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The Relation of Beauty to Utility in Design.

In a recent article by an English writer the expressions of a number of the more noted English architects are given regarding what to them seems the most ideal architectural creation, or, in other words, "the finest building in the world." These expressions, while qualified in different ways by different men, give the palm to structures that represent periods from that of the Taj Mahal to the St. George Hall at Liverpool. While they all base their opinions, more or less, on a combination of utility and beauty, one is delighted with the artistic splendor of a St. Sophia; another speaks with enthusiasm of the skyline and misty-gray effect of the Greenwich Hospital by moonlight. It is thus that the artistic sense is charmed or the sense of utility is satisfied according to the temperament of the critic. And each is right, for it is to a judicious mixture of these that we owe the greatest architectural conceptions. One architect, after stating that St. Mark's gave him probably the greatest pleasure, said: "Though I have thought about the subject, I have to report that I have come to no decision as to a building to be preferred by me before all others. It seems so difficult to judge of a building on its abstract merits, independently of its associations. Then again, architecture is not merely one of the fine arts. It has to do with the necessities and conveniences of life. These have both to be considered, and it is difficult, indeed, to judge between them in making such a choice as you would have me make." We have recently written upon this subject and were inclined to take a stand similar to that of the English architect. In criticizing this, one of our contemporaries says: "The real architecture, by which we mean the design as distinct from merely practical considerations," etc. Now whatever root the word "merely" has been derived from, or its technical meaning, yet as used above the inference might be drawn that "practical considerations" are of comparatively small consequence in building, compared with "artistic" design, and we will admit that "mere practical considerations" need not be considered in certain localities, to-wit—cemeteries. The dead are modest and indulgent to the faults of others; they make no objection to their place of residence, whether underground, or in a vault above ground; not even to an artistic design which has no merely practical considerations about it. They will not object even if the whole affair should tumble down; which, as we once heard an irreverent cynic remark, would be a good thing not only for the inhabitant thereof, but also for its artistic architect, its practical builder, and the cemetery company. This ultimate obliteration, however, is the fate in time of all things mundane, and while the works of Tamerlane are fast going to ruin, and we have but a few examples of the great creations of the Greeks, perhaps it remains for these to entirely disappear before men will be content to "draw the thing as he sees it, for the god of things as they are," and cease to absorb with the inspiration that the best creations of the past give a spirit of copying which kills the budding genius of youth and fetters architectural manhood with an imitative faculty rather than endowing it with an appreciative sense of the beauty of utility as well as of line and color.

PHOTOGRAPHING ARCHITECTURE IN EUROPE.

BY RALPH D. CLEVELAND.

THERE are many problems involved in taking half a ton of photographic plates to Europe, exposing them in all varieties and conditions of weather and light, from one-fifteenth of a second to two hours, bringing them back undeveloped and securing, at least, one thousand printable negatives.

Advice on such matters, from interested friends, is cheap and plentiful.

The question of plates was a serious one and I had abundance of advice on the subject. For example, to use cut films for lightness; backed or non-halation plates; what make of plate to use; to buy my plates in Europe, etc.

The idea of buying plates in Europe I did not entertain a moment, as they are much more expensive than ours and can not be procured in France in sizes to fit American cameras. Cut films I gave up, as I had never used them and had my doubts about their keeping qualities, though in this I may be wrong. However this was no time for experiments. Non-halation plates were very expensive and disagreeable to develop, and as I should only need them occasionally I concluded to stick to what I knew about and was accustomed to. I went, therefore, directly to the Stanley plate factory at Newton, Massachusetts, and ordered ten gross of 8 by 10 plates, all coated with one emulsion and held for me to test. This I did to my satisfaction and the plates were packed in the ordinary boxes and cases without any padding and sent to the steamer. Being only heavy, but not bulky, I was allowed to take them as personal baggage.

The next problem was as to what route to take in order to secure the best food for my camera. France and England I had already decided upon and I was largely assisted in my choice of routes in the former by Mr. Charles H. Moore, the director of the William Hayes Fogg Museum, of Harvard College. He kindly furnished me with a list of objects in France of which they wished photographs, which they had thus far been unable to secure. This proved an excellent basis in mapping out my route and took me to many curious and out-of-the-way places unfrequented by tourists.

On arriving in Liverpool I stored one-half my plates and forwarded the rest at once to Paris. I then went directly to Dalmeyer in London and ordered one of his best telephoto lenses (of which I shall say more further on), and then went directly to Paris, where I arrived the early part of December.

As I had understood that the French laws and usages were somewhat stringent as to photographers, I secured, through our Minister from the French Department of the Interior and Minister of Fine Arts, permits for photographing in all the cathedrals in France and many special buildings and places. While this is an excellent thing for any one to have when photographing in France, especially if one is not proficient in the French language,

I do not think one would have much difficulty in getting local permits wherever one desired. I believe I could have taken all the photographs I wanted, in any place, without any permit, but as it takes about three weeks to get them, it would be well to secure them beforehand, if at all.

There is also a law in France that "any one taking photographs within ten kilometers (about six miles) of any military post or fortification shall be liable to fine and imprisonment." This law will be found to be absolutely inoperative unless, as I understand, one attempts to photograph coast defenses. If one lived up to the letter of this law there are few cities in France where it would be safe to take photographs at all. I paid no attention to the law and was never questioned. The same might be said of the rule of the police in Paris as to photographing in the streets — no permit is necessary.

After waiting at Paris three weeks (and nearly freezing to death) for the arrival of my plates and permits, I took one case

of plates with me, stored the rest to be forwarded as I wanted them and sallied forth. As the French railways allow anything, from a handbag to a house, to be checked as personal baggage, I took one case of plates with me, sending them to Paris when used up, having another case forwarded to me.

My first stop was at Tours, where the weather was so bad that I stayed for nearly a month waiting for it to clear up and experimenting with plates and the telephoto lens on the few fair days. This lens I found extremely difficult to work successfully. In the first place, it gives so dark an image on the ground glass that it is very hard to focus under the most favorable conditions, and on interior details it is almost impossible. Then, as the *slightest* jar destroys the sharpness of the image, it adds another difficulty. The lens is

also extremely heavy, and as the bellows must be run out to its fullest extent, it makes the camera "front heavy." In order to obviate this difficulty, I had a strut arranged from one leg of my camera to the outer end of the camera bed, but even with this arrangement and the greatest care in uncapping the lens, I should say that nearly one-third of the negatives made with the telescopic lens show a greater or less amount of jar. As a means of securing details, however, there is nothing else to compare with it.

Leaving Tours, I went south in a zig-zag course, stopping at Poitiers, Angoulême, Cahors, Périgueux, Toulouse, etc., as well as at a great number of small places, wherever I heard that there were objects of interest, until I reached the Mediterranean. I then went east as far as Nîmes, where is the best preserved Roman arena in existence, and then turned north, through the mountains, to Le Puy, which Arthur Pennell has designated "the most picturesque place on earth"; then to Cluny, the home of the old Cluniac monks — celebrated for the beauty of their architecture — and thence to Bourges and Blois, and back to Paris,



CLOISTER OF GLOUCESTER CATHEDRAL.

which I reached in April, after an absence of four months, during which, in spite of unusually inclement weather, I had taken over six hundred photographs.

Traveling in France I had found extremely easy and pleasant, the hotels were universally good, as well as all railway arrangements. Though I traveled with 230 pounds of baggage, the rates



"THE LINCOLN IMP."

From a telephoto photograph.

of the excess never seemed exorbitant to me and were uniform, while the system of checking was fully as convenient as with us.

On crossing to England, in April, I was to find far different and far worse railway arrangements. I was allowed to take my case of plates as personal baggage, but they never could be checked; there was no uniformity or regularity about the rate of excess and each agent seemed to charge what he pleased and as much as he could.

Generally speaking, the hotels in English provincial towns are bad and it takes a long time to get sufficiently onto the English customs to get what you require.

No general permits are needed in England for photographing anywhere outside of the London parks. In the parish churches you can always get a permit of the sexton or incumbent, and at the cathedrals there is no difficulty whatever in getting a permit, either from the dean or one of the canons or vergers. At one place, Norwich, I was obliged to pay 6 shillings for one day, and tips are always in order.

My special object in London was to secure Sir Christopher Wren's city churches, and I had much trouble and great interest in finding them. Not all were located so they could be photographed, but I managed to get twenty-three of them.

The flint churches of Norfolk I found particularly interesting, many of them having beautiful carved timbered roofs, old screens and curious fonts.

In the old St. Nicholas chapel at King's Lynn I found the grave of Robinson Crusoe and have a photograph of it to prove it!

In the cathedrals I brought the telescopic lens into play, as far as possible, in securing details. At Lincoln, by this means, I secured a portrait of "the Lincoln Imp," probably on a larger scale than he was ever taken before.

I found, generally, that the cathedral towns were also the richest in domestic architecture. Salisbury, with its beautiful



FROM FLOOR OF ST. NICHOLAS CHAPEL, AT KING'S LYNN, NORFOLK.

cathedral and close; Wells, the best preserved in England; Gloucester, with the most beautiful cloister in the world; Tewkesbury, with its lovely Abbey and wealth of quaint houses, and Chester, with its historic Rows, all left their impression on my plates on my way to Liverpool. Here I found all my plates, at the office of the American Express Company, in excellent order. One box of unexposed plates had been opened by the French customs officers on my entry into France and on nailing up the box again they had driven nails into five boxes of plates. These were absolutely the only plates injured or broken during the entire trip, and this possibly might have been avoided had I gone to the custom-house myself to look after them. I entrusted all the forwarding and storing of my plates, both in France and England, to our own American Express Company and had no reason to regret having patronized home institutions.

I sailed from Liverpool August 1 and on arriving in this country was charged duty on my plates as being "partially manufactured abroad," regardless of whether the plates had been improved or ruined by being exposed! I have since developed the entire lot and have thrown away as useless, through no fault in the plates, just 8½ per cent of the entire number taken, which I consider a remarkably good average under all the conditions of light and weather.

To summarize: I was absent exactly ten months; took with me 1,440 8 by 10 glass plates; exposed 1,141, and out of this number secured 1,045 valuable negatives, many of them being from places entirely out of the track of the general tourist or photographer.

ESTIMATING.

BY JAMES R. WILLETT.

WE occasionally receive letters from correspondents asking for advice. We have received several lately regarding the prices of material and methods of estimating work done by contractors. We presume that the fluctuations in values which have occurred during the last year or two have been one of the causes of such requests.

Without setting ourselves up as an authority, we will now make a reply which may perhaps be of some use to the enquirers.

We assume that some (not all) of our correspondents are not very old practitioners, but whether they are or not, they should realize that the one who best knows how to estimate is one who has frequently engaged in such work, who has more or less to make or lose by any errors in his estimate, which he is not likely to find out until it is beyond recall.

The best estimator is an old contractor who has constructed similar works, especially if he has done any lately. If you know of any such person who is reliable and no way interested in that with which you are concerned, then get him to assist you if you can. Ask him about any and all matters that occur to you and to give you any recommendations that you may think proper.

Strictly speaking, it is not an architect's place to make a very close estimate. If he has business in his own proper line he will have but little time to attend to such matters.

To estimate correctly requires a large knowledge of the market values of various kinds of materials and labor and their fluctuations, which can only be thoroughly learned by dealing in them.

Architects do not usually buy and sell materials directly, or similarly, hire any great amount of labor, and therefore are scarcely competent to make close estimates of the values thereof or their fluctuations. They avail themselves, if they can, of the assistance or knowledge obtained from contractors. Indeed the bids of experienced contractors for one and the same work will vary, and sometimes to a considerable amount. If experienced contractors, who risk their own money, do not agree as to the proper price for a work, it is idle to expect an architect who has not and should not have any financial interest therein to excel in such matters.

The foregoing remarks apply especially to estimates that have been made before the work is contracted for; after that has been done it may be quite different.

After a contract has been made for a certain work, then of course the conditions of the contract must govern. If the conditions call for estimates per cubic yard, square foot, or other simple measure at fixed prices, the computation of the proper amount that should be allowed is usually an easy matter, but when the question is more or less a matter of judgment, then difficulty is likely to arise.

Trouble is incidental to the transaction of all business, but we know of no case where trouble is more likely to arise than where a general contract, which embraces many different kinds of works and trades, is let for a fixed lump sum which is to cover cost of all matters that are to be done, especially if the contract is for a large amount, as it usually is, amounting at times to many hundreds of thousands of dollars and sometimes more.

The architect should request the contractor to furnish him with a schedule, or bill of the different items embraced in the contract and his valuation of them; this should be one of the conditions of the contract. Then the architect should go over said schedule, and if it is not satisfactory he should endeavor to rate the items at their true value. What the architect needs to ultimately determine is not their true value but their "contract value," which may be a very different thing and sometimes is so, especially if the contract is taken at too low an amount. After the architect has ascertained the value of all the several items and their sum, then if this sum agrees with the contract price it can be adopted; but if, as is more likely, it does not then rate the sum as just found with the contract amount and apportion the items accordingly, so that their sum as now found will equal the contract price, or rather be somewhat less than it, since some allowance should be made for contingencies. For the purpose of giving estimates, all that is needed is to ascertain the "contract value" of the items; therefore the actual quantities may be dropped and their contract values alone dealt with.

The foregoing may appear a rather tedious and prolix way of proceeding, but it is the safest and the surest; with small work it may not be necessary, but with large work it will, if properly

done, prevent serious mistakes from being made. It will save trouble in the end, much more than it will take to make the schedule.

After the total amount of each item is fixed, then compute the amount which is intended for each story and, if necessary, the amount of the earlier and rougher work and for the finer or finishing work; then distribute them accordingly. In this way a schedule can be made out that will properly apportion each of the items which make up the contract and give the value thereof as nearly correct as it is practicable to do.

In some such way the values of such work are usually obtained by safe, reliable and experienced architects, especially for large works, but even with small ones it will be well for a young architect to make such schedules, for it will train him in the knowledge thereof and make him more capable of taking charge of larger work that may afterward come to him. Having prepared such schedule, the values of the several works done can usually and readily be obtained by quick inspection thereof and the proper amounts allowed. The schedule is also a guide to the superintendent or clerk of the works and moreover a check on him, since by it the architect can readily see if any considerable under or over estimate has been made, and this is sometimes no small part of its value.

Lastly, good temper, a knowledge of the different kinds of works embraced as far as is practicable, and above all a disposition to be thoroughly just and to carry out the conditions of the contract without fear, favor or affection will usually enable an architect to bring matters to a satisfactory conclusion.

WET BASEMENTS.

BY WILLIAM S. MACHARG, C.E.

THE truth of the proverb, "An ounce of prevention is better than a pound of cure," is perhaps never so evident as when, in a completed and occupied building, the basement proves too damp for its intended use. Not only is the cost of cure likely to bear to the cost of prevention the heaven-born ratio expressed in the proverb of sixteen to one, but even at this cost the cure is generally not so complete as is desired, and the sequelæ are a constant reminder of what might have been.

This is particularly true in the case of habitable basements. In many large buildings the basement forms a part of the system of occupancy, and if it prove dangerous to the health of those who must use it constantly, can not be abandoned, because all other parts of the building are occupied in the necessary service. The attempt to cure the evil is then begun, and it is found first that the expense will be very considerable, and next that the cure is likely to be imperfect because elementary principles in construction have been neglected.

This homily is based upon conditions which obtain in our own city, but which exist in a less degree generally. The ground level here is but little above the lake and the underlying stratum is clay. In many parts of the city sand lies above the clay, but generally a fine sand mixed with some clay, making a dense material from which water can not readily escape; in consequence drains are not efficacious laterally for a great distance. It is also true that the sewers upon which we must depend for drainage in all ordinary buildings are generally from eight to twelve feet below the street surface or grade.

Under these circumstances, in the modern wholesale and retail stores and warehouses of the business district a system of basement floor construction has been developed which, with the ordinary ventilation, gives dry and healthful conditions for common occupancy. In many buildings, however, both inside and outside the business district, the expense incurred in such construction is not warranted, nor is it necessary, for the purposes of the building. The text of this discourse is found in a large building recently examined, in which the basement is used, in addition to machinery rooms, for sleeping rooms for employees and for subordinate offices. The building has been used for a very few years, and the floors are warped and uneven, and the plaster at the base of the walls is spotted and disintegrating. Occupants of the offices are afflicted with rheumatism.

An examination of the plans show that the sewer in the street is about thirteen feet below inside grade, the bottom of footings at the same level and the finished floor six feet below inside grade. The building is large, with many heavy masonry walls, and there are no surface drains.

The number and depth of the walls result in cutting up the area into small sections, holding back the subsoil water so that the drainage to the sewer, which would naturally lower it, is prevented. The omission of the surface drains was probably for saving in first cost, and with other conditions as they exist these drains alone would be of little advantage.

In general the construction of the basement for the purposes for which it is intended, or for any purpose for which a dry basement is required, is faulty.

It was undoubtedly necessary that the footings should be placed at the depth they are to secure a foundation for so heavy a building, and they were set in water. In this case the water was apparent, but almost anywhere in this city it can be taken for granted that the subsoil water level is considerably above the bottom of the street sewer. In clay ground it does not always show, as evaporation, especially in warm weather, is more rapid than the percolation through the clay. If, however, an excavation be closely covered over night, water will be there in the morning.

When the footings of masonry walls are set in subsoil water nothing is more certain than that the water will rise in them by capillary attraction, generally speaking, above the floor level, and evaporation will take place in the building; that is, to that amount the basement will be damp. The ounce of prevention in this case is that all the walls in the building should be leveled off at the height where the concrete floor is to be laid, and a thoroughly good, damp course should be applied. This may be of asphalt, bitumen or of impervious cement, provided the imperviousness of the latter is established. Ordinary portland or natural cement mortar is not impervious and should not be used. Slate is an old-fashioned but effective damp course.

With the deep longitudinal and cross walls in this building, tile draining should be used, discharging into catch-basins and so into the sewer, but the use of these does not admit in such soil the common construction of floor used in this building, that is, three or four inches of concrete laid on the earth, with nailing strips set in mortar and the wood floor on these strips. Anything but deep, dry sand, allowing air to circulate under the footings, will cause serious dampness in such a floor.

A proper construction and cheaply applied in this case would be to run in three inches of good concrete at a sufficient depth to allow floor construction with joists with grated inlets in the outer walls for sufficient air circulation. As the walls extend down seven feet below the finished floor, this construction would have been cheap and effective.

Dampness of the outer walls due to contact with the earth above the finished floor would probably not be injurious in this case, but would be easily prevented by mopping with hot bitumen above the damp course.

The use of the damp course and mopped exterior surface is of little cost and it is advisable to use it in all cases where basements are to be used as sleeping rooms or offices. It must be remembered that except in arid climates even the upper earth contains moisture, and that no masonry structures with lime or cement mortars for the binding material are impervious.

Such glaring examples as that which forms the basis of this article should not be found, nor would the slight cost necessary to prevent them be begrudged if the owner, the party principally interested, had it fully explained to him what would be the result of neglect.

BUFFALO EXPOSITION COLOR SCHEME AND TOWER.

IF present expectations be fulfilled, the use of color as an external decoration of buildings will be carried further at Buffalo next summer at the Pan-American Exposition than in any previous architectural work on a large scale. The Paris Exposition architects introduced a good deal of color into their structures, using various media, paint, mosaic, tiles, etc., for the purpose, besides providing for mural decorations under galleries, where the weather could not reach them; but in the French show, however, as was suggested, it was scarcely possible to achieve unity of effect, owing to the comparatively unfavorable location, upon pieces of ground irregular in shape and separated from one another.

For the Buffalo Exposition a new color device was determined upon last spring, and it has just been worked out in detail, under the direction of C. Y. Turner, of New York. The comparative fewness of the chief buildings, all of which will be comprised within a large rectangular plot, has been availed of to attempt an organic and comprehensive color scheme for the whole group. According to Mr. Turner's scheme the dominating colors will be ivory tints for the walls of buildings, decorated with delicate blues melting into greens as near the color of Niagara as possible.

The roofs, all of which will be tiled, will be of dull, rich red. Small domes, minarets and other extremities will be gilded.

Further, the shades used will be developed according to a well-defined scheme dependent on the arrangement of the various buildings. In brief, this latter is as follows: At the upper end of the big rectangle, in the center, is the formal entrance. The principal buildings are set in irregular yet sufficiently symmetrical lines, along the sides of this rectangle, with the great tower, typifying the city of Buffalo, on the central axis, near the lower end. On the left of the entrance, as visitors come in, will be the buildings of agriculture, mines, etc., and on the right the government and ethnological buildings. Farther down, on each side, will be the structures devoted to manufactures, liberal arts, electricity and other productions of human energy and skill. The lower right-hand corner of the rectangle will be devoted to a sort of Vanity Fair, corresponding to the Midway Plaisance or the Rue de Paris. The lower left-hand corner will be occupied by a stadium, for races, athletic sports and other diversions. Between these two spaces, along the lower end of the rectangle, will be the propylaea, or court, surrounded with columns, where restaurants will be found. Small waterways, lined with trees, will add freshness and verdancy to the scene.

Mr. Turner has decided to vary the ivory tints and the greens according to what he takes to be the significance of the buildings and of what they stand for. Near the entrance are the structures containing exhibits having to do with the overcoming of natural forces—the buildings of agriculture, mines and others. On their walls, the ivory and the green will be cruder and less subtle than on buildings farther along, which typify the more refined products of man's activity. Ruddy orange tints will prevail in the ivory coloring near the entrance; by the time one reaches the propylaea, these will have given place to an ivory-gray, while the greens will be more delicate and subdued. The admixture of other hues will not be entirely avoided, but those mentioned will be the prevailing colors, and will fix the tone of the whole group. The tall tower on the middle line of the grounds will be of a natural ivory color, with more and more green and gold as one approaches the top.

At Mr. Turner's studio, work on the details of color for each building is fast progressing. The principal structures of the exposition have been modeled on a scale small enough to be easily handled and have been set in place on a large platform, laid out to scale, representing the fair grounds. The wall spaces on these buildings have partly been covered with strips of paper, painted to the desired colors, and the roofs painted red. Thus a fair notion of the color scheme, as it will look when actually applied, may be obtained. The whole thing promises well.

In the same studio is a large model, in plaster of paris, of the central tower, of which John Galen Howard is architect. This tower is square, and will be 387 feet high, surmounted by a winged female figure, eighteen feet high, the work of Herbert Adams. At the foot of the tower will be a columnar portico, extending from either side of the tower, partly across the center of the rectangular grounds, so as to form, in plan, a crescent. It will be, of course, concave to the entrance, and form the end of a splendid vista between the two lines of buildings.

This portico will enclose, in front of the tower, a terraced fountain, the water issuing from an arch in the base of the tower. On either side of this arch will be an allegorical group by George Grey Barnard, of colossal size. Over the arch will be a group by Karl Bitter, dominated by an eagle. Allegorical figures representing the five great lakes will also appear, those of Michigan and Erie, the principal lakes, so far as Buffalo is concerned, being under execution by Philip Martiny.

Of the tower itself, it is already possible to speak with enthusiasm, if one can go by the large model, some six feet high. It is in three important sections, following an architectural principle well known in such cases. The lowest section, perhaps fifty feet high, is nearly cubic in shape, the arch at the front, its chief feature, being slightly overhung by a cornice, which is continued on either side as the cornice of the porticos.

The middle portion of the tower rises square and undiminished in size for perhaps 150 or 160 feet. On each of its four sides, on enormous scale, is a sort of scroll work extending nearly to the upper cornice of this portion. Here is an original touch, for Mr. Howard intends this tower to be hollow and to be lighted by day through this abundant and beautiful tracery. As the light is to penetrate all four sides, it is expected that the surface of this section of the tower will present the unusual appearance by day of being illuminated from the inside. Experiments with the model have convinced the architect that this plan will be feasible. At night the electric lighting from inside the tower will float through these unglazed rose windows in mellow and beautiful fashion.

The upper section of this tower, comprising perhaps another 150 feet of height, is itself subdivided into three parts. The lowest is a square, with columns and a doorway at each corner. The middle and upper parts are each round in section, and each is smaller than the one on which it rests. The upper part culminates in a hexagonal dome, to be surrounded by the figure of Light, in gilt plaster or papier-maché.

Mr. Howard has made several slight modifications since the model was finished, in the light of the superior facilities thus afforded to judge the design. If expectations are fulfilled, the tower and the other buildings alone will be worth going to Buffalo to see next summer.

HARVARD ARCHITECTURE.*

BY R. CLIPSTON STURGIS.

GR EAT changes have come over Harvard in the last twenty years. The far-sighted policy of the president has raised the college to the standard of a true university. The undergraduate department is in many ways the least important branch of educational work; and post-graduate courses are giving Harvard a position which ranks her at once among the seats of learning.

Numerical growth has come with these changes, and many new buildings have been erected to meet the new demands. The majority of these, especially the dormitories, are private investments and not the property of the university, but a considerable amount of building has been done for the university itself, and it is interesting to note the phases through which the architecture of Harvard has passed. The dignified simplicity of the earlier buildings which so long sufficed for the needs of the college was most unfortunately unappreciated two generations ago, and Harvard but followed the general downward tendency of the time in her buildings. Gray's is not as good as Holworthy; Thayer's is not as good as Gray's; Weld and Matthews, chiefly through being more pretentious, are not as good as either of the others. These marked, however, the turn of the tide, and the last thirty years of the century have seen a constantly increasing excellence in building. Memorial Hall, with all its defects, is yet an enormous advance upon Matthews and Weld. Its general mass and the proportion of the halls within are good, and its weak points are in the handling of a half-understood mediæval style. The gymnasium, following the lines of later English work, is far better, and is moreover in closer harmony with the old buildings. Sever and the Law School mark yet another phase of development, a side current in the general movement. With all their fine qualities, it is more than doubtful if either of these buildings will retain a permanent place in the memory of the graduates.

Few can leave Harvard without being impressed and having their higher instincts touched by the quiet simplicity and complete dignity of the university, but one doubts if Sever ever has roused or ever will rouse any such sentiments. This is, after all, a pretty fair touchstone for good work.

Since then nearly all the work done for the university has been more or less on the lines of the old work and with the distinct aim of preserving a feeling of harmony.

The recent buildings show an intelligent sympathy with the good old work and some appreciation of what is worthy the greatest of American universities. One can not be too thankful for this turn in the tide, for the influence of surroundings on men is a very powerful one, and the general education of the college graduate is lamentably lacking on the side of the fine arts. Not, indeed, through any lack of educational opportunities, but owing to a lack of interest and a lack of initial knowledge which shall make the study of the fine arts of some avail. A boy who has grown up in the average American city and with the ordinary surroundings of an American family has not, as a rule, even the A, B, C of an art education. He knows nothing of painting, sculpture or architecture, and generally would class them, with a knowledge of law or medicine, as things to be acquired later if needed, but not as a necessary part of a well-educated man's knowledge.

Under such circumstances his material surroundings at college are of very great importance, and it is well for him to know, even if he does not appreciate, the older college buildings. To pass daily through the great gate with Massachusetts and Harvard on either hand makes a memory worth having. The Fogg Museum must insensibly train the eye to recognize good architecture. To go daily to Randall Hall must certainly help one to some artistic knowledge. The Soldiers' Field, with its gates and lodge, and the Cary Building, brings good architecture in touch with the athletic life, and the new boathouse will do the same. It seems a thousand pities that the daily memories of chapel and library should not be equally good.

Probably no one architectural feature could do more for good or evil than the great west gate, for it is in such constant evidence. It is therefore doubly fortunate that it should so perfectly fill its place and fulfill its function. Well designed, well placed, and executed with a thoroughness of artistic intelligence which is very rare, it stands a constant reminder of what good work should be.

Far simpler than the west gate, but dignified and restful, are the gates at the north leading out to Memorial Hall. They are good, but not to be compared with the west gate. This is not because they are less extensive and less elaborate, but simply because they are not so well designed nor so well executed. The quick ramps of the coping of the lower flanking walls against the posts is not pleasant, and it injures the lines of the posts which are the keynote of the composition. The ironwork has not the artistic quality of execution which makes the other so interesting, and which is even more important in a simple design than in a more elaborate one. At present portions of the familiar old rail are coming down to make way for new gates and new railing. The latter promises to be in accord with the fine precedent of the great gates, and as far as one can judge the new gates will follow on the same lines. On sentimental grounds one will

miss the homely old boundary, but in this case the new is surely better, and new associations will soon grow around it.

The Fogg Museum is a dignified classic design. All Mr. Hunt's later work bears the impress of the scholar and the experienced architect, who, without any personal initiative, without the imaginative qualities, which so often lead astray, is content to follow well-established precedent. If his earlier work was full of architectural vagaries, such as his Beacon street houses on the hill, his later work was wholly scholastic.

The Fogg Museum is an excellent example of the later tendency. Quiet, restrained, dignified, a harmonious composition, correct, well detailed and well executed. It is a Prix de Rome drawing carried out by an experienced architect. It has, however, no touch of sympathy with other Harvard work, nor has it any hint on the exterior that it is designed for a museum. There is room for two opinions as to how far it meets the needs of the fine arts department; it was built for the use of this department, but in opposition to the wishes and ideals of those who had the department in charge. It certainly is not well planned nor well lighted for the display of statuary or pictures, but it was not intended to rival or parallel the work of the Boston Museum. The interior has the same fine architectural quality as that which distinguishes the exterior.

The whole tenor of college life has changed during the last thirty, or one may say twenty years. Classes no longer bind men together as they did. Clubs and societies are more numerous. Brooks Hall meets what is now a real need, but which then had no existence. Under its roof are gathered those religious and social organizations which have a semi-collegiate or public character. The building, while retaining much of the quiet dignity of the older buildings, has yet a distinct character of its own. No attempt has been made, as was done in the gates, to soften the hard unsympathetic quality of the culled common brick, and therefore the building has a certain rawness which time will eventually remove. The uniformity of the brick is repeated in the monotony of the black slate roof. Any one who is familiar with the delightful color quality of the variegated and mottled Vermont slate must wonder why architects so often seem to prefer the cast steel deadness of the black slate. Even the green seems preferable when roofing a brick building. Apart from these trifling matters, Brooks is a thoroughly attractive building and looks quite at home in its place near Stoughton, Holworthy and Hollis. The interior is equally good and needs only a few years of use to give it the homelike look which such a building should have.

There seems to have been a growing tendency of late years to study and follow the lines of English work of the seventeenth and eighteenth centuries. Various things have contributed to this. The study of mediæval and late Gothic work has led in natural sequence to the study of the style which succeeded them. Pugin, Scott, Street and the other Gothicists have been followed by Gotch, with his delightful study of the seventeenth century domestic work, and this, in turn, is followed by Belcher & Macartney's volumes of eighteenth century work. Such men as the late John Stewardson of Philadelphia have done much to encourage the study of both these periods, and executed work which ranks easily with the best modern English work. The dormitory of the University of Pennsylvania and the new Law School shows that thorough grasp of the spirit of the earlier times which makes individual work possible without any trace of the mere copyist. Others have followed with more or less knowledge and ability, and with the greater popularity of the style it is perhaps needless to add that others have followed feebly in their wake and threaten the style with disrepute by their ignorant handling—just what happened to Richardson's romanesque.

Randall Hall belongs most distinctly to the first class. It is a dignified, quiet design, based on the simpler and better English eighteenth century work. It has good proportion, a clear exterior expression of the great hall within, and a very clever subordination of the kitchen and offices, the necessary accessories. Good red brick and white limestone look better than anything else among the Cambridge elms. The detail is well studied and well executed. The carving quite in the spirit, very decorative, of the late eighteenth century work; though one doubts if the carver who did the swags on the Winchester School would have been content to model one bit of one swag and then duplicate it for the remainder. The gables do not approximate sufficiently close to the outline of the roof, and suggest screens rather than gable ends, but they are pleasantly studied outlines and one forgives the touch of insincerity. One can not, however, be reconciled so readily to the niggardly economy of wooden cornices, painted to match the stone. On the sides, where it forms the eaves, it is not so evidently disagreeable, but on the front it is inexcusably cheap looking. Already the wood has split in places, and the channels of the tryglyphs are almost lost in their coats of paint. Constant care and more paint can alone keep up even a semblance of the imitation, and this will in time quite ruin the fine lines of the detail. If such work must be of wood it should be designed to carry without injury the successive coats of paint; but one can not but feel that it would be more dignified for a building of this semi-monumental and permanent character if the design were kept within limits which would admit its being executed in right materials.

Other important buildings are now under way, the Architectural Building and the Harvard Union; and the Semitic Museum and the final portion of the University Museum are likely to be

* Extracts from an article printed in the Boston Transcript of October 10, 1900.

undertaken very shortly. All of these follow the general line of the good old precedents of the college, so that the architectural outlook of the university is full of promise. Graduates will return to Harvard to add new delights to the pleasant associations of their own college days, and one may feel sure that the students of the present day will take away with them some knowledge of and appreciation for good architecture.

PAINTS IN ARCHITECTURE.

OIL AS A FACTOR.

ADULTERATED linseed oil is the stumbling-block of all who have to do with paint. It vitiates the skill and baffles the honesty of the manufacturer, undoes the care of the architect and the painter and brings to naught the providence of the consumer.

Of all available paint mediums linseed oil is the only one that hardens by oxidation. In the process of drying it increases in weight, while of the adulterants, the vegetable oils dry by decay, and the mineral and rosin oils by evaporation. Linseed oil in drying forms a resistant varnish, increasing the integrity of the paint coating, while the adulterants disappear and leave the paint porous and absorbent.

For this reason it behooves the architect to be insistent upon the item of pure oil; and as in a large measure durability depends on the proportion of oil to pigment, to see that oil-consuming pigments comprise a good proportion of the paint base. For whites and tints, zinc white is the only base that answers this requirement. It requires seventy-five per cent of its weight of oil to fit it for the brush, nearly double the proportion consumed by any other white pigment, and is the only white pigment known that can be used for this purpose.

CHARLES JOURDAIN.

NEW PUBLICATIONS.

THE PLANNING AND CONSTRUCTION OF HIGH OFFICE BUILDINGS. By William H. Birkmire. New York: John Wiley & Sons.

The author has written several works on "Iron Construction," the first of which, we think, was his "Riveted Girders," a most excellent and thoroughly practical work, which at once established his position as an author who knew what he was writing about. The present work refers to those detailed matters which should be considered in erecting such a building. It is practically a second volume of his "Steel Construction of Buildings," and in many matters, more copious than the first one, especially in the arrangements, modern conveniences, etc., which may have come into use since the first one was written. We do not favor very high buildings, although, as the author says, that from a constructive point of view, they may be made perfectly safe, yet in the majority of structures, the tendency is to overcrowding, to a lack of fresh air and light, and therefore to unsanitary conditions. It is quite true that a few very high buildings would not do so, but as the number of such structures can not be controlled, it is better to have a fixed limit, say twelve stories, which should not be exceeded. The work is interesting to any one who desires information on the subject, especially to young architects.

MODERN AMERICAN SCHOOL BUILDINGS. By Warren Richard Briggs. New York: John Wiley & Sons.

The title of this book is appropriate and fairly expresses the nature of its contents which, for a large part, is made up of reports or articles which have been heretofore published. The general statement about insufficient appropriations for school buildings is the usual one for all buildings and indeed for all traffic, that is, people desire to buy for the least possible price. It is inherent in man and never will be done away with. As a rule, no one can get more than what they pay for and indeed they should not do so. This is as true of school building as of anything else. With regard to competitions, the author repeats substantially what has been said many times before and which is true enough, but as long as architects of reputation, real or supposed, will enter into them, it is idle to expect that the public will object or value architects' services at a higher rate than they themselves do. The tenor of these remarks will also apply to commissions. Information is given about various details that should be observed in the construction of school buildings and which are correct. We note the rules on page 114 regarding staircases as well put, although for ourselves we would add that a staircase should not be very wide. If great width is needed it would be better to increase the number of staircases. There is one statement with which we take issue, that is that for ventilation "the air outlets should be larger than the inlets." To this we will say that our opinion is just the reverse with any system of heating. The writer has had experience in the planning and superintendence of all the usual methods of heating, from the hot-air furnace to the fan or blower; from heating apparatus that cost a few hundred dollars to those which cost a great many thousands. His experience has been all one way, and that has been that the outlet should be smaller than the inlet, even with the fan. The author nowhere speaks of the movement of the outside air, that is, of the wind, yet it is an important matter and should be taken into account, especially with indirect radiation, which he particularly and not unjustly recommends. The fact that a flue may be lettered on the drawing either inlet or outlet does not necessarily make it such in fact. Any one who has much experience with ventilating apparatus has found that out, and at times may be not only irritated but amused to find that though

the direction in which the air should proceed is nicely, and even elegantly, laid off on the drawings with arrow-heads properly pointed, yet the rebellious air would wantonly and wickedly go the other way. If for any reason there is a demand for air inside the house and the least resistance is through the flues, etc., designed for its entrance, then it will come through them; if not, it will, if it can come at all, come through any openings there may be. The writer recollects that many years ago, before the first half of the nineteenth century had expired and before the rise of steam-heating, that it was not then uncommon to heat rooms by fireplaces. Sometimes, as in parlors, the doors between the rooms would be open and all the others shut. A fire would be burning brightly in the fireplace in one, say the first, of the rooms. Now try to light a fire in the other, or second, fireplace. The probability would be that smoke would fill the room—that is, the flue of the second fireplace would not, as it was said, draw. The fact was that the first fire and its flue was heated up and was obtaining its supply of air from the second flue, through which the air was passing downward and brought any smoke there might be with it. By opening a window or door so that sufficient air could be had for both fires, they both would draw upward. In short, it is necessary that there should be an ample or more than ample supply of air ready to meet any demand that may be made on it and be supplied and heated through its proper channel. Therefore the inlet should be larger than the outlet and on the indirect radiator be of ample size. The writer has known the cold air to pass downward through an indirect radiator and pass out of a house through what was intended for a cold-air entrance. In fact, that is a matter of common knowledge among contractors, and also that the air will sometimes reverse its direction more than once in the same day. The writer is not inclined to dogmatize on the subject; he knows from experience how difficult it is to provide for all the changing conditions that may occur. He agrees with the author in saying that a good engineer is the first requisite for success. We might and are tempted to enlarge on this matter, but it would be wandering from the subject, which is to give a general review of the book and not to discuss ventilation. We should not have dwelt on it but that our experience on buildings is the reverse of the author's, and we deem it our duty to say so. The book being made up largely of articles covering the same ground, repeats itself at times; there is also a querulous tone about it. As the book seems to be intended fully as much, if not more, for school committees than for architects this is unfortunate, since such committees are usually composed of business men, and such men place a high value both on their time and their temper. They will not be attracted by anything which appears to call for either, whereas it would be well to have them read the book. Notwithstanding what has been said, the book is one which can give considerable and valuable information, especially to those who are unversed in school buildings, and it is well worth perusal.

ASSOCIATION NOTES.

CHICAGO ARCHITECTURAL CLUB.

The officers elected at the last annual meeting of the Chicago Architectural Club are: President, H. K. Holsman; first vice-president, Robert C. Spencer; second vice-president, P. J. Weber; secretary, Birch Burdette Long; treasurer, Adolph F. Bernhard. Exhibition Committee: Walter H. Kleinpell, Charles A. Carr, Max Mauch, J. Nelson Watson, Burton E. Morse. House Committee: Adolph F. Bernhard. Entertainment Committee: E. Charles Hemmings, Van Wagner Alling, Herman L. Matz. Scholarship Committee: Robert C. Spencer, Jr., Max Mauch, Hugh M. G. Garden.

CLEVELAND CHAPTER, A. I. A.

The regular monthly meeting of the Cleveland Chapter was held on October 5, Benjamin S. Hubbell presiding. A general discussion of a plan to bring men noted in the profession to Cleveland the coming winter to address the Chapter upon architectural subjects occupied most of the session.

CENTRAL NEW YORK CHAPTER, A. I. A.

At the meeting of the Central New York Chapter of the American Institute of Architects, held at Buffalo October 25, the following officers were elected: President, J. H. Pierce, of Elmira; vice-president, Professor Trowbridge, of Cornell University; treasurer, Professor Martin; secretary, A. N. Gibb; member of executive committee, J. Foster Warner, of Rochester.

TOLEDO ARCHITECTURAL SKETCH CLUB.

The Toledo draftsmen are active in securing for their city a progressive organization of draftsmen and architects. While they have not followed the lead of most of the draftsmen's clubs and dropped the word "sketch" from their title, they aim to work along similar lines and not only advance the interests of the guild but will take their part in molding public opinion in the direction of good municipal architecture and surroundings, and educating the people into a better appreciation for good architecture generally.

MILWAUKEE ARCHITECTURAL CLUB.

The reorganization of the Milwaukee Architects Association and the Wisconsin State Association into the Milwaukee Architectural Club, effected a few months ago, is already showing the benefit derived from the association of architects and draftsmen

in clubs and the general trend toward exercising an influence upon public improvements. The club has already become engaged in a competition for the architectural treatment of the principal bridge of the city and the widening of its approaches. This latter is particularly utilitarian as the peculiar angle of the bridge and its narrow approaches make it not only a dangerous passageway for teams but also to the street cars that use it as the thoroughfare from the east to west cities. It is a strong example of the necessity for such organizations to not only call public attention to necessities but to present plans for their improvement when such a bridge as that at Milwaukee has jeopardized the lives of citizens for years. The club has a membership of forty-four and contemplates an exhibition of the League circuit drawings. As in the early history of the Chicago club the local Builders' Exchange is materially aiding the club by giving it the use of its rooms for exhibition purposes.

OBITUARY.

ALBERT C. SCHWEINFURTH.

The sudden death by typhoid fever of a peculiarly malignant type brought to a close at Dryden, New York, on September 27, the career of Albert C. Schweinfurth, an architect of exceptional promise and ability. The name of Schweinfurth has become known throughout the United States through the work of four brothers, of whom A. C. was the third, the eldest being C. F., of Cleveland, and the next and youngest, J. A. and H. G., practicing in Boston.

Albert C. Schweinfurth was born at Auburn, New York, January 7, 1864. He was the third of four sons of Charles J. Schweinfurth, one of the earliest citizens of Auburn, and he spent about sixteen years of his short life there, where he enjoyed the happy days of boyhood. Of an alert and active disposition, he longed for the battle of life to begin, and in 1880, at the age of sixteen, he left the high school and secured a position with the then well-known publishing house of J. R. Osgood & Co., which he held for about a year. He soon determined, however, to study architecture, and secured a position in the office of Peabody & Stearns. From this time to the day of his death his ambition and enthusiastic devotion to his chosen life work never flagged. Having remained with this firm for some years he went to New York city and entered the office of the late A. Page Brown, where he remained for some years, and finally started in New York city, in independent practice for himself. Here excessive application to his profession brought on illness, and he was obliged to remove to Denver, Colorado, where he soon felt the benefit of the climate.

In Denver may be seen many examples of his work, distinguished by its peculiar simple dignity and refinement.

In March, 1890, having recovered his health, he removed to San Francisco, where he assisted Mr. A. Page Brown in the erection of many large and important works, he being entrusted with their design and execution, rendering valuable service in beautifying that city. His efforts were directed toward the adaptation to the needs of our time of the suggestions found in the Spanish-American architecture found in the old missions and haciendas, being one of the first to recognize in these types their adaptability to modern uses and artistic effect. In independent practice there he designed and erected many important buildings, among which are the Children's Hospital, the Eye and Ear Hospital, the Hearst building, the Hacienda del Pozo de Verona and the residence of Mrs. Phoebe Hearst, near Pleasanton, and numerous other large and important residences.

In November, 1888, he married Miss Fanny Goodrich, daughter of the late Milo Goodrich, Esq., of Auburn, and to them was born one daughter. His work was so successful in San Francisco that in 1898 he determined to travel and study abroad, and accordingly he spent about two years in that study which had been denied him in earlier life, and it was upon his return, while spending the summer with his family at Dryden, that he died. Thus, at the early age of thirty-six years and eight months, closed a most promising and brilliant career.

MOSAICS.

THE commission in charge of the erection of a new state-house for Maryland has issued an invitation to architects to compete and has engaged Prof. W. R. Ware as expert. \$200 each will be paid for the best five designs.

"It was proven in Galveston, as in most other great storms, that the mortality was unusually great in the districts occupied by frail shacks and structures hastily and carelessly thrown together," says the *Kansas City Star*. "The solid buildings, as a rule, withstood the fury of the tempest, and even the invasion of the sea, and afforded refuge to thousands of people. Experience has demonstrated that it is possible to build against the wrath of the elements. In the fierce cyclone at St. Louis there were very few buildings destroyed that were found, after the storm, to be of proper construction. An examination of other storm-swept communities has revealed the same results. The exceptions to this rule are sufficiently rare to denote the tremendous importance of solid architecture. The rehabilitation of Galveston on its old

site has been decided upon. This does not involve, necessarily, any danger of another calamity such as that which has just devastated the city. With the exercise of rational precaution this peril may be pretty thoroughly eliminated. It will not be possible to raise the island above its present level, but the buildings can be reared upon foundations which will stand against even such an angry sweep of water as crushed the fragile tenements in Galveston, burying hundreds of victims in their ruins."

W. H. SAYWARD, of the National Association of Builders, was recently before the industrial commission at Washington, and described the system of trade arbitration in vogue among the building trades of Boston. Mr. Sayward said that the principle of trade arbitration had been tried in Boston and found satisfactory so far as it went. Arbitration, however, could not always avert a strike, and in that case there always was the widespread trouble that was involved in a sympathetic strike of the allied building trades unions. To obviate this the employers and employees had specialized the arbitration so that any question involving a possible strike was submitted to a committee composed only of the workmen and the employers directly interested in that line. The masons, bricklayers, carpenters and painters all had arbitration committees consisting of five representatives of the workmen in that particular trade and five employers in the same trade. These ten chose an umpire from the outside and settled their differences without involving the allied building trades. If a settlement could not be reached and it came to a strike, the trouble thereby was confined to the painters, plumbers or carpenters, as the case might be. Mr. Sayward said that if this system had been in vogue in Chicago he thought the recent big strike of the building trades there might have been averted, or at least largely restricted in its unfortunate consequences. The same would have been true of the builders' strike in Philadelphia.

AMERICAN architecture is nowhere more deficient than in its churches. This is generally conceded, but so far but little attempt has been made to rectify the defect. That this also marks a probable decline of religious reverence was regarded as certain by Walter Pater. In an article which appeared in the *Nineteenth Century* a short time before his death, Walter Pater gave some account of the great churches of France, and more particularly of the Cluniac church of Vézelay, the grandest of that order which remains, tranquil after the lapse of hundreds of years. Of the Cluniac churches Pater remarked: "As the ghost of ancient Rome still lingers over the grave thereof—in the papacy, the hierarchy—so is it with the material structures also, the Cluniac and other Romanesque churches, which most emphatically express the hierarchal, the papal system. There is something about this church of Vézelay, in the long-sustained patience of which it tells, that brings to mind the labor of slaves where occasional Fescene license and fresh memories of a barbaric life also find expression now and again in the strange sculpture of the place." This interpretation of the Cluniac order of architecture was made by one who was acknowledged to be a master in interpreting the best spirit and genius of the past. It may be taken, therefore, for the present purpose, as showing that, whatever may be the dominant idea of an age or of the architects, that idea will almost inevitably be found represented in its works of art and architecture. Contrast this barbaric instinct as translated into stone with the lightsome Gothic, springing as "out of some grim underworld into genial daylight." All the aspirations of the latter are heavenward—"their frettings and their carvings and their tracery, as though some great ivy plant of stone had curled and wantoned over the stone."

OUR ILLUSTRATIONS.

Entrance to Palace of Forestry, Paris Exposition of 1900. Porte St. Michel, An Entrance to "Old Paris," Exposition of 1900.

School-house, Lake Forest, Illinois. James Gamble Rogers, architect.

Entrance, Stone Gate Road, Lake Forest, Illinois. James Gamble Rogers, architect.

Exterior and Interior Views of the Illinois Theater, Chicago. Wilson & Marshall, architects.

Sketch of Power-house for the National Cash Register Company. F. M. Andrews, architect.

Residence for Gen. Harrison Gray Otis, Los Angeles, California. John P. Krempel, architect.

Exterior and Interior Views of the Oliver Hotel, South Bend, Indiana. Shepley, Rutan & Coolidge, architects.

Cathedral at Tours, France; General View of Façade; Detail by Telephoto Lens of Rose Window and of Tower. In illustration of article by Ralph D. Cleveland in this number.

Photogravure Plate: House for C. H. Spencer, St. Louis, Missouri. Barnett, Haynes & Barnett, architects.

PHOTOGRAVURE PLATES.

Issued only with the *Photogravure Edition*.

House for Prof. James W. Thompson, Chicago. Pond & Pond, architects. The following full page plates are given: the Exterior, Reception-room from Hall, Living-room, Dining-room, the principal Chamber.

Interior View, Lincoln Avenue M. E. Church, St. Louis. T. C. Link, architect.

Masonic Temple, St. Louis. W. Albert Swasey, architect.

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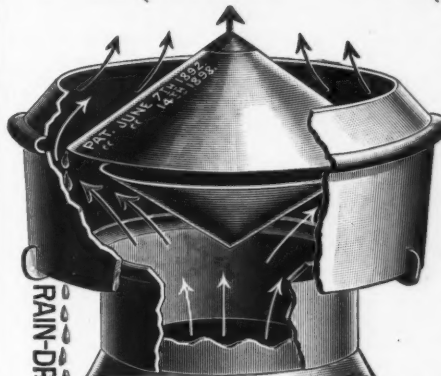
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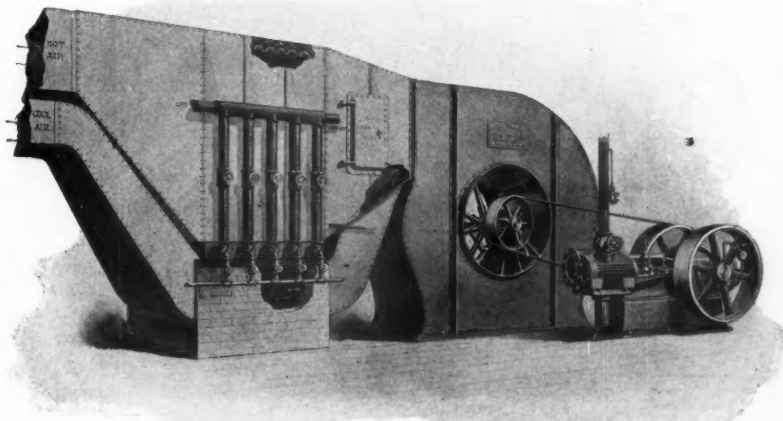
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Vol. XXXVI.

ADVERTISERS' TRADE SUPPLEMENT.

No. 4

WILKS HOT WATER HEATERS.

The Wilks Hot Water Heater, manufactured by the S. Wilks Manufacturing Company, of 53-55 South Clinton street, Chicago, Illinois, has already reached a position of acknowledged utility from which competitors find it difficult to dislodge it. Its first recommendation is its strength, being made of steel; its next, simplicity and ease of regulation, the self-feeders with the coal magazine requiring so little attention, as, by fixing the damper properly, the fire may keep an even temperature for twelve hours or longer. We present a sectional illustration of the Wilks' Heater. As already stated, it is strongly constructed, being of steel, a fact in itself which tends to make it lighter and more susceptible of heat, there being not so much thickness of metal to penetrate. There are also no inside flues to leak, and the fire being entirely surrounded by water, a greater heating surface is thus presented. The motion of the water when being heated being always vertical, an active circulation is secured, because heated water will always ascend, to be succeeded by the colder water flowing in to take its place. The manufacturers claim the construction of the heater to be superior to all others in so far as that openings being located all around the top of the magazine, there is



uniform combustion, and the heating capacity, both front, back and sides, is equal, the gases meanwhile being carried up the flues. The manufacturers are giving the benefit of large experience and abundant manufacturing facilities to the production of the Wilks Heater, and the appreciation accorded is accepted as satisfactory evidence that that portion of the public represented by the clients of the S. Wilks Manufacturing Company having a Wilks Heater, is satisfied with the article. There are many other strong points set out in the company's handsome catalogue. Our readers should write for a copy.

TRADE NOTES.

A PAMPHLET entitled "Westinghouse Railway Motors," just published for the Westinghouse Electric & Manufacturing Company, Pittsburg, has been received. This publication contains illustrated descriptions of the standard Westinghouse Railway Motors, together with a few illustrations of typical railway power stations. Copies of the pamphlet will be mailed to officers of electric railways, consulting and contracting engineers and others interested, upon application.

THE new twenty-story office building which is being erected at the corner of Broad street and Exchange place, New York city, and which will be known as the Broad and Exchange, is to be thoroughly up to date in every feature of its construction and furnishing. It will be equipped throughout with the Kenney Flushometer, manufactured solely by The Kenney Company, New York, which system has been adopted on account of its superiority as a fitting sanitary device for this largest of all office buildings ever erected. The general contractors are the George A. Fuller Company, of New York and Chicago, and the plumbing will be done by Mr. T. J. Byrne, of New York.

RAILROAD NOTES.

M. K. & T. REDUCES RATES IN INDIAN TERRITORY.—Ever since the construction of the M. K. & T. R'y through the Indian Territory its local passenger rate between stations in the Indian Territory has been on the basis of 5 cents a mile. The customary rate of passenger fares on railroads, except

in sparsely settled country, is 3 cents a mile. The population of the Indian Territory during the past few years has grown rapidly; there has been a large increase in passenger traffic on this account, and the "Katy" officials, recognizing the wants of the people and the justice of so doing, have voluntarily arranged to reduce the local passenger rate to a basis of 3 cents a mile. This reduction will take place on or about November 1. There will be great rejoicing among the residents along the line of the M. K. & T.

If you are going to New York soon, a treat is in store for you if you choose the Lackawanna railroad. This line offers the most beautiful scenery of any of the great trunk lines of the East, traversing the landscape agricultural regions of western New York until it reaches the Susquehanna River, beside which it runs for miles, overlooking the beautiful valleys nestled among the foothills of the Blue Ridge Mountains. Next is reached the Valley of the Delaware River, which the train follows through famous Delaware Water Gap, conceded to be one of the most picturesque spots in America, the river and railroad fighting for the right of way through a great gap in the mountains cut by the ceaseless washing of the waters of the river. For miles the track curves in and about the Blue Ridge Mountains, each successive turn presenting a picture seemingly more beautiful than the last. At Mount Pocono an altitude of 1,900 feet is reached, and from here on the train descends through the mountains and foothills almost to the shore of the Hudson River, the last hundred miles having been for the most part beside the picturesque old Morris and Essex Canal. Not far from New York, on the Lackawanna Route, is the New Jersey Lenox—Lake Hopatcong. The famous water gap is come upon just across the New Jersey and Pennsylvania boundary line, in the Lackawanna's most ravishing section of scenery. The celebrated inland New York summer resort, Richfield Springs, is at the terminal of a branch from the Utica arm of the Lackawanna system. Richfield Springs is the established spa of a number of distinguished Chicagoans, cottagers and hotel patrons.



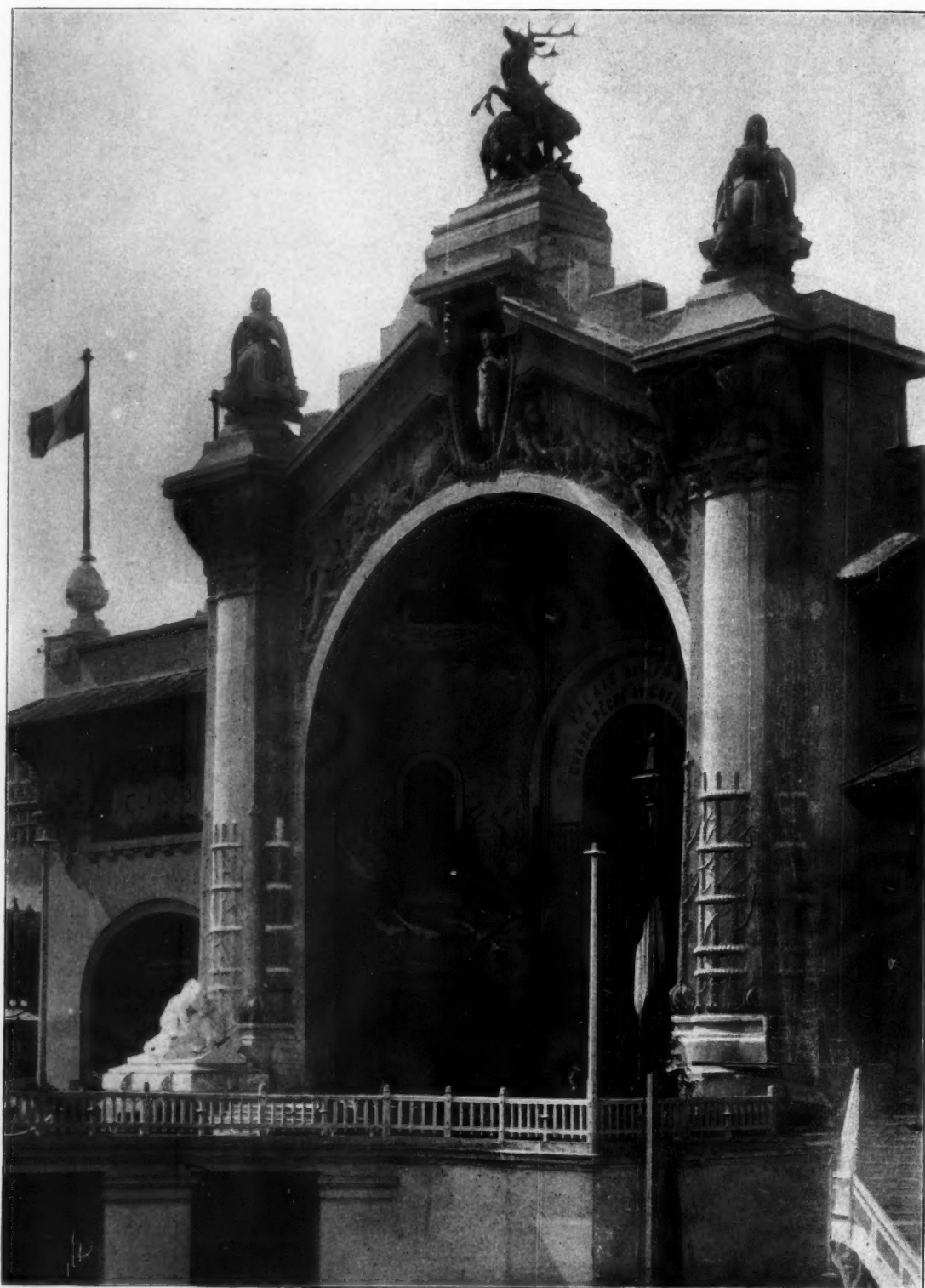
Typical Harvest Scene on the Chicago & North-Western R'y, which traverses the garden spot of the world.



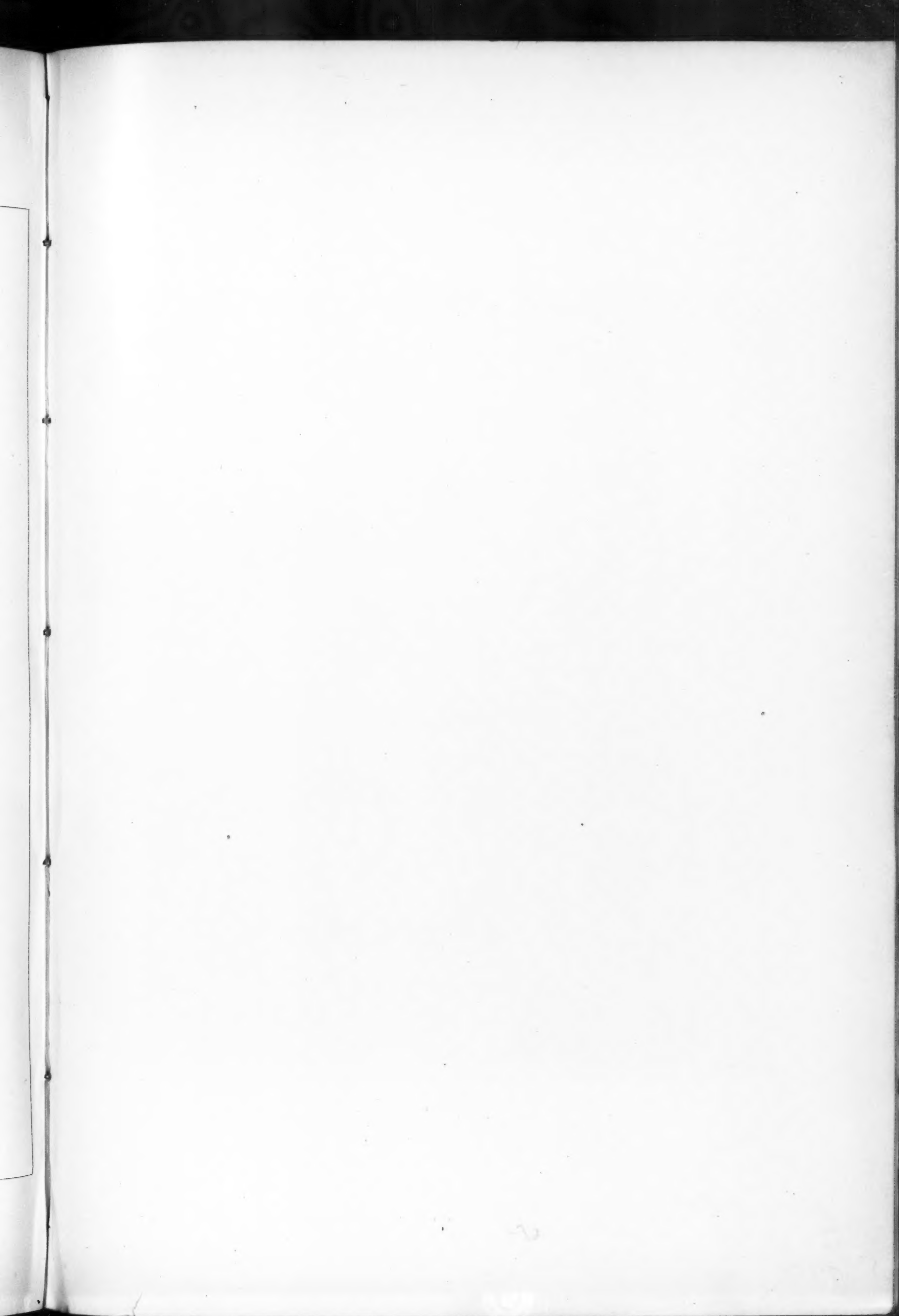
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THE INLAND ARCHITECT AND NEWS RECORD.



ENTRANCE TO PALACE OF FORESTRY, PARIS EXPOSITION OF 1900.

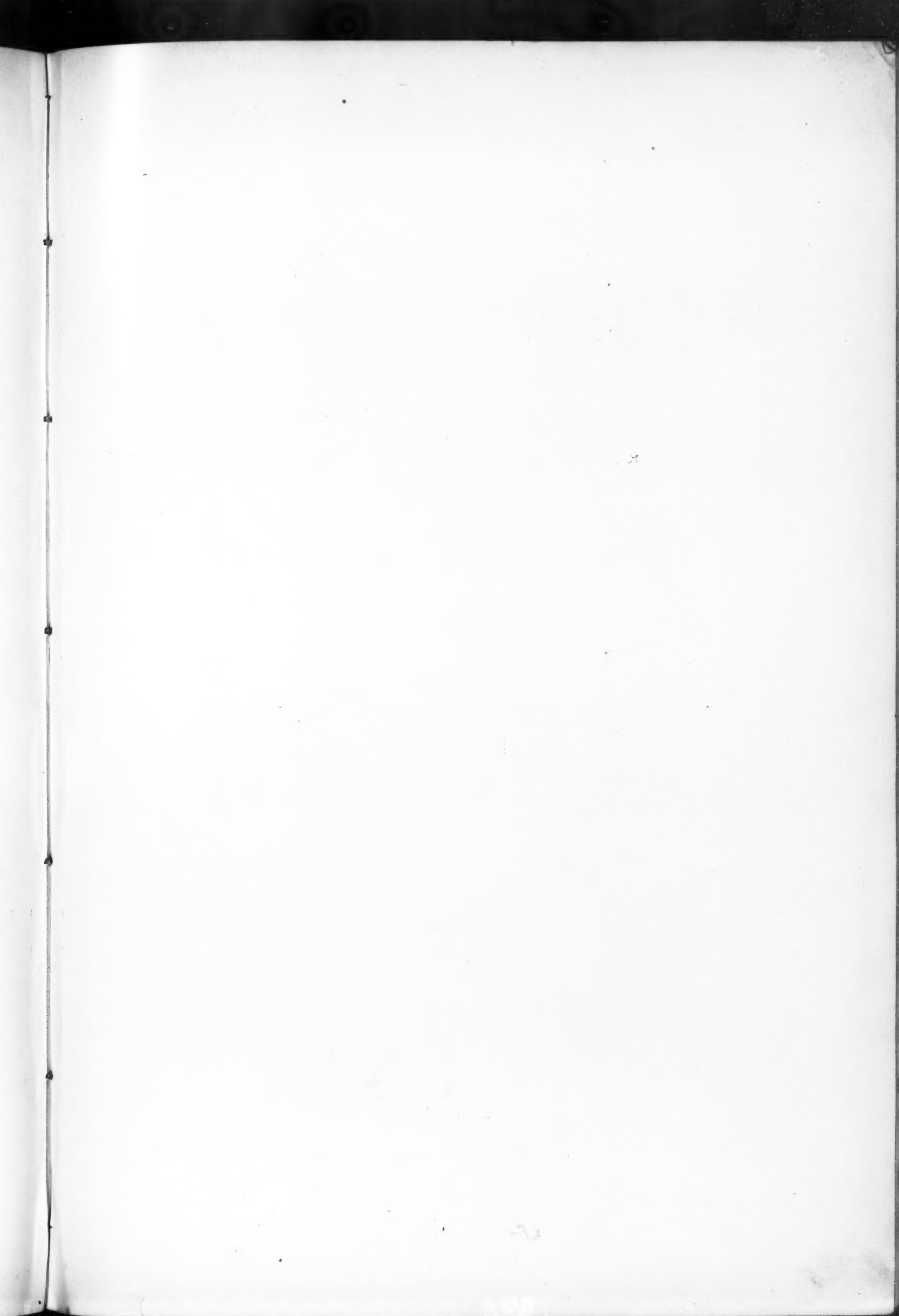


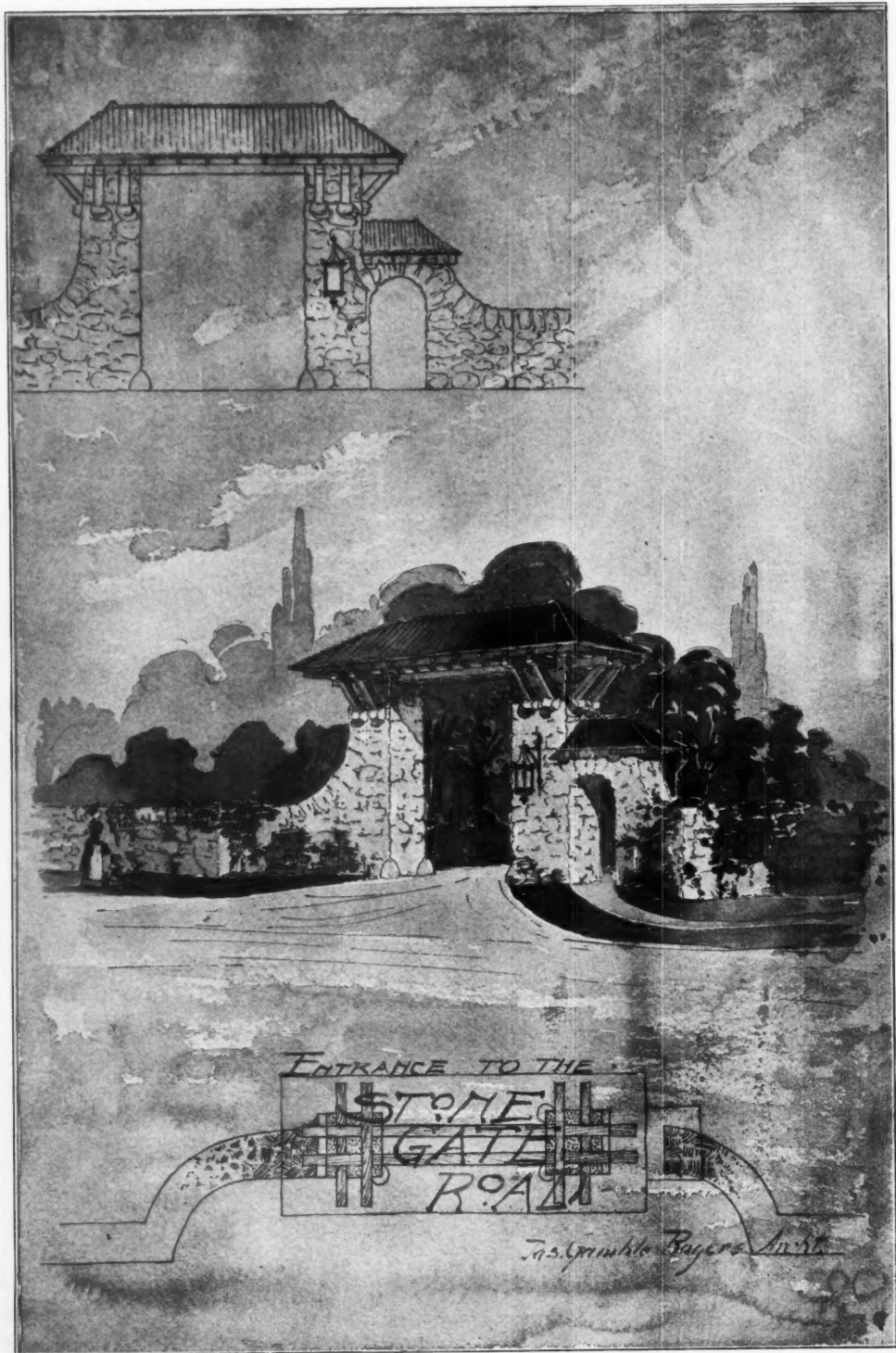


SKETCH OF POWER HOUSE

F. A. ANDREWS - ARCHITECT

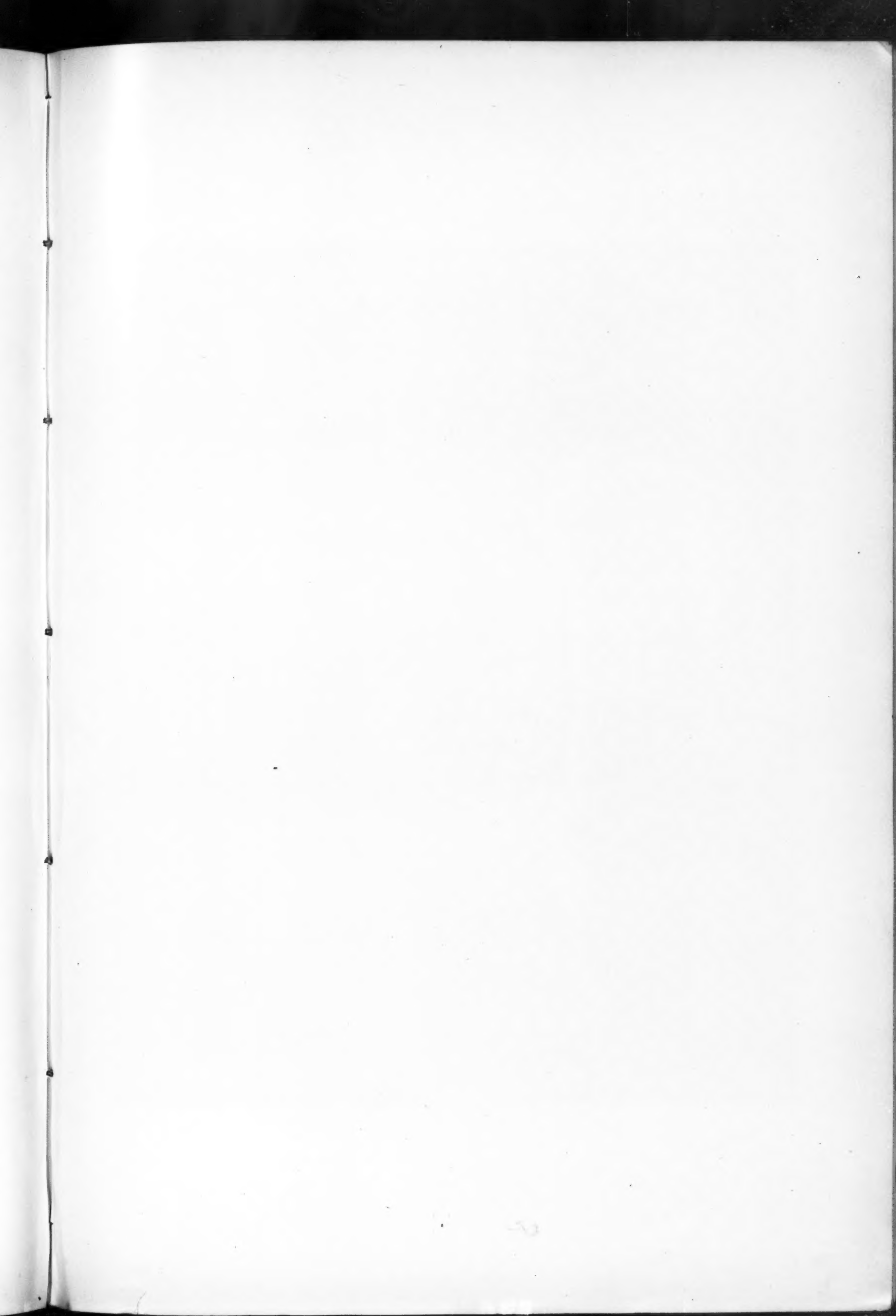
FOR THE NATIONAL CASH REGISTER COMPANY

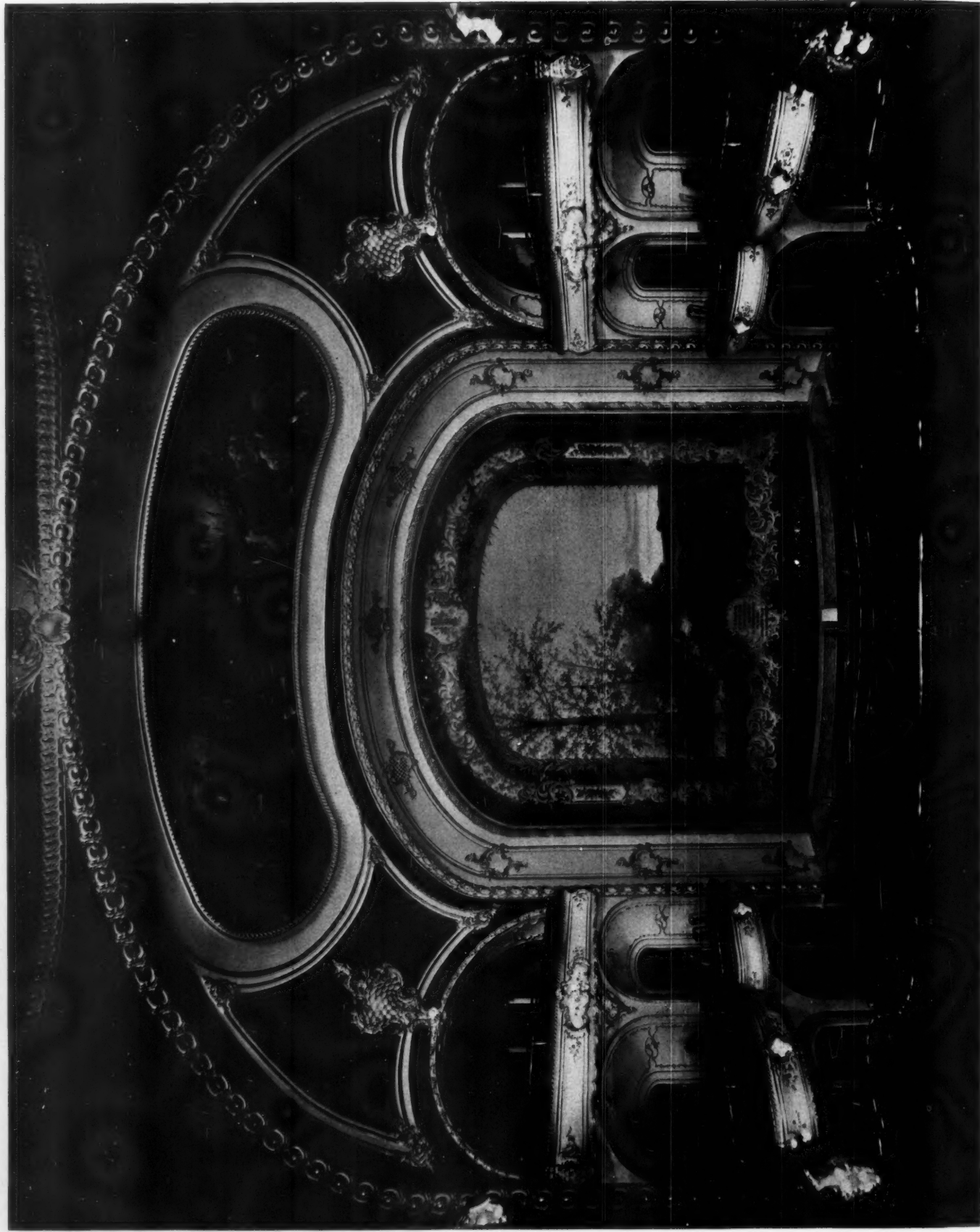




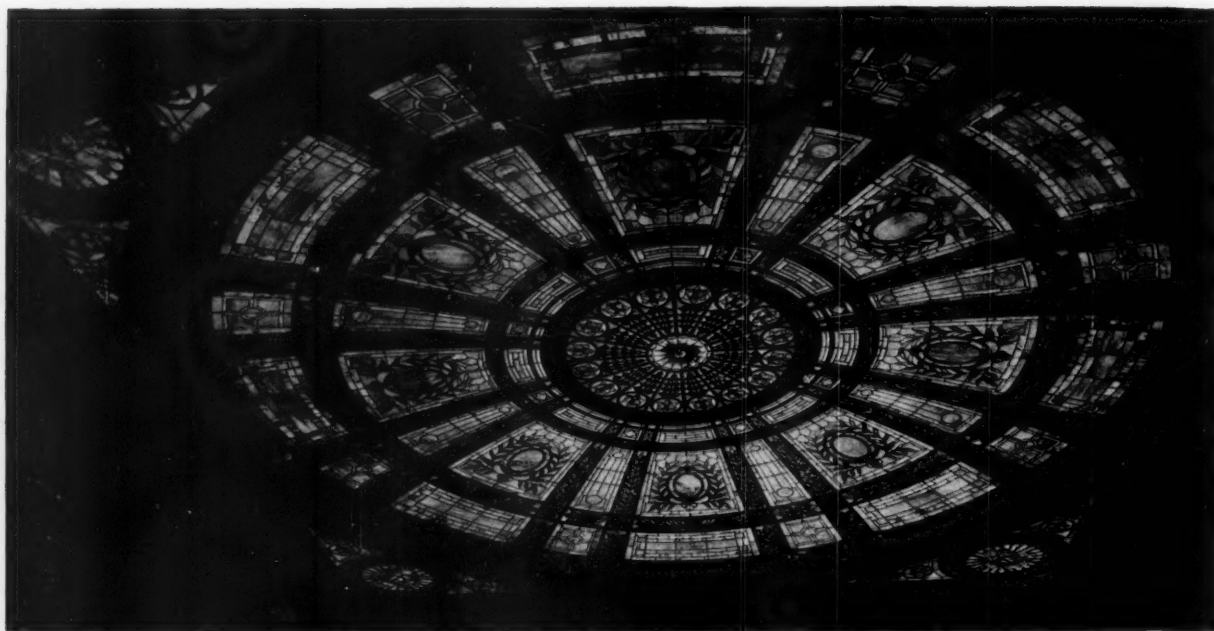
ENTRANCE, STONE GATE ROAD, LAKE FOREST, ILL.

JAMES GAMBLE ROGERS, ARCHITECT.





VIEW OF PROSCENIUM ARCH.



GLASS DOME OVER ROTUNDA.



THE EXTERIOR.

CONTRACTORS, OLIVER HOTEL.
Jacob Rodatz, Mason and General Contractor, Chicago.
The Flanagan & Biedenweg Company, Art Glass, Chicago.
Hulbert & Dorsey, Plumbers, Chicago.

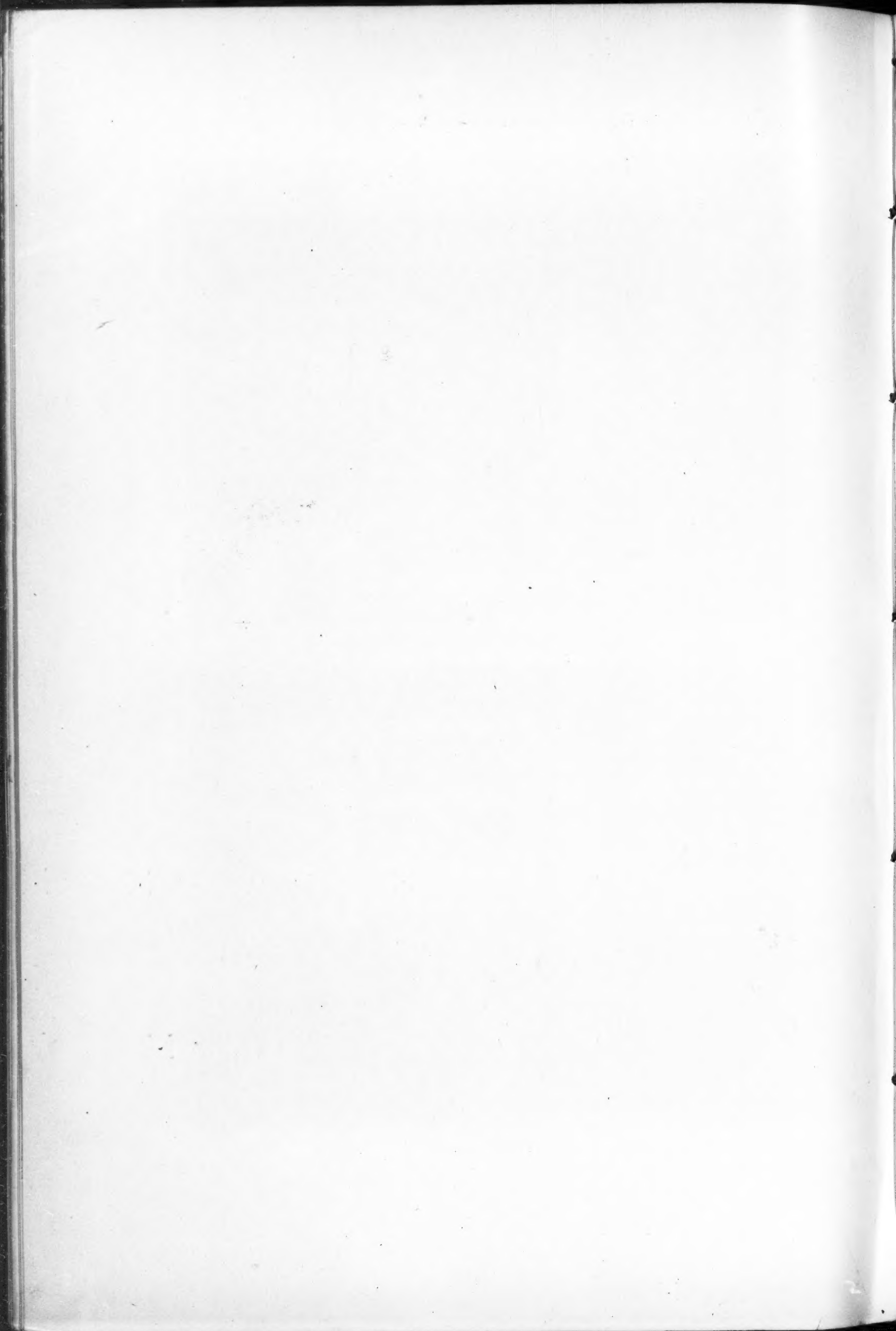
VIEWS OF THE OLIVER HOTEL.
SHEPLEY, RUTAN & ADAMS.



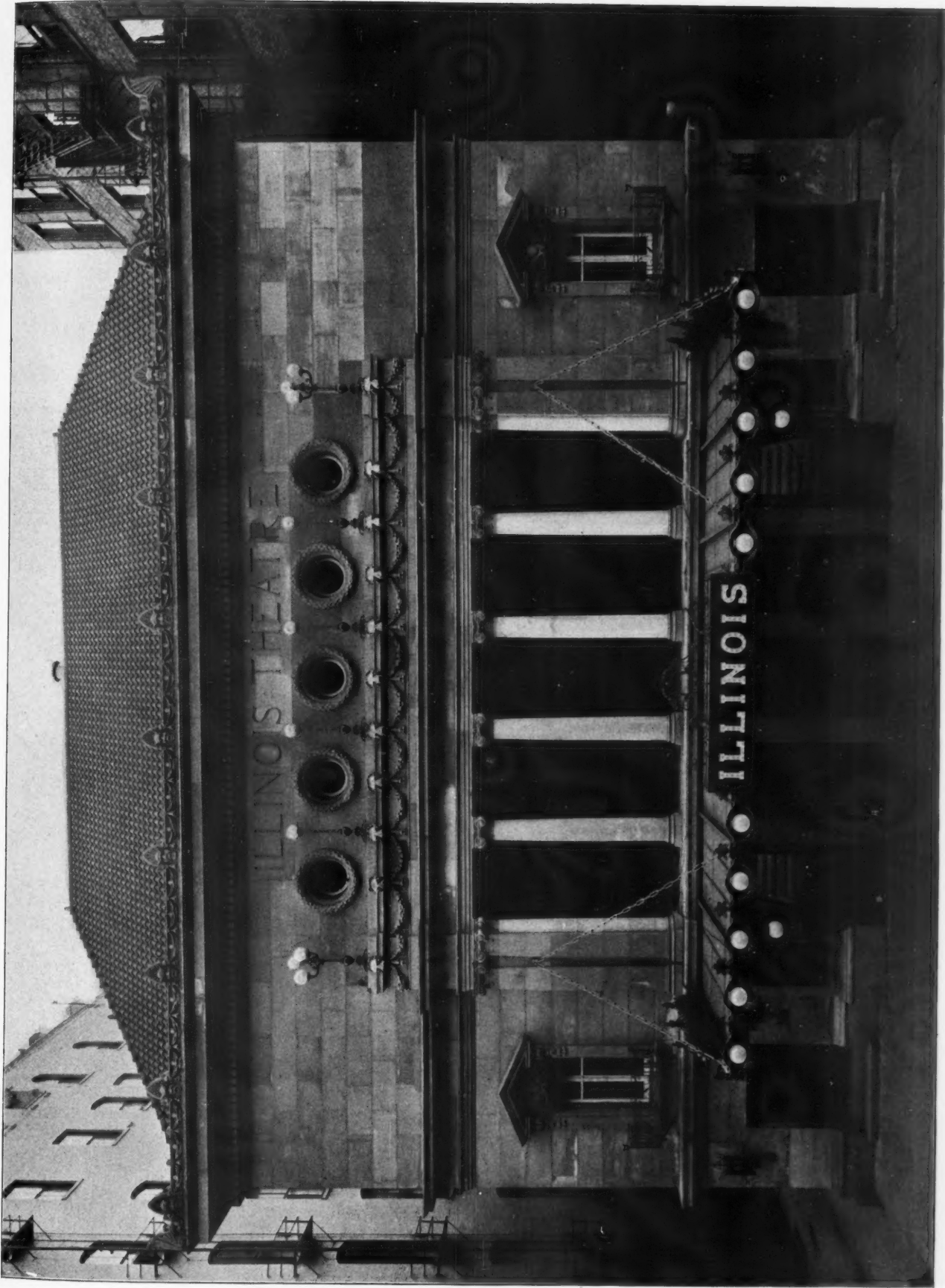
THE ORIENTAL PARLOR.



VIEW IN OFFICE.

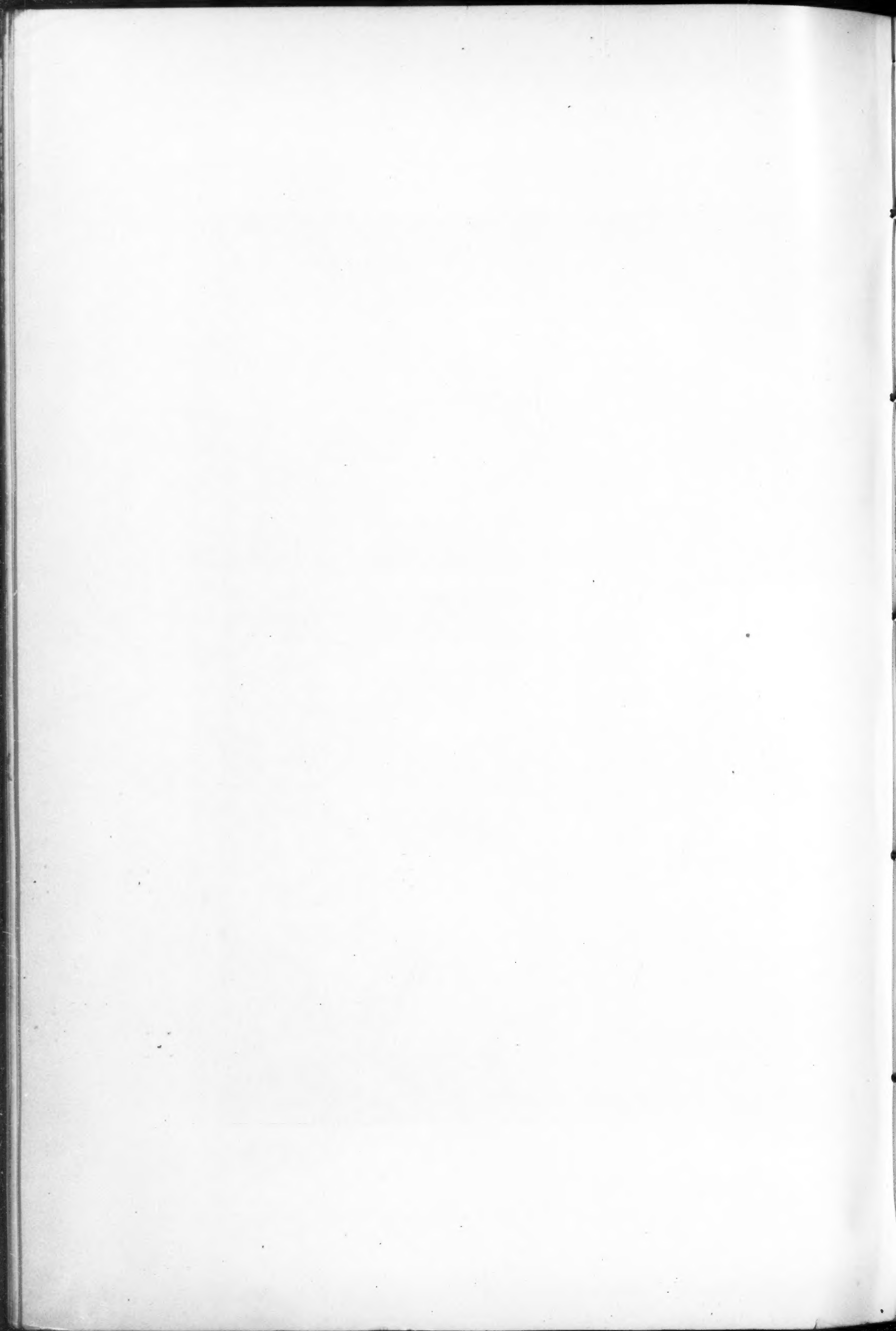


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THE ILLINOIS THEATER, CHICAGO.
WILSON & MARSHALL, ARCHITECTS.

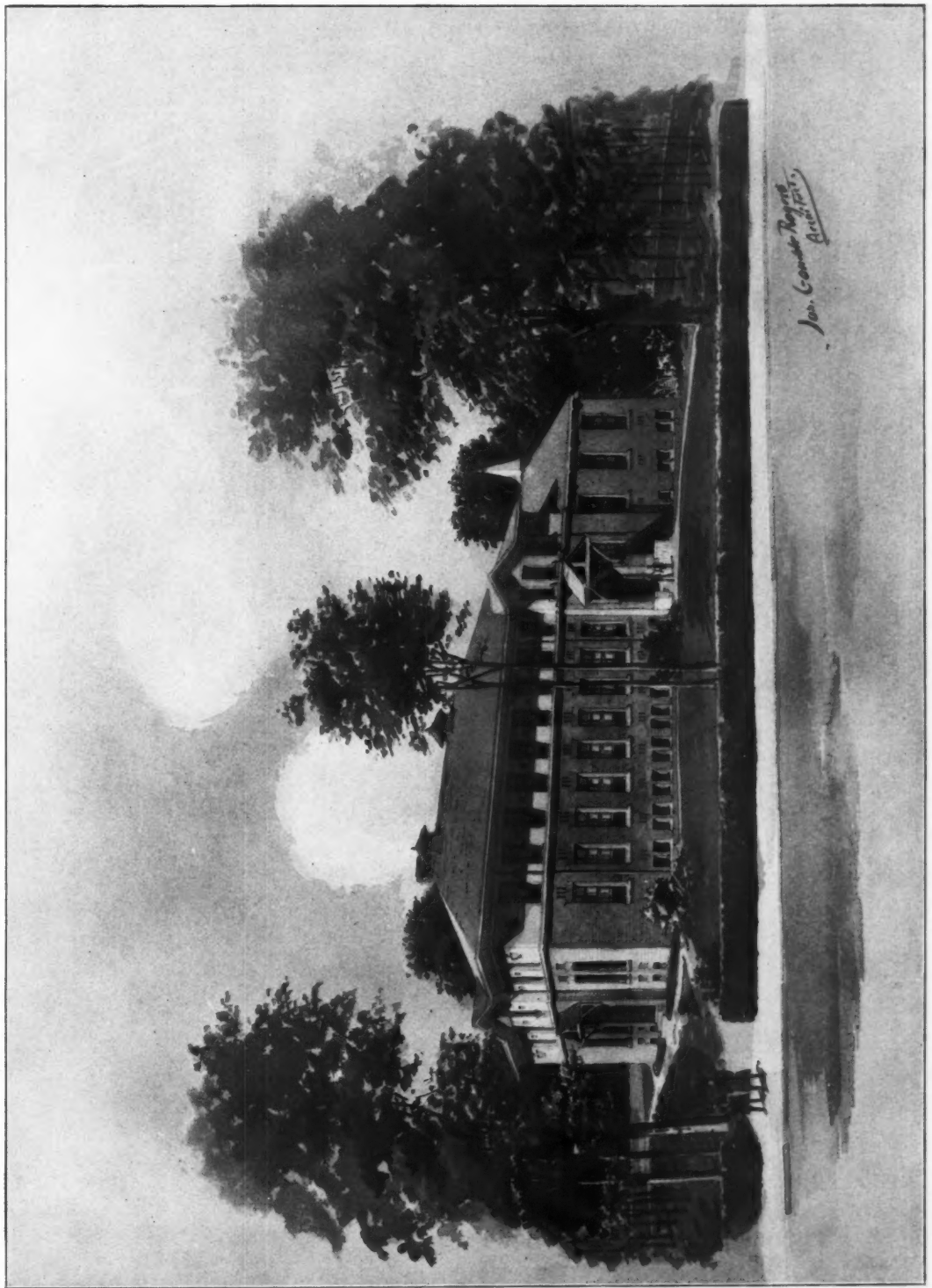
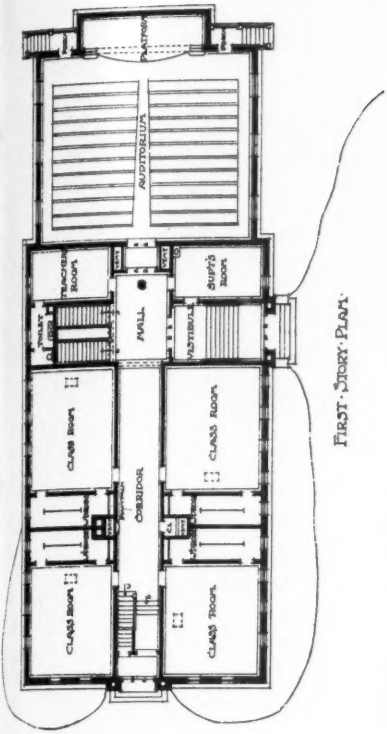
GEORGE A. FULLER COMPANY, BUILDERS, CHICAGO.



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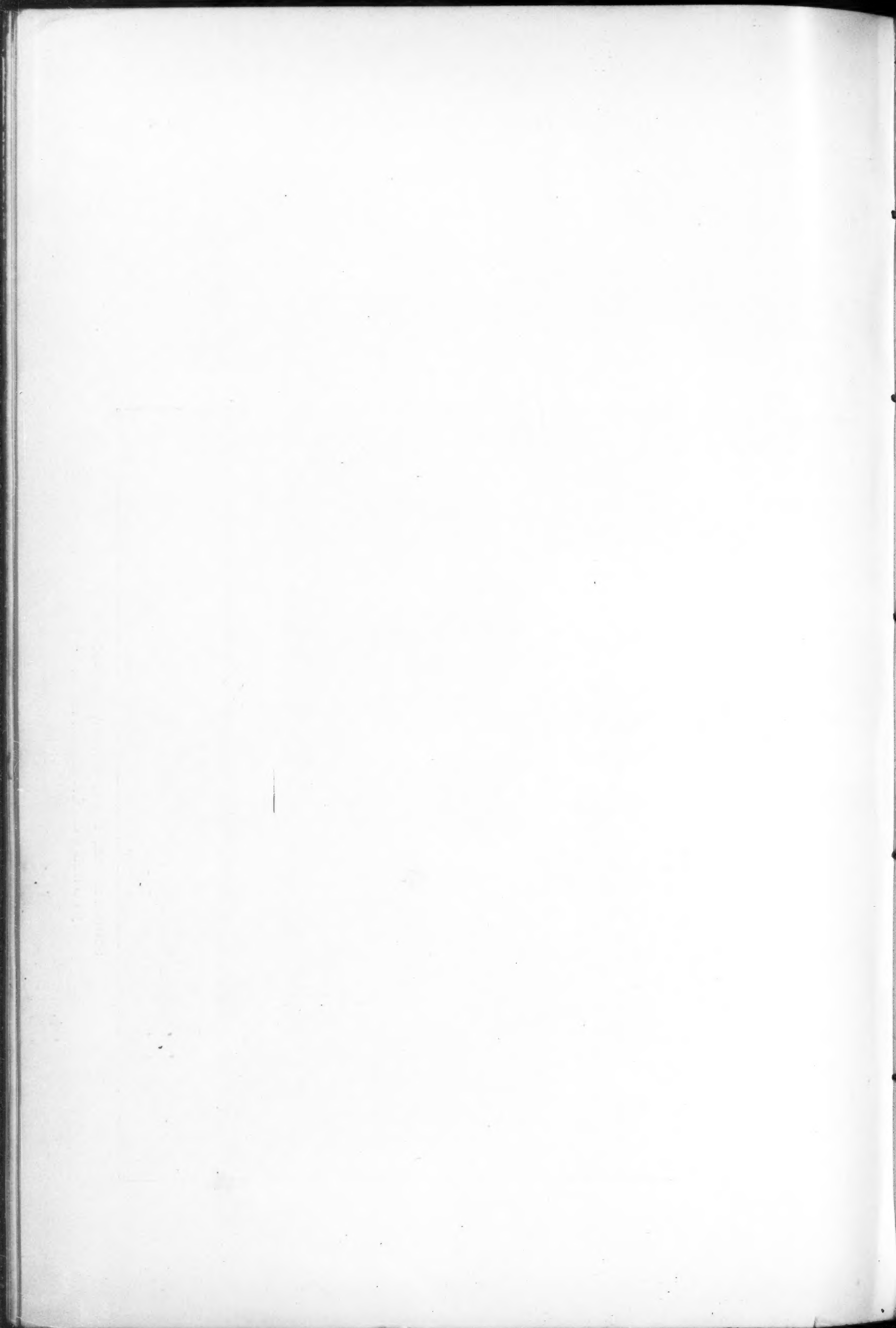
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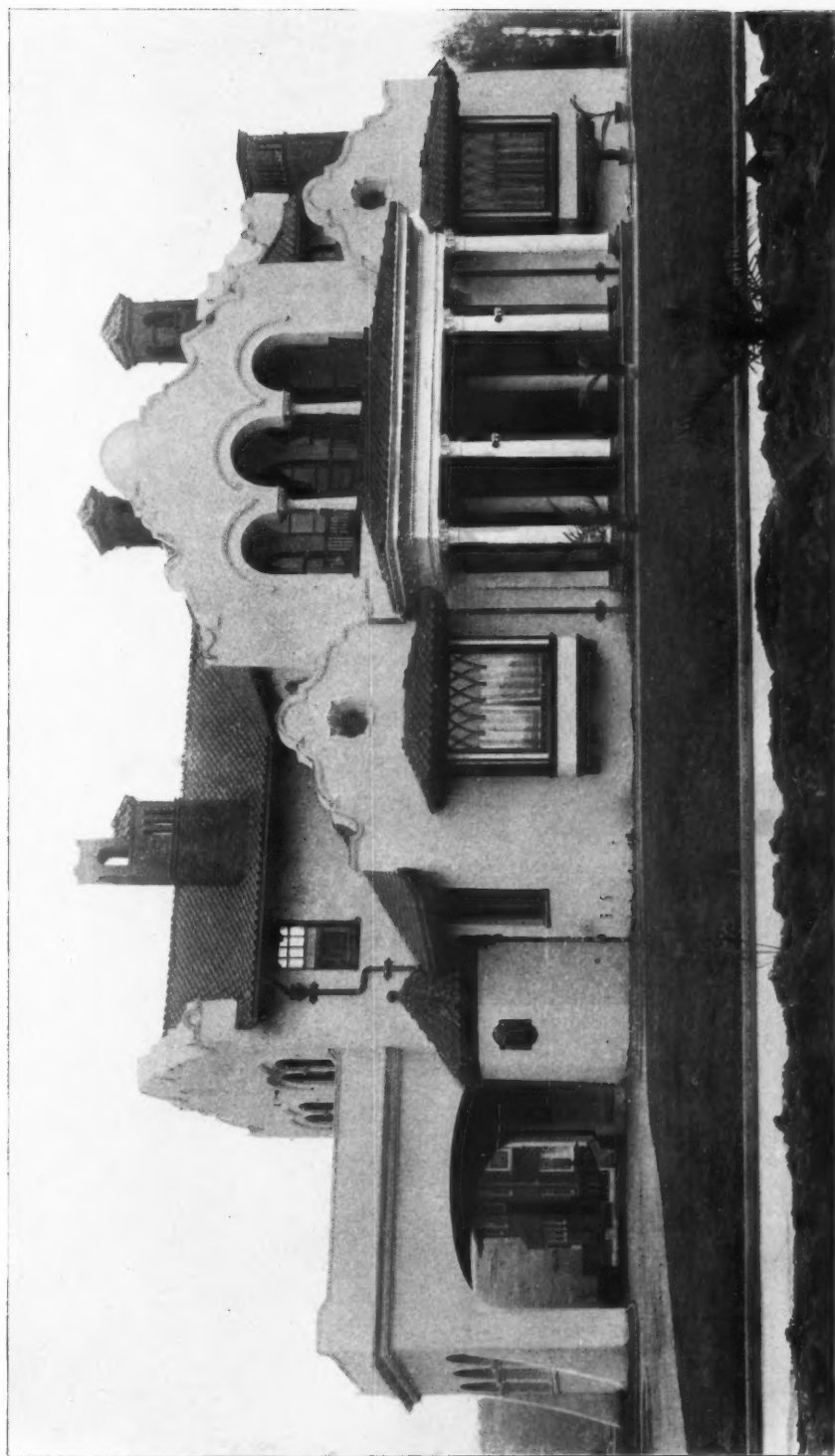


SCHOOLHOUSE, LAKE FOREST, ILLINOIS.

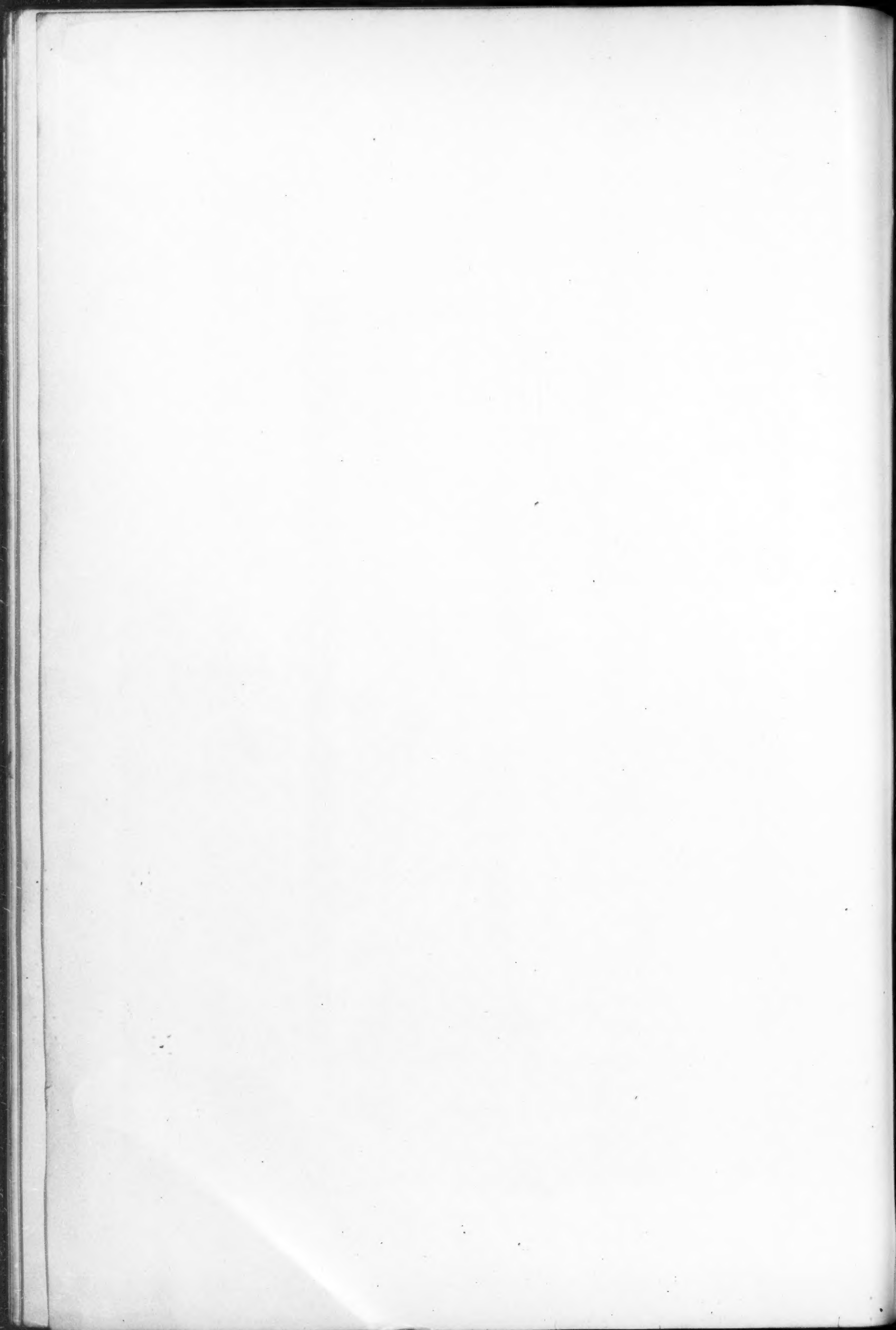
JAMES GAMBLE ROGERS, ARCHITECT, CHICAGO.



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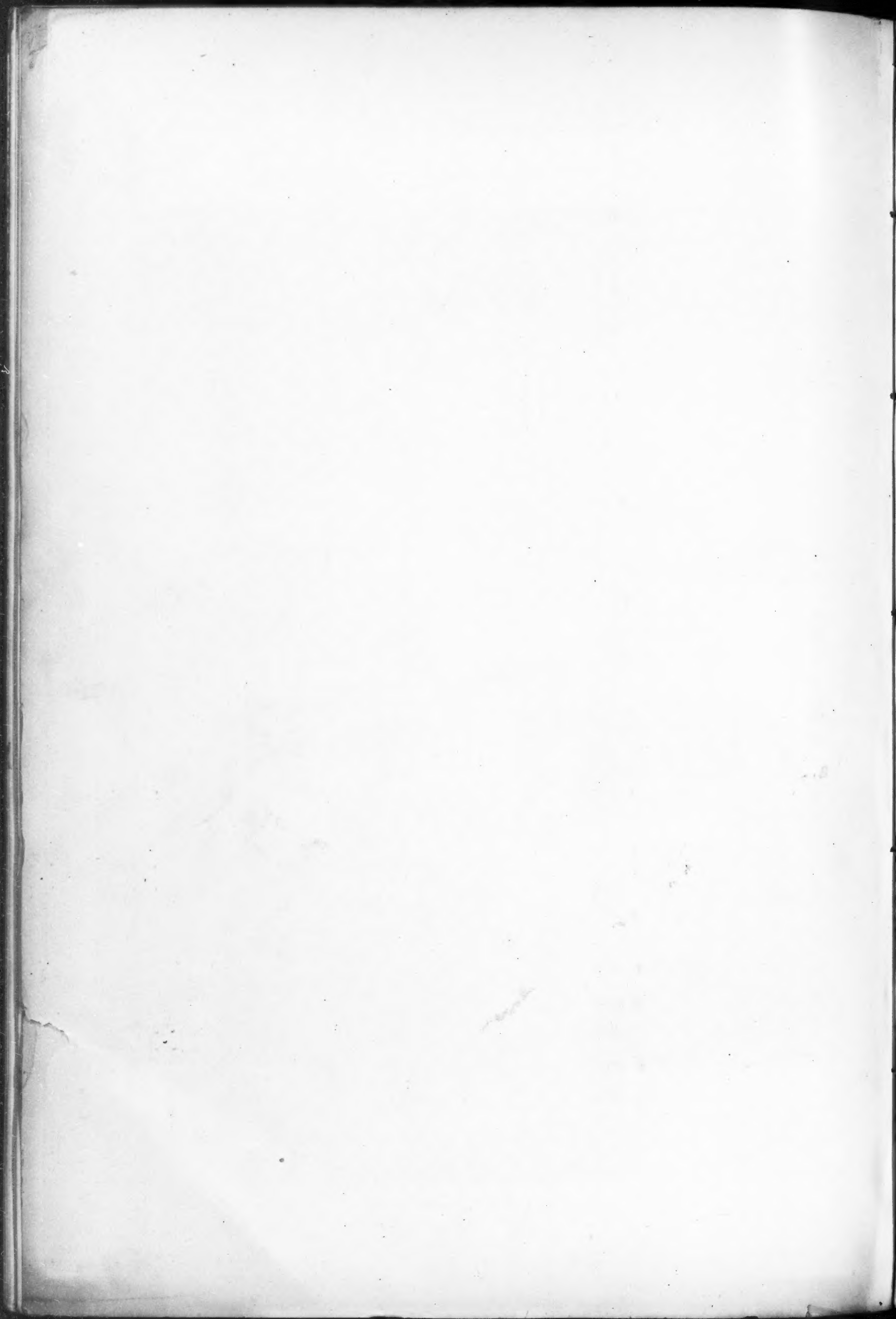


RESIDENCE FOR GEN. HARRISON GRAY OTIS, LOS ANGELES, CAL.
JOHN P. KREMPER, ARCHITECT.



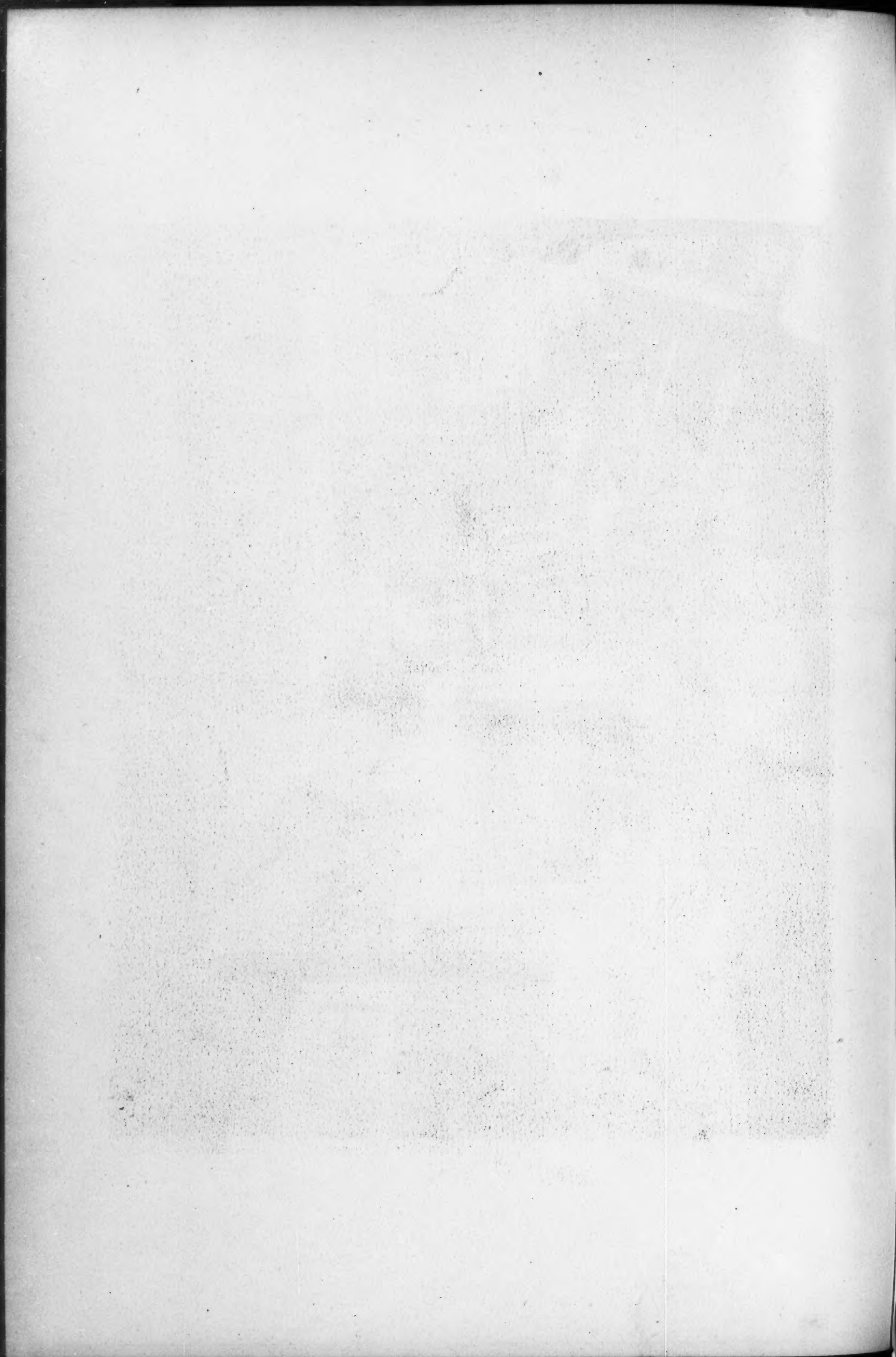


PORTE ST. MICHEL, AN ENTRANCE TO "OLD PARIS," EXPOSITION OF 1900.



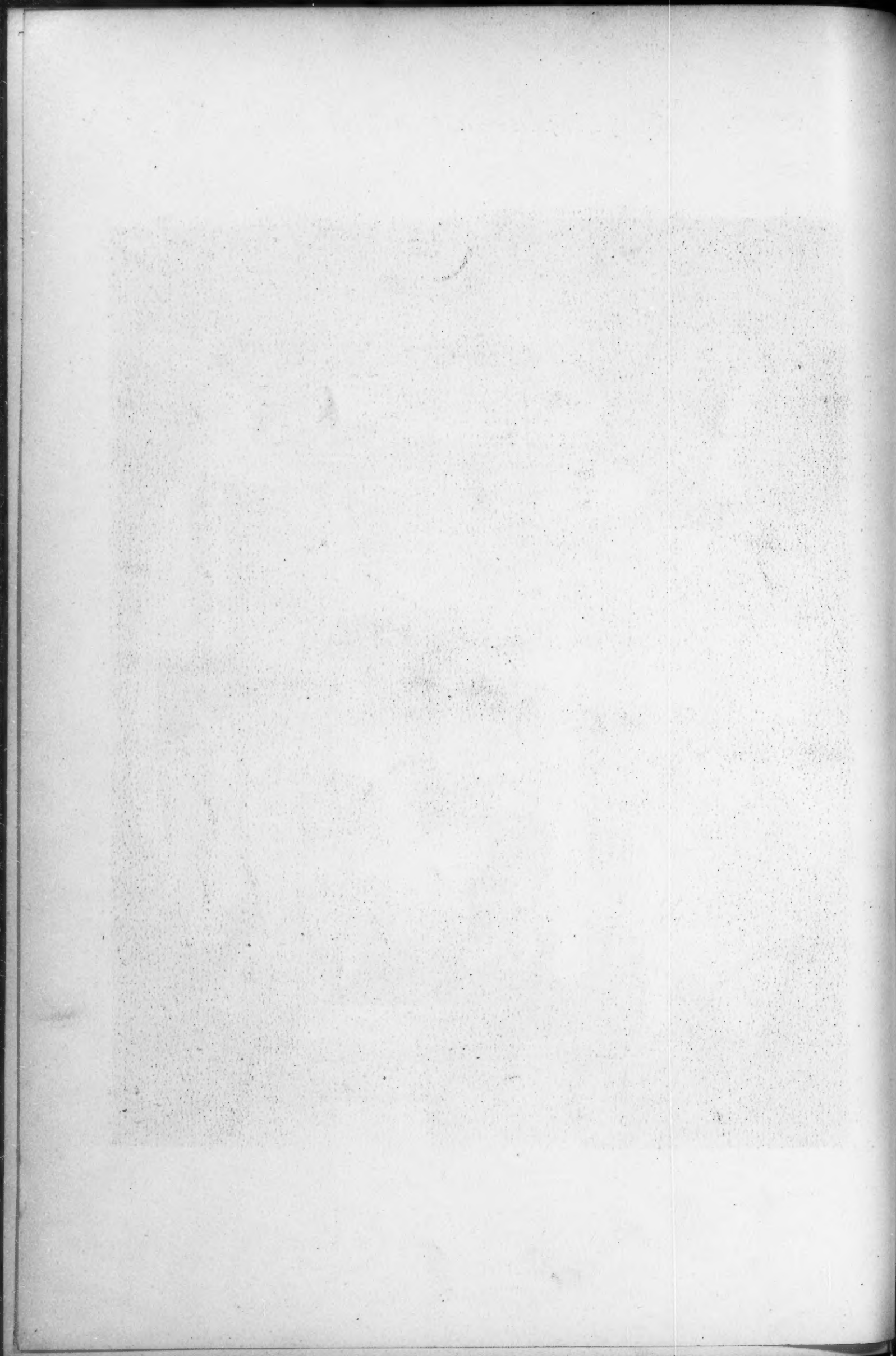


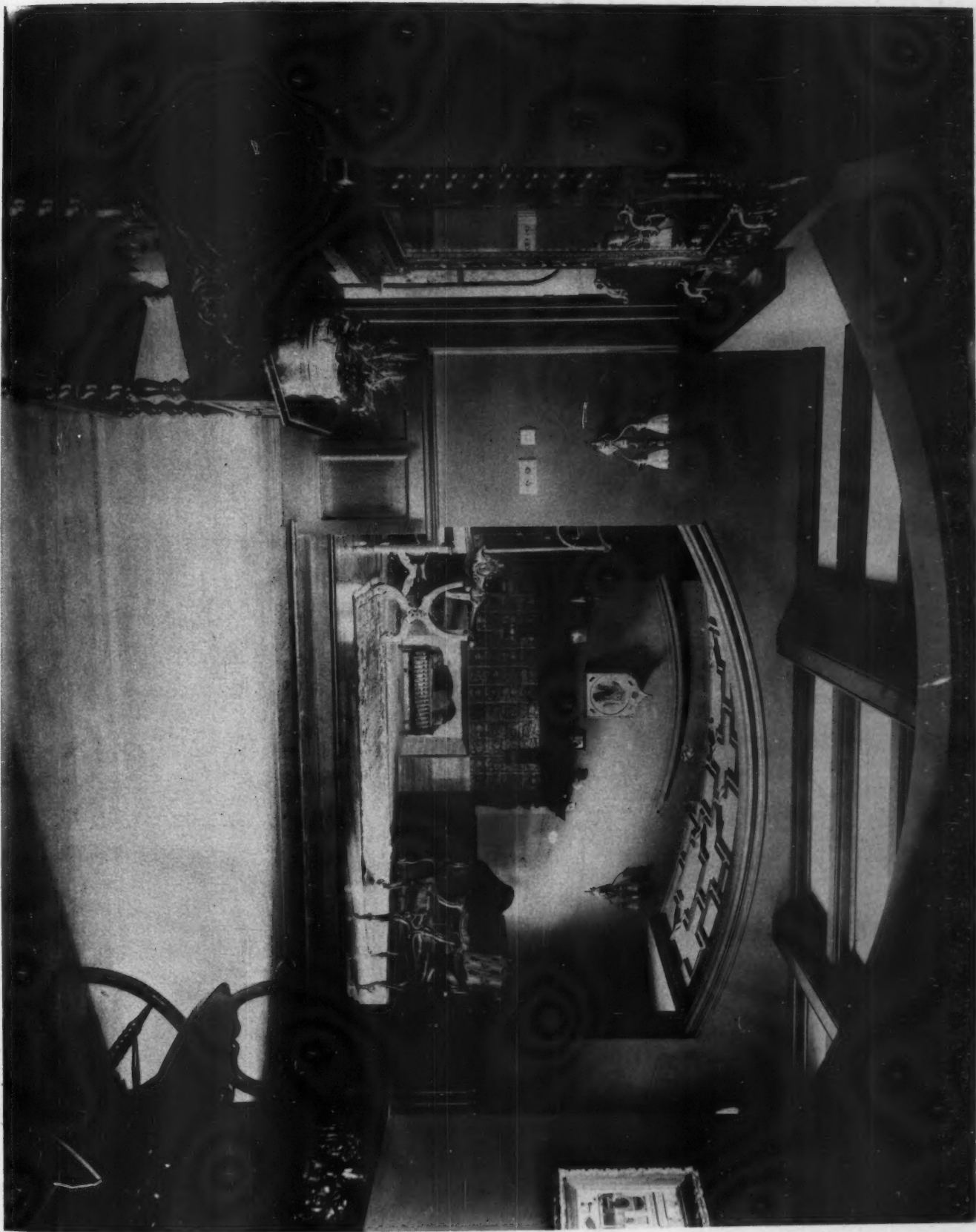
DINING-ROOM, HOUSE OF PROF. JAMES W. THOMPSON, CHICAGO.
POND & POND, ARCHITECTS.





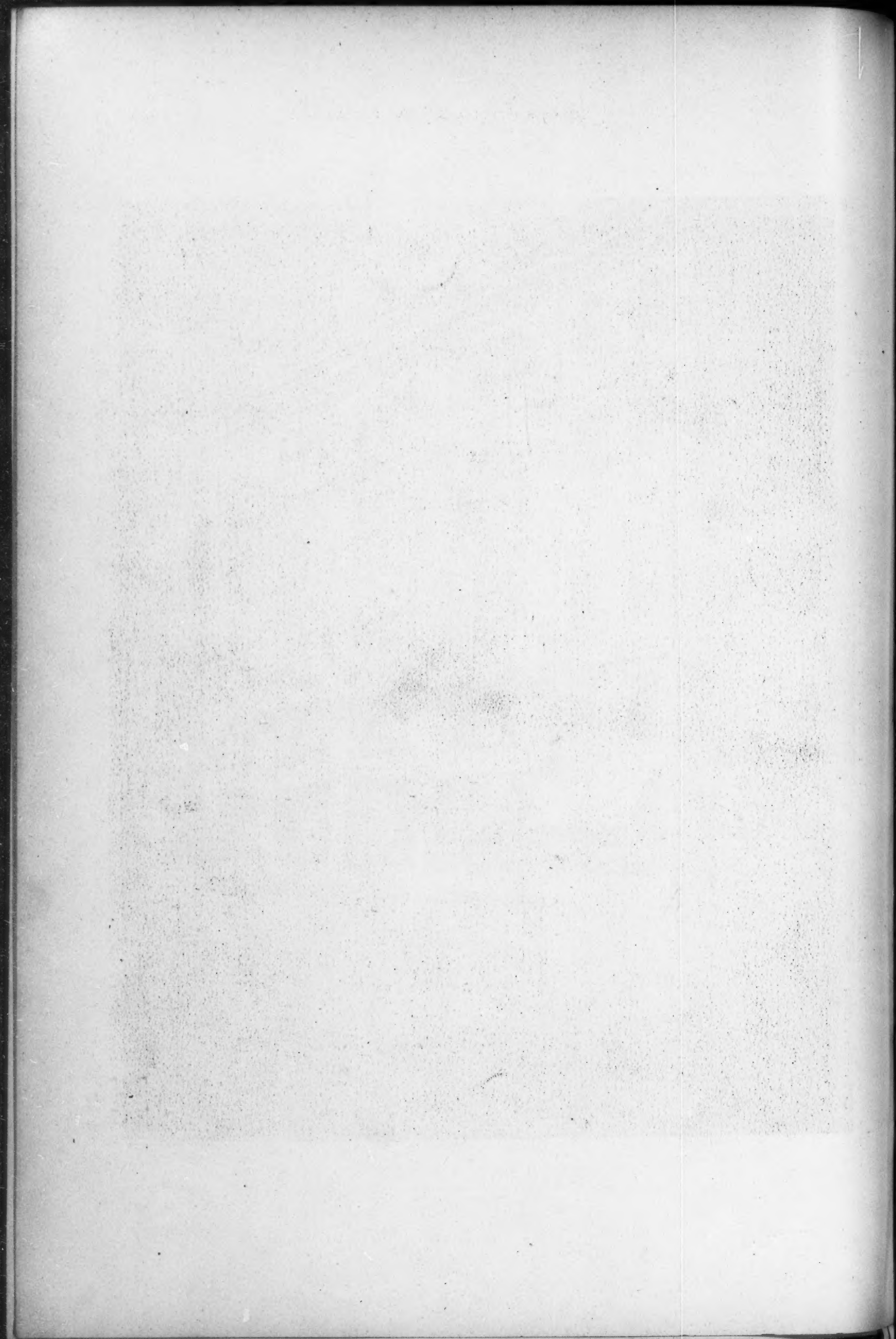
PRINCIPAL CHAMBER, HOUSE OF PROF. JAMES W. THOMPSON, CHICAGO.
POND & POND, ARCHITECTS.

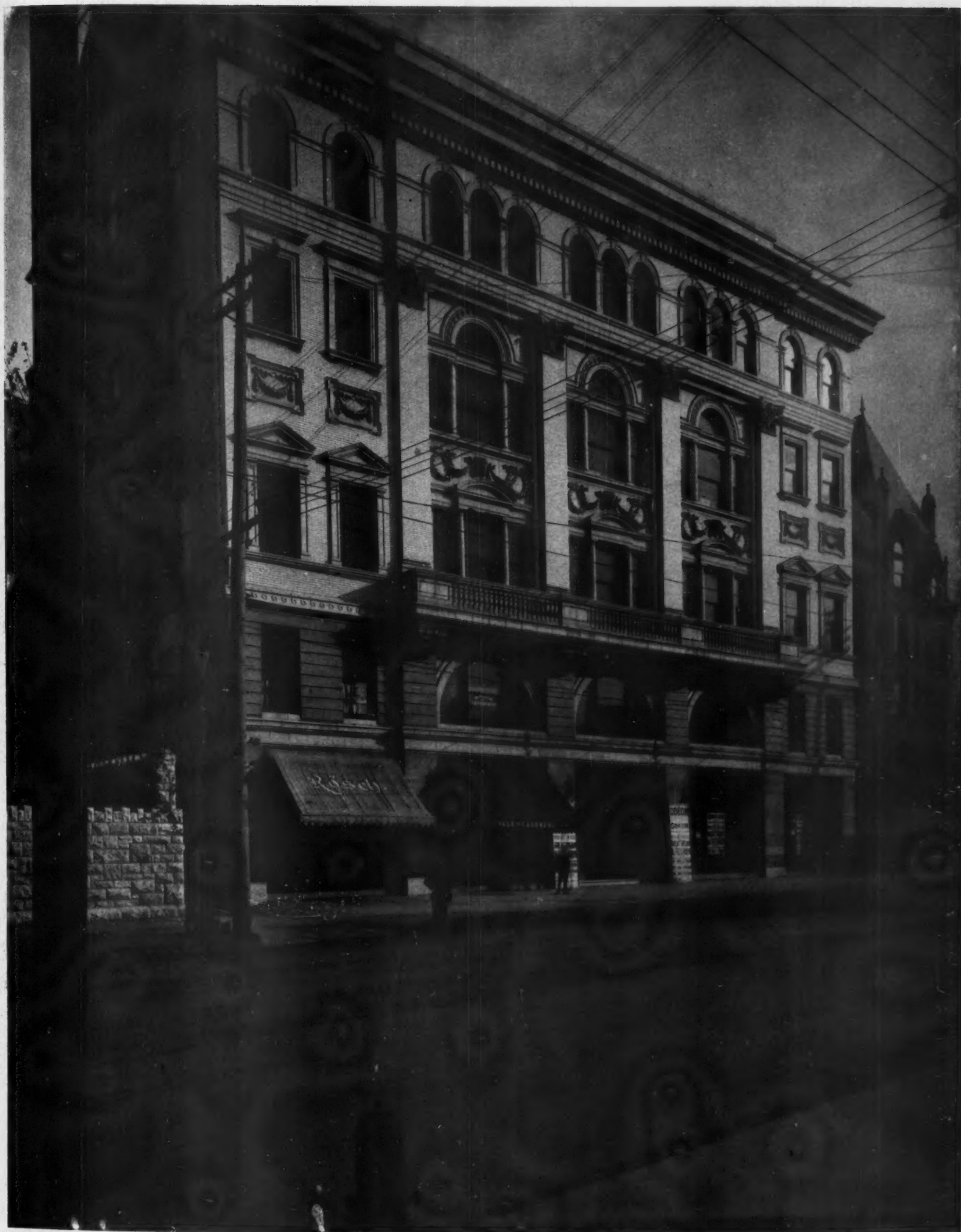




RECEPTION-ROOM FROM HALL, HOUSE OF PROF. JAMES W. THOMPSON, CHICAGO.
POND & POND, ARCHITECTS.

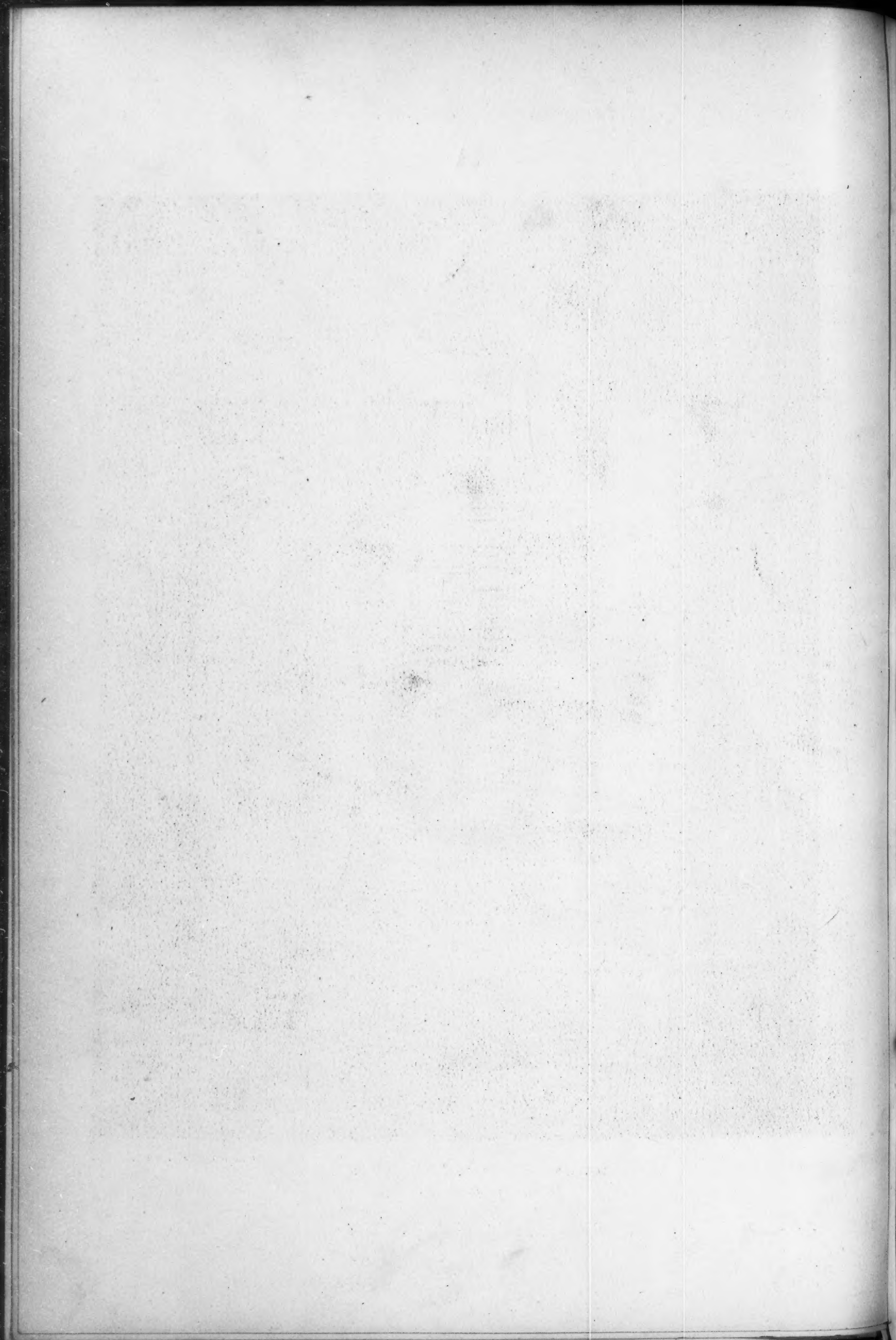
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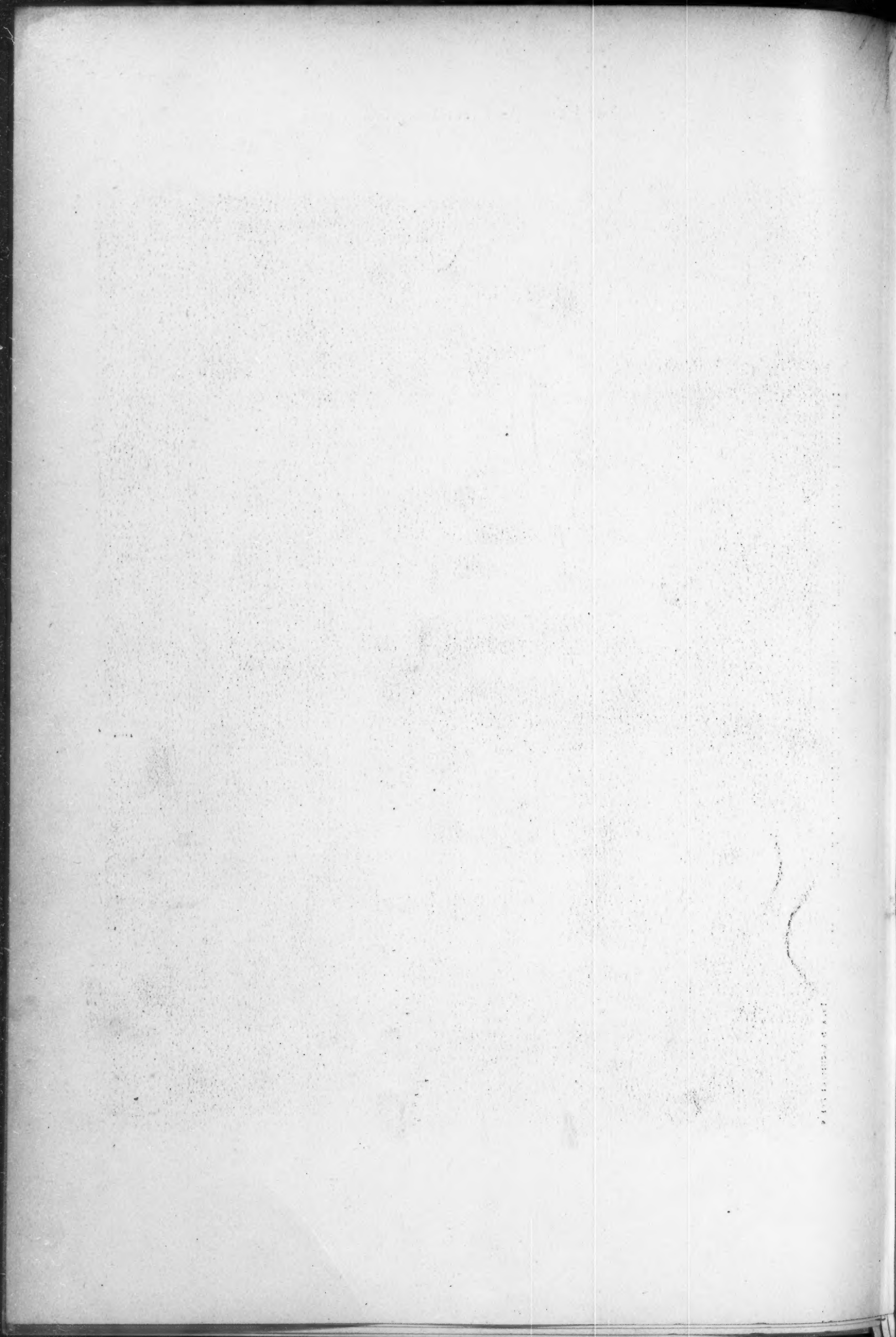
MASONIC TEMPLE, ST. LOUIS, MO.
W. ALBERT SWASEY, ARCHITECT.

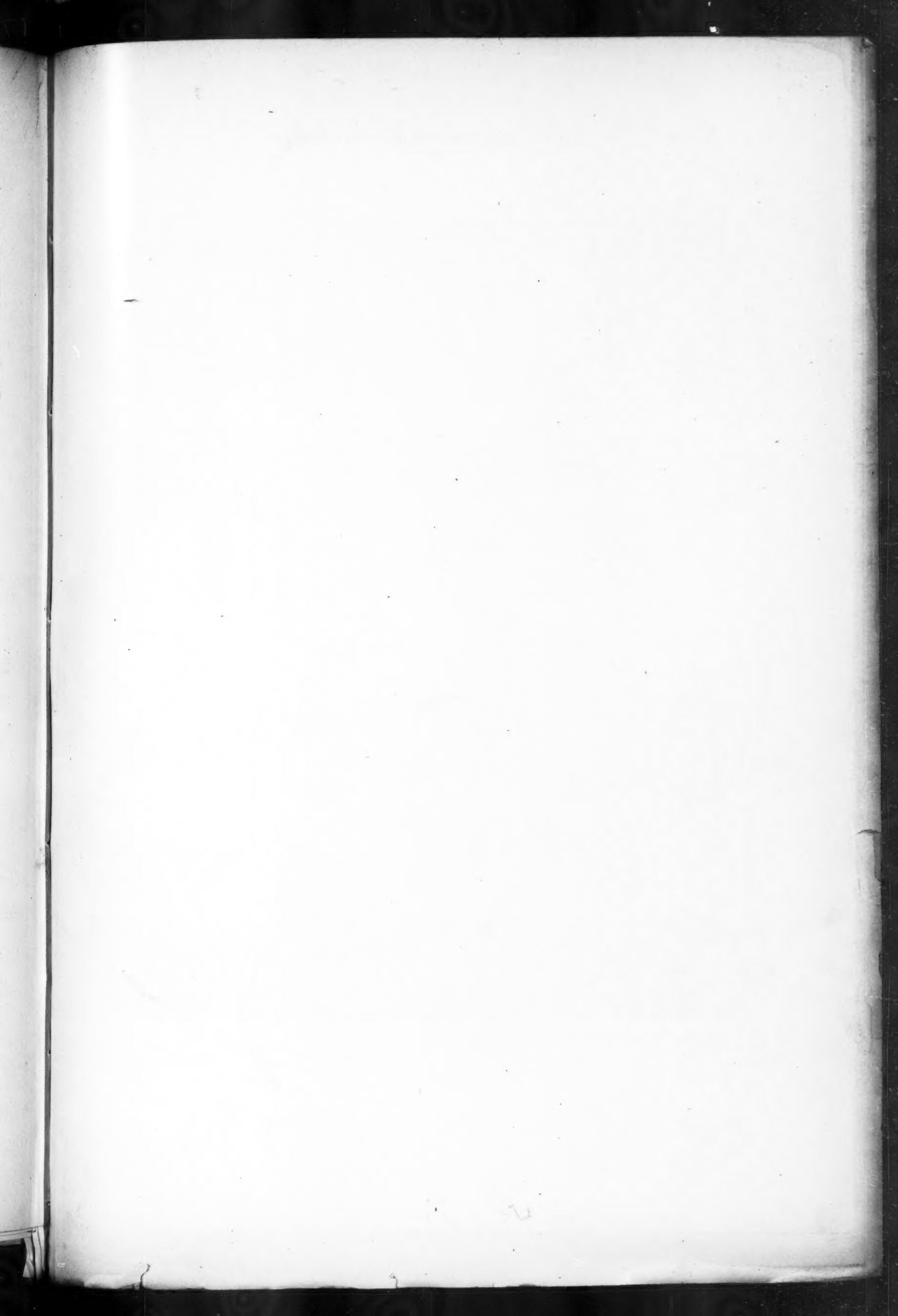
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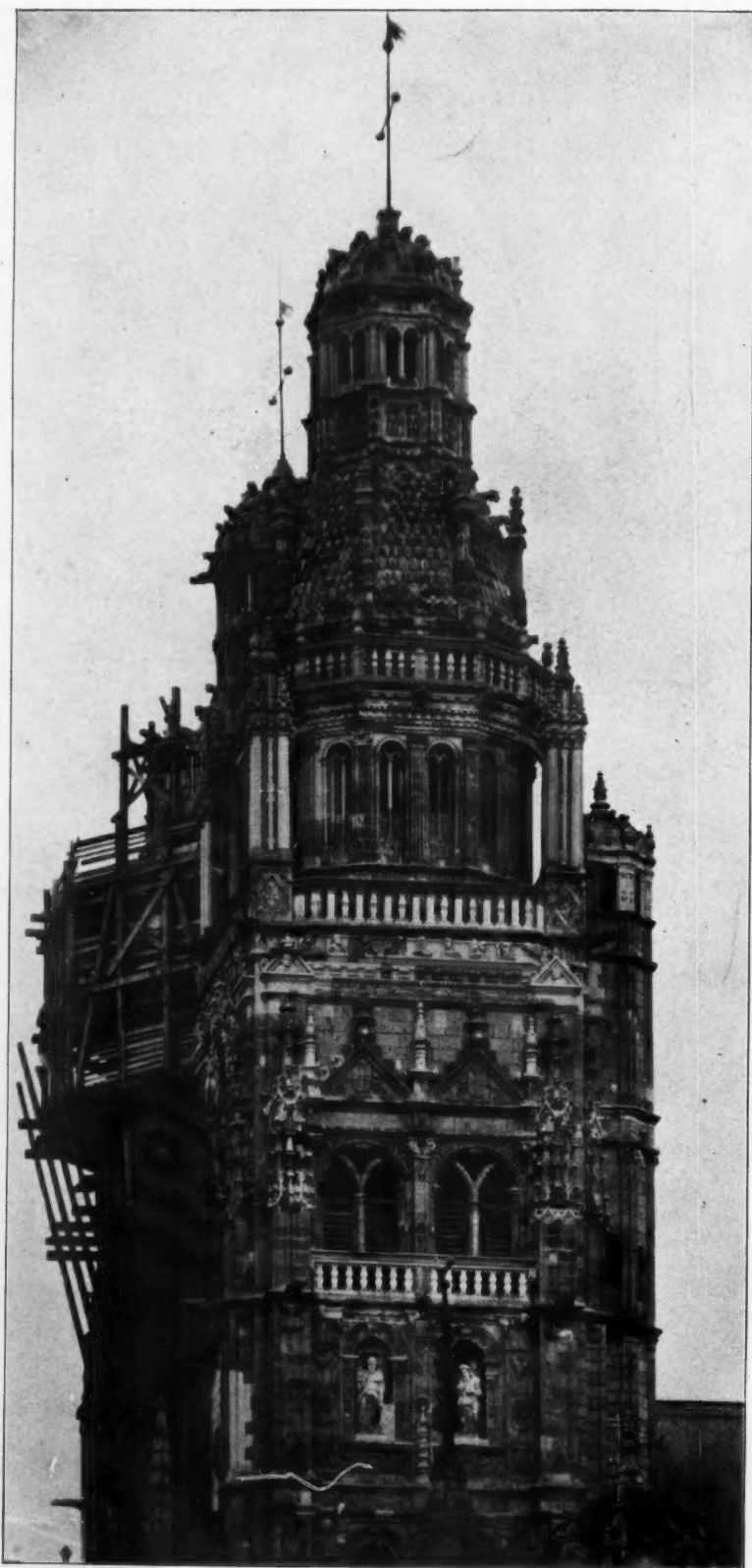




INTERIOR VIEW, LINCOLN AVENUE M. E. CHURCH, ST. LOUIS, MO.
T. C. LIME, ARCHITECT.







DETAIL OF TOWER TAKEN WITH TELEPHOTO LENS.



DETAIL OF WINDOW TAKEN WITH TELEPHOTO LENS.

VIEWS OF CATHEDRAL

In illustration of article "Photographing Architecture"



TAKEN WITH TELEPHOTO LENS.

CATHEDRAL, TOURS, FRANCE.

Architecture of Europe," by Ralph D. Cleveland. Negatives by the author.

FAÇADE TAKEN WITH TELEPHOTO LENS.

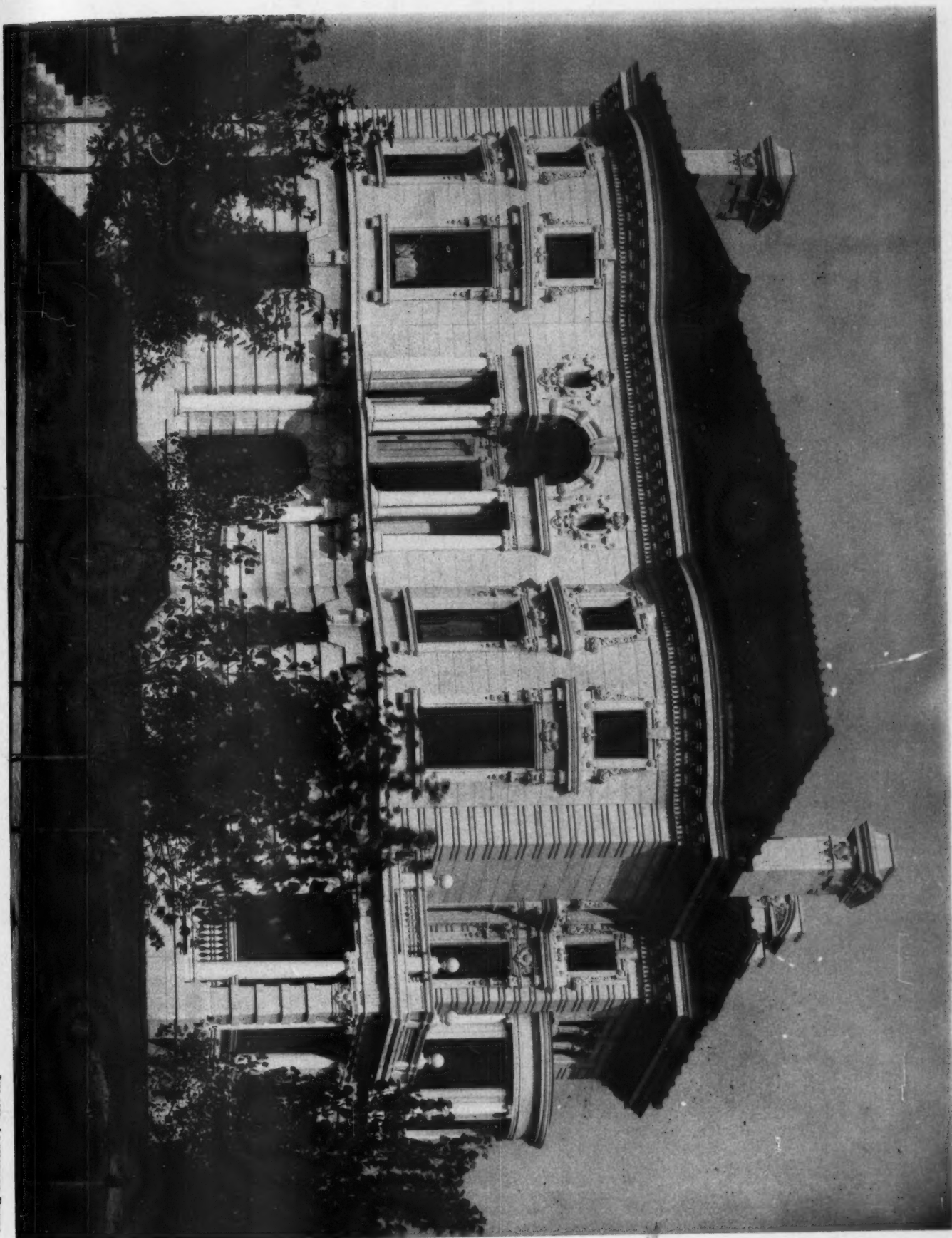


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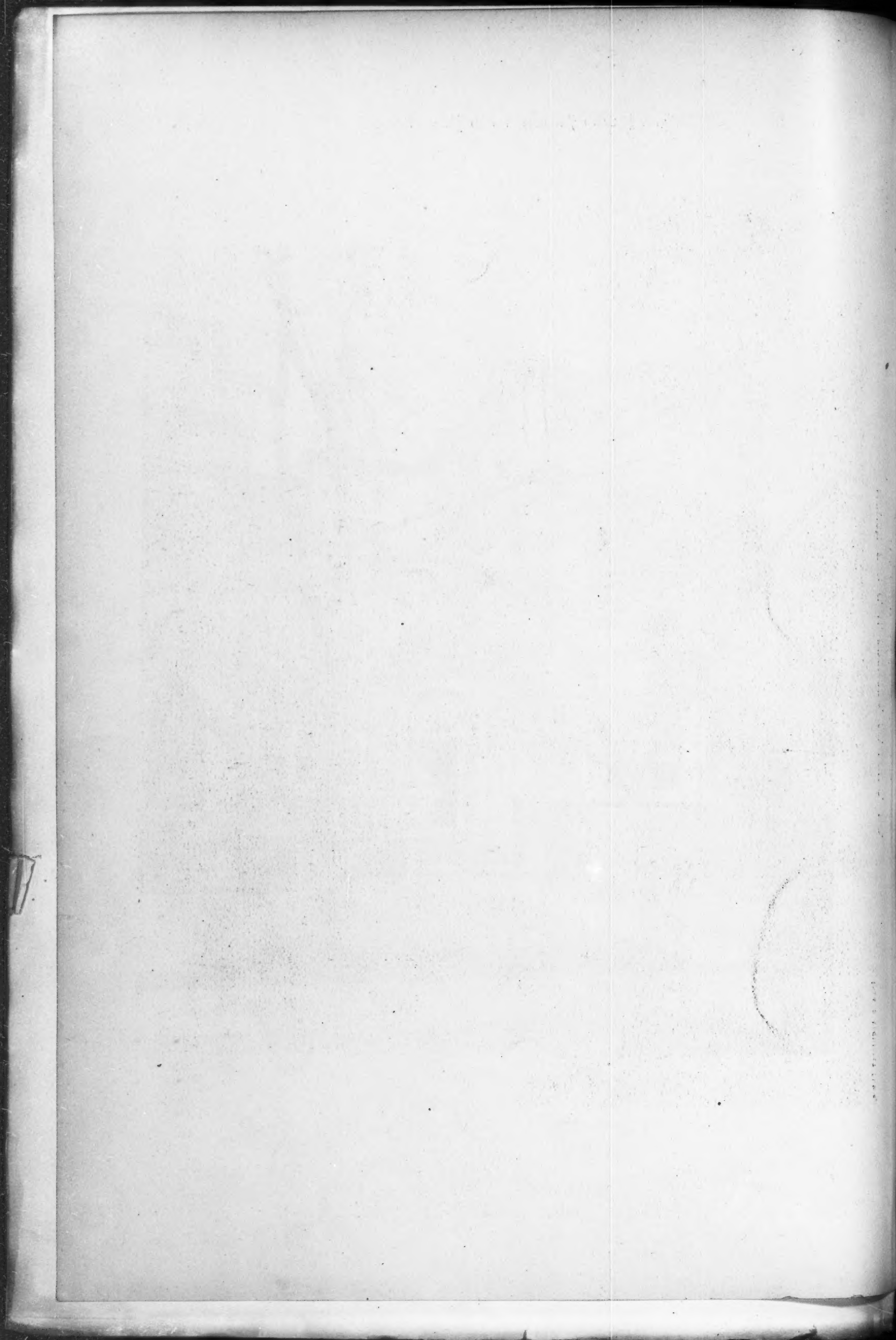
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HOUSE FOR C. H. SPENCER, ST. LOUIS, MO.
BARNETT, HAYNES & BARNETT, ARCHITECTS.

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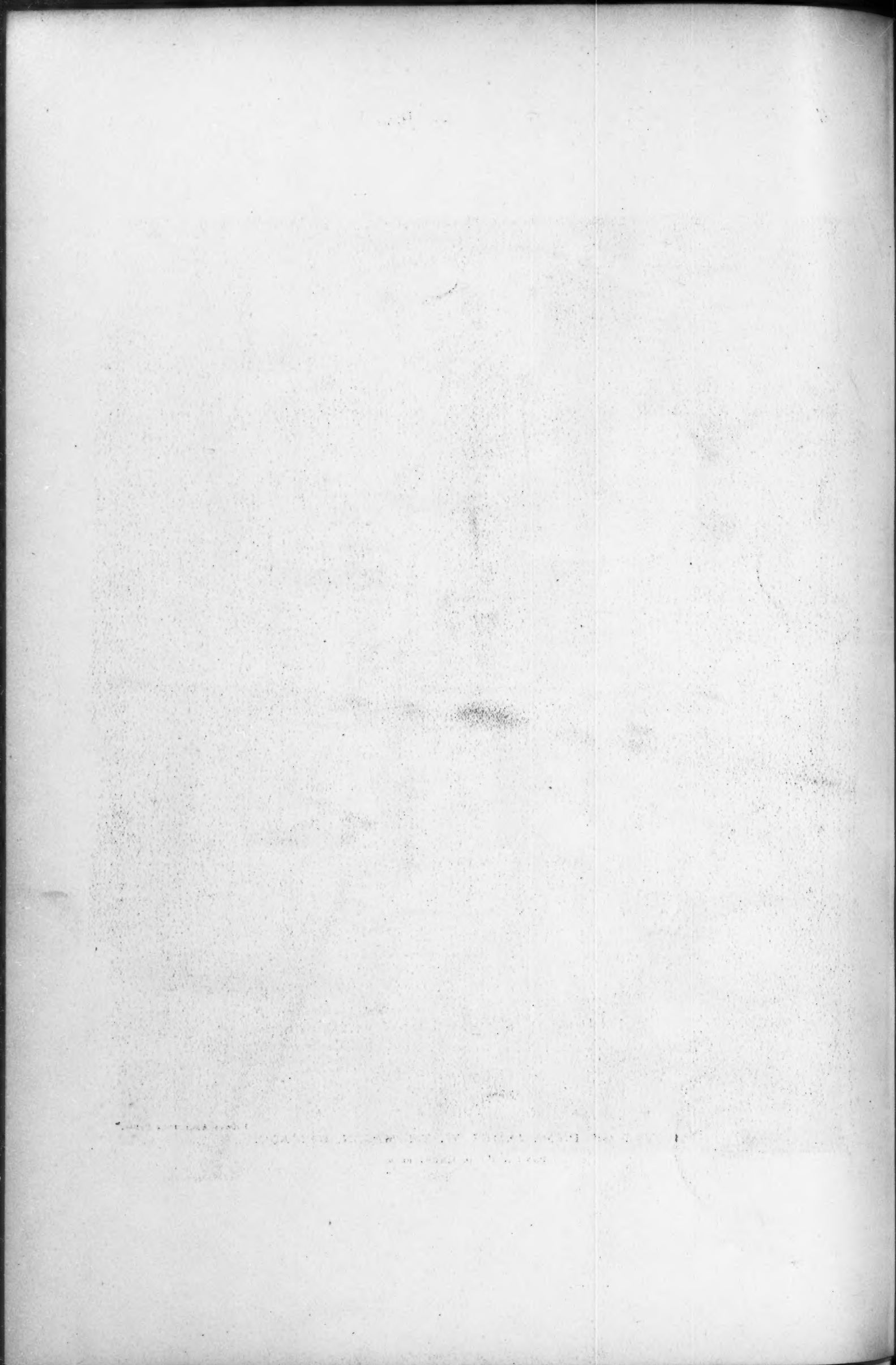




HOUSE OF PROF. JAMES W. THOMPSON, CHICAGO.

POND & POND, ARCHITECTS.

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LIVING-ROOM, HOUSE OF PROF. JAMES W. THOMPSON, CHICAGO.
POND & POND, ARCHITECTS.