

THE INLAND ARCHITECT AND NEWS RECORD

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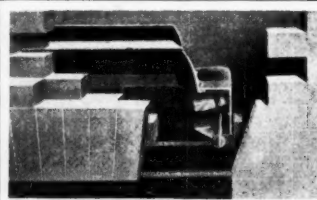
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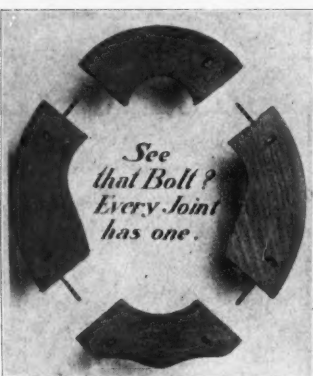
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NEXT CONVENTION AT WASHINGTON, D. C.; APRIL 22, 1907.

Hopeful Signs for Architecture.

An accompaniment of the prosperity that has prevailed in the United States for several years past has been the unparalleled amount of building in all sections. While in many cases the design and construction of the buildings have not been of the best, as a rule there has been a decided forward movement in all classes of structures. That distinctively American type, the lofty office building, is establishing each year a new record in good architecture and architectural engineering. These buildings are attracting the attention and admiration of the world as architectural achievements. However they may be regarded from the standpoint of aesthetics and hygiene, they embody in a high degree good construction and adaptability to the purpose for which they are intended. The largest builder in the country is the National Government. In these years of great activity in government building, in Washington and elsewhere, it is fortunate that there has been an attitude in Congress favorable to architectural advancement; fortunate also, that there is a supervising architect respected by the profession for his attainments. These favorable forces have given to the national architecture of late years a dignity and simplicity that has a wholesome influence on design throughout the land. Constant improvement is noticeable in the architecture of state and municipal buildings, not alone in design, but in substantial construction, and this is also true concerning buildings for educational purposes. Following the example of the adoption of a uniform style for national buildings, the New York City Improvement Commission has reported to the Mayor a recommendation for uniformity in the design of city buildings, a course which is to be commended. Residence work unquestionably is of a higher average of excellence in design than heretofore. The allied arts of sculpture and painting are coming more and more into use for the adornment of buildings, enlarging the scope of architectural treatment. All in all, the architectural profession is to be congratulated upon the continued advancement of its art, and upon the increasing appreciation accorded to architecture by the public.

Should School Buildings Be Fireproof?

The Property Committee of the Board of Education of Philadelphia has been investigating the advisability of building solely fireproof school buildings. The committee has visited the schools of New York and Boston, consulted with school boards, and obtained opinions from prominent architects. The situation is complicated by the fact, common to most cities, that there is a lack of accommodation for children of school age. It has become, therefore, a

serious question whether to build second grade structures by which a greater number of children could be accommodated or fewer first-class fireproof buildings. It would seem the part of wisdom that school and other public boards should be foremost in the erection of substantial, well designed, fireproof buildings. The tax of fire protection falls upon the municipality, and it is highly desirable that municipal buildings should be object lessons of good architecture and fireproof construction. In school buildings, particularly, where thousands of helpless children are congregated, nothing but fireproof buildings, equipped with the best possible safety appliances, should be tolerated by any community. The Philadelphia board has reached this conclusion, and it is to be hoped that they will be upheld by the council and the people.

The Architect and Building Mechanics.

A most prolific source of annoyance and anxiety to the architect is the difficulty of securing satisfactory workmanship in the construction of his buildings. His effort to get good work brings him into close contact with workmen and in this relation he finds necessity for the qualities of a diplomat. Thus his calling demands a combination not only of the artist and the business man but of the diplomat as well. The architect's duties would be simplified and his burden greatly relieved if the building mechanics had the skill that comes from more thorough training, and the ambition to excel that would follow a more liberal policy of the labor unions with regard to apprentices. It is a strange condition in a republic where freedom is an inherent right that the followers of a trade should endeavor to increase the value of their services by combining to deny other men freedom to learn that craft for which they feel they are best adapted. It would seem that a more just way to enhance the value of labor would be to strive to excel others in workmanship and productiveness. We have no right to attempt to rise at the expense of forcing other men down. Possibly the humanitarian and economic side will in time prevail with the labor leaders, but there now seems little hope of this.

More Technical Trade Schools Needed.

In view of the present restrictions on apprentices by labor organizations, and the low average of skill among building mechanics, it would appear advisable for the architects to encourage every movement directed toward technical training in the schools. Much good is being done by the introduction of manual training in the public schools. The training of the hand in connection with that of the mind is conducive to ideal development. It is needless to state that the instructor in manual training should be a skilled workman, capable of imparting the principles involved and teaching the correct use of tools. Broader in scope than is possible in the manual training courses of the public schools are the great technical institutions such as the Carnegie Schools at Pittsburg. Such schools are needed throughout the land, and architects have a strong personal interest in their establishment and maintenance. To this end the co-operation should be gained of architects, engineers, contractors, manufacturers and all those concerned in building. Technical courses might well be a part of the curriculum of all the state universities, and broadly planned trade schools might appropriately be established and supported by the national government, or at least receive national subsidies. It is a well established fact that

the boys who have been trained in a technical school are better fitted to make a wise selection of their life work and in following a trade have a physical and mental training that greatly aids in their rapid advancement. It is probable that the general establishment of technical and trade schools would spur the labor organizations to a more generous policy concerning apprentices.

Colored Terra-Cotta for Exterior Ornament.

The influence of the style of the Italian Renaissance upon design in America was certain to direct attention, sooner or later, to the use of glazed terra-cotta and faïences in varied colors for decorative effects upon the exterior of buildings. The employment of strong color contrasts on building exteriors has not been, however, without adverse criticism. Those who attended the last banquet at Washington of the American Institute of Architects will recall the forcible lament of one of the notable speakers upon the use of colors on the exterior of buildings. The artist speaker voiced the sentiment of the opponents of this use of color by emphatically condemning color effects upon exteriors other than those produced by time and the action of the elements. He fondly dwelt upon the mellow tints of a building so colored, and was enthusiastic of its beauty when touched by the light of the sun and moon. Within the hearing of this encomium were several of the foremost architects of America who have introduced with signal success terra-cotta and faïences of various colors in development of color schemes for the exterior of their buildings. It is scarcely ten years since this movement was first noticeable, yet at the present time glazed terra-cotta in brilliant hues is seen in panels, capitals, courses and cornices on the exterior of skyscrapers, churches, hotels, public buildings and residences. With the sanction of leading architects, and the example of several successful buildings erected where the beauty of the design has been enhanced by a judicious use of colored terra-cotta, it is likely that the capabilities of this form of exterior decoration will be developed to the utmost. The artistic possibilities are great and in the hands of capable designers with true perception of color values an added beauty will be given to our street fronts.

Convention, Architectural League of America

The convention of the A. L. A. to be held at Washington, D. C., April 22-24, promises to be largely attended. The Architectural League of America has kept well in the van on questions of importance to the profession. Its aim in these is to work in harmony with the elder association, especially in questions that more appropriately belong to the American Institute of Architects. In educational questions, traveling scholarships and municipal improvements the younger body has found a pertinent field for its full activities. The program for the convention includes the following subjects for consideration: Individual membership in the League; the transfer of members from one club to another; the establishment of the office of permanent secretary; traveling scholarships; fellowships in the architectural schools; and the subject of fuller preparation on general educational lines for entrance to professional schools, with less general but more special work in these schools. Several important papers by architects of prominence are expected. It is probable that seventeen clubs and societies will participate in the convention.

THE GOTHIC ASCENDENCY

BY RALPH ADAMS CRAM, ARCHITECT. (Concluded)



It was Christian in its impulse because it was full of the passion for perfect beauty, and, above all, the recognition of God, the consciousness of the Redemption, and the overriding impulse toward Christian service and Divine worship. It was the product of Christianity, for the civilization that used it as a means of expression was a Christian civilization.

Paganism had fallen, and civilization had been involved in its ruin. For centuries Christianity worked slowly, sometimes blindly, to build another world on the wreck of the old. As the builders of the dark ages patched together the fragments of shattered temples, raising fallen columns, inserting riven cornices and capitals in rude walls of lumbering brick and stone, so did the Church work for a time with the makeshift spoil of a ruined era. Little by little both began to do creative work, still on the lines of pagan remains—no new ideas as yet, monastic conserving of perishable treasures against the spoiling of barbarians. Then, almost in a day, an awakening, a sudden consciousness that the night was over, and the dawn at hand. Out of its dusky cloisters, as from the ark, issued that which was saved from the universal destruction; man had rested and refreshed himself, and there was a new day for labor.

The monasteries became active agents, no longer passive conservators. There was good fighting in driving back invading savages instead of retreating before them, there was the service of God in converting and civilizing them when once they were conquered. Christ was King, and His service was good, therefore came the Crusades, with all they meant of self-sacrifice and heroism, and, later, when their first glory had waned, of adventure, excitement, wealth, glory. The world opened out like a transformation scene; new lands, peoples, ideas were revealed. Man was like a child in a garden of enchantment, and like a child he frequently broke the wonderful new toys that came to his hand.

Then came the age of production; every one was busy, either in doing or working. Wealth increased amazingly; on the continent men drew together into cities; civic and diocesan pride came into existence, and Bishop and commune raised the wonderful cathedrals, half to the glory of God, half to the glory of their own special dwelling places. In England the monasteries remained supreme, and the cathedrals were for a time of secondary consideration. When the Benedictines, who had sown the land with sumptuous abbeys, fell away from their best ideals, the Cistercian reformation came to instill new life into the institution of monachism. They were followed by the Augustinians, they by the friars; Bishops and Princes on the continent, monks and kings in England led the van of civilization.

At one time unbridled fighting and the Black Death threatened to bring the epoch to an end in disaster, but the close of the fourteenth century saw a marvelous recovery, and the fifteenth century began in splendor, with a glory that waned almost instantly, for Christian civilization was disintegrating, becoming paganized under the malignant influence of the Renaissance, and the root of faith and sincerity had withered.

But three and a half centuries had taken their place in history, as marking an era of achievement that had had no parallel since the days of Pericles.

This is the epoch of the so-called "Gothic" architecture, sculpture and painting, and of more than this. Not alone was it the time of magnificent activity, manly fighting, chivalrous ideals, passionate faith—it takes in and includes all that almost unimaginable period called the Early Renaissance. Again by our clumsy nomenclature we have fallen into the habit of counting this period as solely the beginning of a new era. More than this was it the end of an epoch, for the vitalizing spirit in the Early Renaissance was the spirit of Mediaevalism. All the art of this time was the final and supreme flowering of Mediaevalism itself. In the art of the Early Renaissance, Christian civilization came full tide, but the poison of neopaganism was working; men and manners were degenerating, had degenerated indeed so that we are confronted by the phenomenon of supreme art in a period of utter moral obliquity. The new power was stronger than the old; the crested wave of perfect achievement broke, retreated, was sucked back into the abysses of the sea, and the waves that followed were foul with the mud and slime of the tide of the High or Classical Renaissance.

From this moment architecture began to decline, foreshowing so the imminent collapse of all true art of every kind. It was not so much that pagan details became the vogue, utterly superseding the exquisite products of mediaevalism, it is not even that this "classical" detail was used unintelligently, barbarously, without any regard to its original function, and was at the same time, coarsened, vulgarized, degraded, step by step until it became the unspeakable "rococo" and "baroque," but it was that the whole idea of structural logic was submerged, and the architects of the XVIth and XVIIth centuries became mere children, building up their invertebrate block-houses for their own amazement and our wondering imitation. Not one new thought in logical construction was evolved, while those inherited from the past were discarded as barbarous and "Gothic."

In the light of this extraordinary degeneration, the achievements of the French masons of the XIIIth century stand forward forever as one of the crowning glories of man. In its beginnings it was pure logic, almost Greek in its consistency, its superb self-restraint, its dependence on proved and authoritative precedent. Later the self-restraint began to disappear, though the splendid logic still remained, until at the end this also vanished, and the passion for pure decoration took its place, artistic ingenuity confined to the development of exquisite, lace-like detail, until, law and logic forgotten, nothing remained but a phantasmagoria of dream-like decoration.

In England, on the other hand, Gothic was always a means of personal expression, a vehicle for the manifestation of human imagination. No British monk or mason would for a moment consent to be bound by any system or precedent he found hampering. The work done yesterday was only a point of departure for the work of today, which in its turn was but a stepping-stone toward that of tomorrow. Almost every man who built, invented some new scheme, but neither he himself, nor any of his fol-

lowers or successors had the patience—or was it the lack of genius?—to work any one of them out even to partial perfection. English Gothic is simply a collection of dissociated themes, if we regard it narrowly as a style, but in the larger view it is the splendid record of the hopes and visions and wholesome humors of a race of active, enthusiastic, healthy Christian men.

And it is to these two great national manifestations of lofty civilization that we who prefer Christian things to pagan and look on art as a language and not as a pastime—it is to these that we return for our inspiration and in order that we may learn anew the basic laws of our art, forgotten now these many centuries. Not because we believe that through faithful copying and slavish mimicry we may rebuild a fictitious but plausible simulacrum of sound architecture, but for two very clear and definite reasons that seem to us good.

The first reason is this: because we find the eternal laws first given in Greece, continued and further elaborated and developed under mediævalism until they achieved perfect clarity and finality, while as we look at the matter, these same Greco-mediæval laws were negated and destroyed by the architects of the pagan Renaissance. In the second place, we are convinced after considerable study that the pure beauty which was the object of all Hellenic art, was restored by the Christian civilization of the Middle Ages and raised to a yet loftier plane of perfection, while during the Renaissance beauty ceased to be operative and gradually crumbled away until with the final triumph of this same Renaissance, it vanished utterly from architecture as later it was to vanish from the other arts as well.

Now these two things must be restored, structural logic and absolute beauty, or rather the sense of these things must be acquired again. If our contention is justified, viz., that in Hellenism and in mediævalism these things come full tide, the ebb following instantly after the fall of the mediæval systems, then to these two periods must we go for the knowledge and the inspiration we so grievously need.

And then? Why then we can really begin, for erudition and archeology are useless save as means to an end, and that end is creative expression. If we can steep ourselves in all the marvelous logic and reason and law of Greece and mediævalism; if by faithful and even passionate study of absolute beauty as it is revealed to us by them we can acquire again that instinct for beauty that should be the heritage of man—if we can accomplish this then we shall be able, perhaps, to use the mystical language of art to some effect. And when this happens, if ever it does, the result will be very different in its outward seeming to the Greek or the Gothic of the past. There is no exclusive sanctity to either, and neither is the last and final word. The best thus far beyond a doubt, but ages lie before us and each must develop its own perfect tongue.

We return then to Gothic art, since it was the last word in point of time, in the development of sound and honorable and significant and beautiful architecture, but we return only for the moment, and for the sake of getting a fresh start: the road that opened invitingly so long ago has led only into the wilderness; we will try again, and whether we choose from the ramifying roads the one that leadeth to salvation is a matter altogether veiled in impenetrable cloud.

THE MODERN SMALL LIBRARY

BY EDWARD L. TILTON, ARCHITECT



THE modern free library has become a powerful educational factor excelling in some respects the public schools, since its influence upon the individual is not limited to a few years but continues through life and many small libraries established in recent years throughout the country have been of incalculable benefit in disseminating general information which makes the solid foundation of a nation's strength.

Much credit is due to the influence exerted by the small libraries in assimilating and nationalizing the foreign immigrants, whose hordes apparently threaten to inundate and destroy our civilization as the barbarians did that of Rome. It is both interesting and reassuring, therefore, to note that more books on American history are taken from the libraries by naturalized foreigners than by native Americans, and that among the foreign born solid works on science and kindred subjects circulate more freely than lighter works of fiction. One of the branch libraries in Cleveland serves a large Polish settlement, and the children after school hours frequent the library in large and ever increasing numbers to obtain books, not alone for themselves but also for their parents who are too abashed to apply in person. This typical example is a fair index of the educational value of the small libraries to the country at large and while the great work they are doing so quietly and unobtrusively is fully realized only by those who are

brought into close contact, yet the fruit borne from the seed now sown will be appreciated by every one of the next generation.

The birth of the modern library era may be placed about fifty years ago. Boards of education at that time were authorized to invest in books for circulation among the students and, with some restrictions, among the public. Sunday schools engaged in a similar work, while in the larger cities mercantile and proprietary libraries were founded subject to certain membership fees and conditions.

The American Library Association formed in 1876 has been a controlling influence in developing and organizing methods; instructing students for library work and in formulating conditions to guide in the construction and arrangement of library buildings.

Finally the material prosperity of the country has produced men of wealth like Andrew Carnegie whose youthful struggles for knowledge engendered a realization of the value of a free library in every town, and already several hundred towns have profited by his philanthropy.

The library schools at Albany, Brooklyn, Philadelphia and Cleveland have trained hundreds of efficient librarians who are stimulating and directing mental improvement in every section of the country. The spirit of the modern library is aggressive; it is no longer simply a book reservoir, but resembles a way-side spring for the thirsty and, as the faculty makes the college, so the first requisite for

a modern library is a capable librarian, next the books and finally the building, for, although a bibliophile may resent this sequence (and a blessing go with him) we are considering the greatest good of the great majority.

The books form the kernel and the cost of the shell should not be disproportionate to the contents nor to the number of people served, otherwise the maintenance becomes burdensome. Two dollars per capita of the local population equals an amount usually sufficient to construct a building of requisite capacity while the annual expense of its upkeep should equal about ten per cent of the cost. For collegiate libraries with collections ranging from fifteen to one hundred thousand volumes, one dollar per volume is an approximate guide as to a legitimate cost of a building to house the books properly and to be in keeping with the character of the institution.

The proper selection of books for a small library requires much care and judgment, for while the national and state libraries should keep all books at all times, the small library must limit its collection to the books required by, or of benefit to, the community, since every volume costs about thirteen cents per annum to house. Indeed a librarian must become a *libercide* on occasions and destroy (if no other disposition be possible) idle books that do not earn their lodging—again the bibliophile will shudder—for unfortunately the artistic value of the average modern book is small and as a rule does not even merit the additional outlay required to make its home fireproof. Fortunately however, the destruction by fire of library buildings rarely happens, so if the appropriation be limited a cheaper building with more space is usually preferable to one which, though fireproof, is correspondingly contracted, and in case of loss the average collection may be replaced for the insurance money. For a special collection of value a fireproofed section of the building may be provided. As an aid in selecting books, the American Library Association catalogue is of great value, since it indicates definite lists of from one thousand to several thousand volumes in

sequences of desirability suitable for libraries of various sizes.

We now approach a consideration of the building proper and at the outset it is necessary to admit that local conditions largely control the solution and individualize every problem, although certain general requirements are common to all. The building should be centrally or accessibly located in the town and yet on a quiet street. The primary elements of a good library plan are effective and economic administration which includes easy supervision; ample lighting both natural and artificial; sufficient heating and ventilation; and withal a proper consideration of size and cost proportional to income and not too far in advance of the immediate needs but arranged so that future enlargements of any department may be made either within or by addition to the building, without detriment to its purpose or aspect.

To attain a satisfactory result requires careful consideration of the details and many experienced librarians are now able to formulate a program for the guidance of the architect in a manner unknown a generation ago, but there are also many librarians, trained *bookists*, who are incapable of properly tabulating and proportioning their needs.

Considering the librarian as the main spring, the delivery room with its counter or charging desk is the vigilance station and focal point from which all the departments should radiate. In a small library these elements consist of a reading room for adults; another for children; a periodical or newspaper room; a book or stack room; a librarian's room; toilets for both sexes and such other accessories as conditions require and the appropriation permits such as cataloguing, unpacking, work and storage rooms; club rooms, rooms for special collections or curios and in collegiate libraries, seminar study or professors' rooms. Lecture halls may frequently be included to advantage even in the smaller buildings either in the basement or upper floor. (To be continued.)

USES OF TILE IN ECONOMICAL BUILDING



HERE will the house you are building first get shabby? Without doubt where it is subjected to the roughest usage, and to unobserved and insidious decay. The exterior of a building, where it is not composed of the most durable material, such as stone, brick, slate, etc., has the materials graded to oppose the action of the elements where it is most persistent. Thus it is, that even though the walls of the building may be of wood or of stucco, the roof and the foundations are made of imperishable substances. The foundation is always of non-absorbent stone, or brick: and in like manner the roof is preferably of mineral matter, slate, burned clay, tile or metal, or at least of asphalt, which is mineral in origin.

Without doubt the entrance of the house is the part subjected to the roughest usage, and it hardly requires any argument to convince one of the utility of making the vestibule floor over which all the traffic of entering and leaving is concentrated, of some imperishable material. Therefore it goes almost without saying, that the vestibule, at least, is to be tiled. It should require no

argument to demonstrate the desirability of making the walls of this entrance of similarly indestructible material.

But it is not only wear or direct rough usage, which tells upon a house; an internal decay indicated by unpleasant or musty odors will be found even more objectionable and almost impossible of removal. The worn floor may be repaired, the battered wall may be replastered and papered; but it is impossible to reach with such renovations, the evidences of decay indicated by the sense of smell.

It is not so much the collection of visible trash or filth in the closets and pipe-enclosures of the old plumbing, that was responsible for the unpleasant conditions that went along with it, but the fact that moisture condensed on the cold water-pipes (outside) which trickled down and was absorbed by the surrounding wood of the joists or flooring. The amount of moisture thus collected is never sufficient to make the wood actually feel damp, but it is sufficient to support the organisms of decay; the molds and putrefaction germs, which live in and upon vegetable matter such as wood, by being constantly supplied with this small amount of moisture, particularly under the

stimulus of constant warmth. Now the latter is supplied by the contiguous hot water pipe. These germs of decay, or rather of odor more than of visible decay, are known to the bacteriologist as "anaerobic," which means that they live in substances out of contact with air or light. The effects of their destructive action are therefore not commonly seen, and only become manifest in course of time to the sense of smell.

The complete remedy is therefore to make the floors and walls subject to moisture and warmth either through general use, or through the fact that water pipes pass through them (as described above), of impervious and durable material which can not decay.

Such material is stone, slate, cement, burned clay tiling and rubber tiling. From what has been said above it will occur to everyone, that the floors and walls in which this destructive action takes places, and which therefore are the centers from which radiate the influences that destroy the value of the house, are the bath-room, kitchen, and pantry. On account of the attractiveness of the modern bath-room, through the luxury and elegance of the present plumbing fixtures, it has become the object of pride, and a sort of show-room with the modern housewife. In consequence the use of tiling in this apartment has become so common, without thought of its importance in the sense just explained.

Because its use is as yet so indissolubly associated in people's minds with luxury, tiling of the kitchen receives with us almost no consideration. And yet from what has been said above, it should be plain that this is the first place in which such material should be applied. Indeed this is invariably the case abroad, and because it is true, you find habitable and comfortable houses that are hundreds of years old: while in our country the mansions of the wealthy less than a quarter of a century in age, which have been kept as fresh and clean as the labor of servants could keep them, are turned into boarding-houses, not only because the neighborhood becomes unfashionable, but because the houses themselves have become musty and malodorous, and their well-to-do owners want to build new ones, abandoning them for many causes, among which this is perhaps the least avowed but the most cogent. The kitchen, therefore, is the place above all places where for the sake of economy the walls and most particularly the floor should be tiled.

For it is on the average the warmest room in the house, its floor is subjected to having water containing vegetable and meat juices spattered or spilt on it, and the very efforts to keep it clean by frequent wiping with water, supply the necessary dampness which starts the colonies of "anaerobic" germs growing, which spread from it throughout the entire woodwork of the house.

Another place which is tiled too seldom, but for which tiles are advantageous from reasons of economy, is the porch of a suburban villa. So many of these villas otherwise well kept up, present a shabby appearance to the visitor, because of the porch which is first seen by him. Its floor is warped and decayed from the rain water that has stood upon it, and the walls are untidy from the rubbing of backs and hands, and cannot be cleaned like a glazed surface. It would occur to no architect to recommend the flat part of a roof to be made of boarding and why thoughtlessly they allow the imperfectly sheltered porch-floor to pass without a recommendation for its proper preservation, must always be an enigma to disinterested observers.

It has been the purpose in this brief treatise to explain why tiling for floors and walls is an indispensable building material. There is much in favor of its use for decorative purposes, but so much has been said and thought on this that its utility has been almost entirely overlooked by American builders, and even architects, trained abroad have lost sight of its importance and not thought of the reason why so great a number of European dwellings have retained their freshness and habitableness for centuries. Among the kinds of tile used for flooring are those designated as follows:

Plain clay tile. These are made of natural clays in various geometrical shapes and in the colors which nature furnishes. They are to be had in rich terra cotta reds, in lighter or salmon tints and various shades of buff, gray and also black. The tile are made in shapes derived mathematically from the division of the 6-inch square, enabling the laying out of the greatest number of geometrical patterns. Vitreous tile are made from white clay, and fusible minerals of granitic origin. They are usually white or tinted by the use of imperishable coloring oxides of various shades of blue, green, pink and so forth. As the name indicates, they have been burned to the point at which the constituent materials have been fused together, and they present a glassy fracture, although the surface is velvety. The shapes in which vitreous tile are made are of geometrical character, smaller than the 3-inch square.

Ceramic mosaics are made of the same quality of materials used in the above two classes, but they are composed of "tesserae," under a square inch in size. These tesserae are usually square, round or hexagonal in shape, and are assembled in pleasing patterns. A mosaic means by derivation simply a picture of ornamental plane surface composed of colored bits set in cement. The Romans used such floors, with tesserae of marble, other colored stones and burned clay pieces indiscriminately, according to the color desired. But the Romans walked barefooted or in sandals. The steel nails in the heels of our shoes soon wear such material out, therefore good floor mosaics today are made of "ceramic" material, that is to say of hard burned clay which is imperishable.

Tiling for walls is distinguishable from the above kinds (which are used largely in floor-work), by being made of burned clay plates in geometrical shapes, six inches square and smaller, which are covered with a thin layer of molten glass, either white or in a great variety of colors. Most of the tints in which these are produced are known to our public from the extensive use which has been made of such tile for the decoration of fire-places, and it is not necessary to describe them here, nor to descant on their beauty. It may be added that moldings and base tile in various shapes are made to finish off the walls with modelled architectural members; and to adapt them to fit accurately around the frames of windows and doorways. Tiles are hardened and made durable, against destructive influences, by being burned in kilns, at high temperature. The heat attained in their manufacture is as much as 2600 degrees Fahrenheit, and the hardness which they attain under this burning is so great that steel cannot scratch them. In consequence they are not worn out when used in the floor, by the scratches of the shoe nails, and when placed on walls they are not marred by being struck with canes or umbrellas or contact with furniture.

PARISIAN APARTMENT HOUSES

BY T. M. CLARK, ARCHITECT—Continued

IT may be observed that, although the service entrance to the apartments is, as with us, separate from the entrance to the reception rooms, both entrances usually open upon the courtyard, and are equally under the inspection of the concierge, so that not only the cook's admirers, but the milkman and the grocery's boy, must give a satisfactory account of themselves before they can gain admittance. Of what may be called commercial visitors there are, however, not so many in Paris as with us. Although every apartment, however small, has its kitchen, "non-housekeeping apartments" being unknown in France, there is nothing like the American morning procession of wagons from the grocer, the fishman, the provision man, the fruit man, the laundryman and the baker at a Parisian door, it being the universal custom for housekeepers or cooks, as the case may be, to go to market themselves, and bring back their purchases in a basket suspended either from their own arm or from that of an attendant; while milk, bread, laundry bundles, and packages from the department stores, are either brought by hand, or are left with the concierge.

Within a short time, elevators, which were considered a dangerous and unnecessary luxury in Paris for many years after they were in common use here, have been very extensively introduced into Parisian apartment houses, even of a comparatively unpretentious class. Most of them are hydraulic machines, of the direct plunger type, and run very slowly. They are fitted with ingenious stops for controlling them from the outside as well as the inside, and are operated, in most cases, by the tenants themselves; and, as no expense is involved for the salary of an attendant and water is supplied at small cost, they have come to be regarded as almost indispensable, and nearly all the newer houses are provided with them.

Figures 4 and 5 show the entrance floor and third story plans of a small apartment-house of twenty years ago, situated near the acute-angled intersection of two streets in the Opéra quarter. As this is the most fashionable shopping district of Paris, the whole of the entrance floor is given up to stores, except the space required for stairways and concierge's quarters, and the entrance carriage-way, which here, in the absence of a courtyard in which carriages can turn, runs through from street to

street. Both ends of it are however, under the eye of the concierge, who can lay hands with equal facility upon people attempting to reach the main or service stairs. In the third story (Fig. 5) we find two courts, both of which terminate at the first story ceiling with skylights, one over the carriage entrance, and the other over the rear portion of two of the stores, thus utilizing to the full extent the valuable first story area. The professional reader will note the cleverness with which the irregular lot is made to give a stately staircase, and symmetrical rooms, of pretty

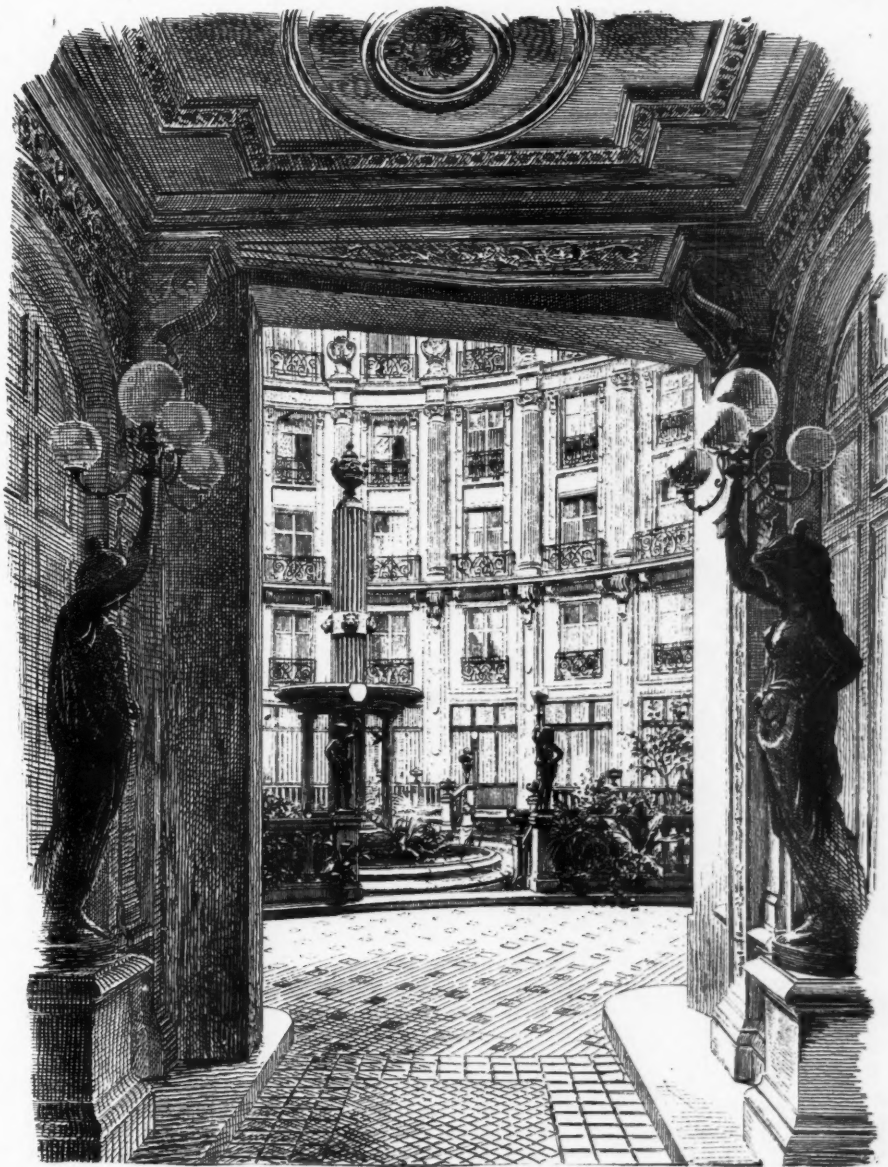


FIG. 6. ENTRANCE AND COURTYARD OF A PARISIAN APARTMENT HOUSE.
BY M. BOUSSARD.

(From *La Semaine du Constructeurs*.)

(For Figs. 4 and 5, see next page.)

and varied shapes, all well lighted and communicating conveniently; and the professional reader's wife will probably be interested to remember that the great dressmakers, the Worths and Pingats and Paguins and Doucets, are to be found in this very quarter, in just such apartments as these, slightly altered, perhaps, for the better convenience of their customers.

Except in detail, the dispositions shown in this little house are still universally followed in Paris. As will be observed, each floor here comprises two apartments. The



FIG. 4. PLAN OF ENTRANCE STORY OF HOUSE NEAR THE OPERA, PARIS. BY MM. LEMONNIER AND VERGNON.

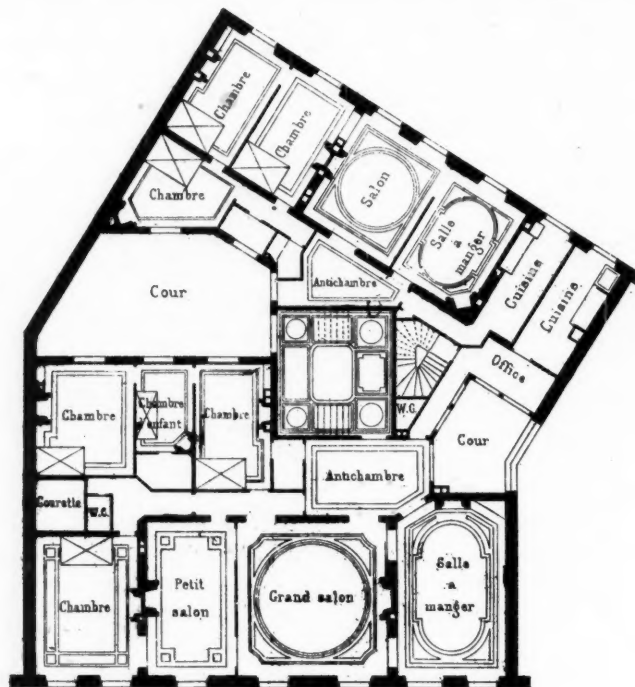


FIG. 5. THIRD-STORY PLAN. HOUSE NEAR OPERA, PARIS.

larger one, overlooking the Avenue de l' Opéra, includes a Grand Salon, or large parlor, and a Petit Salon, or small parlor, while the smaller apartment possesses only one parlor. Each, however, has its dining-room and kitchen, and a sufficient number of bedrooms, and the larger apartment has a spacious pantry between the kitchen and din-

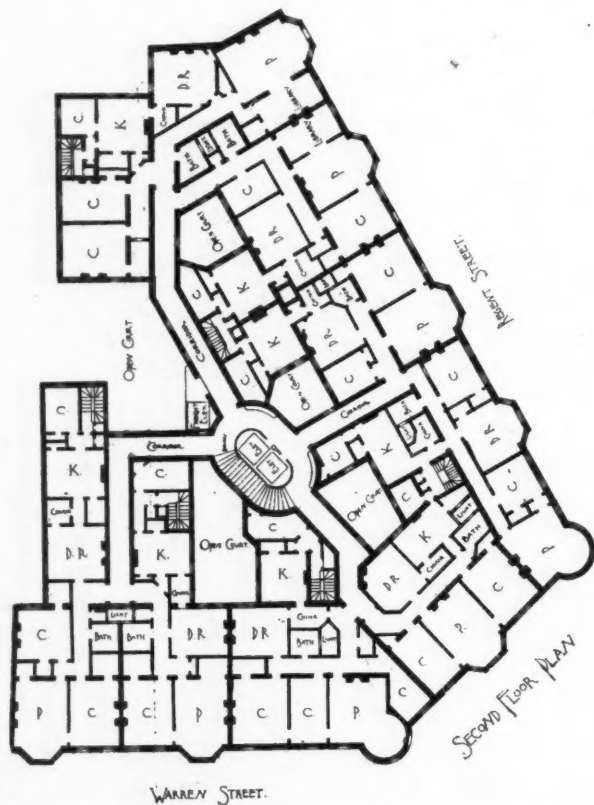


FIG. 7. PLAN OF AMERICAN APARTMENT HOUSE OF TWENTY YEARS AGO.

ing-room. In more modern houses, especially on land less costly, the type of the larger of these two is commonly adopted. Often, the so-called "Large Parlor" is not more than ten or twelve feet square, while the "Small Parlor" may be only seven or eight feet wide; but it is a satisfaction to the Parisian mind to have them nominally

separate, even though the separation may consist simply of a curtain; and even in the smallest apartments, where only one parlor can be afforded, a bedroom is very often made to open out of this parlor, as well as out of the corridor, so that it can be used for a "small parlor" when not occupied for its intended purpose. In the same way, Parisian housekeepers now consider a pantry so desirable that something of the kind is almost always provided, even though it may not be more than three or four feet square, and may open out of a kitchen eight feet square. In the older houses there is always at least one "Salle de bains," or bath-room, somewhere among the bedrooms, and one or more separate water-closets. In the most recent buildings there is a tendency to multiply bath-rooms, and the American plan of combining water-closet and bath-room is now quite frequently adopted. In all Parisian apartment-houses, old and new, the larger bedrooms, at least, have attached to them a "Toilette," or dressing-room. Often, this dressing-room is nothing more than a large closet, without any light except what may come through the open door.

In many apartments a "Bibliothèque," or library is added to the number of reception rooms. It is hardly necessary to say that such a room is rarely found in Amer-

Until recently, Parisian apartments have been planned very much as an ordinary dwelling-house would be, devoting as much space as possible to the rooms, arranging these "en suite," as the real-estate agents say, and utilizing for halls and passages whatever space might be left, with reasonable provision for light, and for convenient access to the different rooms. Lately, however, much more attention has been paid to the entrance hall of each apartment. Instead of providing, as is still the rule with us, in the better class of houses, a comparatively spacious and handsome general vestibule (Fig. 6), at the street entrance, while the private halls of the apartments are little better than narrow, dark and crooked passageways (Fig. 7). Parisian architects now generally take great pains to make the entrance-halls of the individual apartments spacious, symmetrical and handsome.

ARCHITECTURAL AND STRUCTURAL ENGINEERING

BY MAURICE M. SLOAN, ARCHITECTURAL ENGINEER. (Continued)



WITH relation to the snow load upon roofs, the climate, slope of the roof, and material of the roof covering should be considered. With very flat roofs in northern climates a snow load of as much as twenty-five pounds should be used in designing the main supporting members. Where the roof in such a climate is steeper than one-half pitch, then the snow load may be reduced to fifteen pounds unless the roofing material is of such a nature as to retain the snow, as, for instance, some kinds of tiling. In more southern climates, especially those of the Middle States, the snow load on flat roofs of from twelve to fifteen pounds is ordinarily sufficient, and eight pounds on roofs steeper than one-half pitch.

Usually the building departments of the several cities require loads in excess of those which can possibly exist, although a considerable load is sometimes superimposed on a roof construction by the weight of shafting, machinery, or other installations that may be suspended from it.

The term "accidental load" frequently occurs in engineering and architectural discussions, but has no place in practice, for, as the name implies, it is hypothetical; and, being such an unknown quantity, is entirely negligible in considering the design of a building. As a purely accidental load, its amount can not be determined and ordinarily the factor of safety upon which the structure is designed is sufficient to provide against failure from any such load.

Any suddenly applied load will produce increased stress upon the frame or structure resisting the action of the same, to an amount considered as equal to the effect of twice the same load applied statically. As many elements enter into the effect produced by a falling load the formula becomes complicated, and as such a load is of rare occurrence in building construction, formulas to determine the action of a load of this character are of little interest except in the analysis of the drop load test as applied to fireproof floors or similar constructions. In building construction the suddenly applied load is most frequently encountered in connection with crane runways, and the overhead work of elevator shafts, the load upon the crane girder being increased by the sudden starting and stopping of the machine, and a similar action occurs on the beams supporting elevator mechanism.

In the study of failures of structural features the causes may generally be traced to one of several faults, or to neglect. Strange to relate, the principal cause of failure is not, ordinarily, ignorance of engineering principles on the part of the designer, but is more frequently a disregard of these principles, or is due to an oversight caused by the apparent unimportance of the feature, which afterwards proves worthy of careful consideration. Many errors in poorly designed structural elements are found in the architect's office about the time the plans are ready to post for prices, and such discoveries lead to much confusion, for corrections many times being made so hurriedly as to be insufficient, and need for adjustment of

design and price is sure to occur as the work progresses.

Many radical errors in the structural design are discovered by the building department and where it is possible a preliminary examination of the plans and specifications by them will act as an additional check and cause an expurging of an important error which if left to stand would involve a considerable extra if not discovered before the contracts are signed.

Undoubtedly the greatest cause of error in structural design occurs on account of a failure to consider all the loads coming upon a member or structural element. An error is most likely here, when the loading is somewhat complicated, and serious results are likely to occur where the neglect of a portion of a load overstresses a member beyond the safe limit. Many times the structural designer is misled by the apparent simplicity of the problem and dismisses the same by inspection, whereas an analysis shows complications which require some care in their detail, the neglect of which is likely to cause conditions of overloading and weakness, with danger of failure.

In the design of certain elements of construction ordinarily based upon empirical rules, such as retaining walls and other engineering work where the stresses are of an uncertain nature, there is a tendency under the pressure of the owner's parsimony to reduce the structural dimensions to the allowable minimum; unfortunately it seems always to be in cases of this kind that the conditions which pertain when the work is started are worse than usual and the architect or engineer is compelled to redesign in the midst of the contract, thus involving the owner an extra of such an amount as to cause him to repudiate his original instructions to build as cheaply as possible. One or two experiences of this kind establish a most excellent rule for the designer, namely: that of never reducing structural dimensions to the shady side of safety even to cause the contract price to fall within the architect's quotation.

In foundation work too much care can not be exercised to obtain the proper data upon which to base the calculations and where the data is not available the conditions as they actually exist upon the commencement of the work should always be compared with the figures upon which the design of the footings are based. There is nearly always a disposition to save on the foundation work, though such a tendency frequently results unfortunately, especially where the foundation soil is of an uncertain nature, and ordinarily the sum expended in the liberal design of the substructure can be said to pay an exceptionally good interest on the investment.

The engineering adage that the strength of a chain lies in the weakest link is most frequently exemplified in building construction, where it is not unusual to find plate girders of great strength with bearing block so small in area as to greatly overload the masonry upon which they rest, and heavy truss work devoid of lateral stiffness to such an extent as to cause dangerous vibration from light winds.

(To be continued.)

REINFORCED CONCRETE WORK

BY F. D. WARREN, ARCHITECT, (Continued)



THIS means that forms are so erected that certain parts, such as the sides of beams, girders or walls, may be removed in advance of the remainder, thus allowing such parts to be used over and over more times than otherwise would be the case, and yet still allowing proper supports under the soffits of all beams, slabs, or lintels. This in a short time may be followed by the removal of the panel forms under the slabs, providing no supports in the super-imposed story is placed upon them; in addition some of the supports under the beams and girders may be removed at the same time, but the removal of the soffits and all the supports from these latter parts should be a matter of careful discretion, and should follow at some future time.

While all due time should be given for the setting stage to take place, it is unfair to impose the construction to such a disadvantage in its competition with other constructions as to require the forms to remain unstruck for a length of time in excess of that required. These two opposing features, namely, safety and competition, should be kept well balanced by those in charge, and the only justifiable solution seems to be to place this charge in the hands of a party disinterested in the contractor's profits or losses, and conservative to the extent of guaranteeing safety.

OVERLOADING.

Doubtless many accidents in the past that have been classified under "Premature striking of the forms" should have been under the category of overloading. While it is necessary to construct the super stories before the lower stories have attained sufficient strength of themselves to support the former, the latter should never be imposed to the task of supporting lumber, cement and other materials in addition. A careless disregard of this precaution only leads to overstraining the concrete whose working strength has not yet been attained, to the end that unsightly and impaired work, if not ultimate disaster, results.

While many other precautions might properly be mentioned, it is far from the intention to carry the subject beyond such a point as will arouse the public, and still better, the parties responsible, to a keen appreciation of some of the causes in the past that have discredited the construction in the eyes of the public in general. To adjust such misapprehension, it is but fair to the construction to impress on the minds of all, that disaster results, not from a physical weakness in the construction itself, but from the careless method employed in its erection, and which can only be nullified by thorough and conscientious inspection.

RESPONSIBILITY OF DESIGNERS IN REINFORCED CONCRETE WORK.

No construction in use at the present time involves such scientific principles, careful forethought, and ingenious distribution and combination of material in its design as does reinforced concrete. To claim that genius has kept apace with the times by the application of such qualities and principles to construction work may readily be granted after a little retrospection in the past history of different constructions. To further claim that all the

possibilities of science have been utilized in its development, as it exists at the present time, and that it has reached a standard of perfection can hardly be granted in the light of recent misfortune and disaster resulting from its use.

That the causes of all such misfortunes should be laid to faulty erection, is misleading and unjustifiable, and should not be handed down to posterity as such unchallenged. Justice demands that the true causes be ascertained and made known, lest the development in the future be hampered because of lack of information regarding possible consequences due to the slighting or omission of such vital theoretical or practical features of the design. Only by the open and public exposing of faulty designs and the attendant moral effect derived therefrom, can the ideal design of the future be realized. To this end, let the co-operation of all be extended to the task of removing the present bad from the good, the hobbies and notions from the more recognized standards, the patented theorisms from the practical and sensible actualities.

DEVELOPMENT OF CONSTRUCTIONS.

A more vivid idea of the proportions of the problem and the attendant scientific functions devolving upon the concrete designer, can be laid before the public mind by a concise historical sketch of the different kinds of construction and the demands each makes upon the designer.

First of all let wood be considered as it is the oldest form in general use at the present time. Time has demonstrated that it is of such a composition that its fibres will withstand all manner of stresses known. Upon the proper sizing and joining only, depends the design. Needless to say that the weakness of such a construction lies in the methods of joining and liability to decay, hence the designer's concern hinges upon these points in adapting it for use.

Next, since stone and brick are so near alike in their uses and adaptations, let these be considered for a moment. While the nature of these materials is such as to resist a large amount of compression and shear and a lesser amount of tension in the individual pieces, the great weakness lies in joining two parts or pieces together in a satisfactory way to resist tension. The only means employed is through another medium, in the form of mortar, which, to say the most, is but partially successful. While there are plenty of cases where, from the nature of things, tension is thrown upon the mortar, it is not conservative practice to allow for this in the design, therefore the limitations imposed upon the use of these materials are principally included within the scope of this weakness.

The next advancement was the application of structural steel to construction purposes. Unlike the earlier forms, this type not only successfully resists all kinds of stresses, but any number of members may be joined together with little, if any, loss of efficiency at the joints other than that due to poor workmanship. Again, the art of designing with this construction has so far advanced, and this along standard lines that, with the stress diagrams of any problem solved, all that remains in the design is to select suitable and the most economical sections from handbooks recognized as standard.

(To be continued.)

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Committee on Institute Seal—Frank Miles Day, chairman, Philadelphia, Pa.; Ralph Adams Cram, Boston, Mass.; H. Van Buren Magonigle, New York, N. Y.

Delegates on Advisory Board, Appointed by the Secretary of the Interior, for Testing Materials—Geo. B. Post, New York, N. Y.; Wm. S. Eames, St. Louis, Mo.

Committee to Consider Building Laws in the Terms of the Resolution Adopted at the Fortieth Convention, for 1907—Arthur G. Everett, chairman, Boston, Mass.; Arnold H. Moses, Philadelphia, Pa.; A. F. D'Oench, New York, N. Y.; Benj. S. Hubbell, Cleveland, Ohio; Charles Henry Muhlenberg, Reading, Pa.

Committee on State License—Wm. B. Ittner, chairman, St. Louis, Mo.; Henry Rutgers Marshall, New York, N. Y.; Peter B. Wight, Chicago, Ill.; A. F. Rosenheim, Los Angeles, Cal.; Charles F. Baldwin, Newark, N. J.

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ASSOCIATION NOTES.

CHICAGO ARCHITECTS' BUSINESS ASSOCIATION.

The regular monthly meeting and dinner were held at the Art Institute the evening of March 26. Second Vice-President Irving K. Pond presided. The attendance was large. After disposal of the routine business Mr. Van Vlissingen and Mr. Fessenden, representatives of the Chicago Real Estate Board, addressed the association. These gentlemen spoke on opposite sides of the question of the desirability of state legislation to authorize corporations for the ownership of real estate. Bills with this object are pending in the legislature, and a strong majority of the Real Estate Board is working for their passage. It is desired that the Architects' Business Association support the bills and send a delegation to Springfield to urge their adoption. The promoters of the bills believe that there will be no increased activity in large holdings and buildings until provision is made for corporate ownership. There was not sufficient time for discussion of this question by the association, and the meeting adjourned to Fullerton Hall to listen to a paper on Reinforced Concrete delivered by T. L. Condon, C. E. The paper was a valuable contribution to the subject, and had the earnest attention of the architects and guests.

IOWA CHAPTER A. I. A.

Representative Hambleton is in receipt of a letter from the legislative committee of the Iowa architects' organization commending him for his efforts in securing the passage of the anti-

tipping bill. George E. Hallett, of Des Moines; E. P. Schoentgen, of Council Bluffs, and George W. Bird, of Des Moines, are the committee. Their letter to Mr. Hambleton follows:

"It is with great pleasure that we note your success in obtaining the passage of the anti-tipping bill, which we are gratified to learn covers the much to be condemned practice of offering architects side commissions by material supply houses. This problem has been given much consideration by the Iowa chapter, A. I. A., and every effort toward a feasible solution has been put forth by the chapter. We herewith enclose a copy of a stereotyped form of letter which we have endeavored to send to every dealers in building materials, who has attempted in any way to approach or influence architects in any save a legitimate and ethical manner. The practice of attempting to influence an architect in the manner which you seek to prevent is most reprehensible, and while this practice is not by any means so general as is commonly supposed, there must, nevertheless, exist some foundation for the charge as made, otherwise this feature of your bill could not have been conceived. As we know that the practice of receiving such gratuities is confined to the unethical and unscrupulous, we wish to heartily endorse this feature of your bill and trust that it will soon become a law, as it can only operate great benefit to the public as well as the legitimate practice of architecture."

OUR ILLUSTRATIONS.

Apartment building, Chicago.

Residence of Mrs. M. E. Holland, Detroit, Mich. Rogers & Macfarlane, architects.

The Attuck School building, Kansas City, Mo. Charles A. Smith, architect.

Study for Metropolitan Church of Christ, Chicago. Pond & Pond, architects.

Residence of G. B. Roberts, Bala, Pa., Field & Medary, architects, Philadelphia. Several exterior and interior views and plan are given.

Unitarian Church and Parish House, West Newton, Mass. Cram, Goodhue & Ferguson, architects. Two exterior and two interior views and plan are shown.

New York Terminal station for Pennsylvania Railroad Company. McKim, Mead & White, architects. The following views are shown: Bird's-eye view, general exterior, Thirty-third street elevation, Seventh avenue elevation, looking down Thirty-second

street, general waiting-room looking toward the arcade, general waiting-room, concourse and tracks. The general waiting-room is 325 feet long, 110 feet wide and 150 feet high.

Young Men's Christian Association building, Toledo, Ohio. E. O. Fallis, architect. The building was completed in 1906 at a cost of \$300,000. The Michigan street front, represented by illustration, from the basement to the second floor level, is constructed of white marble, and the balance of terra cotta and pressed brick, all of light gray color. The building covers an area of 24,500 square feet, and has a floor area of 126,500 square feet. It is thought that this building embraces the most progressive ideas in "association building" construction. It is devoted entirely to the Young Men's Christian Association work.

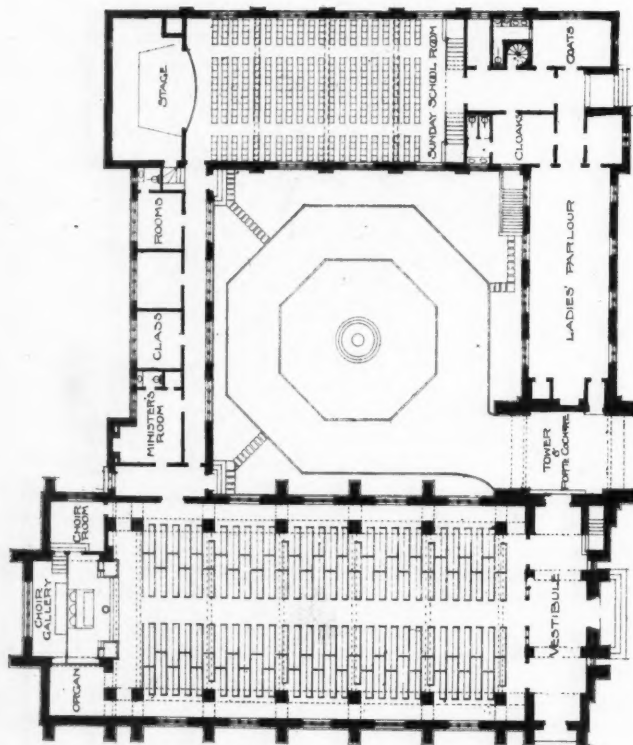
Building for the American School of Correspondence, Chicago. Pond & Pond, architects. The building is designed for the headquarters of the American School of Correspondence and is located at the northwest corner of the intersection of Fifty-eighth street and Drexel avenue. It is a brick structure, with heavy Bedford stone courses and mullions. The brick of the basement and rustications is darker somewhat than that of the body, which is a red, more or less variegated. The roof is of dull green tile. The interior is characteristically treated in hard woods. The window treatment gives the maximum light with a great strength in the piers and a decided simplicity of masses.

Seventh Baptist church, Baltimore, Md. Edward Hughes Glidden, architect. The church is on the northwest corner of St. Paul street and North avenue. It is built entirely of Beaver Dam marble, and is generally of perpendicular Gothic treatment. The main tower, on the southeast corner, with the spire rises to a height of nearly 150 feet above the street level, and is of marble to the top. The tower on the southwest corner is almost a duplicate of that on the southeast, but is smaller and without a spire. The interior of the church is carried out in the same style as the exterior and has a richly groined ceiling, which rises to a height of fifty feet above the level of the floor and is frescoed. All the wood finish and pews are of black walnut. The baptistry is located at the rear of the pulpit platform and is of white Italian marble. A large hall for social purposes and conventions occupies the larger part of the basement under the main auditorium, and is connected with a kitchen, toilet rooms, etc.

Residence of Mr. Willoughby George Walling at Winnetka, Ill. Mann & MacNeille, architects, New York. This shows a very successful treatment of a stucco exterior. The house itself is a building built some twelve years ago. It was originally covered with clapboards, and was of rather light construction, intended to be used as a dwelling only during the warm months of the year. When its present owner concluded to make it into an all-year-round house, it had to be considerably remodeled, and especially made more substantial to resist the cold weather. The simplest way to do this was to cover the entire exterior walls of the building, including a portion of the piazza, with a thick layer of stucco, on wire lath; also to inclose the main piazza and have it heated, in order that the rooms upstairs might not be too cold. The alteration also included a new arrangement of the entrance and new plumbing, and various interior changes. As the house stands now, it has the appearance of a new building. It has the advantage of standing back several hundred feet from the road, so that a satisfactory vista is obtained, and the approach is made by a straight road leading directly to the forecourt in front of the entrance; a scheme particularly pleasing in a building of this character. One enters at the stair landing and ascends several broad steps to reach the main floor. On the right hand is the living room connected with glass doors to the inclosed piazza or the sun parlor, which is heated the same as the rest of the house, and is perhaps more used than any other room in the house. At the left is the dining-room and beyond this the kitchen, laundry, etc. The house has the advantage of being only one room deep, so that in the summer time every room in the house has a good draught.

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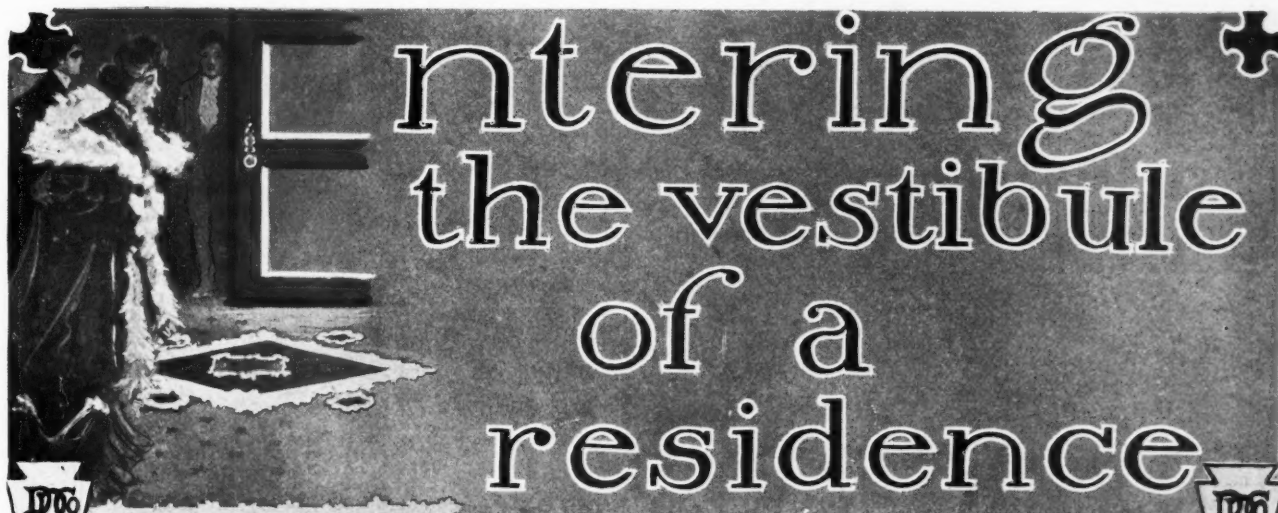
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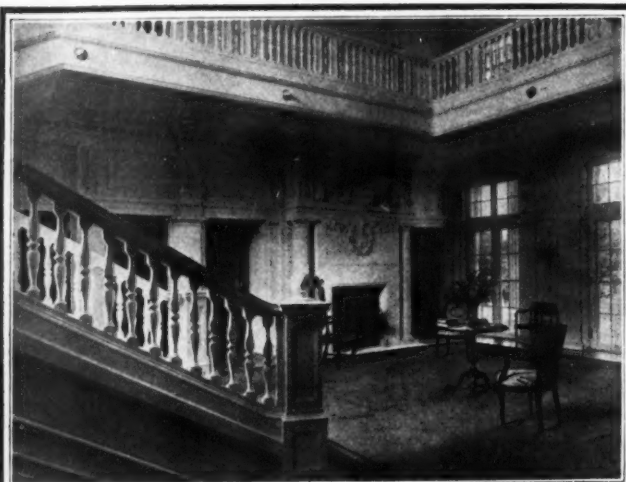
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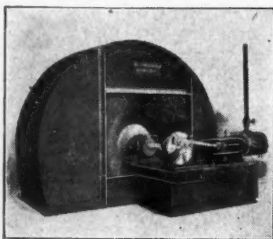
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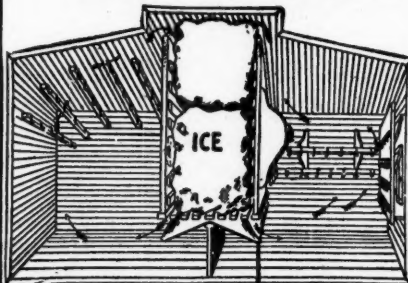
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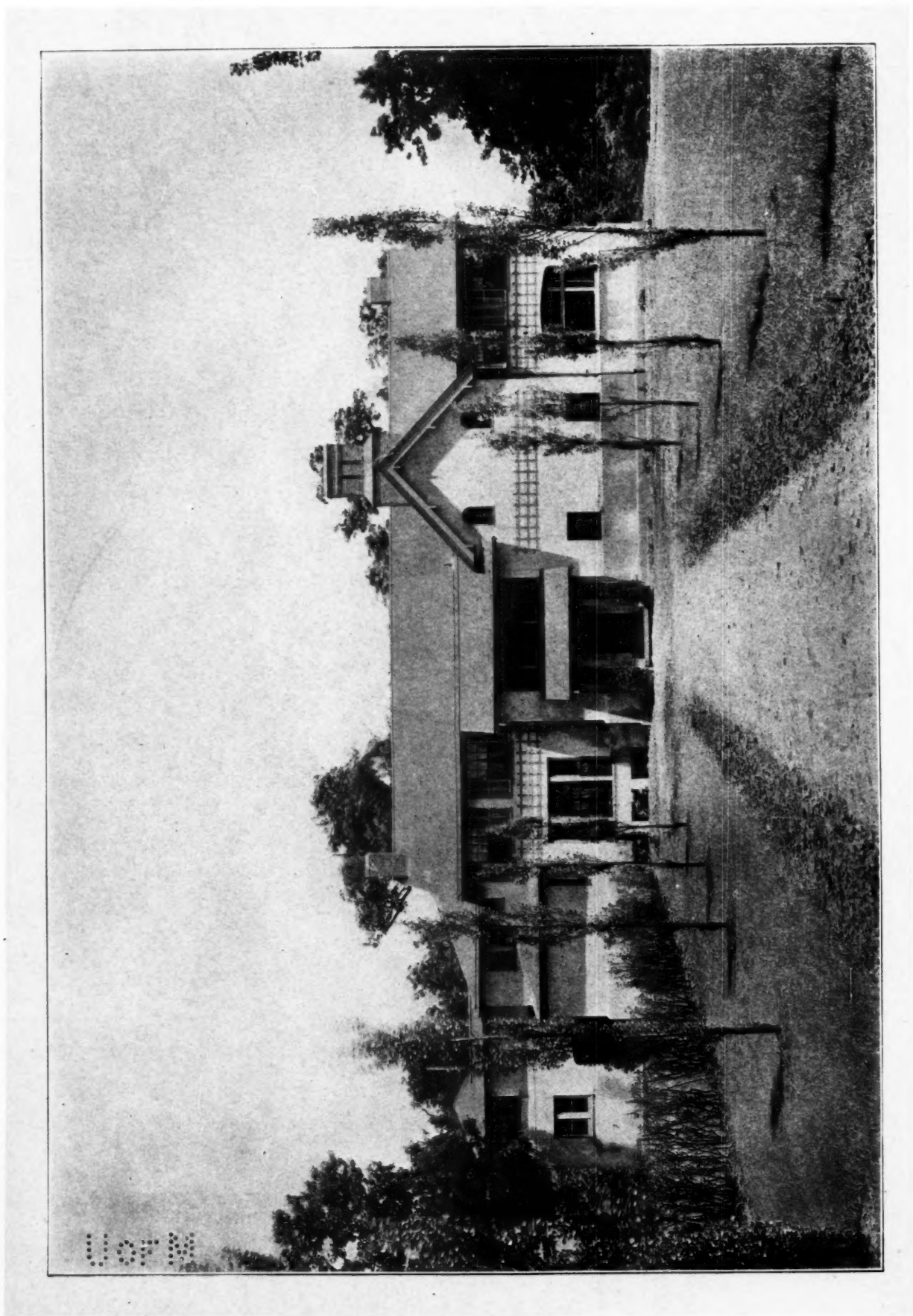


THE UNITARIAN CHURCH AND PARISH HOUSE, WEST NEWTON, MASS.

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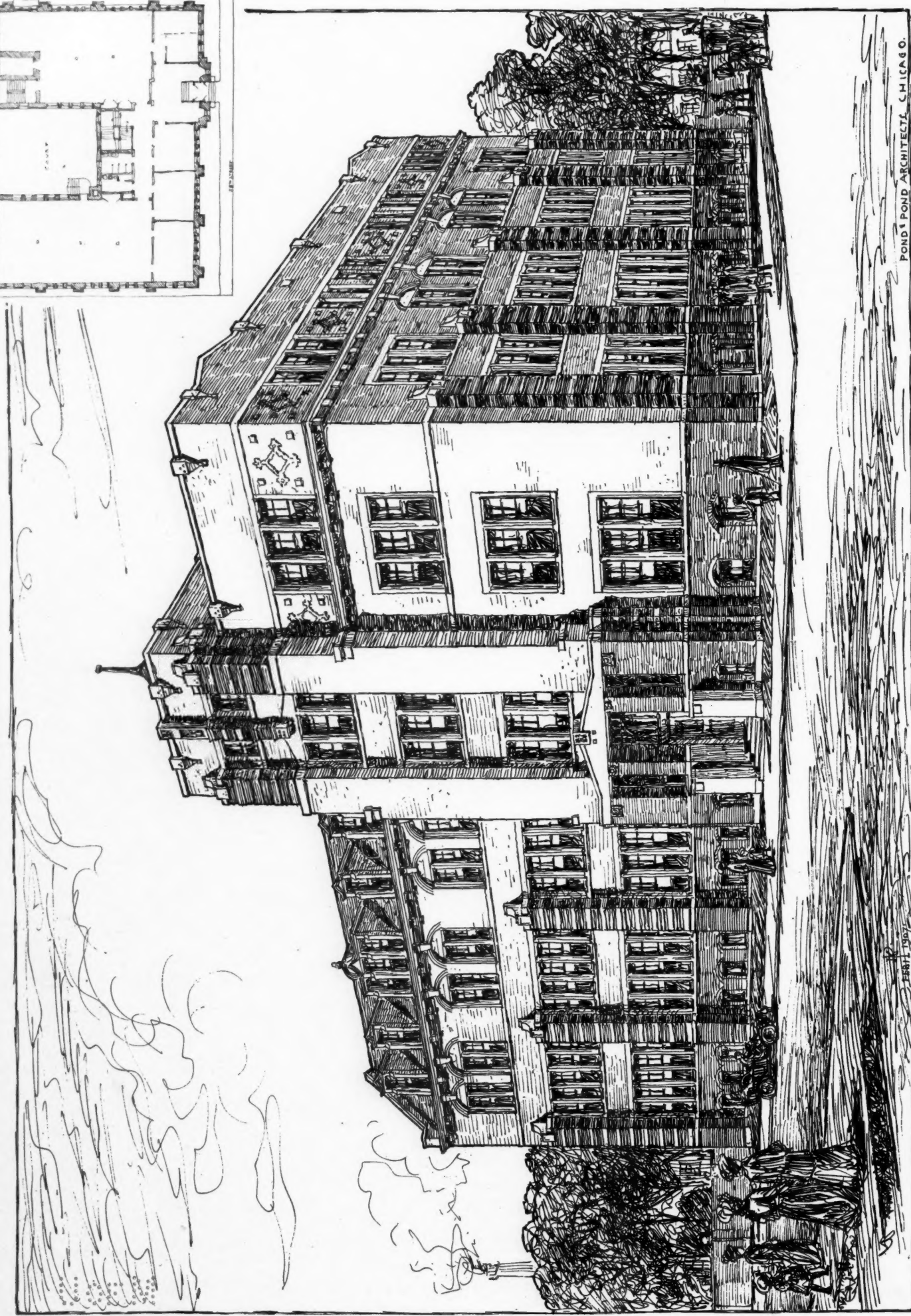
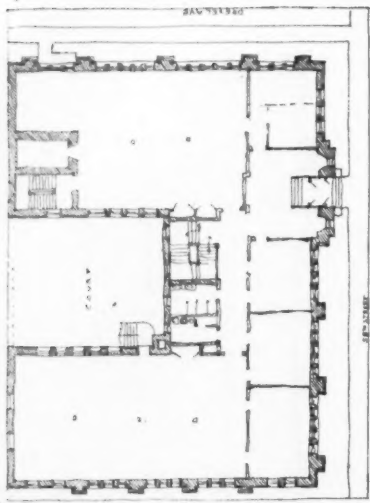
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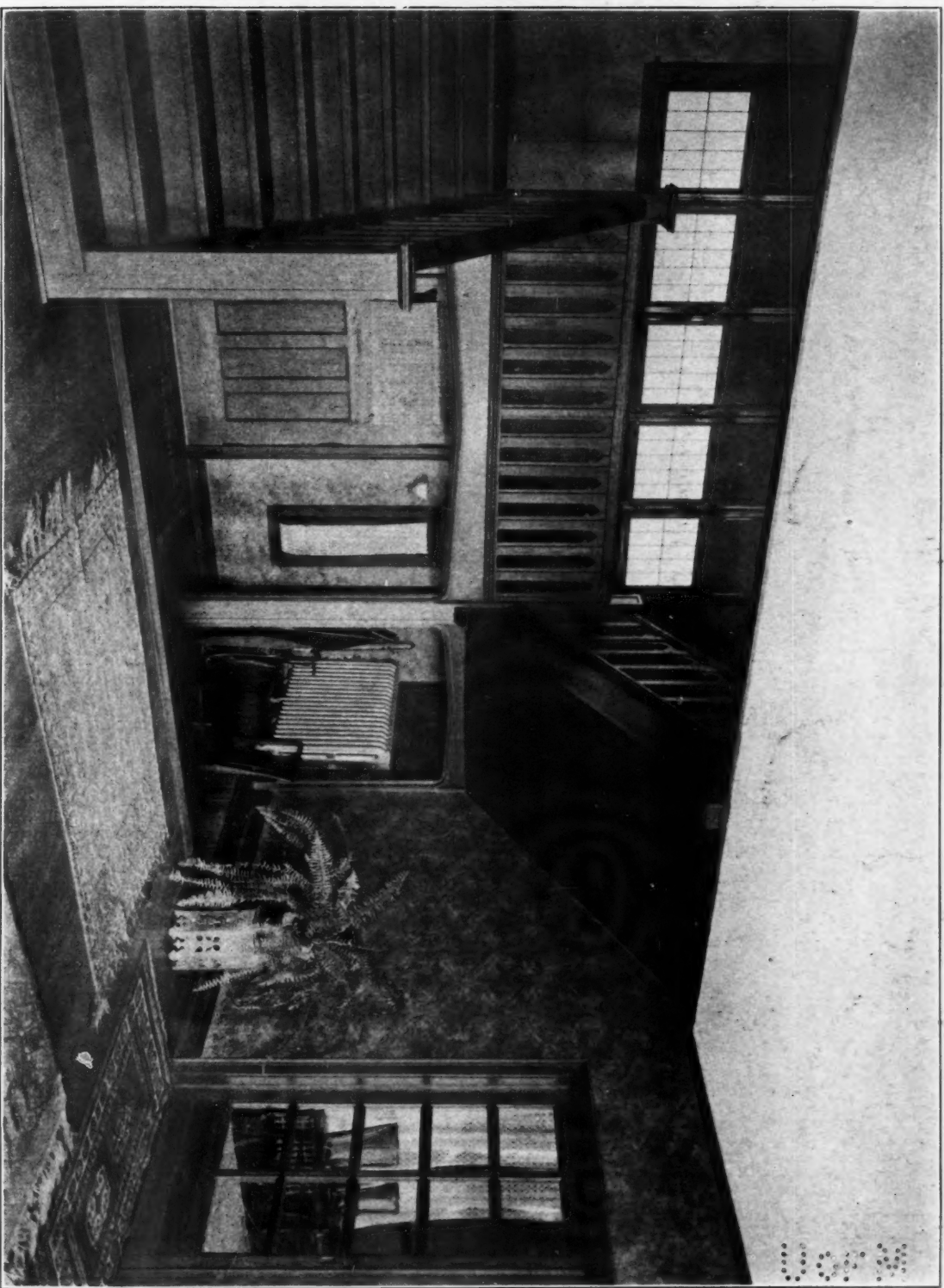
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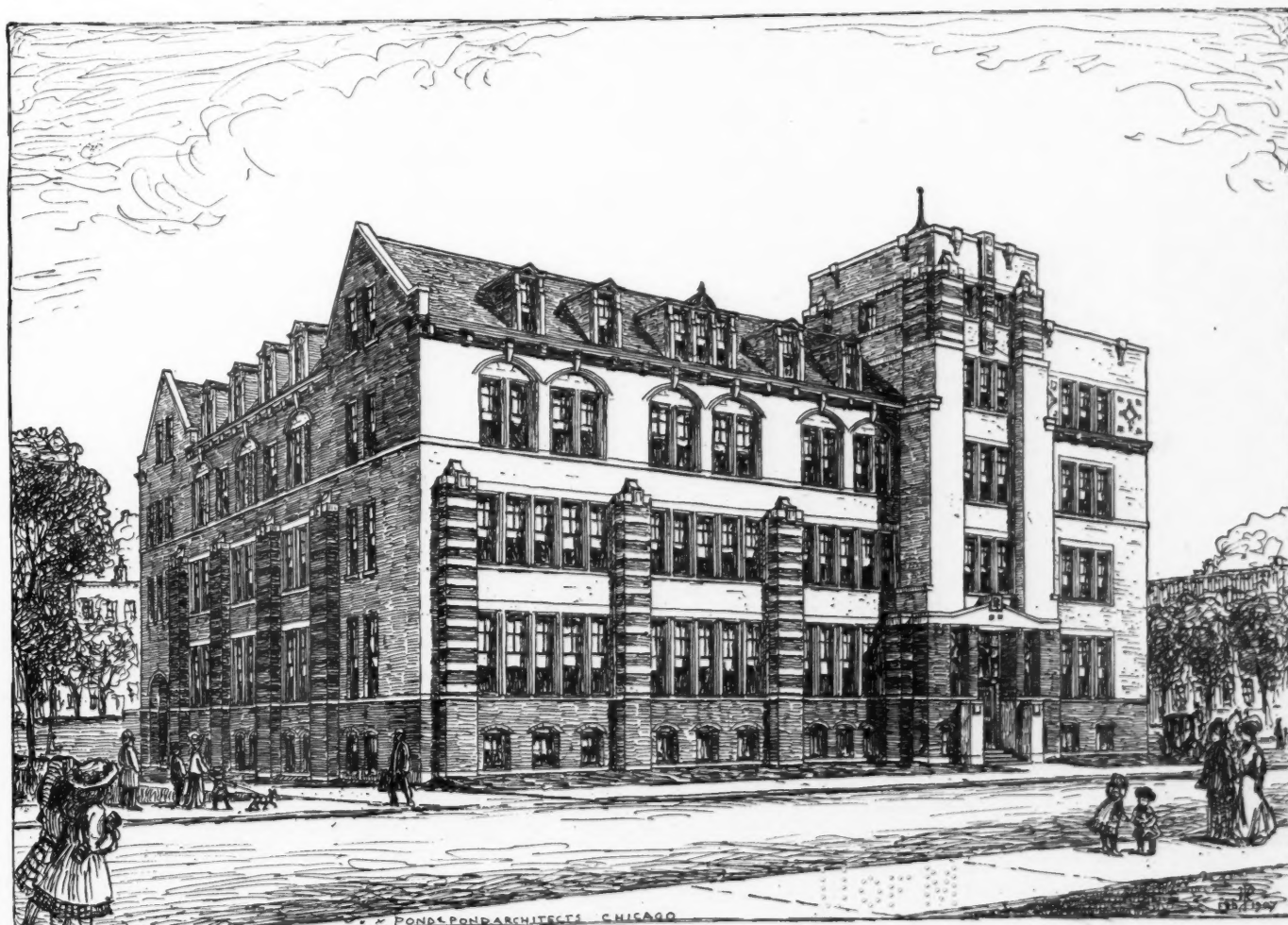
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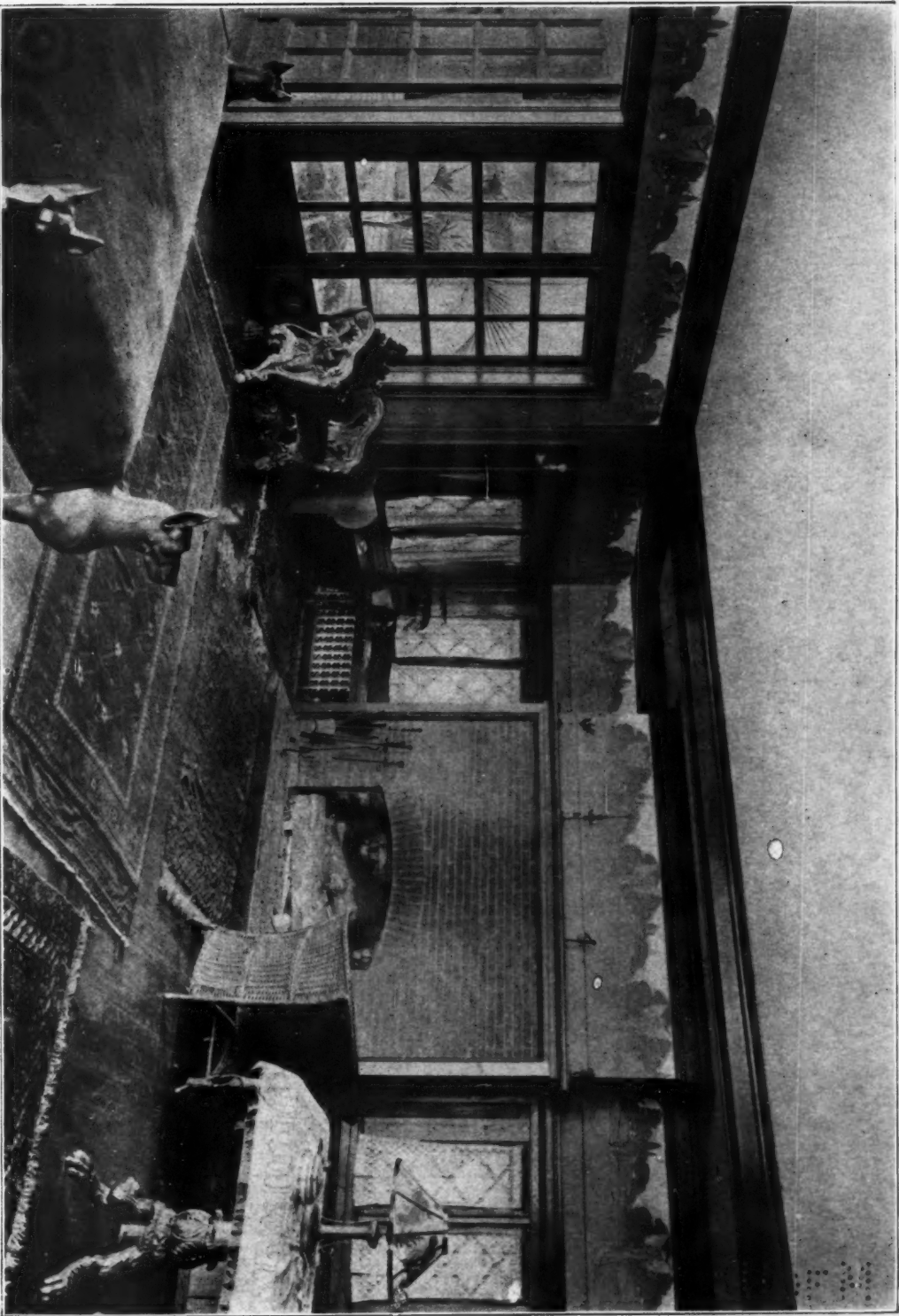


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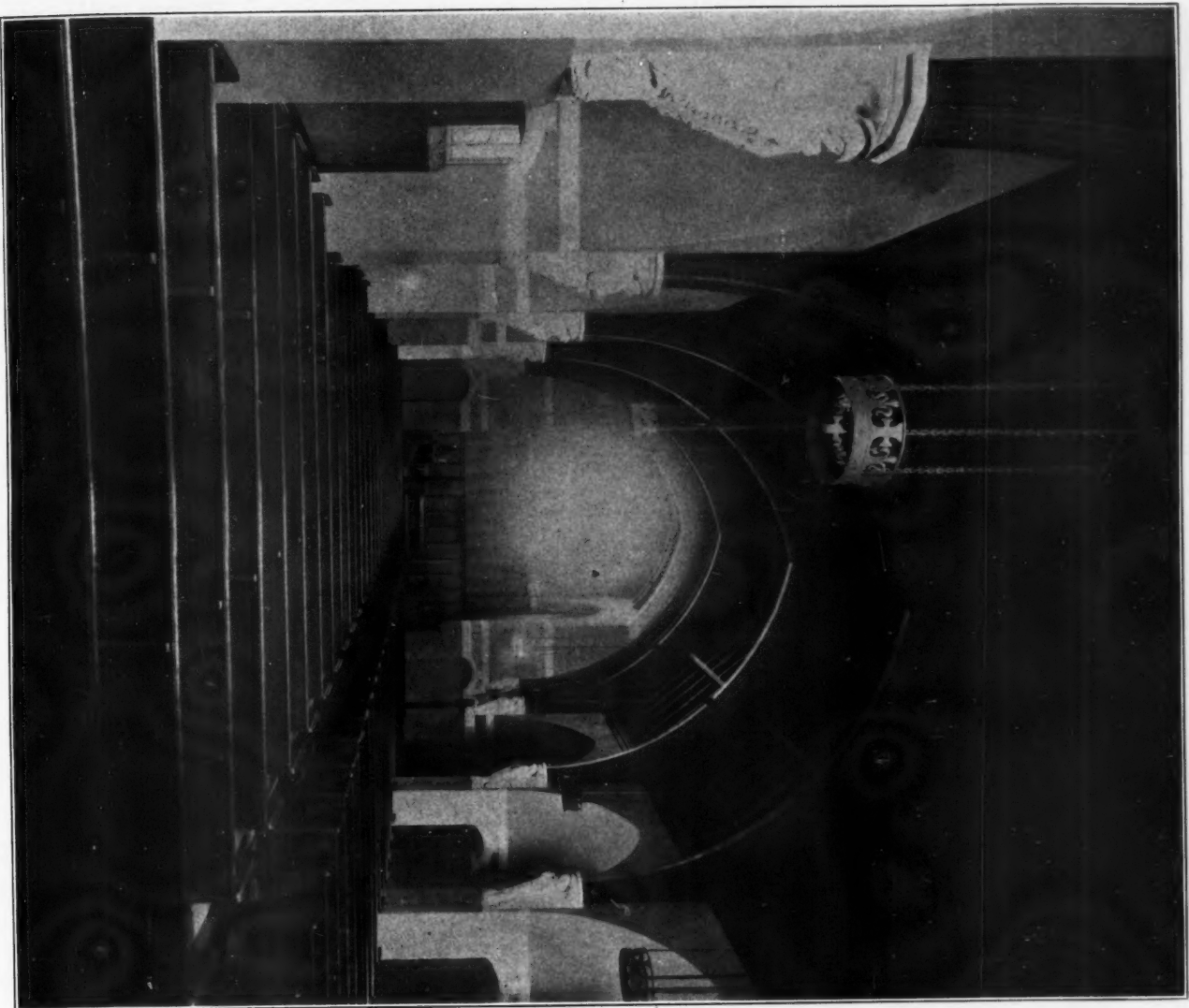
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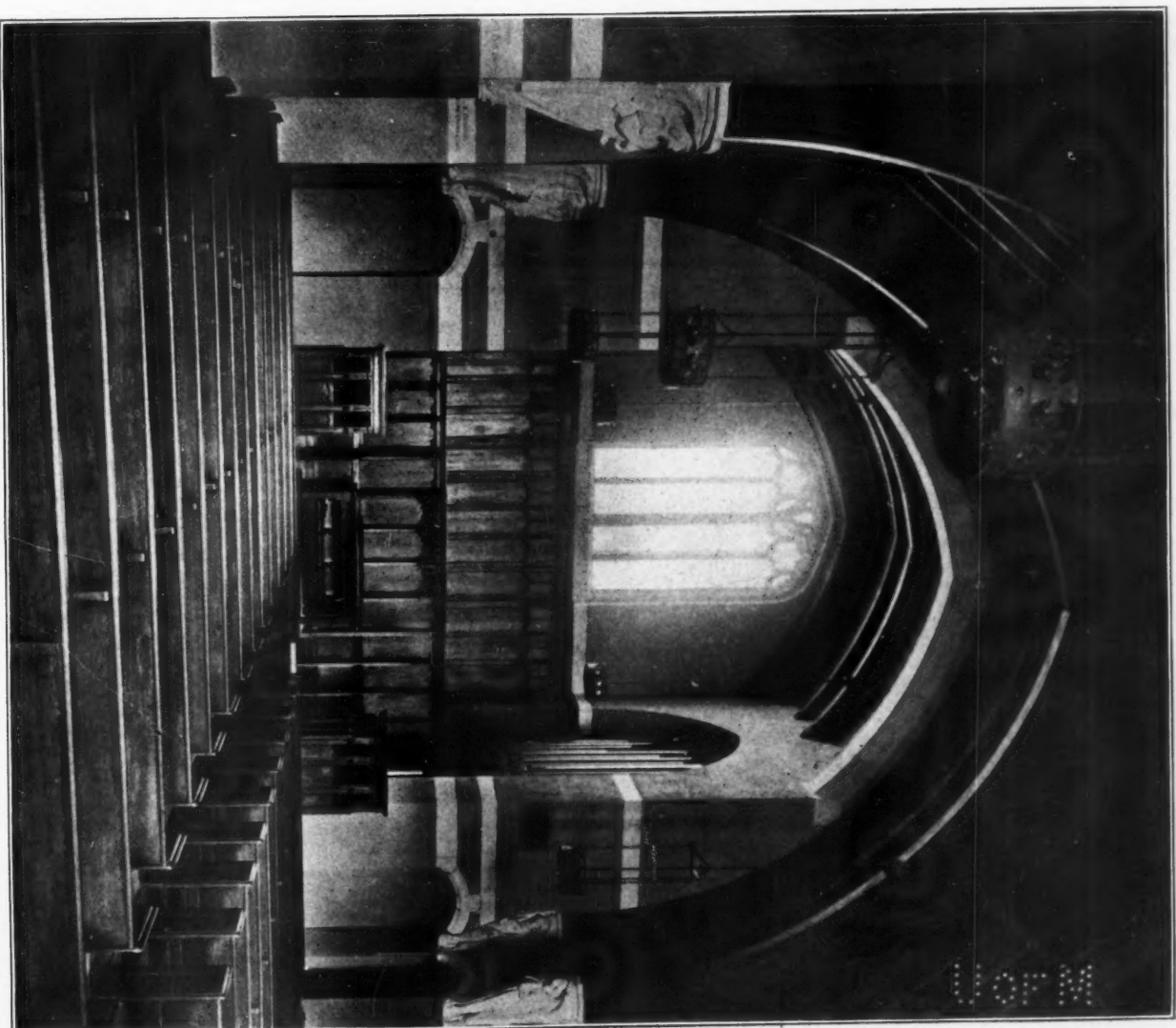
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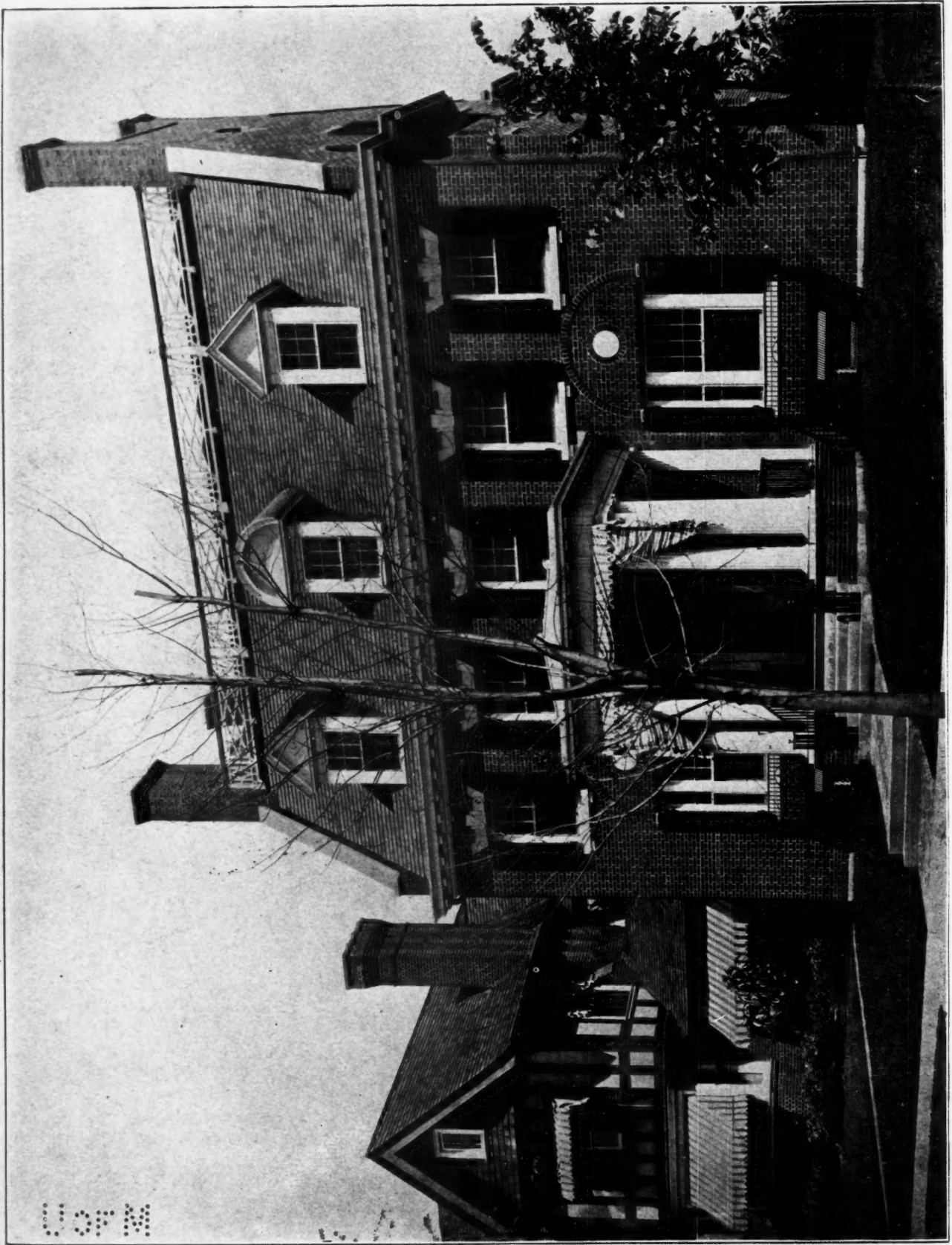
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VIEWS IN THE UNITARIAN CHURCH, WEST NEWTON, MASS.
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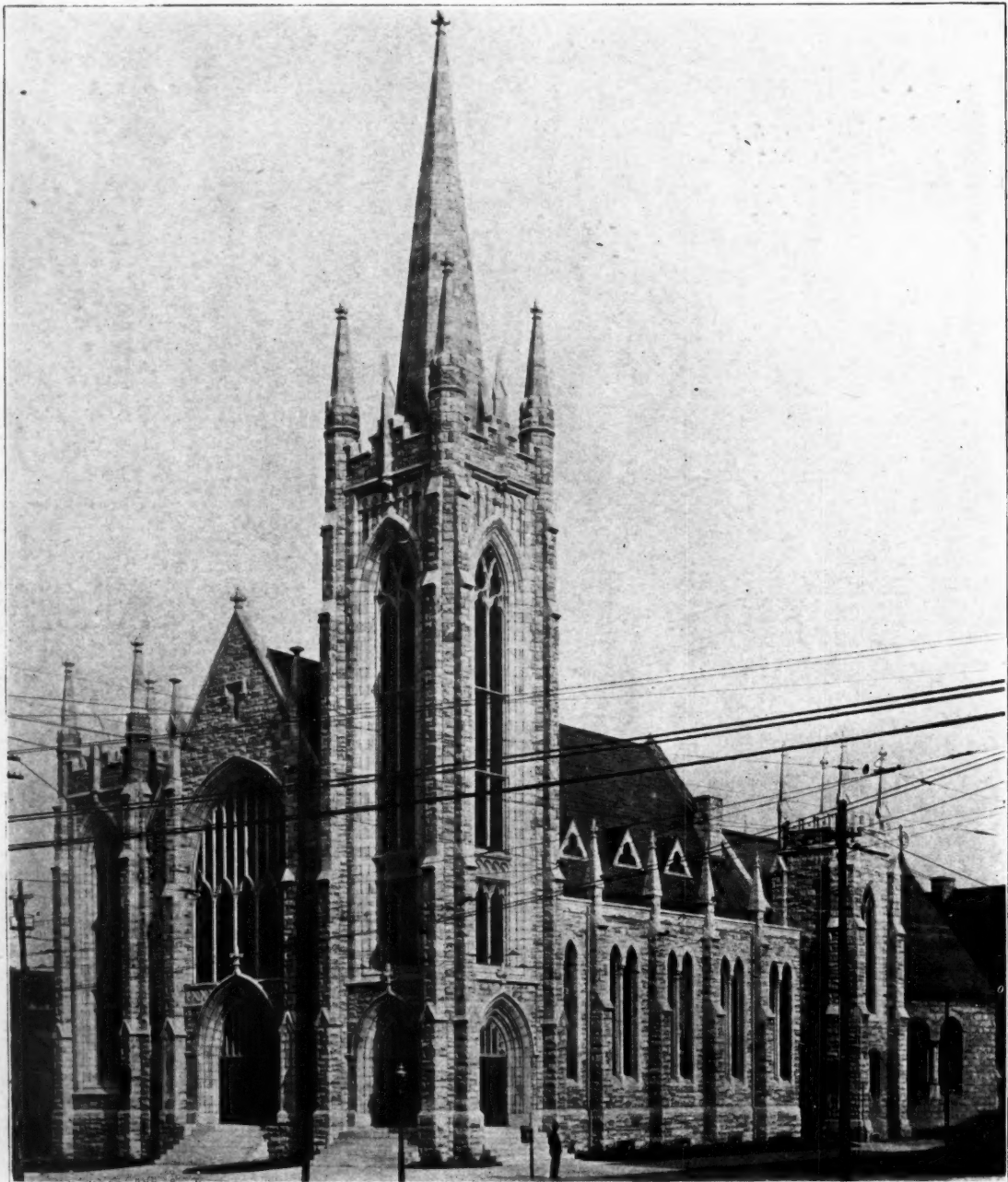
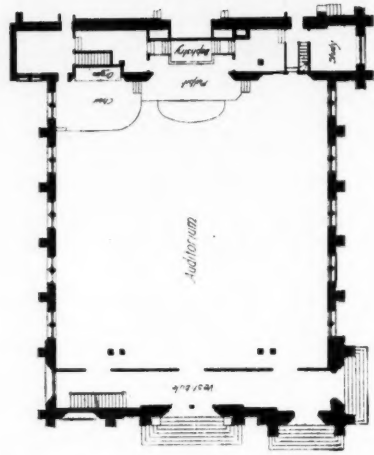


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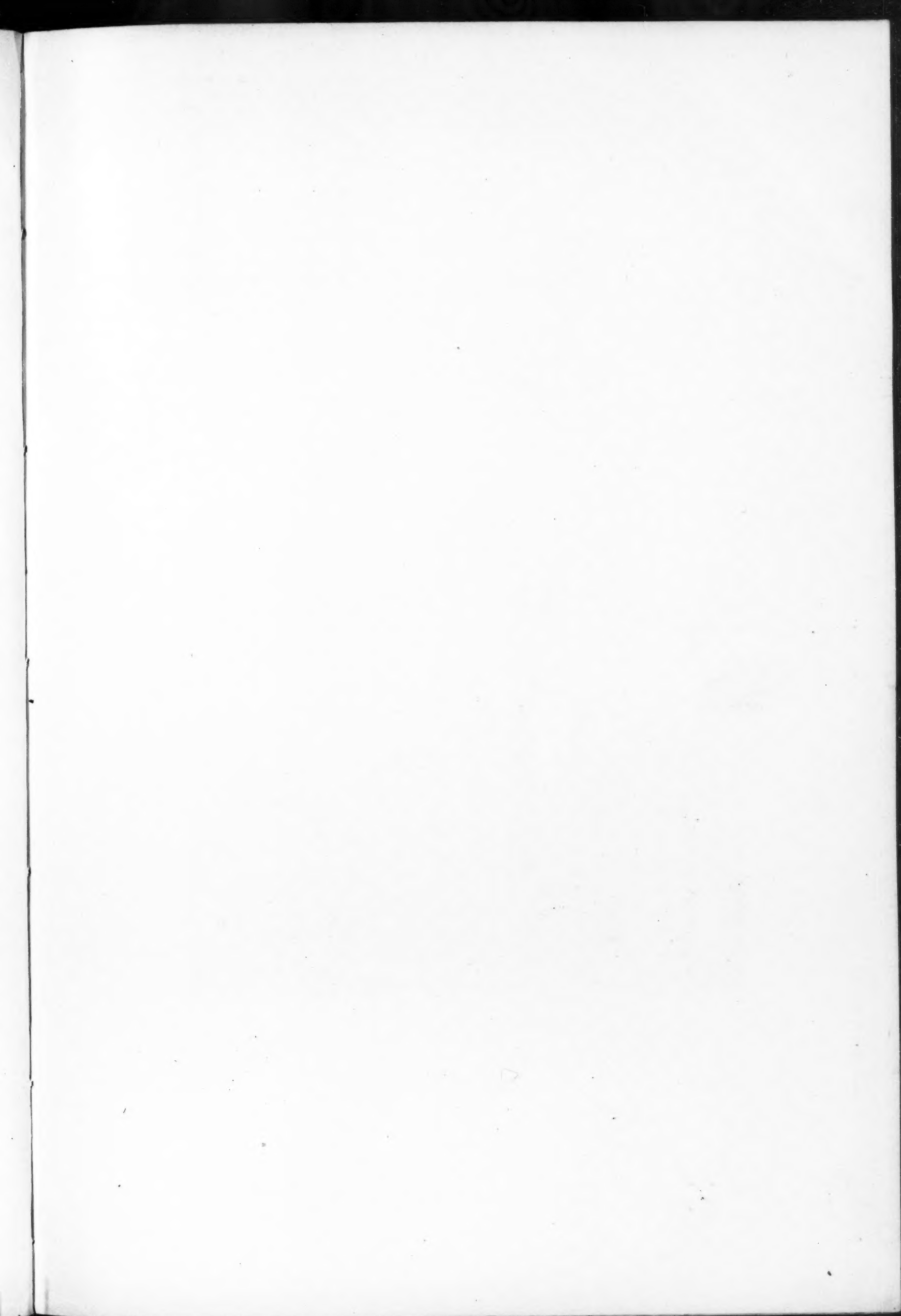
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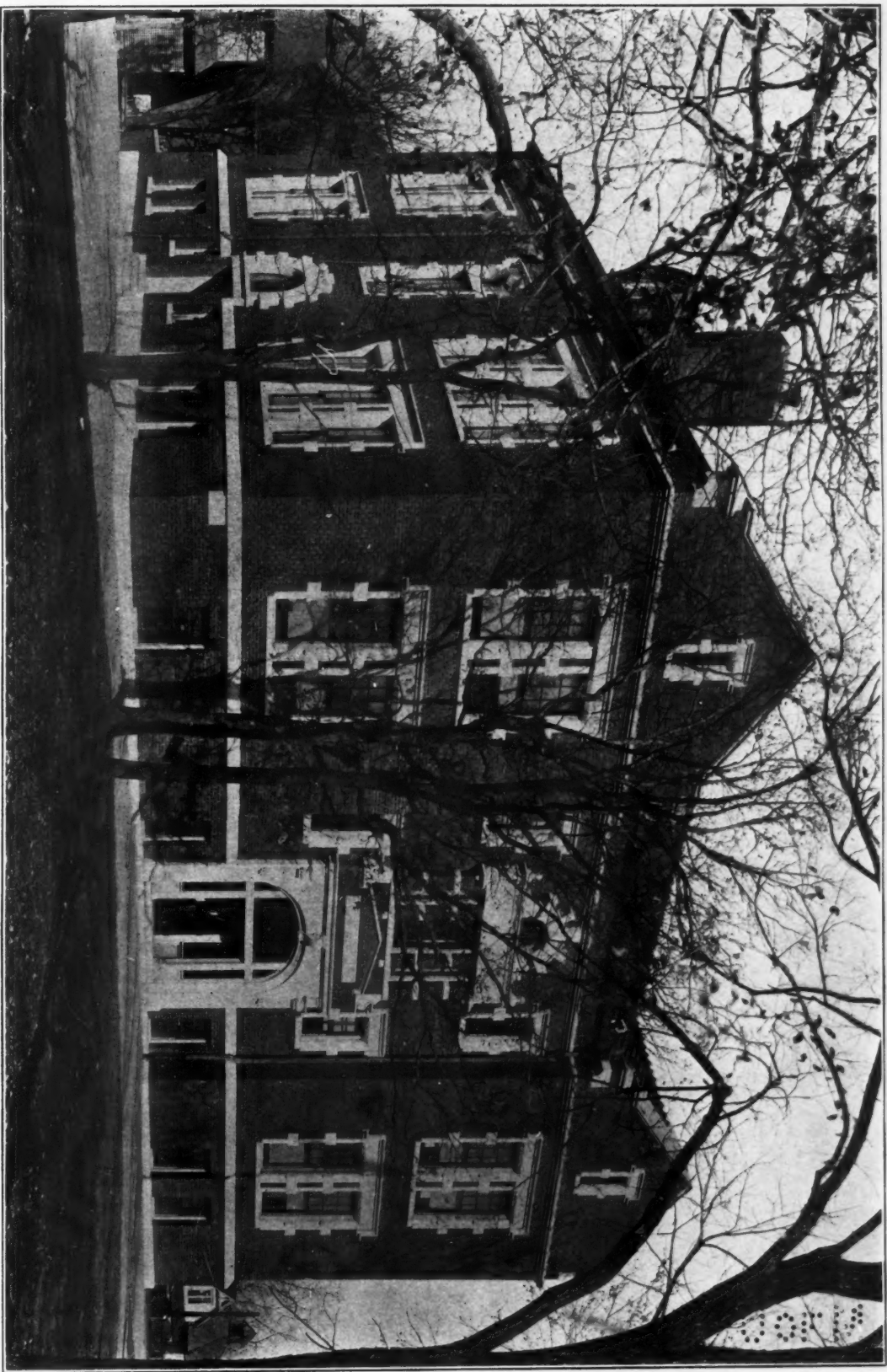




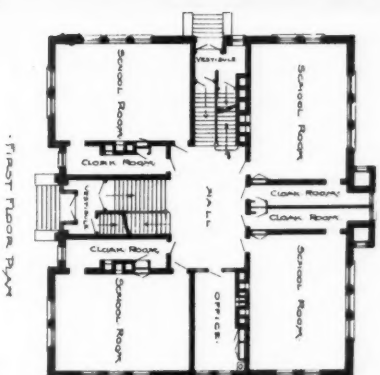
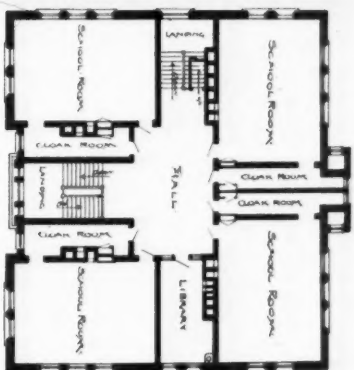
YOUNG MEN'S CHRISTIAN ASSOCIATION BUILDING, TOLEDO, O.
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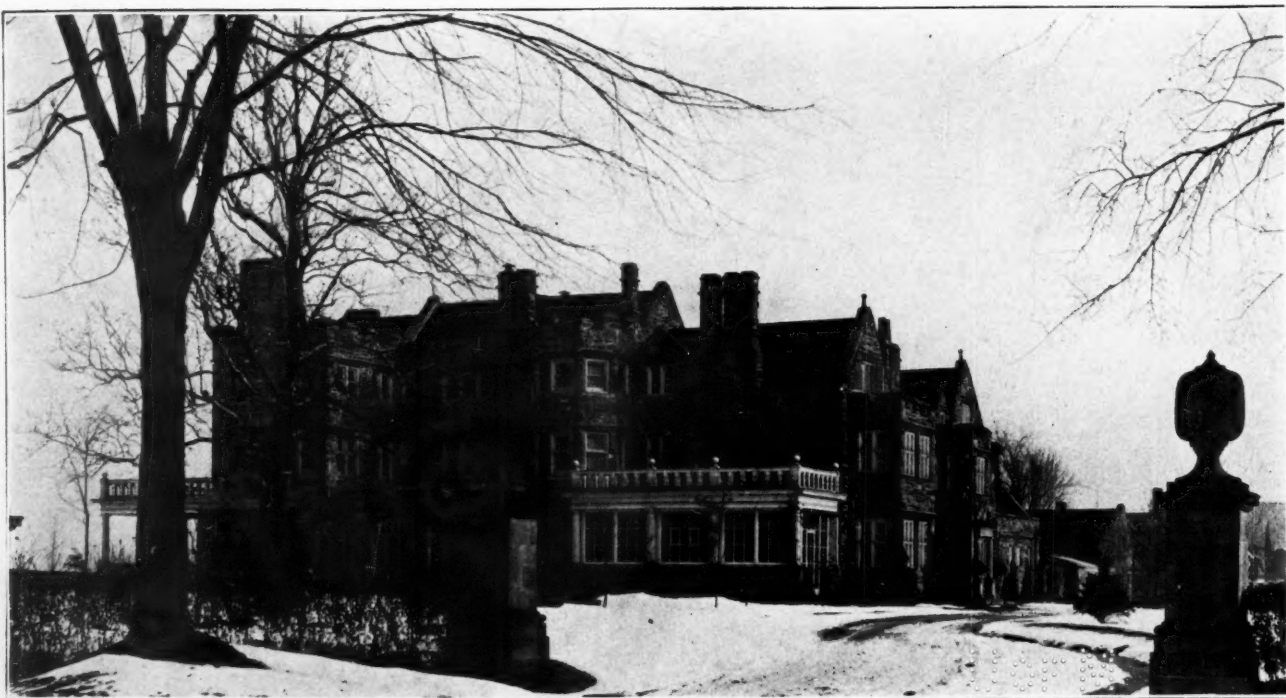
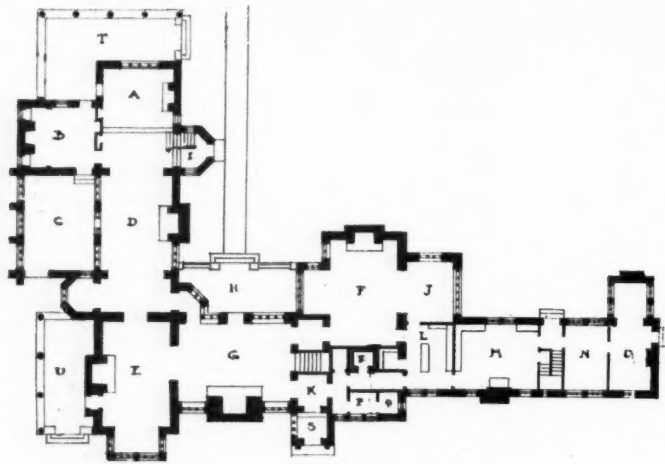
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THE ATTUCK SCHOOL, KANSAS CITY, MO.
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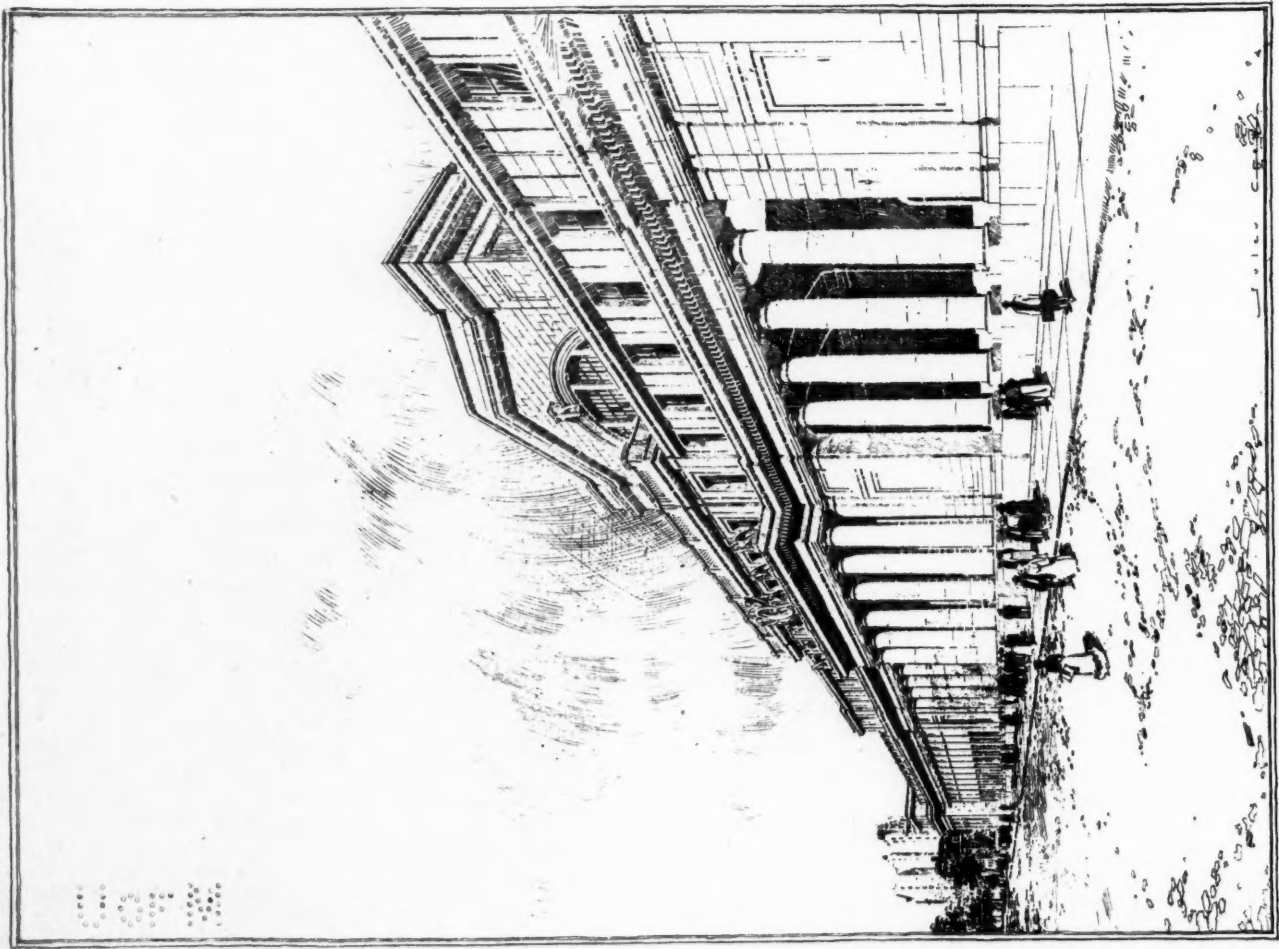


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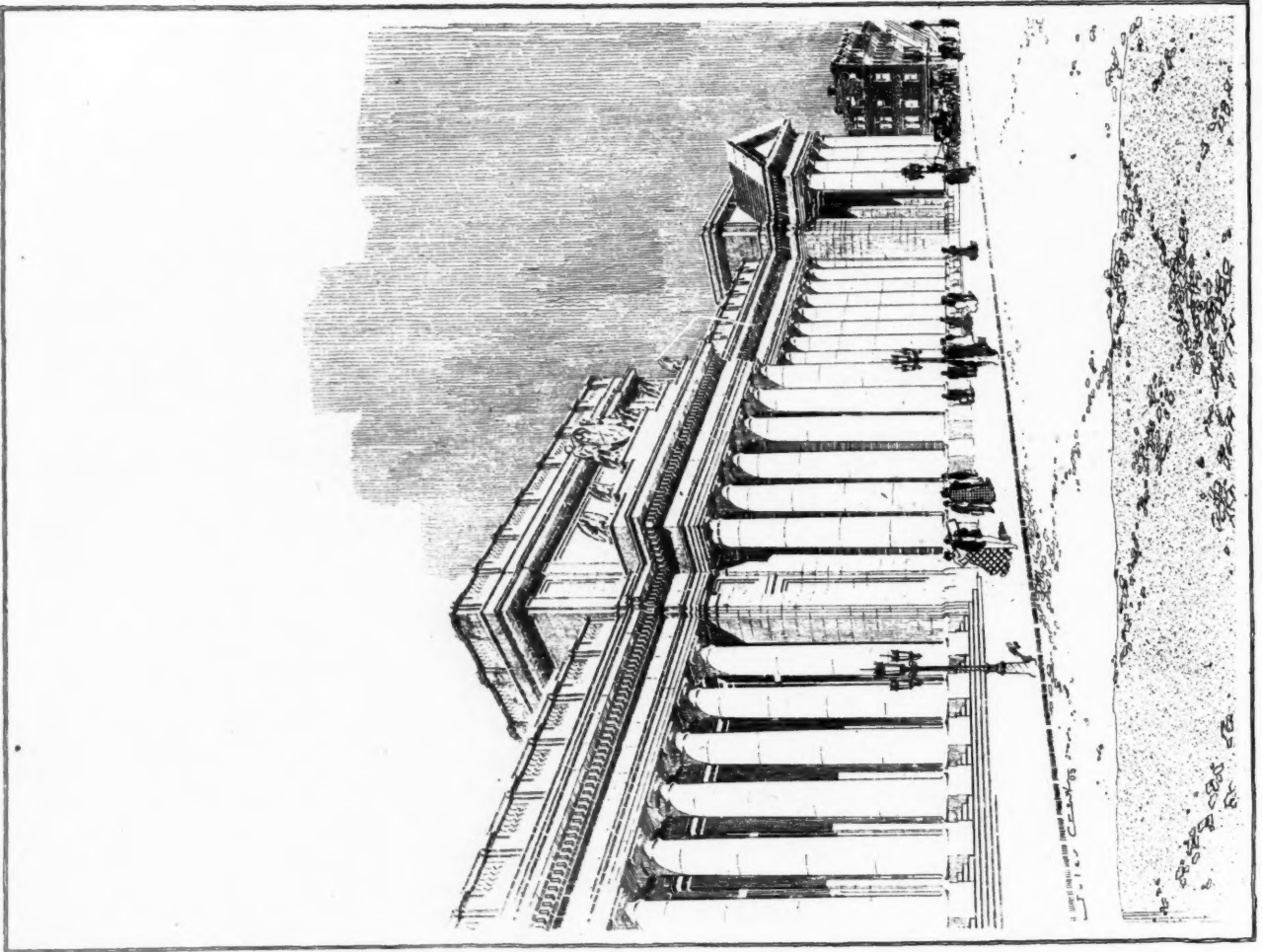
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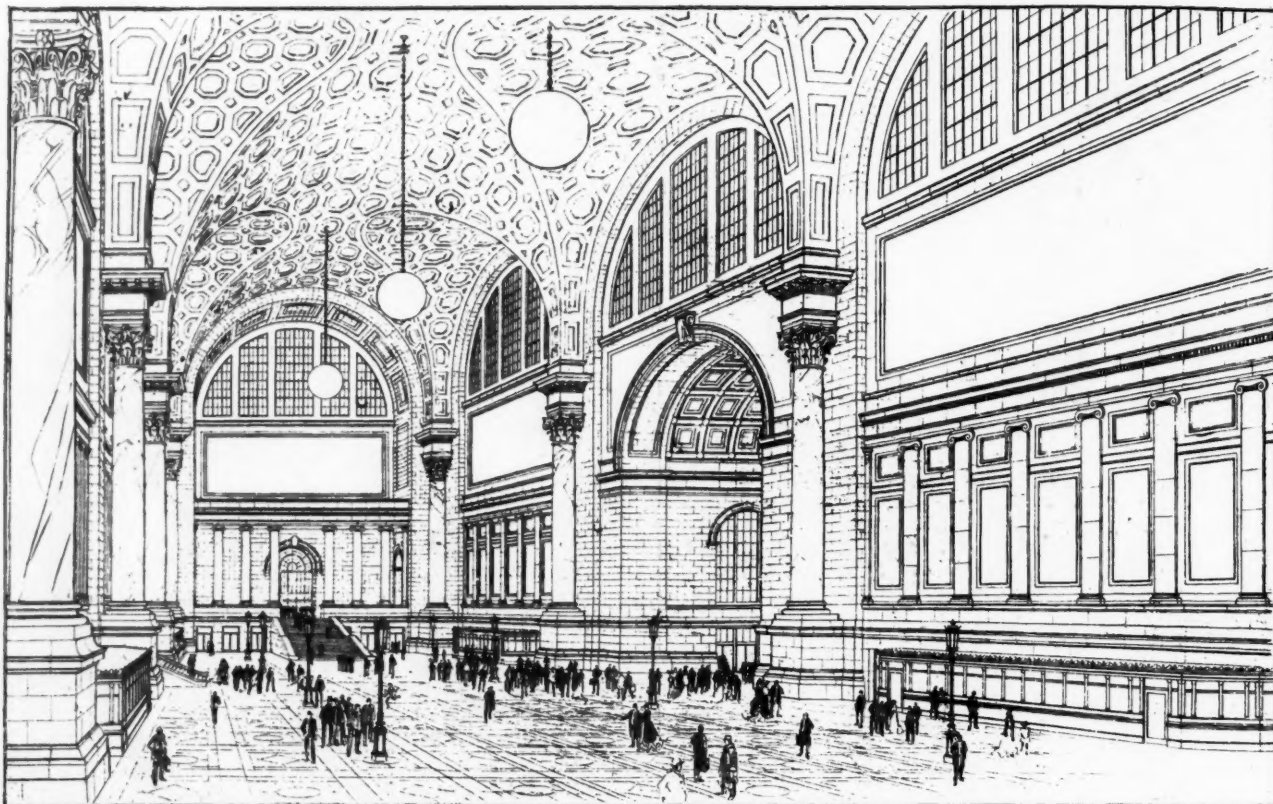
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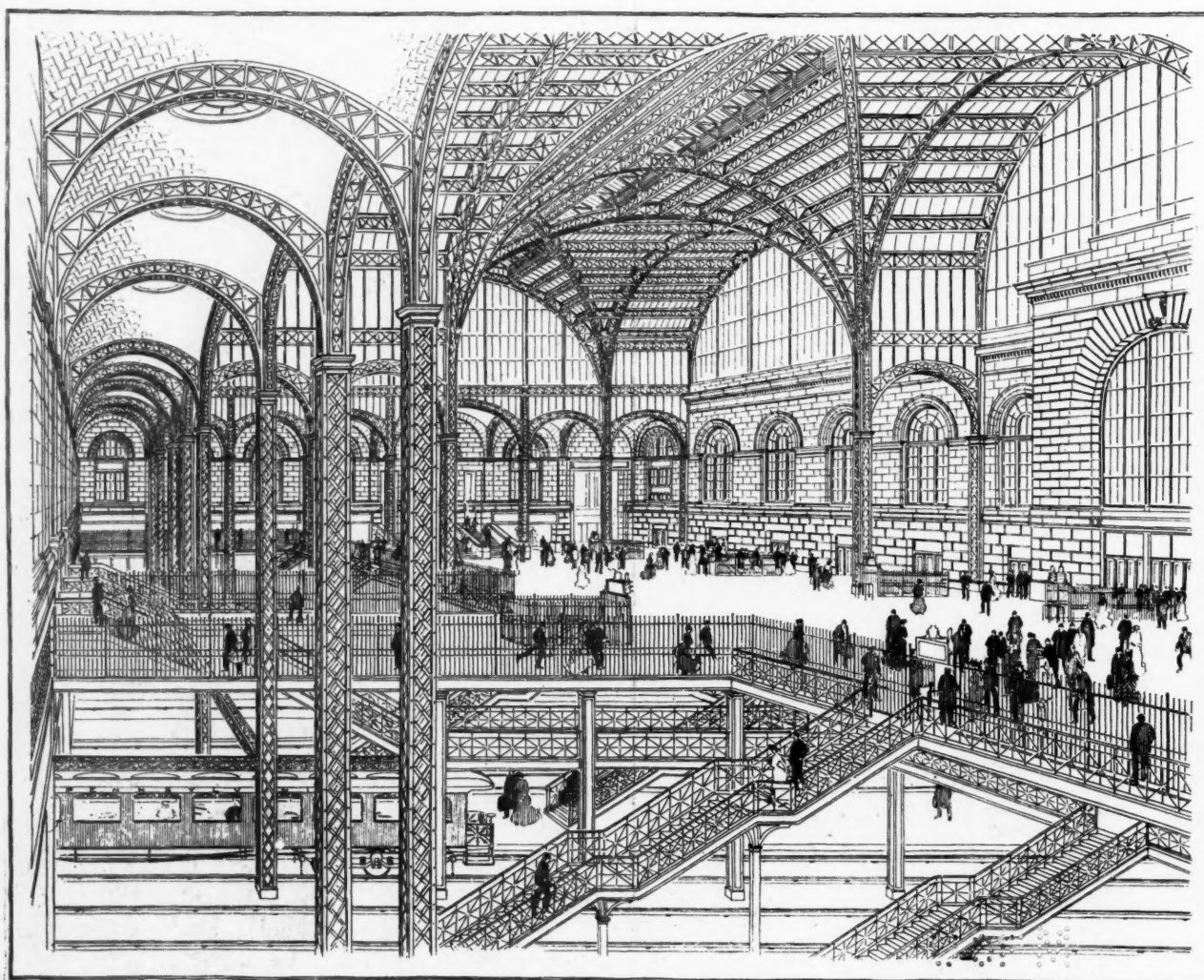
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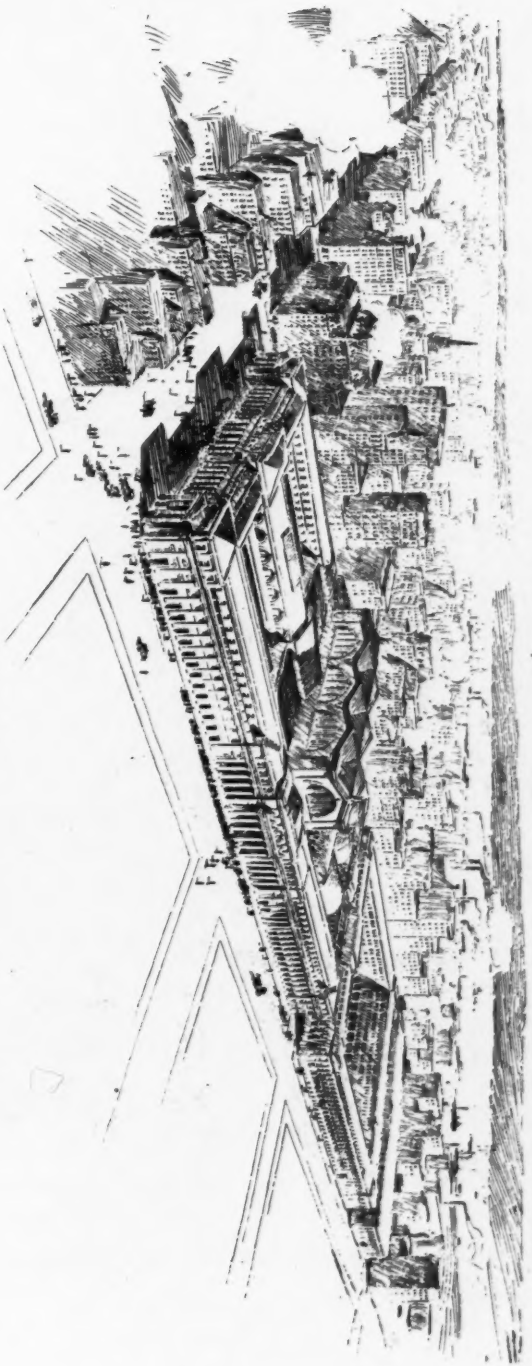
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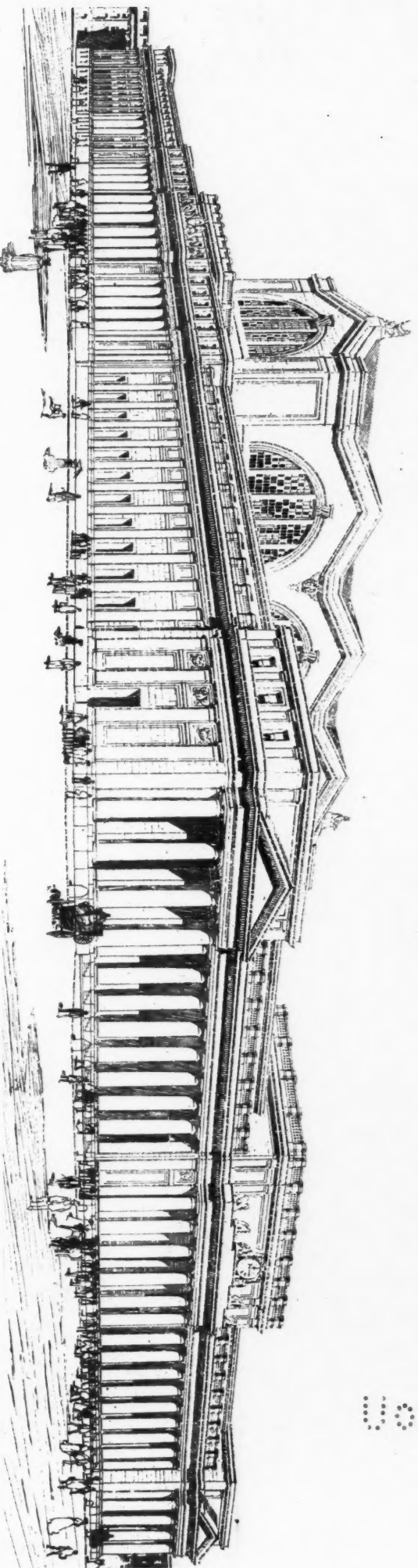
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Bird's Eye View

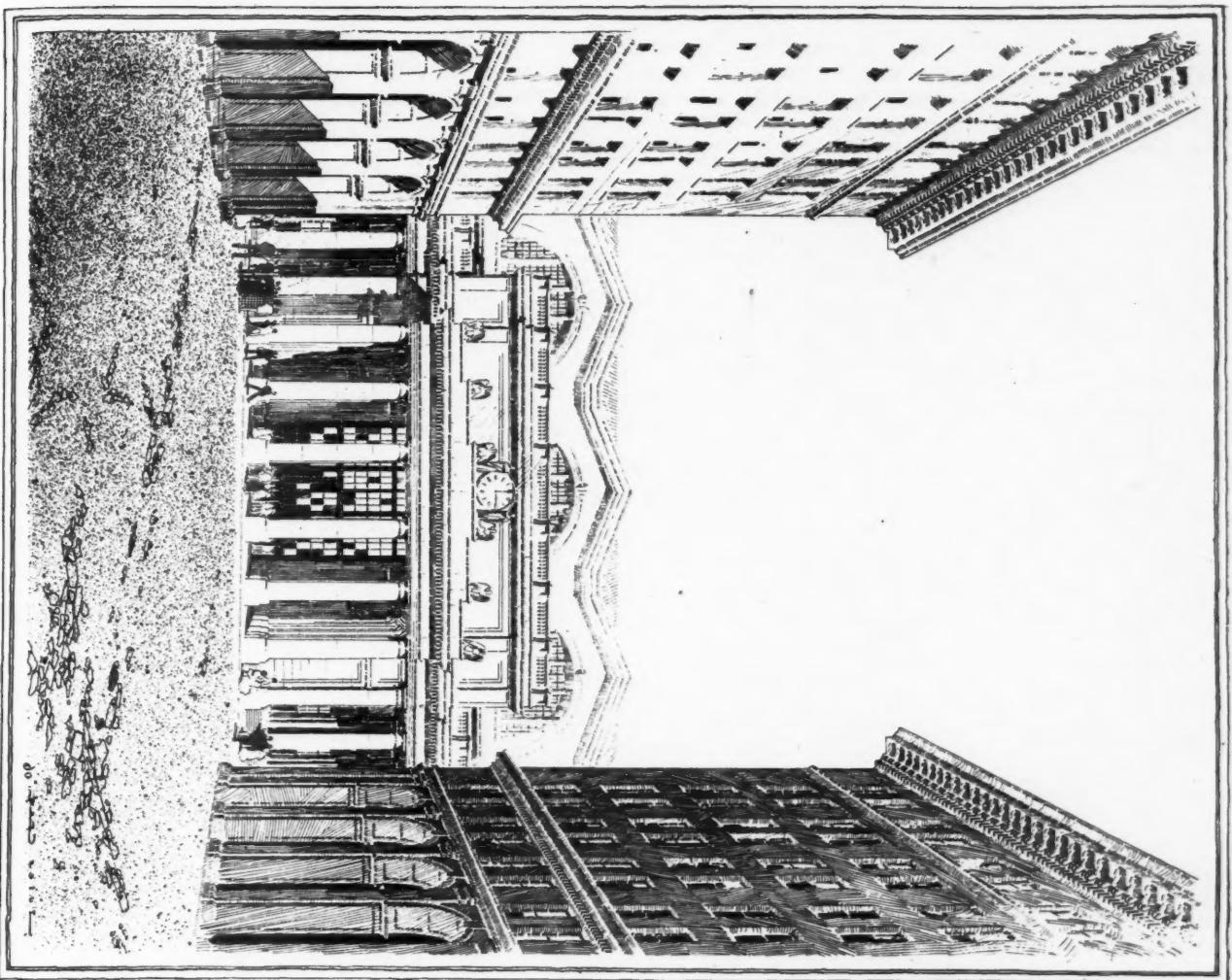
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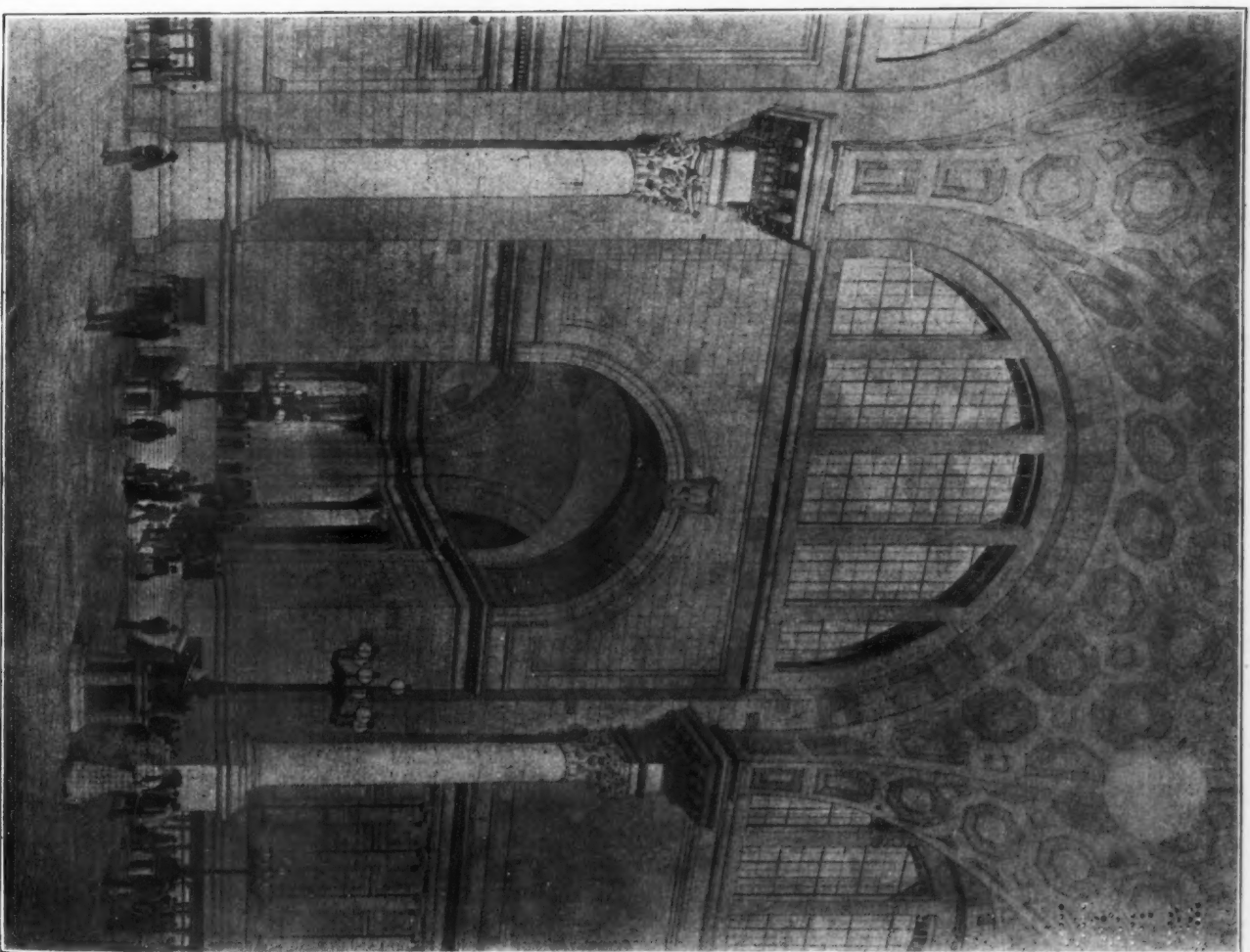
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View Down Thirty-Second Street

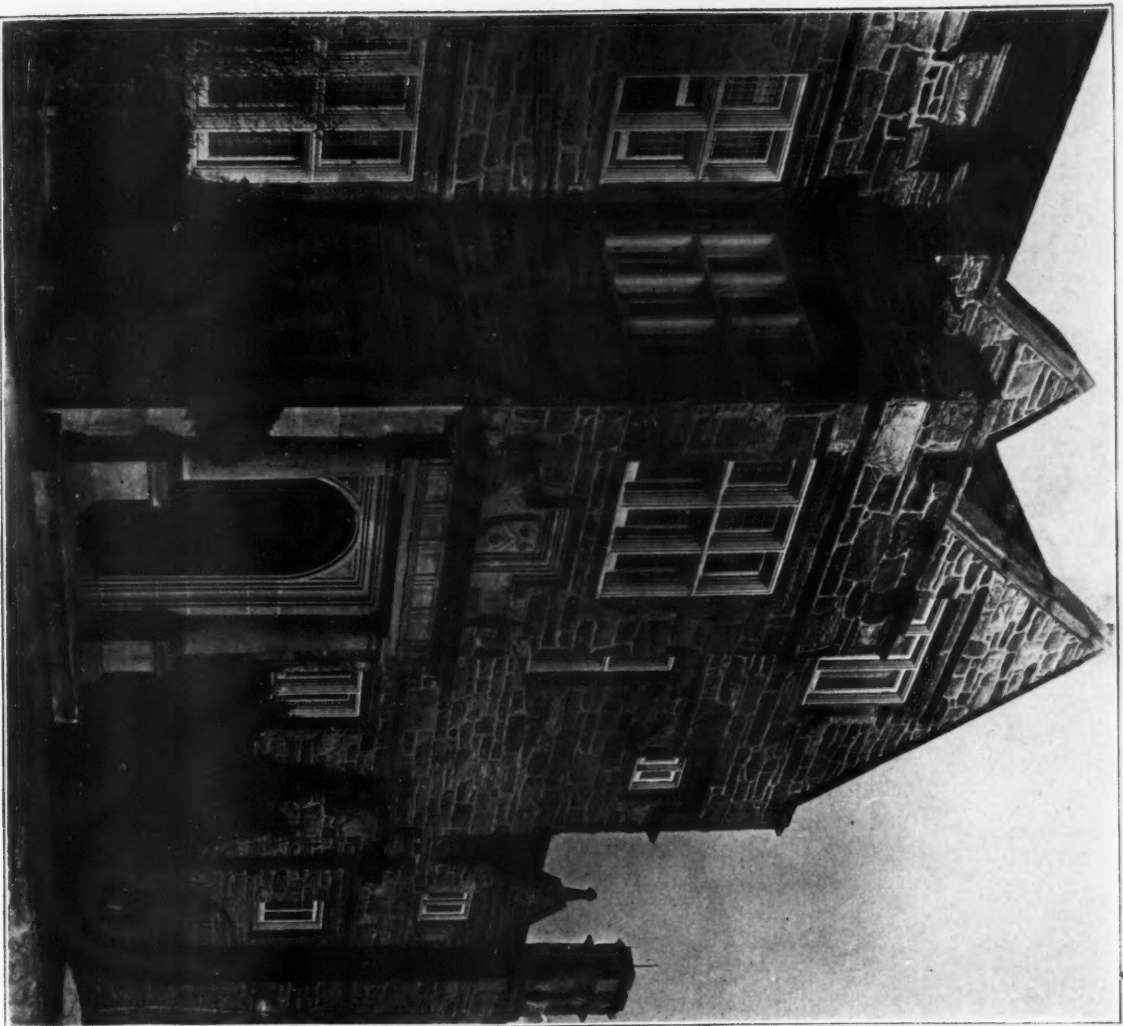
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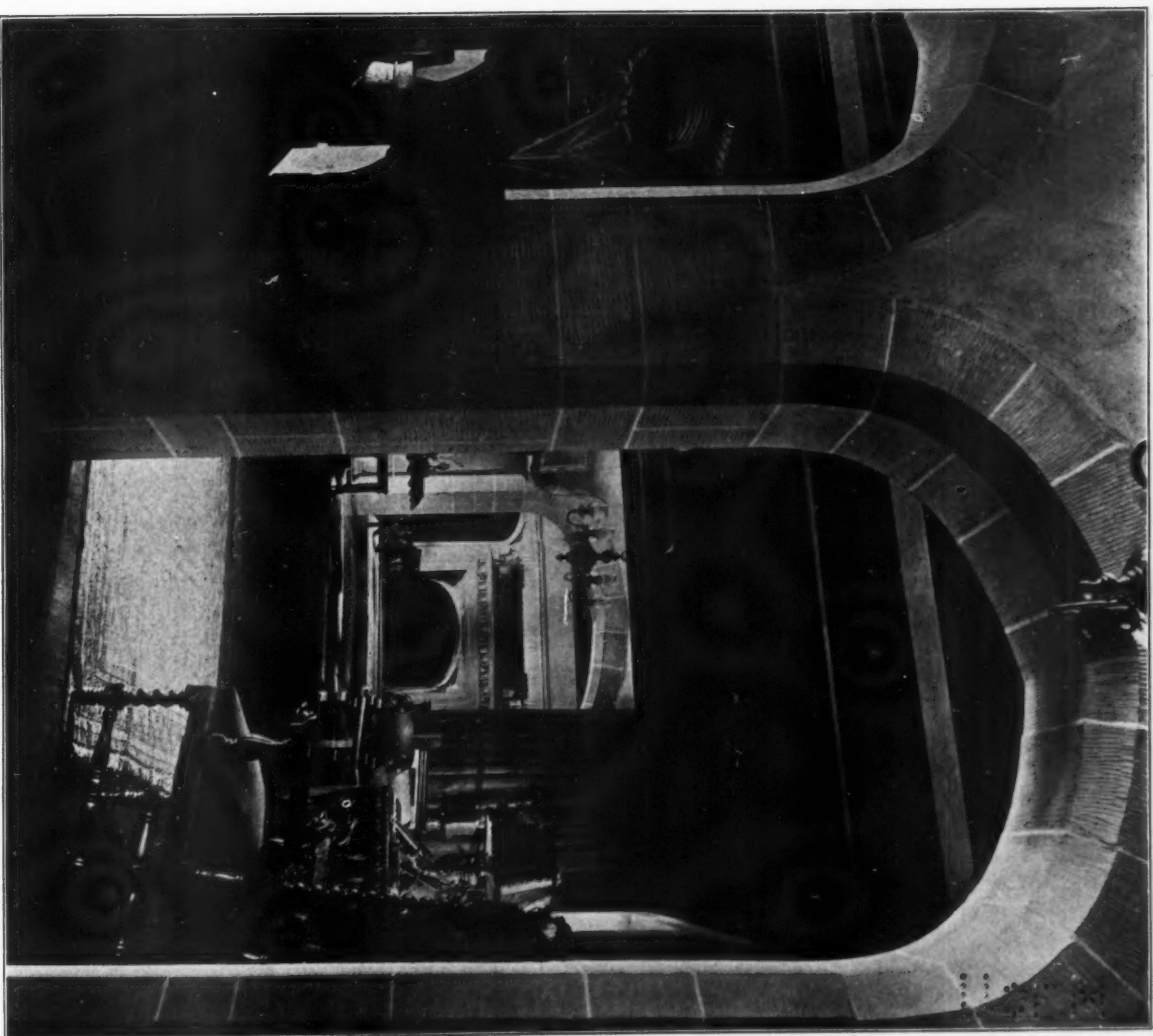
General Waiting Room. View Toward Arcade

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