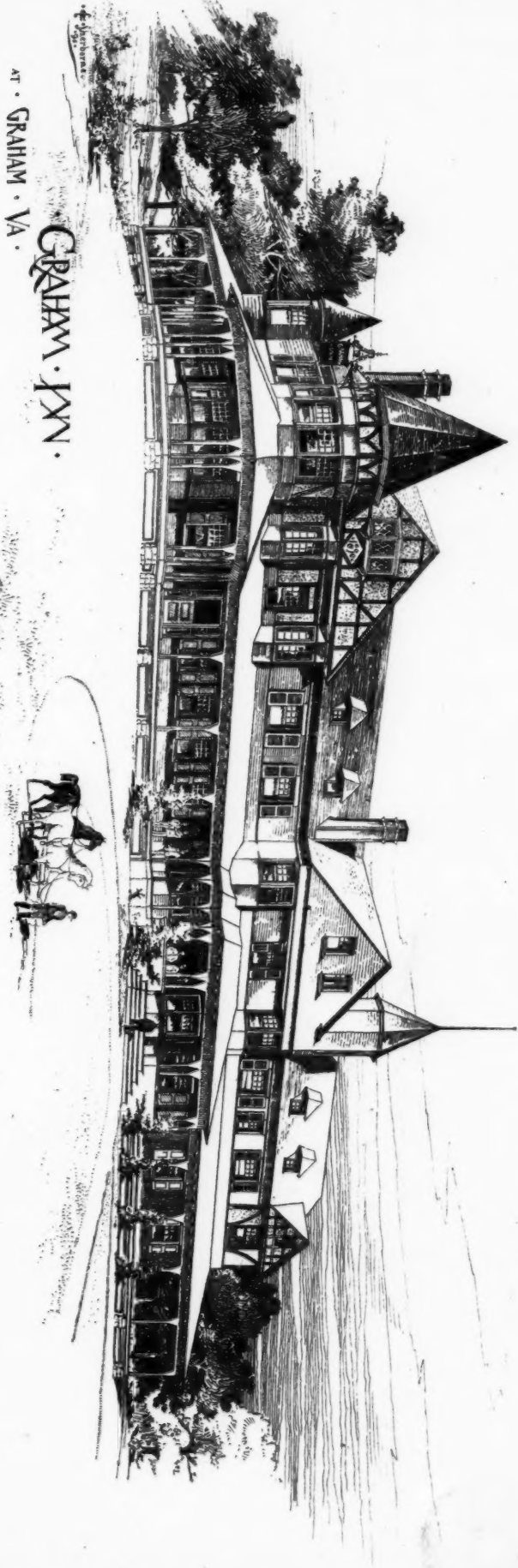




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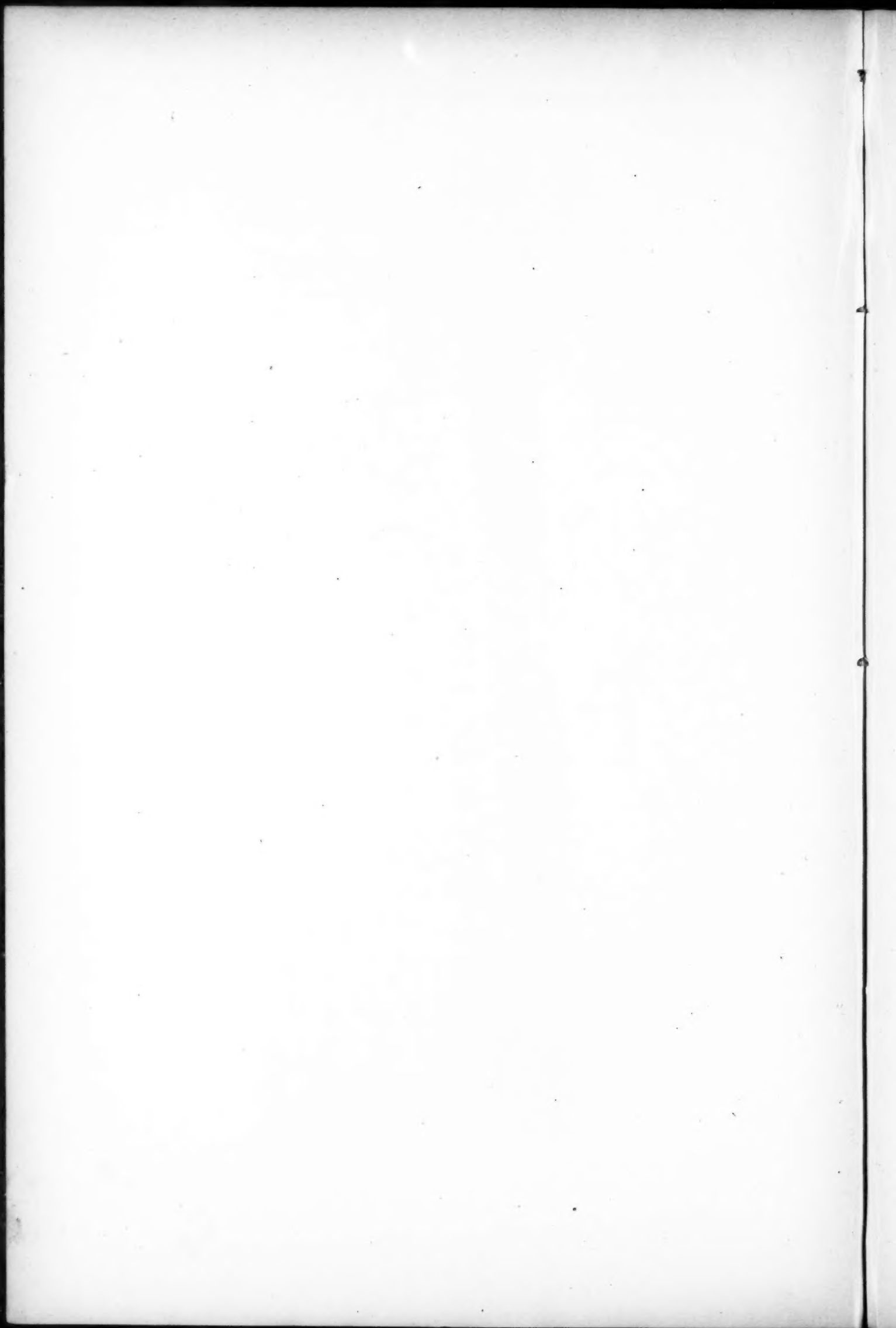
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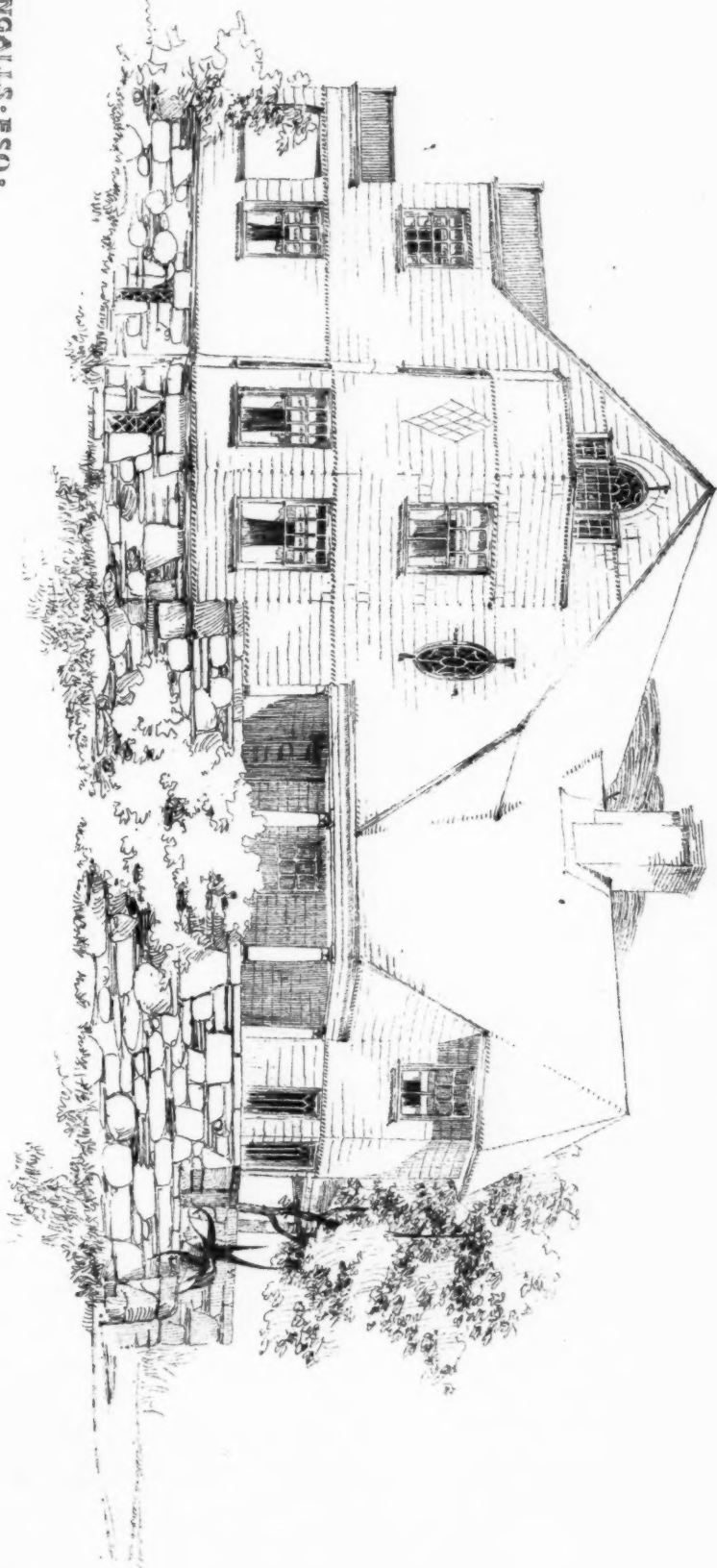
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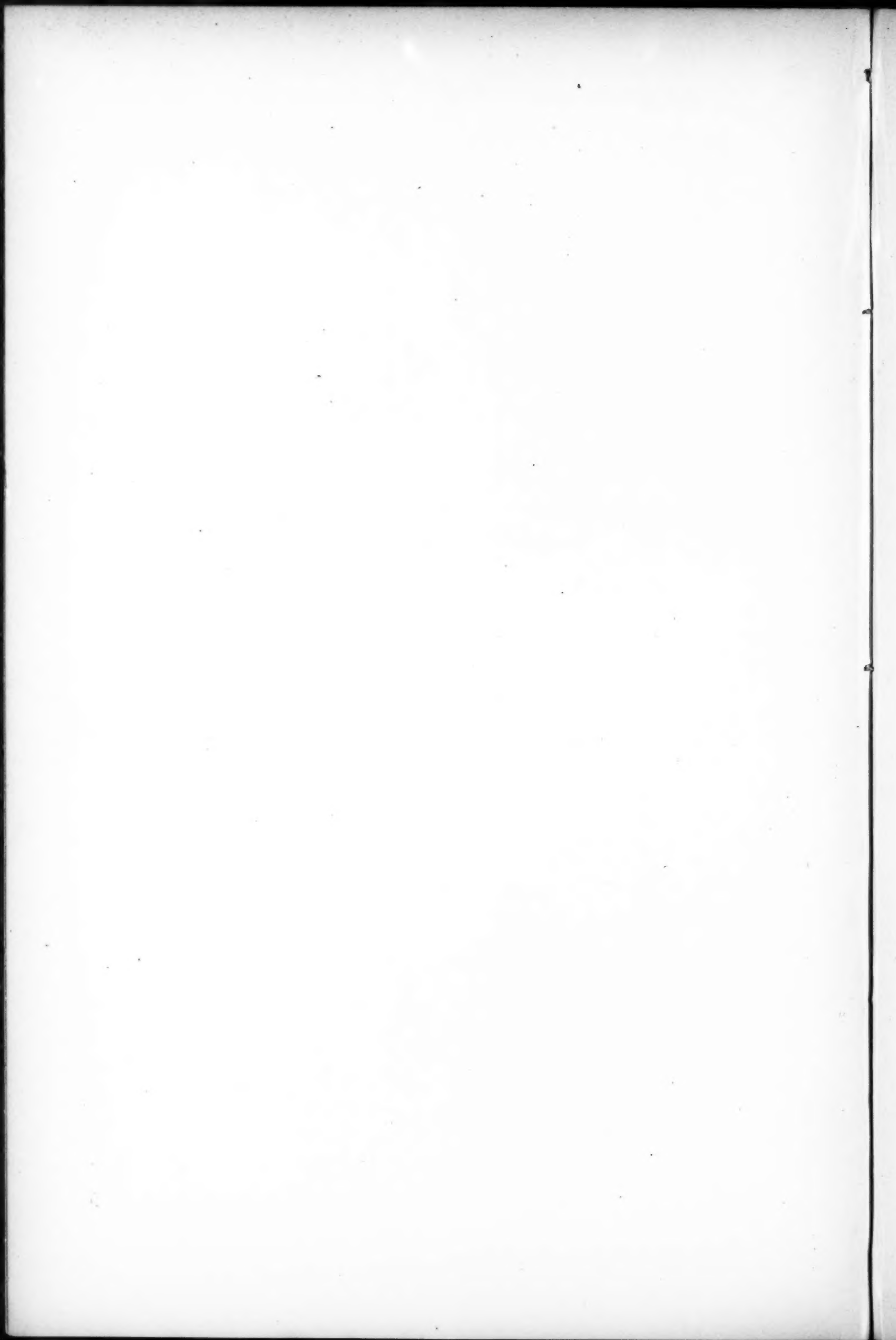
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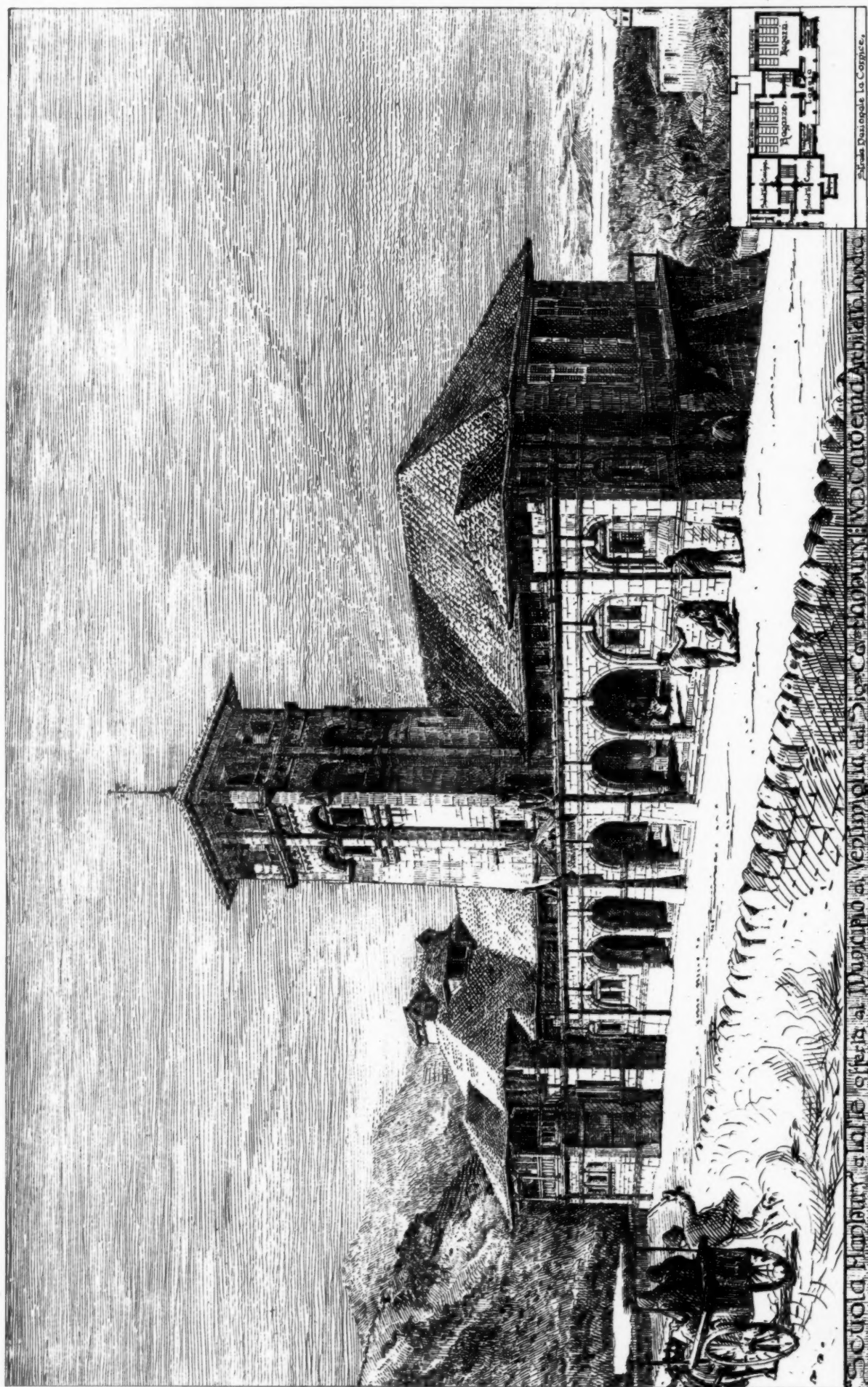


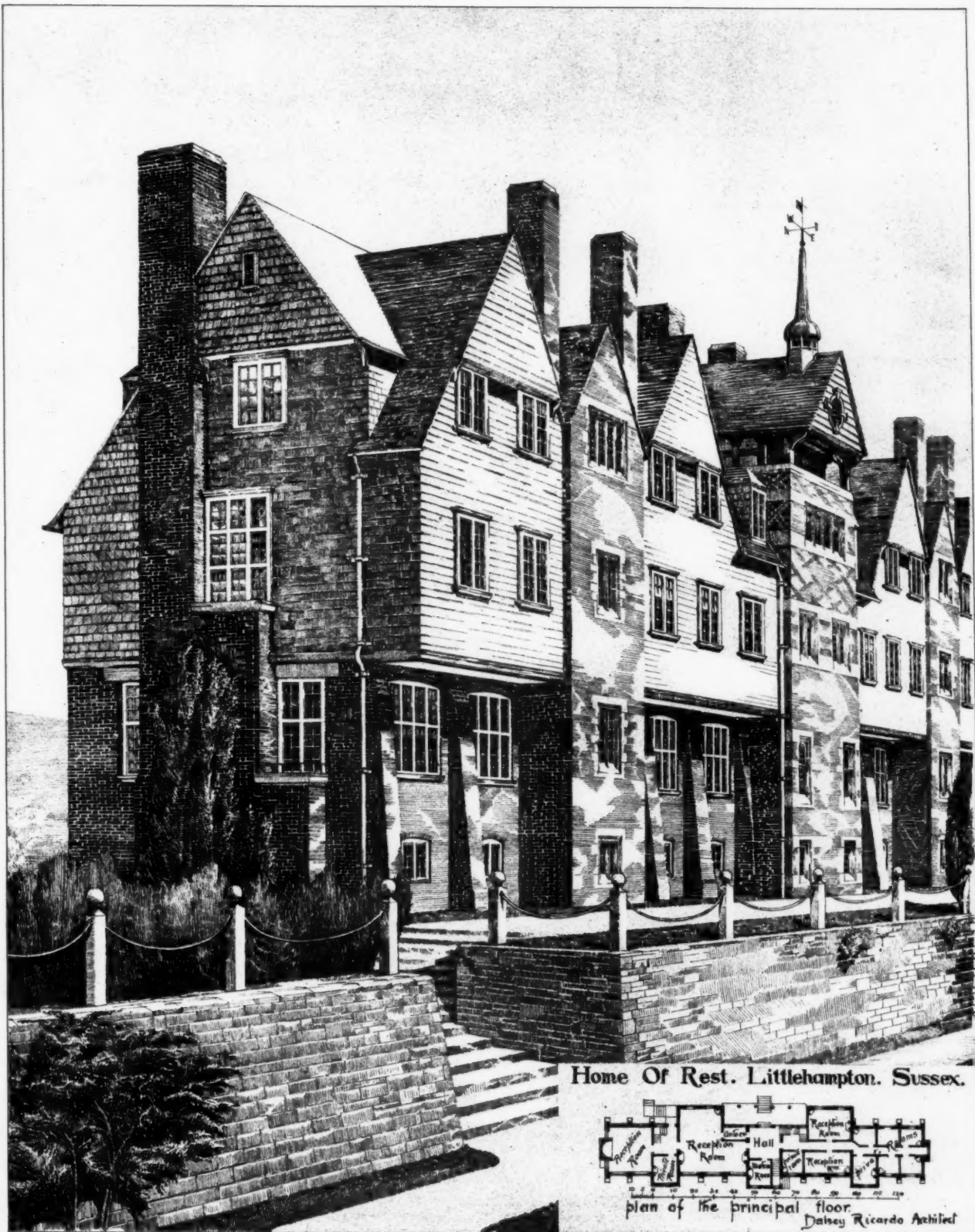


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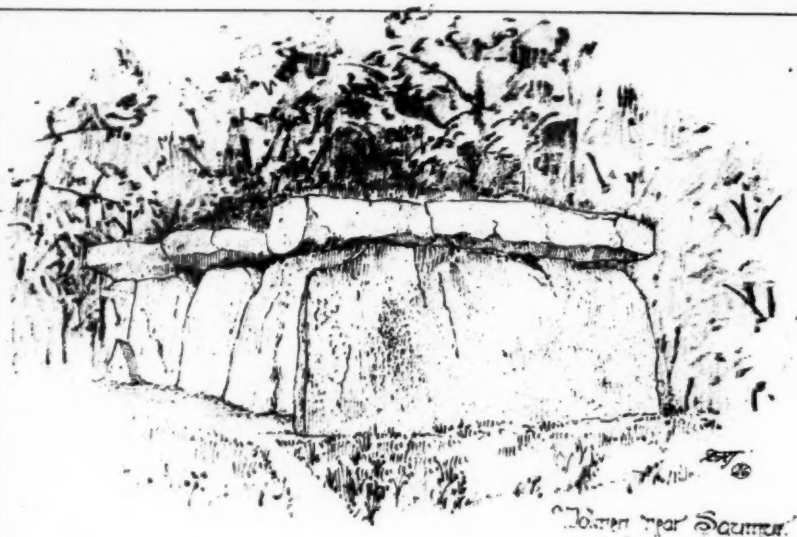






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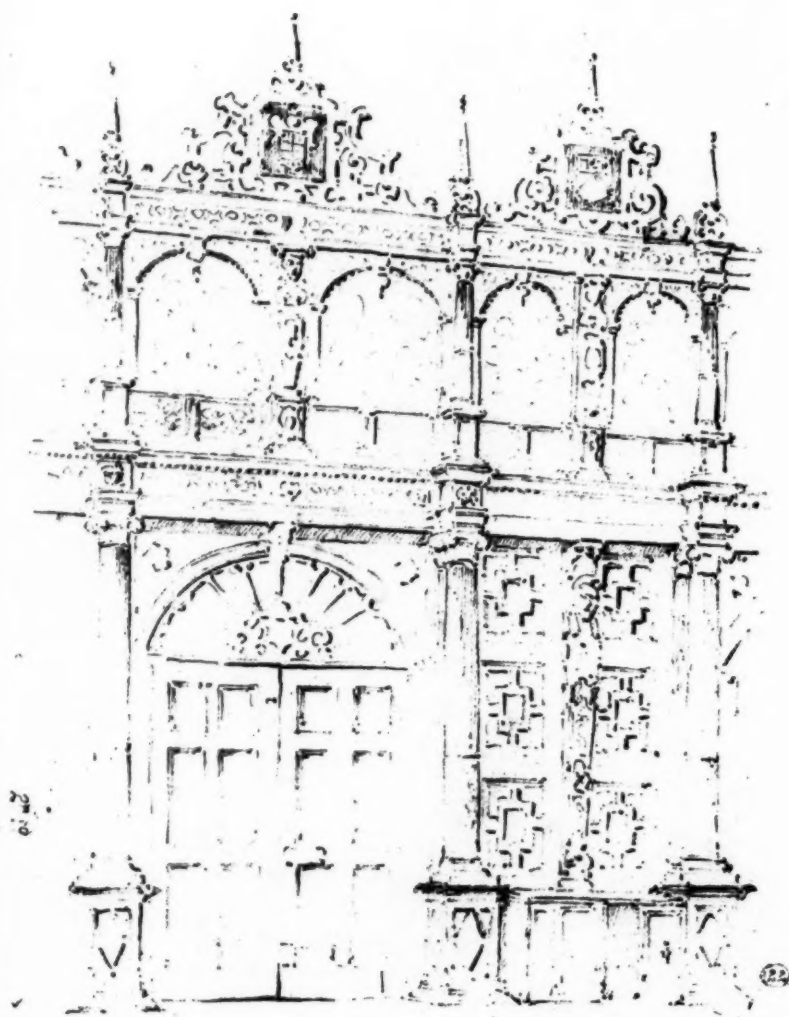
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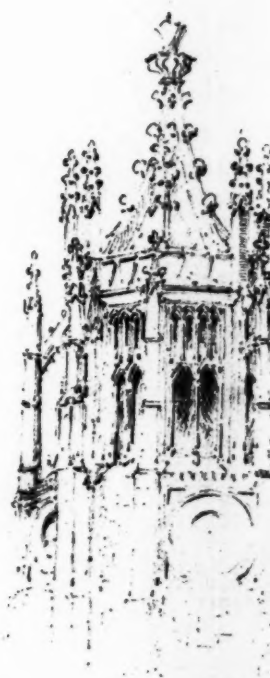


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Edgar A. Josselyn

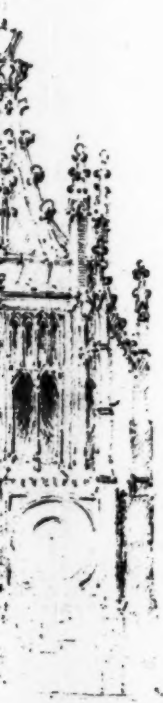
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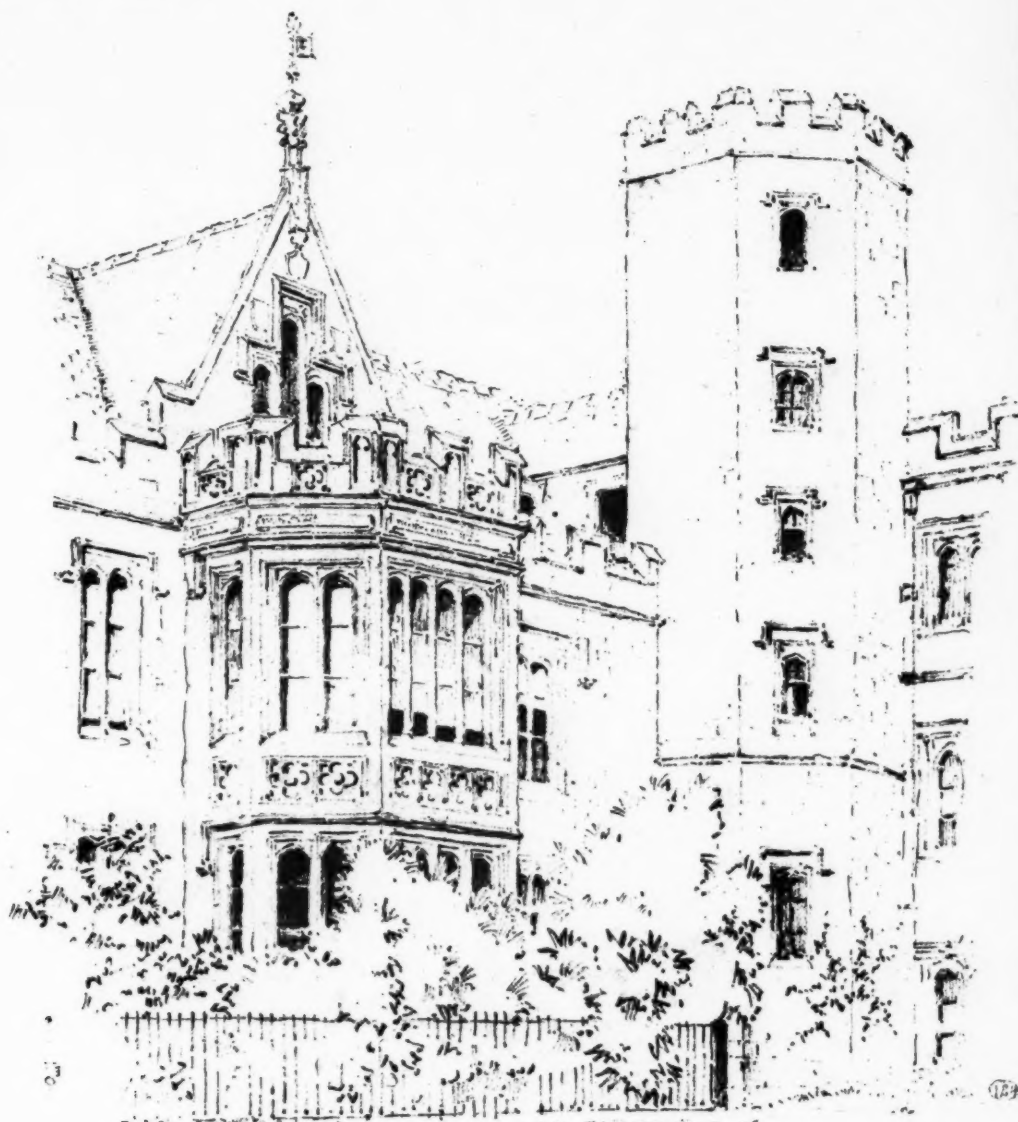
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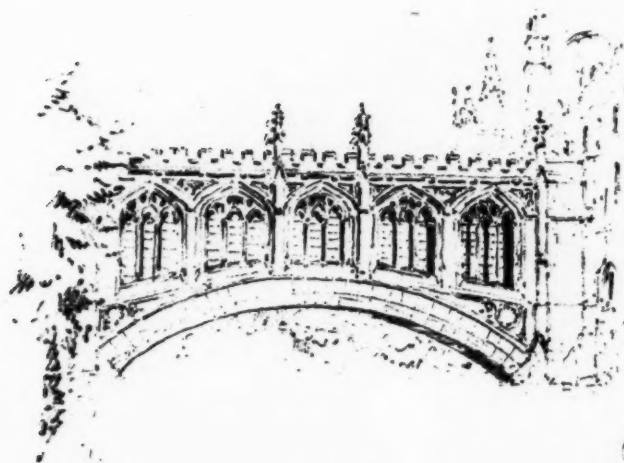
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PANEL EXECUTED IN BURMANTOFTS FAIENCE.

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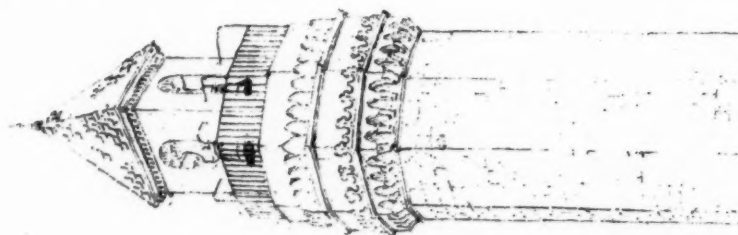
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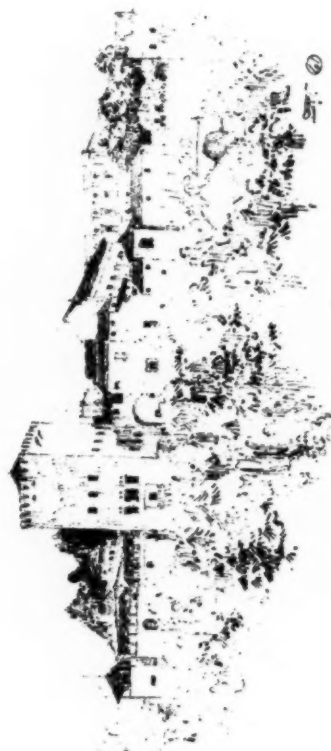
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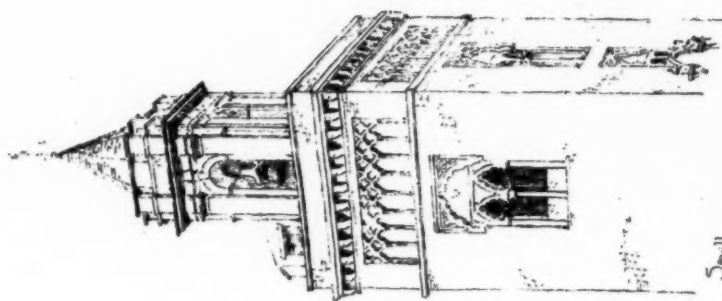
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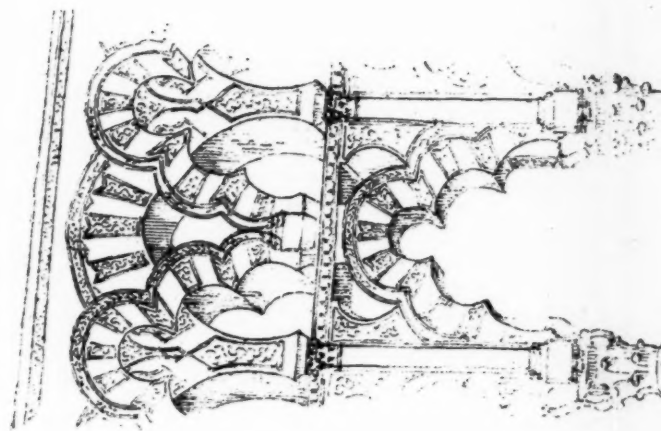
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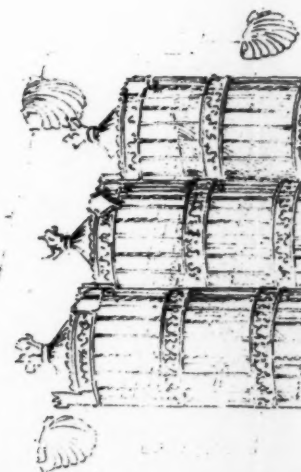
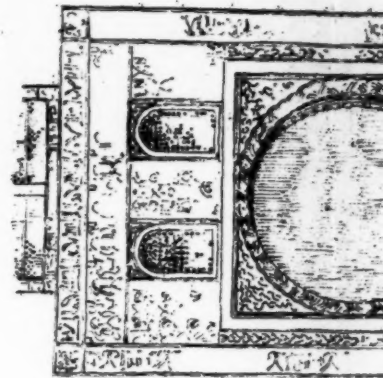
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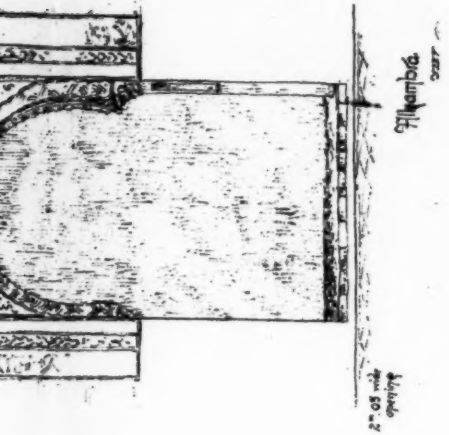
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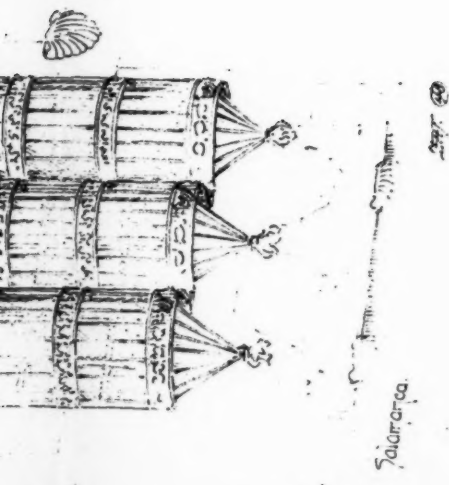
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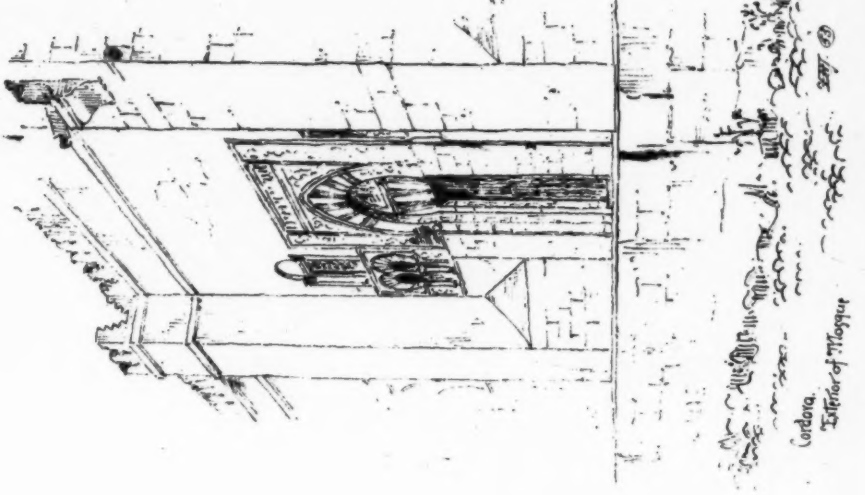
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2nd floor



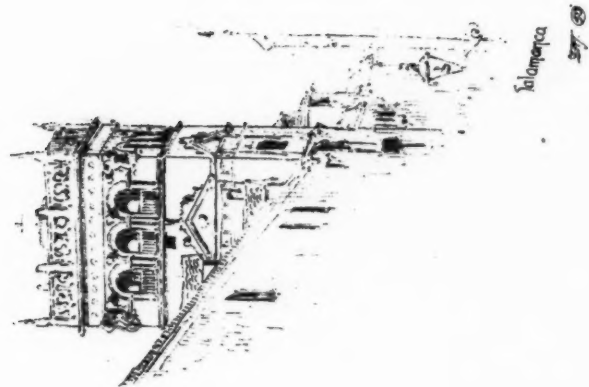
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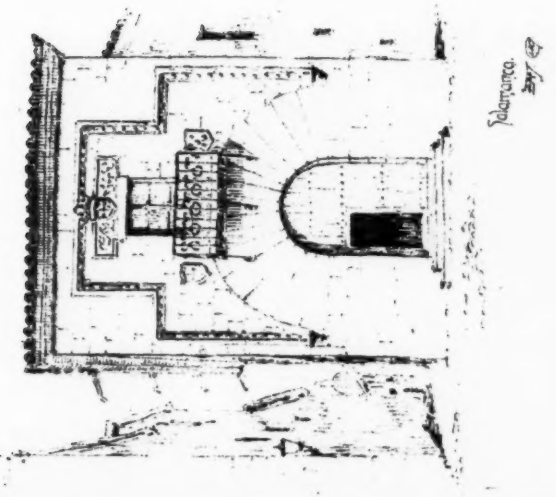
Salamanca



Salamanca
Interior of Mosque
Cordoba

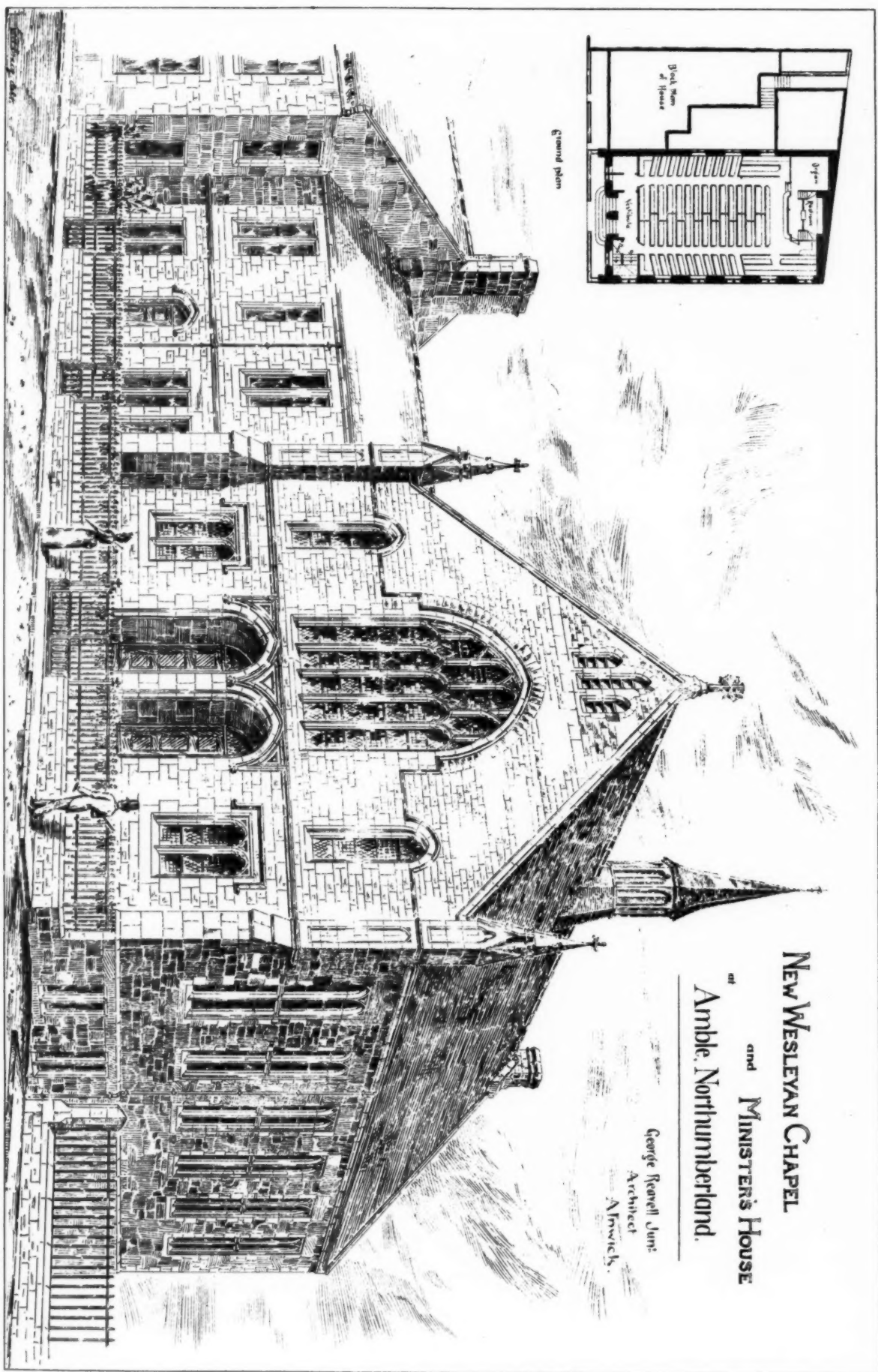


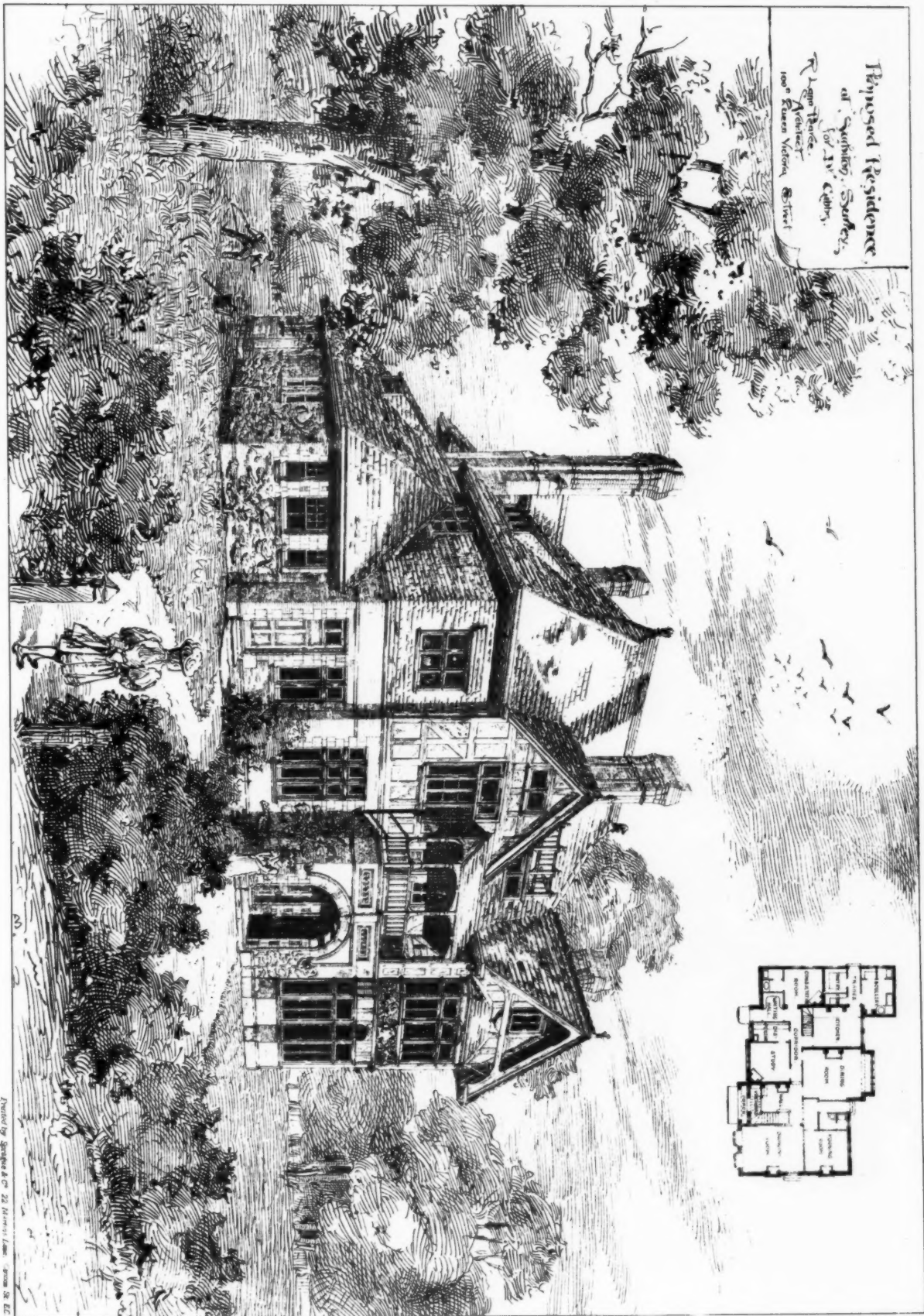
Salamanca



Salamanca

Edgar A. Gosselyn



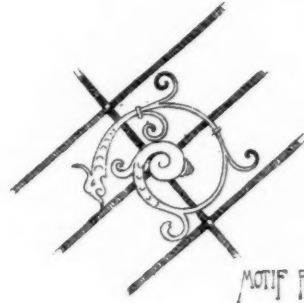




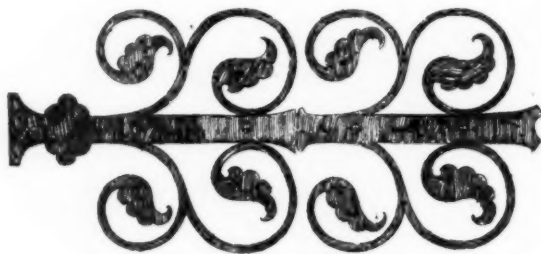
— ALL PLATWORK — INCISED —



HEIDELBERG



MOTIF FROM
A GRILL.
VLM.

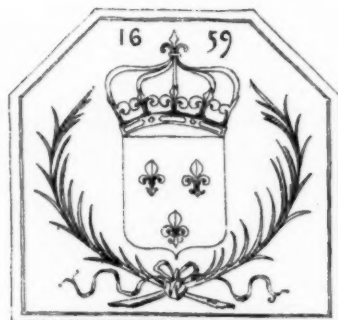


WROUGHT IRON HINGE.
PATISON.



Metal Work.
+ SKETCHES -

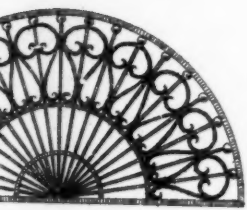
Theo. F. Leist. del.



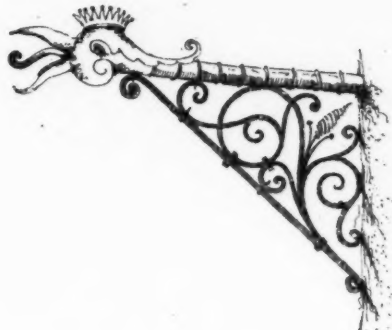
CAST-IRON FIREBACK.
MUSEE DES ARTS DECORATIF.



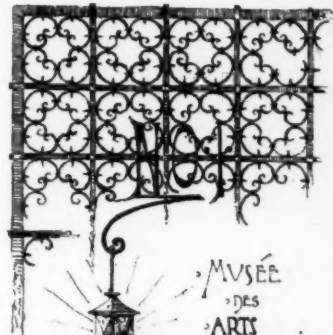
GRILL AT HEIDE



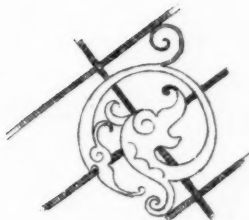
HEIDELBERG.



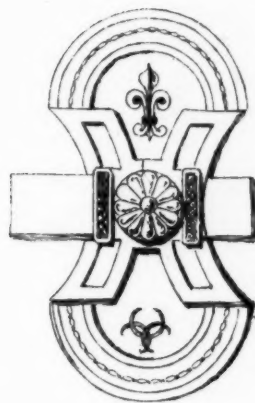
AT WIMBORNE.



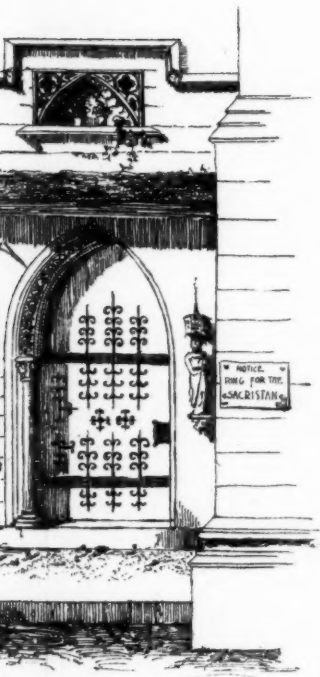
MUSÉE
DES
ARTS
DÉCORATIVES
PARIS.



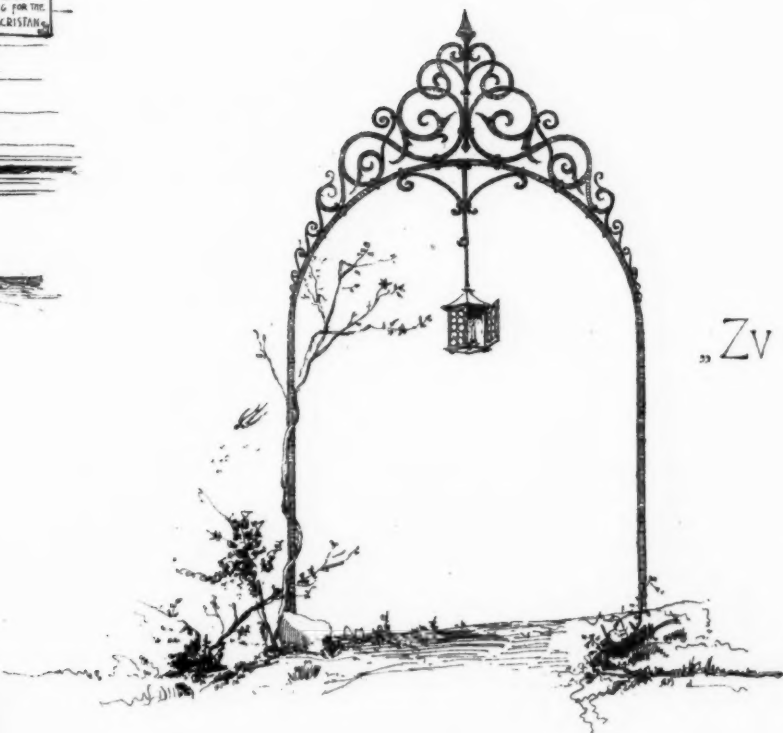
"MOTIF"
FROM A GRILL.
AT VLM.



LATCH.
CLUNY.

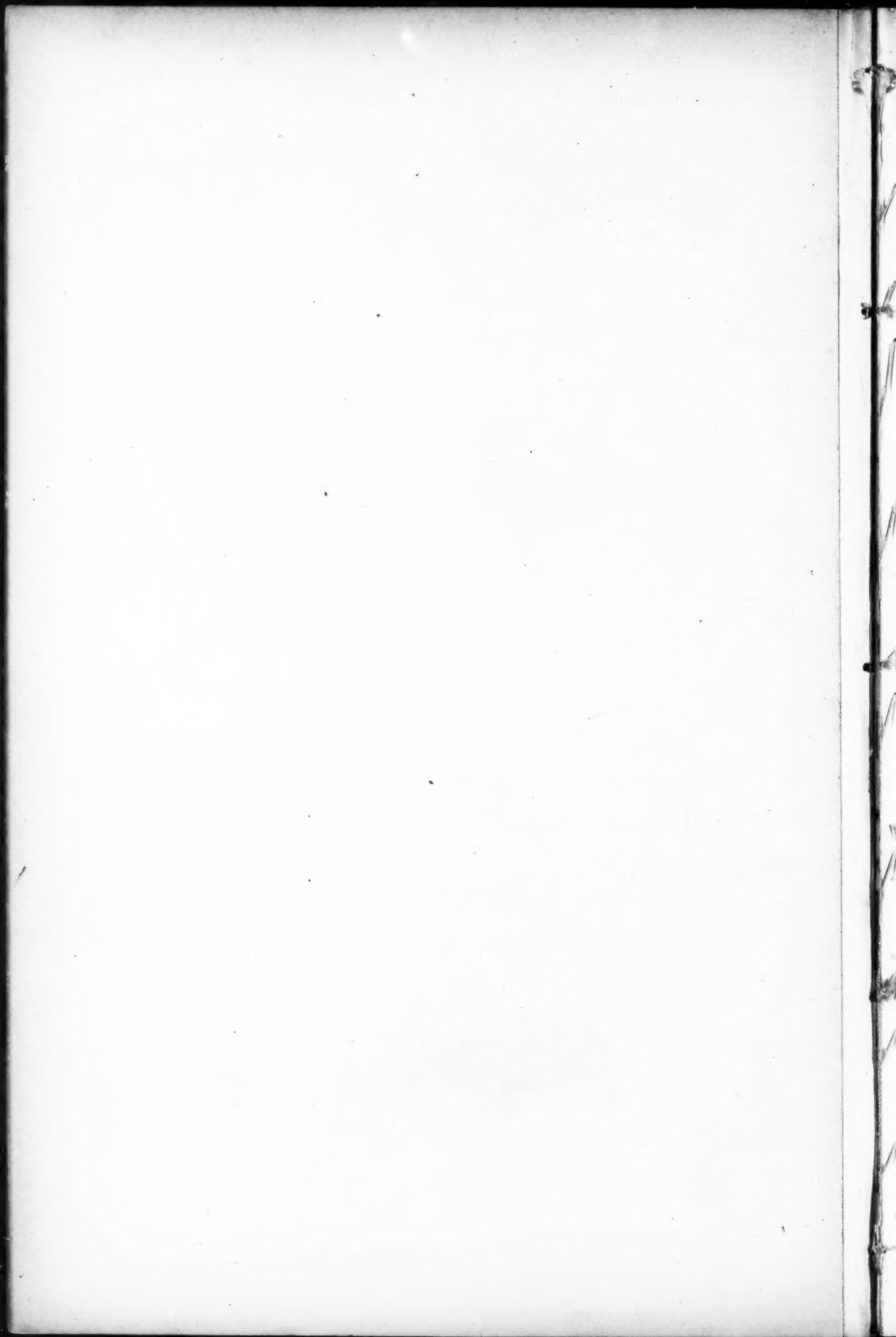


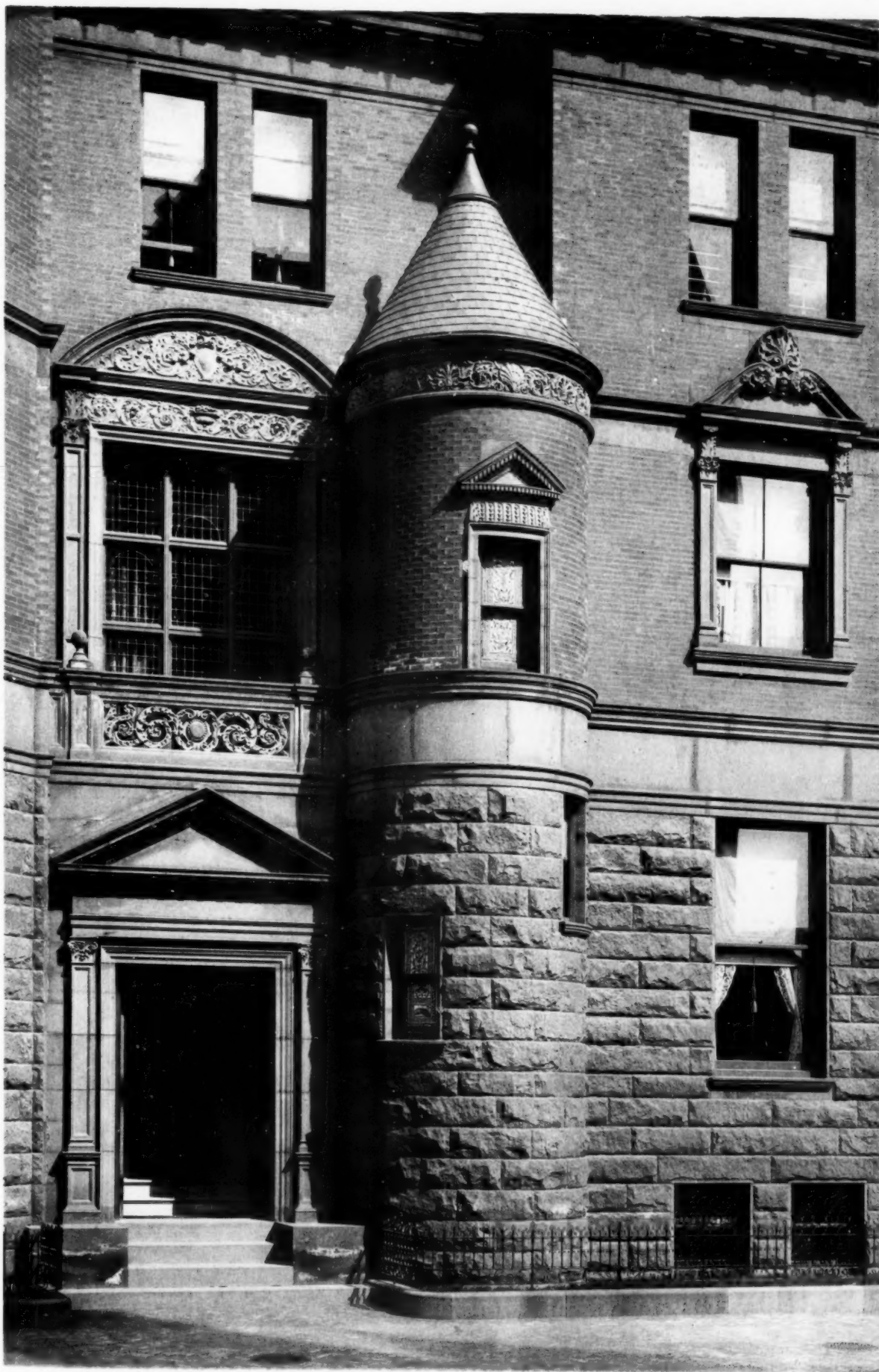
AT HEIDELBERG.



„ZU DEN
DREI
WEISEN.“

SCHWABING.

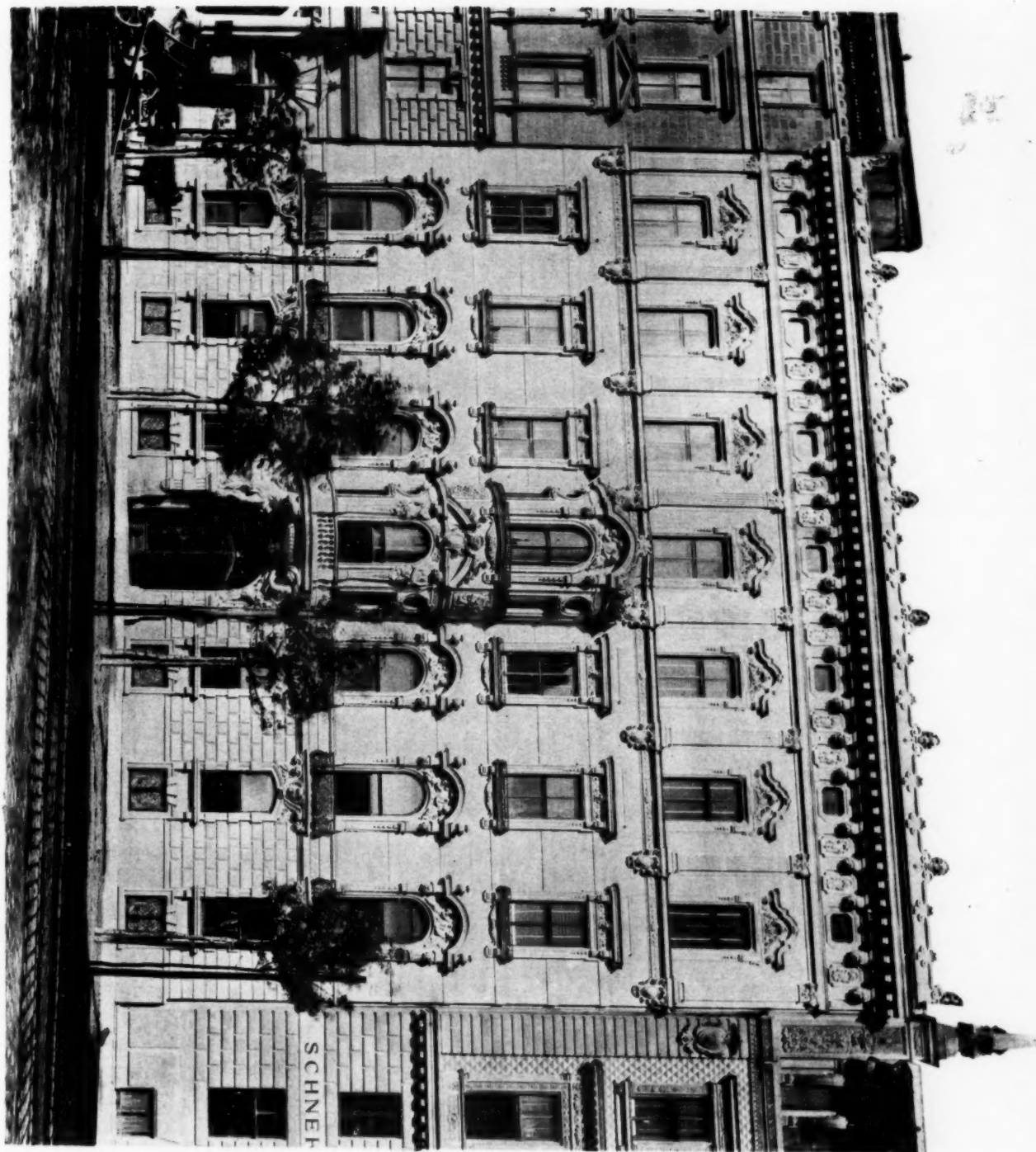




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ENTRANCE TO HOUSE OF E. V. R. THAYER, ESQ., BOSTON, MASS.

STURGIS & BRIGHAM, Architects.

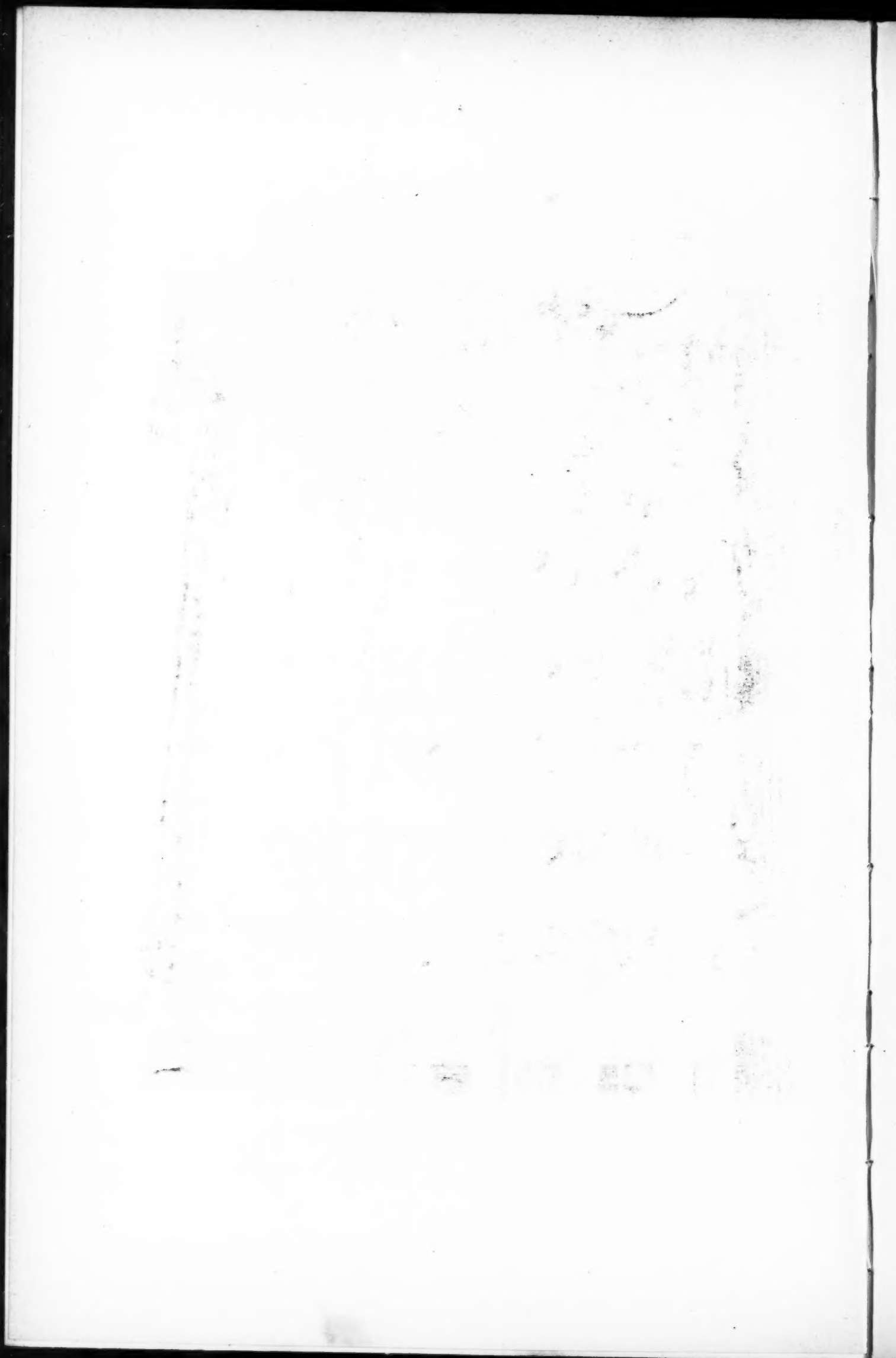


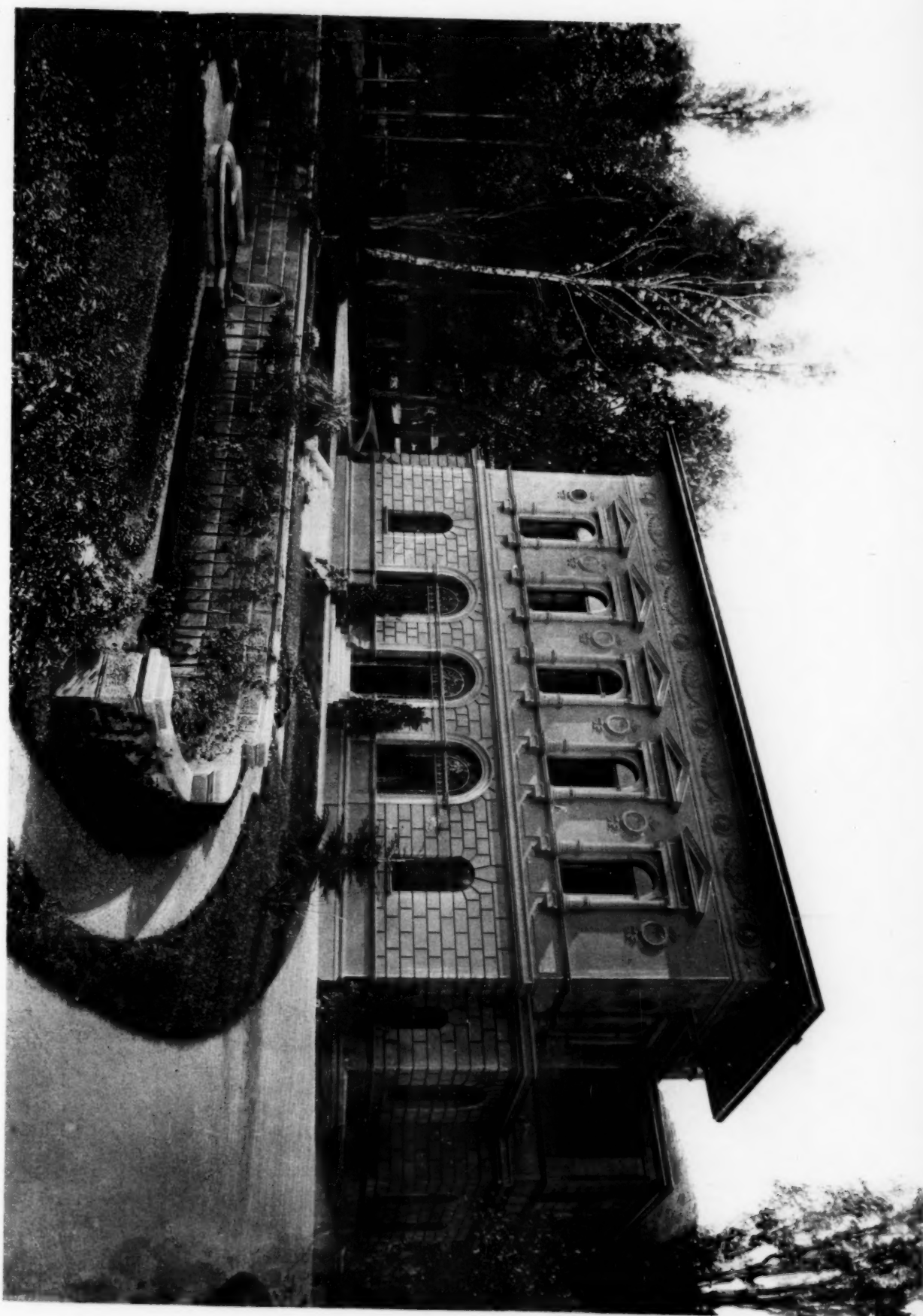
Lithdruck

HOUSE OF HERR STURANY ON THE SCHOTTENRING, VIENNA, AUSTRIA.

HERR STURANY, Architect.

Wien



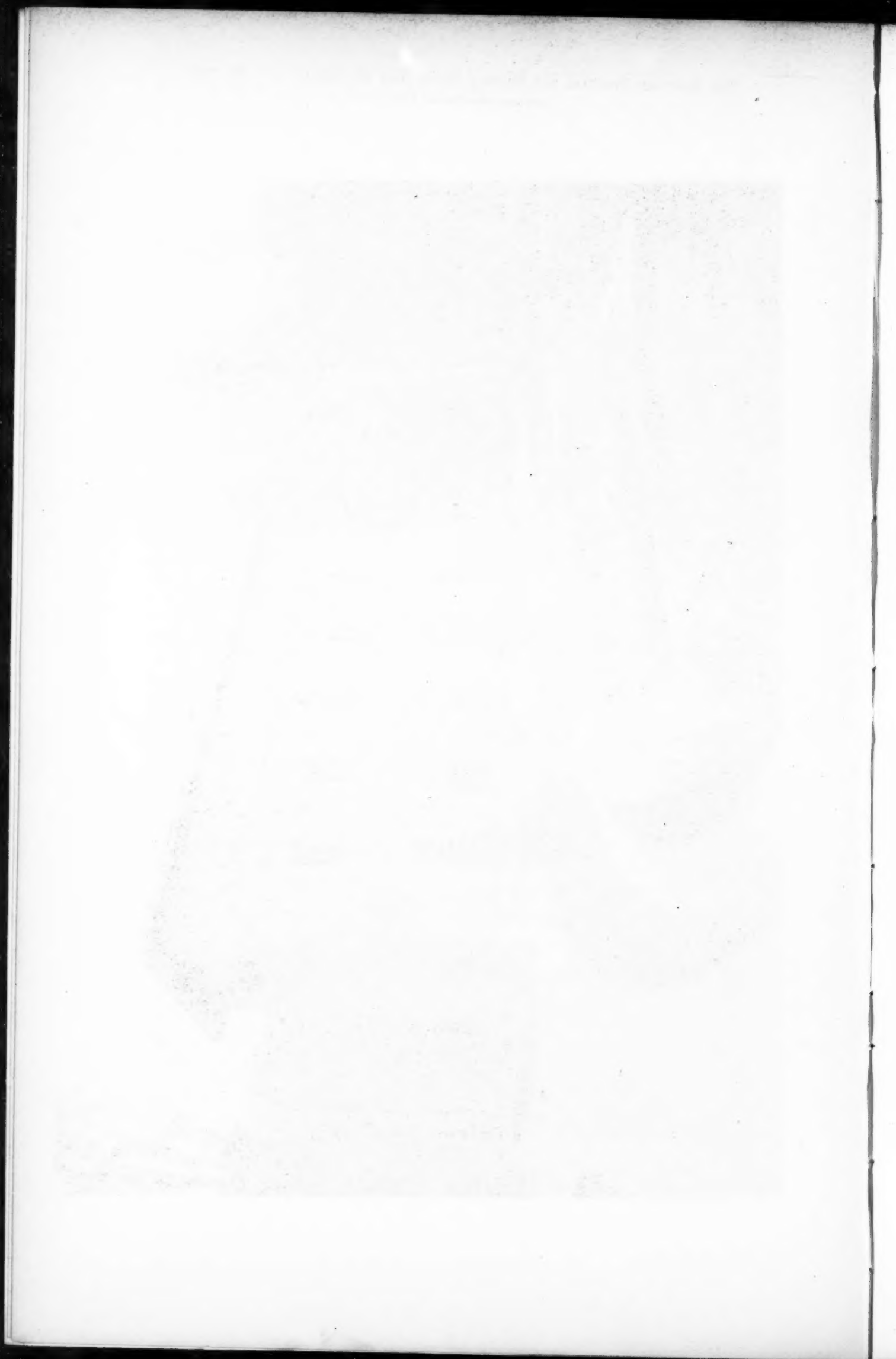


Lichtdruck

A VILLA AT BADEN, NEAR VIENNA, AUSTRIA.

HERR ROTH, Architect.

Wien





Imp. Eudes

Krieger sc.

PUITS A TOULOUSE