

JUNE, 1906



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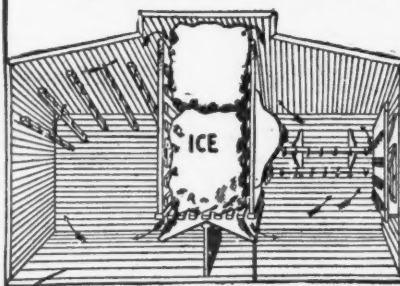
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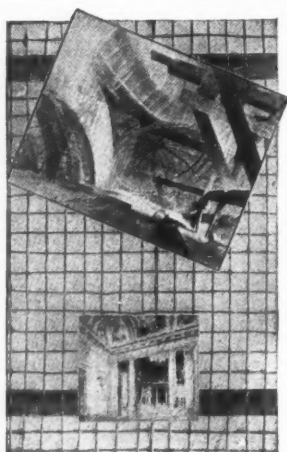
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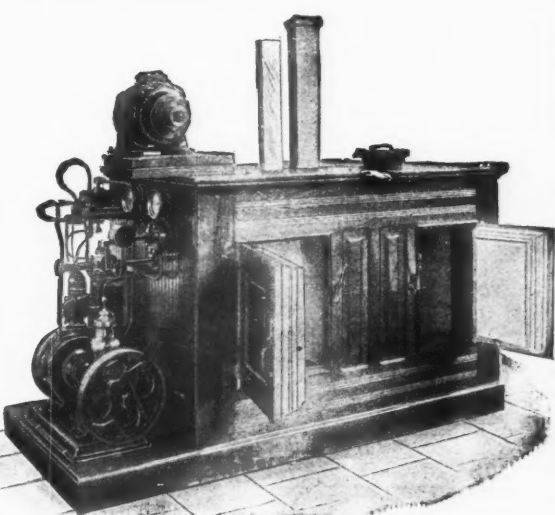
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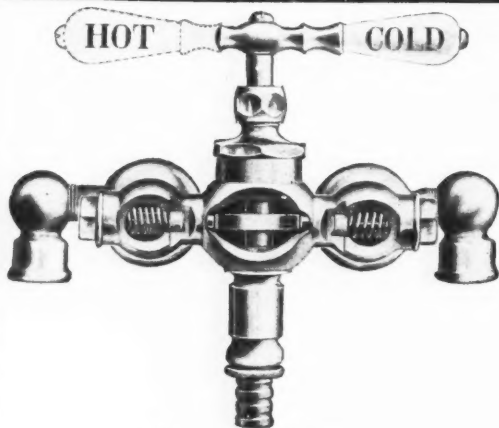
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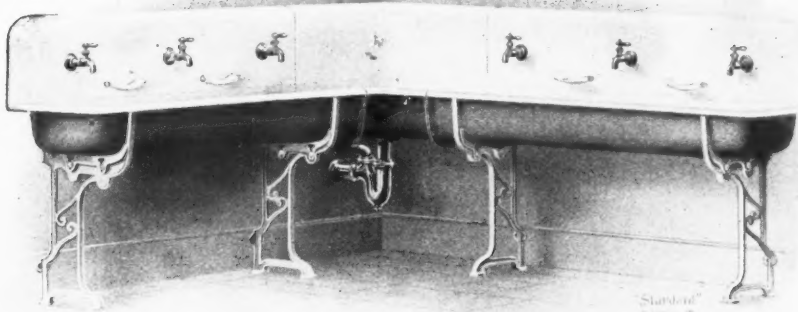
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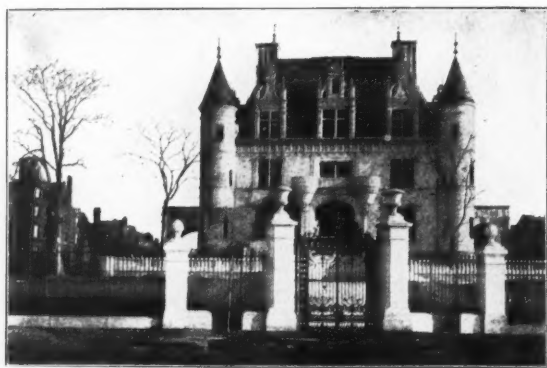


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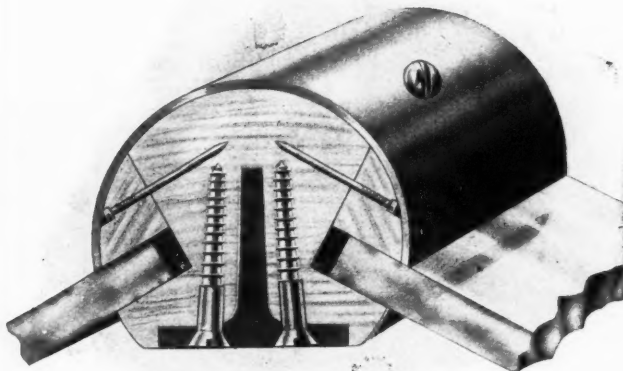
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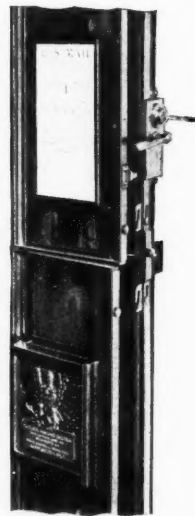
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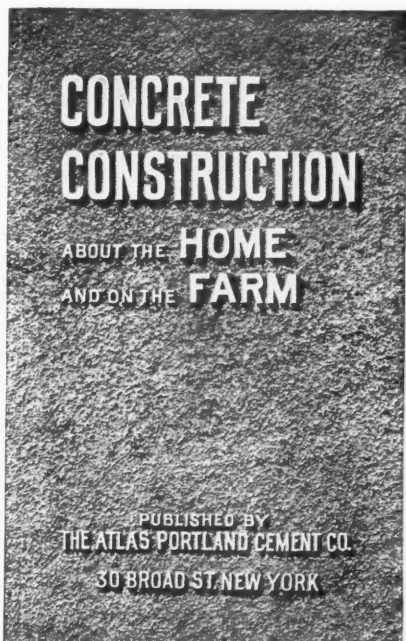
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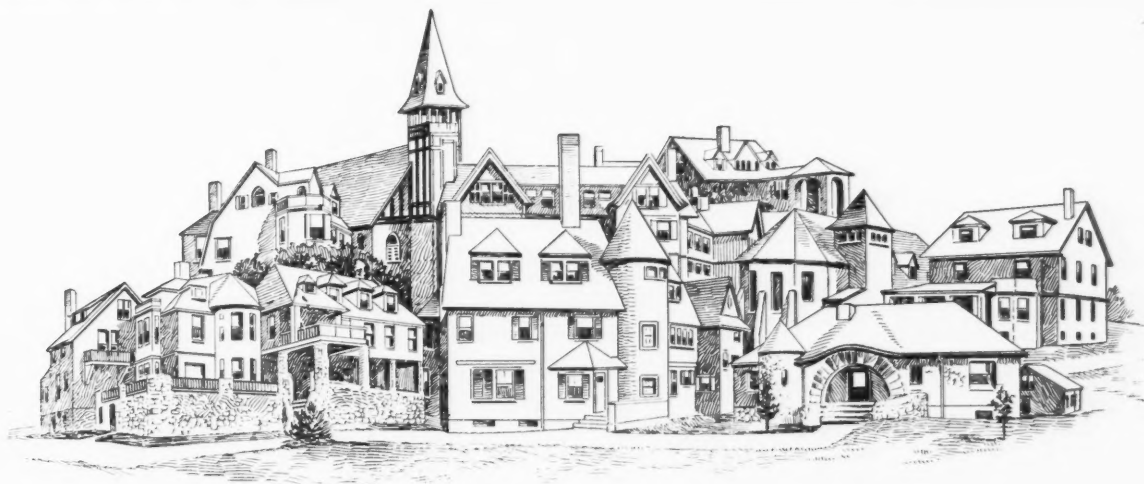
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No. 5



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NEXT CONVENTION AT WASHINGTON, D. C., 1907.

An Effective System for School House Plans.

Notwithstanding the attack last year upon the Board of Schoolhouse Commissioners of Boston, the work of the board has gone steadily forward under the able direction of Architect R. Clipston Sturgis. The Annual Report to February 1, 1906, is full of suggestion with regard to schoolhouse design, planning, equipment and decoration. The system of distributing the school work among selected architects, as conducted by the Boston Board, is giving that city schools of unusual interest in their design and plan. That the results are so satisfactory is due in a considerable degree to the standards established by the board, and to the staff of experts connected with the work. An interesting indication of the time devoted by an architect to the preparation of drawings, so little understood by the general public, is given in this report from which we quote:

Two firms, one with the experience of a previous building, and one without, attempted to make a set of drawings under pressure of the Board as quickly as possible. The former were appointed on July 22, 1904. Drawings and specifications were not ready for bids until October 25, 1905. The latter were appointed August 11, 1904, and drawings and specifications were not ready until March 13, 1905. In the one case fifteen months, in the other seven months. The drawings made by the architects for the former were for a high school, the first that the Board had planned. It was not able, therefore, to give the architects information at the outset, but was constantly changing instructions and modifying the plans presented. The preliminary drawings were not accepted until April, 1905, so that the actual completion of this set of high school drawings occupied about six months. The total number of drawings in the set was thirty-six. To this are added the drawings made by the engineers, seven in number for the heating, and nine for the electric work, and a specification of 150 printed pages, which was type-written more than once, corrected on galley and page proof by the architect and by the chairman before being finally printed. In the latter case the total number of drawings in the set was twenty-five. To this are added the drawings made by the engineers, eight in number for the heating and ten for the electric work, and a specification of 118 printed pages. All this takes time, and if it results in avoiding errors and having no extras it is time well spent. The second of the buildings referred to is complete, finished two months ahead of time, and the record of changes is \$320 added and \$1,931.62 deducted, and finished, irrespective of the bonus (\$3,850), for \$157,203.38, or \$1,611.62 less than original contract price.

Every part of the schoolhouse work has the attention of expert advice; the plans have the supervision of Professor Chandler; there are color experiments by a special committee of which J. T. Coolidge, Jr., and J. Randolph Coolidge, Jr., are members; and F. J. Cotton, M. D., is adviser in the selection and adjustment of chairs and desks, a most important department. Other experts are Professor Sanger on chemistry; Professor Sabine on physics, and Dr. Jelly on the care of the special classes. No

city is more liberal than Boston in supplying funds for educational work; that the disbursements are most carefully and judiciously considered is evidenced by a perusal of the report of the board.

**The Conditions
at
San Francisco.**

Apparently the municipal authorities at San Francisco are making haste slowly. This is to be commended. The time is well spent that is given to the judicious consideration of plans that shall best meet the needs of the city in the rebuilding, especially with the view to the greatest ultimate good. As foreshadowed in our May number, the Burnham plan has been adopted as the permanent basis for the reconstruction of the city. The havoc wrought has had the personal inspection of numerous experts in building—architects, engineers and contractors. Each of the three elements of destruction, the earthquake, fire and dynamite, have been given due consideration. Reports have been made upon each of the more important individual buildings and those of a class. In the estimate of damage there is naturally much variation. The more conservative investigators hesitate to give any estimate whatever, believing that much construction that appears sound will be found weak. The advocates of the various systems of fire-proof and patented construction are extremely active in securing data favorable to their special interests. It is only where conflicting interests agree or critical investigation has been made by a wholly unbiased and capable expert that conclusions can be depended upon. The greatest hope for an unbiased report rests in the movement for a commission of architects and engineers on the ground to make an exhaustive examination of each of the important buildings and formulate the results. A summary of the reports recently received is of interest. The damage to the tall buildings appeared greatest at a point about two-thirds of their height. It is therefore possible that the steel framework will when stripped show kinks at this point. It is a safe conclusion that, though buildings of this class may be injured they will not be destroyed. Buildings on solid or bed-rock foundation were least injured. A low heavy monolithic building on such a foundation has proved earthquake and fire proof. In one building a floor of steel beams with reinforced concrete was credited with so stiffening the building that it withstood serious damage.

More or less of the tile fireproofing had fallen off in various buildings, but in most cases had served to prevent serious injury to the steel frame work. The eight-story Marsden block was one of the buildings that escaped with little damage. This had reinforced concrete floors and all steel work protected with concrete. One architect concludes from his personal examination of the ruins that a brick building is not good construction to withstand earthquake, unless thoroughly bonded and tied, the brick work well laid in cement mortar, and the walls heavy; nor yet stone buildings nor those veneered. That concrete is fully as good for fire protection as tile. That concrete for filling between beams, especially when used as a monolithic floor, reinforced with steel, is better for earthquake or fire protection than hollow tile filling or flooring, and not only will resist crushing, but distortion, better than tile.

Another architect writes: "Steel cage construction is unquestionably the best, but it should have gusset con-

nections; the floors should be of reinforced concrete. All structural steel should be entirely enclosed with concrete, and the external walls should be of brick, terra cotta, or concrete, thoroughly secured to the steel frame. A curtain wall of re-inforced concrete with the net work of re-inforcement entwining the columns and beams and with the brick facing bonded into the concrete with a course of headers in every sixth course would seem to be the best thing for walls."

The facts are multiplying continually; there remains the consideration of their relative value and drawing just conclusions that shall safely guide to better construction.

**Tests of
Reinforced
Concrete.**

Architects and engineers agree that in the rebuilding at San Francisco reinforced concrete is destined to be one of the chief factors. Unless unusual care is given to the materials and workmanship there will be numerous failures in construction that will have a reactionary influence upon the sentiment now so strongly in favor of this system of building. An unfavorable condition is the fact that the cement produced in that section is not of the best. However, there is no good reason why proper materials should not be used, and, with judicious regulation and inspection by the municipality, a high grade of reinforced concrete construction be secured. In view of the intelligent care and watchfulness required to avoid failures, the series of tests of reinforced concrete beams conducted by Prof. Arthur N. Talbot during 1905 at the University of Illinois is of much value. The phenomena observed indicate that for normal 1-3-6 concrete of good quality a reinforcement of 1.5 per cent of steel of 33,000 pounds per square inch elastic limit will not develop the full compressive strength of the concrete. In beams having a smaller amount of reinforcement, failure will be due to the stretching of the steel beyond the yield point.

The diagonal tensile stress corresponding to the shearing stress represents the tensile strength of the concrete. Beams reinforced with tool steel showed failure at the average bond stress of 133 pounds per square inch. Mild steel placed horizontally gave no evidence of slip under a bond stress of 193 pounds per square inch. The results with loading at the one-third points compare favorably with multiple-point loading, and are comparable with uniform and other distributed loading. Repeated applications of a load which causes high compressive stresses in the concrete give increasing deformations; deflections after a dozen applications were found to be 12 per cent to 30 per cent greater than at the first application. Beams subjected to a stress of 15,000 pounds per square inch in the steel and 800 pounds per square inch in the concrete failed to return to their original position when load was removed, but retained a deflection of from 20 per cent to 35 per cent. Poorly mixed concrete and lean concrete used in the lower half of beams caused failure by diagonal tension at shearing stresses of scarcely more than one-half those at which beams with normal concrete failed in the same way. These facts do not establish the invariable action of reinforced concrete under the same conditions, but they are somewhat of an addition to the information on this important subject, gained from a series of carefully conducted tests with adequate apparatus and under the supervision of a man trained to observe and capable of deducing logical conclusions.

MUNICIPAL IMPROVEMENTS.

BY ALBERT KELSEY, ARCHITECT.

CHAIRMAN OF COMMITTEE OF EXPERTS OF THE ART FEDERATION OF PHILADELPHIA.

PART X—THOROUGHFARES.

SINCE thoroughfares are usually regarded as passages or as direct ways through rural park-drives, rambles, detached equestrian paths, etc., will be considered separately, confining the present inquiry to commercial high-ways, boulevards, avenues and streets; or to be more concise, to all public arteries and their accessories traversing more or less densely constructed areas.

The relation of intersecting streets to any thoroughfare, or at least the manner of forming the intersections, is a very considerable element in shaping its character. Consequently, a thoroughfare can not be discussed entirely

(A.) HARBOR THOROUGHFARES.

One can well understand that commerce, in a commercial nation, demands a free avenue of development; though it is more difficult to fathom the exact meaning of the phrase when asked to say just what provisions should be made for its unrestrained growth. Especially is this true here where short-sighted and ruthless sacrifices are forever being made under the false cloak of commercial prosperity. Sacrifices, too, which are as great a menace to the general commercial prosperity (though the people do not realize it) as to the general efficiency of the city, as will presently be seen.



SHERIDAN DRIVE AT ENTRANCE TO THE VILLAGE OF KENILWORTH, ILL. GEORGE W. MAHER, ARCHITECT.

as an independent unit, though it is the purpose of the articles to follow to take them up separately as distinctly individual types. Before proceeding to do so, it is right to point out once more that in cities built on radial plans, like Paris and Washington, land is cheap, good building sites offering one or more wide frontages and superb outlooks, often directly up or down two streets and out upon the open space formed by their intersection, are plentiful; while the streets themselves afford such directness of communication that if fashion or other allied interests do not build in many centers, as is sometimes the case, their buildings then inevitably radiate in many directions, instead of being confined to uninteresting rectangles in monotonous rectangular rows only too often crowded by tenements, and suffocated by the atmosphere of the slums. And again they occur at so many points that there are always good sites for new interests seeking a center. And, lastly, along radial streets frequent and diverse monumental effects on abutting property result, or are at least possible at every commanding corner.

Here where miles of water front are disfigured with privately owned piers, where the adjoining streets are infested with death dealing railways, naturally only vile and degrading neighborhoods accrue, while abroad similar areas are open and free to all, exemplifying lessons of order, economy and cleanliness. And more, in the most paternal of "downtrodden foreign communities" they provide in the fullest sense free avenues of development for commerce.

In referring again to Philadelphia, for a monstrous example, she is singled out not because she represents disorder on a grander scale than some others, but because her repulsive and unrestrained condition is more familiar to the writer than that of any other wounded city. Her anatomy has been contorted and disemboweled beyond belief, until her very entrails are exposed to view and are rotting in a state of utter disorganization. It is along her twenty miles of water front that virtually nothing creditable has been done; that splendid opportunities for public recreation have been spurned; that commercial freedom has been wiped out. In short, there her degradation is complete.

(To be continued.)

THE ELECTRIC LIGHTING OF BUILDINGS.

BY R. E. HEINE, ELECTRICAL ENGINEER.

PART III.

THE most approved methods of wiring require that all new wires should be laid in iron conduits, and the first cost should be allowed to cover such a type of construction. Although the cost of labor and materials vary slightly, and the total cost depends to some extent upon the size of the installation, the following table may serve as a guide in computing the first cost for the wiring of a building. The figures given apply for the wiring to the outlets only, and do not cover the cost of fixtures.

One, two and three-light outlets.....	\$ 3.00 to \$ 6.00
Six-light outlets	6.00 to 12.00
Twelve-light outlets	12.00 to 15.00
Floor outlets	10.00 to 20.00
Cut-out cabinets, per circuit	2.00 to 3.50
Flush switches	3.00 to 6.00
Drop lights, additional to outlet	1.00

Where a large number of single light outlets are to be grouped closely together, the cost per outlet would naturally be less than where these outlets are widely scattered. The cost of circuits in the cutout cabinets depends largely upon the grade of construction desired, and upon the arrangement of the circuits with respect to facilities for metering, flexibility and manner of control.

THE ARC LIGHT.

The field of the arc lamp for interior lighting is a limited one, and the application of such lighting is confined more generally to large spaces and to general illumination, where steadiness of light, color and detailed distribution are not essential.

Of the various types of arc lamps now in service there is practically only one, the so-called "Enclosed arc," which can be considered for interior illumination. The essential point of difference of the enclosed arc lamp from the open type consists in surrounding of the carbon rods by a semi-air tight glass globe, the object of which is to prevent the air from freely circulating around the carbons and the arc, shutting off the supply of oxygen contained in the air and thereby increasing the life of the carbons and the steadiness of the arc. A well designed enclosed arc lamp should burn one hundred and fifty to two hundred hours with one set of carbons, whereas the open arc lamp has a life of about eight hours under the same conditions.

Where it is absolutely necessary to preserve true color effects the light of the arc lamp is apt to lead to undesirable results. There is a decided prominence of violet rays in the electric arc, the removal of which presents a difficult problem. By using colored globes this may be partially overcome, at a sacrifice, however, of a small percentage of the useful light. Frequent attempts have been made to overcome this difficulty by the use of carbons impregnated with some chemicals, but the results have not been very satisfactory.

Arc lamps are usually operated from a 110-volt circuit, but can also be run on a 220-volt system by using two lamps in series. The power consumption of the enclosed arc lamp varies from 380 to 820 watts, and the candle power from 150 to possibly 800, depending upon the angle, globe and conditions. The standard or average size consumes about 550 watts, or two-thirds of a horse power.

Direct or alternating current can be used to equal advantage.

For interior lighting arc lamps should be hung at a height of not less than ten feet and not more than fifteen feet above the floor level, depending upon the area to be illuminated, on account of the distribution of light of the arc, which is not uniform at various angles. For general lighting one standard size arc lamp will serve an area of about forty feet in diameter, but in cases where merchandise is to be displayed, or where writing is to be plainly legible, an area of not more than twenty feet in diameter should be attempted for good illumination.

The light emitted from the arc is very intense, and in order to secure a better degree of distribution than could be attained with globes many systems of diffusers have been tried. These generally consist of a circular or conical reflector, placed in such a way as to conceal the arc from the eye, and throw the rays of light on a good reflecting surface on the ceiling. This latter surface is of such shape and design as will spread the light equally in all directions, resulting in a less intense, but more evenly diffused light throughout. Such systems should be attempted only for the lighting of large rooms.

As a general rule it should be noted that arc lighting for interiors should not be attempted except where the room is very large, and where a number of lights can be used. It is often necessary and desirable to use supplementary incandescent lights, especially along walls and in corners and for portions in the shadow of columns.

Arc lamps are made in numerous forms, both plain and ornamental, the casings being made mostly of sheet metal, iron, copper or brass; cast metal, such as cast iron or brass, and of drawn metal. For a lamp of plain design, a seamless drawn steel or copper case affords perhaps the greatest advantage all around. The drawn cases are very strong, devoid of rivets, lighter than cast cases and not easily broken.

For ornamental treatment to harmonize with surroundings special designs can be used. These are generally made up as castings and afterward hand-finished. Frequently arc and incandescent lamps are used on the same fixture, the latter serving merely to re-enforce the design and the light of the incandescent lamps used mainly for decorative effect.

During the past year another type of arc lamp, known as the "Flaming Arc," has been brought before the public. Although this type of lamp is better adapted for out of door illumination than for interior work, a word concerning its performance might be of interest.

In this lamp the carbons are not enclosed in what is known as the "inner globe," and the large outer globe serves merely as a diffuser. Instead of occupying a vertical position, the carbon rods are set at a slight angle, and both are fed downward from above. The arc itself is very long, and the current used is about twelve amperes, but due to the fact that two of these lamps are operated in series on a 110-volt circuit, the power consumption of one of these lamps is but 10 or 15 per cent higher than the ordinary arc. The carbons are impregnated with some salt, resulting in an intensely yellow arc.

(To be continued.)

THE PLANNING OF HOSPITALS.

BY T. M. CLARK, ARCHITECT.

PART IX.

TO FACILITATE the uniform distribution of heat to the different portions of the establishment, the boiler house is usually placed in the axis of the group of buildings, but a little to the rear. This generally brings it behind the main administration building, where it is least in the way of the wards, and where supervision from the administration building is easiest. Convenience of access for coal wagons is, of course, essential, and provision must be made for disposing of ashes. The boiler house itself, besides the space required for the boilers and for coal storage, usually accommodates also the main ventilating fans, and often electric generators and engines, all of which should be placed in a separate room, so that the coal dust and ashes from the boiler room may not injure them.

Most hospitals in this country are heated by indirect steam, the air requisite for ventilation being, in winter, passed over hot steam pipes, to raise it to the proper temperature before it is admitted to the rooms. There are many variations in detail in hospital heating systems, but, in important establishments, the fresh air is usually driven by a fan through a large "tempering coil," or screen, composed of five or more sets of steam pipes, placed vertically at a little distance apart and "staggered," the pipes of one set coming opposite the intervals between those of the next set, so that all the air passing through must come in contact with some hot surface. Where the hospital is simply planned, and not too large, the tempering coil may supply all the heat necessary, the various sections being, in this case, arranged with separate valves, so that one, two or more may be thrown into action, according to the amount of heat which it is desired to impart to the air, and pipes, or, more commonly, underground conduits then convey the heated air to the rooms in which it is to be used.

Where, however, the arrangement of the buildings is complicated, the air which leaves the tempering coil at a given temperature will not warm uniformly the different rooms in which it is delivered, owing, in part, to differences of orientation or exposure in the various buildings, and, in part, to loss of heat in passing through long conduits, the rooms nearest the boiler house being in such cases usually overheated, while those at the greatest distance are cool. The remedy for this is to provide each building with auxiliary heating surfaces, by which the air from the tempering coil may, if necessary, be raised to the required temperature. In this case the tempering coil is generally made smaller, so as to supply air at a moderate temperature, the auxiliary surfaces in each building being called upon to raise it to the degree desired. The auxiliary surface for local use is commonly in the form of stacks of pin radiators, over which the air delivered from the tempering coil through the main conduit passes into the secondary conduits by which it is conveyed to the rooms. In order to give still greater control over the temperature of the air delivered in different parts of the ward or room, it is common to provide a "mixing valve," or metal flap, in the secondary conduit, by which the whole or any part of the current may be directed through the secondary radiators, and the portion so superheated mixed again with the rest before the air reaches the room. The mixing

valve is usually controlled by means of a chain from the room in which the air is delivered, so that the temperature may be modified at every register if desired. In a large, open space like the main room of a hospital ward this is, however, rarely necessary, and two or three mixing valves and secondary stacks should be sufficient. A useful addition to the system is an apparatus for automatic control, of which there are two or three efficient kinds. With this apparatus a dial, or thermometer, is placed in the room to be heated, and an index set at the temperature which it is desired to maintain in the room. If the temperature rises beyond the point indicated, a mechanism, operated by the expansion of air, or of mercury, shuts off steam, or moves a mixing valve, as the case may be, until the temperature falls again. In a large plant, the automatic control usually actuates the mixing valves, but it is equally efficient if connected with the valves of the tempering coil, or even with the draft doors of the boiler.

However, the air may be brought to the desired temperature and maintained there it is necessary that it should be distributed as evenly as possible through the room, in order that no patient may have to breathe air which has already served some one else. For this purpose it is usual to provide a register for every bed. The old practice was to put the register under the bed, where it could not be used as a spittoon, but a floor register catches much dust, and a wall register under each window is better. It is true that it is possible to use a wall register as a spittoon, but it is difficult to do so where the usual hospital table is placed over it, and a wall register under a window, where the air is forced in by a fan, offers the advantage that the downward flow of the air chilled by contact with the glass in winter is counteracted by the ascending force of the warm, fresh current, and the latter is held longer in a position to be breathed by the patient, while the cold draughts descending from the lofty hospital windows are checked and rendered harmless. The inlet registers, and still more, the outlet registers, collect dust, even when placed in the walls, and the fronts should be so arranged that they can readily be taken out and washed, and the surfaces of the conduit behind wiped with a damp cloth. Such conduits may be had of enameled iron, which can be much more easily and thoroughly cleaned than the ordinary galvanized iron.

To be thoroughly efficient the heating and ventilating system of a large hospital should include exhaust fans, to draw out vitiated air from the rooms, and dispense it into the atmosphere. While the main, or "plenum" fans, if properly proportioned, can be depended upon to force a sufficient quantity of fresh air into the rooms, the currents may not always take the desired direction, and, in some of the corners, the atmosphere is likely to be nearly stagnant, even though outlet flues are provided for its escape. By means of an exhaust fan this inequality of distribution is easily remedied, and the fresh air currents directed uniformly to all parts of the room. It is usual to make the exhaust fan of smaller capacity than the plenum fan, as its office is simply to regulate a distribution which would go on, although unevenly, without it, through the leakage around doors and windows, as well as through

any outlet flues that might be provided. The capacity of the plenum fan, on the other hand, must be accurately calculated, as must be also the dimensions of conduits, flues and registers, the extent of heating surface in the radiators, and the capacity of the boilers and the chimney in order to obtain satisfactory results. The modern rule is that every patient in each ward of a general hospital should be supplied with at least three thousand cubic feet of fresh air per hour, which should be increased to five thousand feet in infectious wards; and the velocity of the current issuing from any register should not be greater than six feet per second, a higher velocity than this causing unpleasant, and perhaps dangerous, draughts. The sizes of the conduits required for delivering a given quantity of air at a velocity of six feet per second are easily calculated, and the amount of steam-heated radiating surface required to warm this air from zero or below to the standard of temperature adopted is also readily ascertained from the books on the subject, which give also the proportionate dimensions of boilers, grates and chimneys.

Both plenum and exhaust fans are most conveniently driven by electric motors, but an engine for the plenum fan in the basement, with a vertical shaft to the exhaust fan, which is usually placed in the upper story, or the roof, will answer every purpose where electric current is not available. In large hospitals, however, it is becoming common to install high pressure boilers, with engines and dynamos for producing electric current on the spot. The current so produced may be used not only for driving the ventilating fans, but for operating elevators, and laundry and other machinery, as well as for lighting the rooms at night; and the exhaust steam from the engines which drive the dynamos may be used in the laundry and kitchen, as well as for heating the whole establishment in winter.

It not infrequently happens that hospital wards, in pursuance of some theory of hygiene, are heated and ventilated in what appears to be an eccentric manner. In England, for example, and among those who follow English traditions, an open fire is regarded as the perfection of warming devices, and hospital wards are fitted with open fireplaces, like those in private houses, but larger, on the supposition that the patients are in this way afforded the best possible heating as well as ventilation. In the mild climate of England, where the windows can be open all the year round, with a little radiation from a fire to take off the chill, and dry the room, this may be very well, but such a system is unsuited to colder climates. Even as ventilators, open fireplaces are greatly overrated, a little experimenting, in cold weather, in a room heated by one, soon showing that, while copious streams of cold air rush across the floor from the doors to the fireplace, the atmosphere above the level of the top of the fireplace opening is very little disturbed; and, if the windows are closed, the room well filled with people, and lamps or gas-jets burning, soon becomes extremely foul. In a hospital ward, furnished, as is often the case in England, with a large fireplace, either at one end or in the middle, the result is likely to be the same, the air in the upper part of the room, unless the windows are open at the top, soon becoming foul, and affecting, by diffusion, that below. Moreover, pleasant as the radiation from an open fire is to a well person, who can move away from it when he wishes, it is doubtful whether it is equally salutary for a helpless invalid in bed near it, who, if the fire is hot

enough to give any warmth to patients at a greater distance, may be condemned to suffer for hours or days an exhausting perspiration.

Some years ago the theory was vigorously advocated that all hospital heating should be by radiation, and that the walls and floors of the wards ought to be heated by an adaptation of the Roman hypocaust system. Nothing, perhaps, was ever devised more uncomfortable in practice than this method; and, while there is, undoubtedly, much reason in the theory of most medical men, that the air which patients breathe should be as cool as practicable, and that radiated heat, particularly that from an open fire, is valuable as a stimulus to the skin, no satisfactory way seems to have yet been invented for administering these tonics to patients confined to their beds in large hospital wards; and a liberal supply of fresh air, at a uniform temperature of 65° to 68°, evenly distributed throughout the room, seems, on the whole, to give the best results.

Next to the heating and ventilating plant, the operating room most needs, perhaps, a building to itself. It is imperatively necessary to keep everything connected with surgical operations free from dirt, dust and atmospheric contaminations of every kind, and this condition can best be fulfilled in a building connected with the main body of the hospital only by well ventilated corridors. Although comparatively isolated, the operating department of a large hospital should be near the administration building, so that accident or emergency cases may be received from the ambulances, registered and attended to without a moment's unnecessary delay; and it should also be so conveniently connected with the wards that patients can be readily wheeled in from them. Except for these communications it should be complete in itself. The essential portion is, of course, the operating room, and the most essential point in this is, perhaps, the lighting, for without a good light serious operations can not safely be attempted. Both front and top light are necessary, and both must come from the north, so that the windows will never need shading. The usual arrangement is to have a wide window in the north side of the room, extending nearly to the top, and a skylight above, continuing the window toward the middle of the ceiling. As usually constructed, a timber or iron beam is carried across the top of the window, separating it by a foot or so from the skylight. This beam casts, however, a shadow, which may interfere with the surgeon's work, and, in the best operating rooms, it is dispensed with, the window and skylight being constructed together, of slender iron framing, without any heavy crossbars to cast shadows.

Except for the window, the walls of the operating room must be as plain and smooth as possible. All the angles should be rounded, and the whole, including floor, walls and ceiling, made washable. In private hospitals marble wall-linings are much used for operating rooms, but four or five good coats of enamel paint on ordinary plastering answer every practical requirement. The base should be of curved tiles, and the floor of some hard, non-absorbent material, free from cracks. It is common to set a large piece of rough plate glass in the floor under the operating table, on the theory that blood and other stains can be wiped more easily and thoroughly from glass than from any other material. The joints around the glass need to be well looked after.

(To be continued.)

THE OLD CALIFORNIA MISSIONS AND THEIR INFLUENCE ON MODERN DESIGN

BY W. L. B. JENNEY, ARCHITECT

A CLOSE study shows that the modern design bearing traditions of the mission style consists in its principles of good architecture generally, such as satisfying the requirements in the most direct manner, adaptability to



the environment, the most economical use of the material, the use whenever practicable of the material at hand in the most skilful manner, the using of proper proportions in all parts with a judicious and agreeable fenestration, etc.



HOUSE OF MR. SEVERANCE, LOS ANGELES, J. C. NEWSOM, ARCHITECT

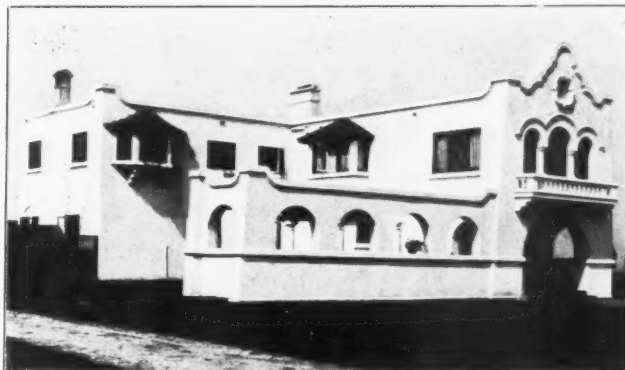
The station on the Santa Fe at Albuquerque is a very artistic and picturesque design that might have been designed by an old mission architect. The environment of the Indians and their adobe huts are near by.



A BIT OF THE RIVERSIDE HOTEL

I find this to be true that wherever I find a dwelling, or I may say a building, that suggests the mission style I always decide at once that it deserves study and usually end by admitting that it is a good design.

I found in the city library (Los Angeles) a very fine work entitled "Spanish Colonial in Mexico," by Sylvester Baxter, published in Boston by T. B. Willet. One folio volume of text and five volumes folio of photographs,



HOUSE, LOS ANGELES, JOHN PARKINSON, ARCHITECT

nicely mounted. It is well worth the perusal of all interested in the subject.

Mrs. Hollenbeck's residence, near the old folk's home, she has built at Boyle Heights, Los Angeles, shows the mission influence.

In Los Angeles and the environment there are more cottages per square mile than I think can be found elsewhere. Those of one story are called bungalows; many have a story and a half, and the majority show a mission influence, but not the church gable seen in Mrs. Hollen-



HOUSE FOR MR. BARTLETT, LOS ANGELES, C. F. WHITTLESEY, ARCHITECT

beck's residence and in the typical mission residence. This belongs to the church and not to the habitations, though to many it is the characteristic of the style. The architects of Los Angeles have by degrees worked up a so-called mission style of their own, omitting, however, almost entirely the church gable, confining themselves to features of the habitations. The roofs are usually quite steep, 40 to 45°, with projecting eaves, often covering the porches or

verandas. Frequently, however, the verandas are behind an arcade as in the typical mission residence.

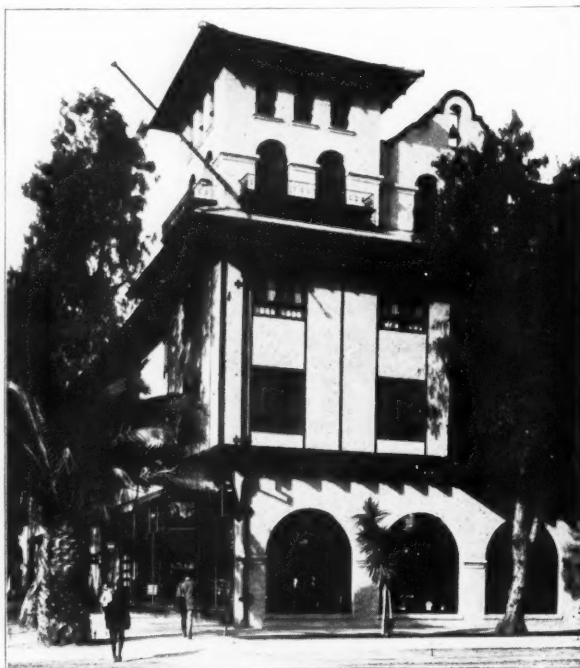
In the cottages or bungalows the chimney is usually outside, often built of brick dotted with small boulders. The habitation is set well back from the street with a lawn in front, decorated with the date palm, the royal palm, and the California fan palm, the picturesque dracena, many fine flowering small trees, and beds of tea roses and borders of flowers. When the grounds admit of it there is the characteristic pergola covered with climbing roses or vines. When the site is high it is terraced and a retaining wall built on the sidewalk line, with the ground behind the wall filled in high and sloped to the face of the wall, which is usually built of boulders laid in cement

mortar with the joints kept well back from the face, the rounded face of the boulders projecting. Along the inner face the wall is planted with all of the trailing vines, of

which there are so many here, which are filled with pretty daisy like flowers in many colors. I saw one terrace wall covered with the trailing rose geranium almost covering the face of the wall with its bright rose colored flowers and green leaves, making a very pleasing effect.

The lots are usually separated by hedges. There are many hedge plants that grow well here and are always green, and usually in flower, such as the laurestina, which is used so much in Italy; the calla lily, red geraniums, a continuous bloomer here, and many others.

Flowers here grow so easily and cost so little that every cottage, however humble, is surrounded by a garden. Most every one has also an orange tree or two and a lemon, ornamental as well as useful.



A CORNER, RIVERSIDE HOTEL

Riding near an old mission I saw an aged priest sunning himself. He looked so characteristic of his environment that the picture suggested "A Peaceful Reverie."

SANITARY ENGINEERING IN THE MODERN OFFICE BUILDING

BY J. PICKERING PUTNAM, ARCHITECT

PART XI

THEREFORE, the trap will resist siphonage as long as there is any waterway at all left in the trap. Yet when the discharge is entirely stopped by sediment, or retarded to a point of inconvenience, it will of course announce itself and necessitate opening and cleansing.

It only remains to determine how far it is best to contract the horizontal dimensions of our trap in order

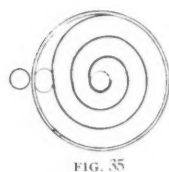


FIG. 35



FIG. 36

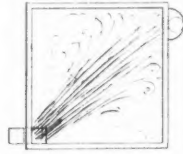


FIG. 37



to obtain on the whole in practice the most desirable results.

Our next experiments were therefore made to decide this question.

A number of different sized spirals were tested, two of which are shown in Figs. 35 and 36, the former being ten inches and the latter seven inches in diameter. Both are able to withstand the severest strains applied to them and can never be siphoned in plumbing work.

For the purpose of studying the movements of waste water through drum traps, a number of shallow traps like that shown in Fig. 25, and of various sizes and shapes, were constructed of glass and metal.

The actual movement of the air and water in these

traps, under both siphonage and friction tests, proved quite different from what would generally be expected. It is natural to suppose that under the pressure (or "suction," as it is popularly called) of a powerful siphoning action, air and water would be forced straight across the reservoir from inlet to outlet arm along the line of the least resistance in a straight and rapid current, somewhat as shown in Fig. 37, with return eddies on each side of the main current. It would also be natural to expect some such current to be formed when water is discharged through

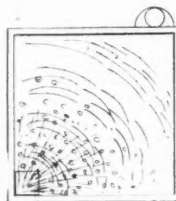


FIG. 38

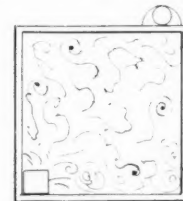


FIG. 39



FIG. 40

the trap with considerable force from a fixture above connected up as shown in Fig. 34.

The actual course of the water in these cases was, however, altogether different from our theoretical assumption. Under siphoning action the course of the water presented the appearance shown in Fig. 38. The water was projected violently upward from the inlet mouth and, striking the glass top of the trap, was reflected in a strong

spray downward and outward with the formation of bubbles extending nearly half way across the trap. At the same time powerful waves were set up, which formed irregular rings or waves around the inlet mouth, as shown.

On the other hand, the course of the water under a normal discharge was even more at variance with the ex-

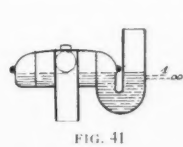


FIG. 41

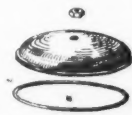


FIG. 42



FIG. 43

pected. The water, though coming with great force under the head shown in the cut, seemed nevertheless to eddy about quite leisurely and sluggishly in all sorts of directions, forming, to all appearances, quite meaningless and uncalled for curves and spirals, with occasional unaccounted for dartings toward unexpected points. It ap-



FIG. 44



FIG. 45



FIG. 46

peared to meander about, as one might say, "with its hands in its pockets," and not by any means to rush direct to the outlet opening with the frantic haste and decided manner we had confidently expected and planned for it. Fig. 39 gives quite an accurate idea of the curious antics played by the current. The black specks in the drawing indicate pieces of heavy, solid matter thrown into the water for the purpose of better studying its peculiar movements. These at times jumped about quite quickly, as if suddenly inspired for action by a brilliant idea, and at other times lay motionless for a while, as if deliberately resting for another violent effort a moment later.

Our last step consisted in constructing the parts of the trap in such a manner as to permit of economical manufacture and easy opening and closing for examination while in use.

Figs. 40 to 46 illustrate the finished trap as it appears made in one case for basins and in another for bath tubs, and constructed of copper and brass or of cast iron. The trap in the latter case may be either black japanned or finished both inside and outside in white porcelain enamel, which both gives a perfectly smooth surface and presents a very attractive appearance, corresponding with the white porcelain fixtures with which it is used. In Part I of this article I outlined roughly the reasons why the use of the "main house" or "disconnecting" trap ought to be prohibited by law, giving the arguments usually urged that its use restricts ventilation and increases the cost of the work.

But there is another very strong reason which I have never seen advanced, but which I consider exceedingly important, and that is that its general use deprives us of the advantage of one of the most effective and simple methods known of filtering the air of cities and towns of dust and disease germs, an advantage which in times of epidemics seems to be of very grave importance.

In order to provide a simple ocular demonstration of the manner in which the wet interior surfaces of sewers

and soil and waste pipes arrest these fine particles of dust and their accompanying bacteria, and gradually clear the air of them, I have constructed several experimental drain pipes of metal and glass tubing of different lengths varying from ten to twenty-five feet, both with and without bends and traps. Figs. 47, 48 and 49.

These pipes were thoroughly moistened on the inside with water and a specified quantity of dry dust from the street was placed at one end of each, and the attempt was then made to blow the dust through the pipes from end to end by means of air blasts of varying strength.

Before describing these experiments it is important to point out the relation which dust bears to disease and disease germs and how it serves to disseminate bacteria through the air and then to show what becomes of them, when they are brought in contact with the moist surfaces of sewers and drains and with the water in traps.

Mrs. Percy Frankland, fellow of the Royal Microscopical Society; honorary member of Bedford College University of London, and joint author with Professor Frankland of "Micro-Organism in Water," "The Life of Pasteur," etc., says in her interesting work entitled, "Bacteria in Daily Life," published in 1903:

"That it is no exaggeration to describe streets, from the bacterial point of view, as slums, is to be gathered from

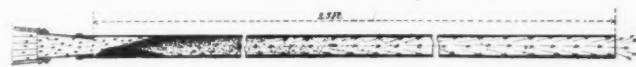


FIG. 47

the fact that much less than a thimbleful of that dust which is associated with the blustering days of March, and the scorching pavements of summer may contain from nine hundred to one hundred and sixty millions of bacteria. But investigators have not been content to merely



FIG. 48

quantitatively examine street dust. In addition to estimating the numerical strength of these dust battalions, the individual characteristics of their units have been exhaustively studied, and the capacity for work beneficent or otherwise, possessed by them has been carefully recorded. The qualitative discrimination of the bacteria present in dust has resulted in the discovery of, amongst other disease germs, the consumption bacillus, the lock-jaw or tetanus bacillus, bacteria associated with diphtheria, ty-

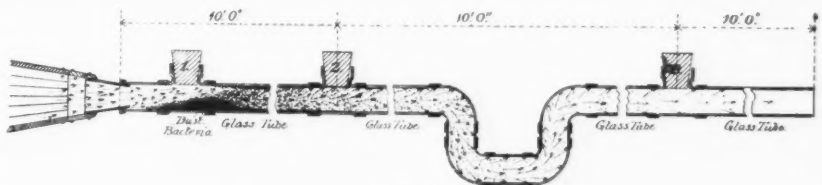


FIG. 49

phoid fever, pulmonary affections, and various septic processes. Such is the appetising menu which dust furnishes for our delectation. There can be no doubt, therefore, that dust forms a very important distributing agent for micro-organisms, dust particles, aided by the wind, being to bacteria what the modern motor-car, with its benzine or electric current is to the ambitious itinerant of the present day.

(To be continued.)

THE COMMERCIAL VALUE OF FIREPROOF BUILDINGS.

BY A. S. ATKINSON.

Thus it is that we have advanced today to the highest stage of fireproof building. The laboratory tests have shown us the value of the different materials. Each class of building materials has its distinct field of usefulness. Even fireproofed wood is not intended to withstand the flames, for in a very hot fire the best fireproof wood would eventually char and crumble to pieces. But for interior ornamentation in fireproof structures it has its purpose as well as marble or granite. A good many demand wood trim inside of a building, and by using fireproofed wood we lessen the fire hazard to that extent. That is, the interior fire could not spread from one room to another by means of the fireproofed wood. The latter would not blaze and carry the heat, but would prove quite effectual in limiting the fire.

The cost of fireproof buildings has been steadily reduced in recent years so that today it is but a trifle higher than that of the ordinary structures which would be utterly destroyed by the first fire. This fact is not fully appreciated. Inventors and manufacturers have completely revolutionized the building trades within the past ten years. Machinery for mixing and compressing concrete building blocks and artificial stones is merely one feature of this development. Burnt clay tiles, terra cotta and burnt bricks are all produced by new and exact methods at a cost much less than formerly. Instead of guess work, the materials are made according to exact rules and formulas, which give uniform results that can be depended upon under all conditions. The crushing strength of each brick or tile that enters into a structure is known before it leaves the manufacturer, and its fire-resisting properties are known, because it is refined and hardened by a temperature approximating 2,000 and more degrees. Building material that comes out of this furnace can safely be relied upon to withstand the worst fire that may rage around it when put in a building.

The introduction of machinery in the manufacture of the modern fireproof building materials has thus benefited the builder and owner. The decrease in the cost of materials makes it possible for architects to design and construct buildings at a slight advance over the cost of ordinary non-fireproof structures. Wood and other combustible material are finding less and less use in the newer buildings. We shall soon find most of the cities passing laws requiring the use of only fireproof materials in the main body of buildings, and it will be an offense against the municipality to use anything except standard products that have passed national tests.

The commercial value of fireproof buildings is thus a matter of national importance. It means finer and more permanent cities, with the fire risk largely eliminated, and security to life and property greatly increased. It means larger and steadier returns upon capital invested, for insurance risks will be lower and repairs much less. The age of a building will be marked by centuries rather than by years, and with such permanency once assured an effort will be made to make each building an enduring honor to the genius of the designer. When an architect designs for future posterity and not for a day he strives to put in his work enduring lines of beauty and harmony of colors and proportions which may be lacking in his ordinary products of a season or decade.

THE SIGNING OF BUILDINGS

LETTERS TO THE EDITOR, INLAND ARCHITECT.

Lansing, Mich.

In reply to your question, "Is it desirable, as a rule, that architects' names should be publicly associated with their buildings, and if so, how can this best be accomplished?" it is my opinion that for all public or semi-public buildings the name of the architect should be associated with the building, but for private buildings it should be as the owner desires. As to how this can best be accomplished, I would wish to carefully consider the question at length before venturing an opinion or a suggestion.

New York City.

In answer to your question relating to the association of architects' names with their buildings, we would say that in our opinion it is most desirable that this should be accomplished. We believe that this could be effected best in two ways: First, that every building of importance should be signed by its designer, and, second, that the architectural press, architectural societies and the members of the profession at large should endeavor to instill into the minds of the non-professional press that it not only adds a great deal to the interest in any reference to or description of a building, to know the name of the architect, but this association of the name of the designer with his work tends to stimulate a greater pride in the work designed and an ambition that such work shall be a credit to its author.

Richmond, Va.

You ask is it desirable, as a rule, that architect's names should be publicly associated with their buildings, and if so, how can this be accomplished? My opinion is the architect should be given the credit for his buildings and that his name should be publicly associated with the same by mural tablet of bronze or marble placed conspicuously at the entrance of the building. The painter and the sculptor place their names permanently upon their work, so why not the architect, whose art is that upon which all the other fine arts chiefly depend. The designer of many of the most beautiful buildings, both ancient and modern, is unknown and lost to the world because no record of a permanent character of the designer was made upon the building. In many of these buildings the architect who designed them was prominently associated with the government and history of his country and such knowledge would but enhance the interest of the public in his building. Sir Christopher Wren is buried under the floor of St. Paul's Cathedral, London, which is his greatest monument, but few architects have been given such distinction or the merit due them at all acknowledged.

ANSWERS.

"Subscriber, Louisville, Ky.," who wants the address of an expert in acoustics of public halls, should write to Prof. Wallace C. Sabine, 481 Beacon street, Boston, probably the first living authority on the subject, both in theory and practice.—T. M. C.

"Subscriber, Hamilton, Ont." Here is a list of books on theaters:

Birkmire: American Theaters. N. Y. Wiley. 1896. Plans. "Sighting," p. 88.

Garnier: LeNouvel opera. Paris, 1875-81.

Gerhard, William Paul: Various publications on theaters published by Bates & Guild Company, Boston, Wiley, N. Y., and others.

Sachs and Woodrow: Modern opera houses and theaters. London. Batsford, 1896-98.

Semper: Theater. Stuttgart. Bergsträsser. 1904. Plans. (Being Handbuch der Architektur, Theil 4, Halbband 6, Heft 5.) Contains bibliography on theaters, pp. 511-523.

A. I. A. Quarterly Bulletins, Washington, D. C., give summary of recent articles in architectural periodicals, —F. A. B.

THE PRESERVATION OF AMERICAN BUILDINGS.

THE architectural associations are very properly inaugurating movements for the preservation of buildings of historical and architectural value. The Rhode Island Chapter of the American Institute of Architects at its last meeting took an unequivocal stand in opposition to the demolition of the old "market house," known as the Board of Trade building. A resolution presented by Edward F. Ely was adopted declaring that the old market house now occupied by the Board of Trade ought not to be destroyed, and it was voted to send a letter, signed by the president and the secretary, to the city council, urging its preservation. The interesting statement was made that this building was the first in the country ever dedicated by a Masonic body.

Never has such a universal request been made by the architects of America as in the case of the courthouse at Pittsburg designed by Richardson. It really amounted to an overwhelming protest against the destruction of what is considered an almost priceless artistic American treasure. There is not an important architectural society in America unrepresented in this protest, and the resolutions passed were couched in the strongest and most urgent language.

NEW PUBLICATIONS.

THE WIRING HANDBOOK, with Complete Labor-Saving Tables and Digest of Underwriters' Rules. By Cecil P. Poole, member of American Institute of Electrical Engineers. Published by McGraw Publishing Company, New York. Price, \$1.00.

This book is designed for those who have to make up wiring plans and specifications. It is rudimentary enough in character to be of value to those not advanced in electrical science; yet its scope is greater than is ordinarily included in works on electrical wiring and connections. An important feature are numerous carefully compiled tables printed on separate sheets of tough paper. The book is substantially bound in leather.

THE MODERN HOME. A Book of British Domestic Architecture for Moderate Incomes. A companion volume to the British Home of Today. The text by W. H. Bidlake, M. A.; Halsey Richardo and John Cash. Edited by Walter Shaw Sparrow. New York: A. C. Armstrong & Son; London: Hodder-Stoughton.

In the previous volume, "The British Home of Today," the range of subjects was from expensive houses to costly mansions and estates. The book was devoted to illustrations of the homes of the wealthy. The present work fitly supplements the other by presenting homes of moderate cost, ranging from simple cottages to the homes of the well-to-do professional or business man.

The designs selected are representative of the best present-day work of this class by architects, most of whose names are known in connection with much more important buildings. This suggests that English architects take more personal interest in the smaller commissions than is usual in America. The reproductions are all of a high class. Numerous plates are in colors, which give a very bright, attractive appearance to the book.

Perspectives, elevations, plans, interiors and decorations are shown throughout. The following subjects are treated in the text: "The Home from the Outside"; "The Interior and Its Furniture"; "Some Decorative Essentials," and "Sanitation." The houses illustrated with scarcely an exception are simple in line, well balanced throughout, and planned for home comfort. The book is full of valuable suggestions to the architect who designs domestic architecture.

THE ORDERS: Tuscan, Doric, Ionic, Corinthian, Composite. Compiled from the instruction papers in the architectural course of the American School of Correspondence, Chicago, Ill. Price, \$12.00 in installments, or \$11.00 cash.

One of the most important of the recent works on architecture is this "Study of the Orders." It is a valuable compilation from the best authorities, and has been in preparation for three years. It has engaged the attention and earnest effort of several American architects and authors. In its production, the editor, A. F. Zapf, had as collaborators: Frank Chouteau Brown, whose drawings are in evidence throughout the work; Frank A. Bourne, whose intimate knowledge of the works on architecture the world over was of great value; H. V. von Holst,

architect, teacher of architectural design, and graduate of the Ecole des Beaux-Arts, Paris, and J. R. Coolidge, Jr., president Boston Society of Architects. This insured a work of practical as well as theoretical value.

The part on the Roman orders is based largely upon the exhaustive treatise entitled "An Analysis of the Five Orders," by F. Laureys, architect, professor at the Royal Academy, Brussels, published in 1870. Vignola was the chief inspiration for Professor Laureys, who interpreted and explained much left vague by the earlier author. Plates from Palladio supply other versions of the orders and furnish authority for changes by Professor Laureys from Vignola.

It has been the aim of the present work to give all of value from these standard authorities, and in simpler form than before attempted. Thus it is adapted not only to use as a text-book for students but also for those who desire to become informed regarding the precedent upon which modern architectural practice is founded. An important part of the book are the illustrations of ancient buildings that are the best examples of the use of the different orders; thus the student is enabled to turn from study of the detail sheets to the application of the principles, exemplified in historical buildings of the highest types.

Great care has been given to the illustrated glossary of architectural terms most in use, which forms an important section of the book. The work has over four hundred pages of text profusely illustrated with carefully prepared drawings and photographs. This is supplemented by a portfolio containing fifty-eight plates 11 by 15 inches in size of detailed drawings of typical specimens of Greek and Roman architecture. The book and portfolio are both unusually attractive typographically and are substantially bound. The work is the successful culmination of a project planned to be of the utmost help to the student of architecture, and one that will benefit the practitioner as well, by confirming and refreshing his knowledge of the orders.

BOSTON NOTES.

The Aleppo Temple is considering the erection of a Mystic Shrine in Boston.

A site for the Hospital for Incurable Consumptives, a State institution, has not been determined upon.

Land has been purchased in Cross street and a High School will be erected upon it for the city of Malden.

Clarence H. Blackall has been selected as architect for the Registry of Deeds and Probate Court at Salem.

Leroy Pearl Burnham, Harvard, '02, was successful in winning the Rotch traveling scholarship in May, 1906.

Work has been begun on the new Harvard Law School adjacent to Austin Hall. Shepley, Ruten & Coolidge, architects.

June 1st work began on an eight-story fireproof light manufacturing building at Beach and Knapp streets for Mr. W. B. P. Weeks.

The town of Brookline appropriated \$100,000 for a public gymnasium, which amount they are endeavoring to increase by \$20,000.

The contract has been awarded for the erection of the Girls Latin and the Boston Normal Schools at the Tremont entrance to the Fenway.

Boston is looking forward to a new Appraisers' Stores building for which it expects an appropriation of \$900,000 for site and building.

A Masonic Temple is to be erected at Washington and Lynde streets, Salem. It will be four or five stories high and contain offices, stores and masonic headquarters.

The First National Bank has secured land at Franklin, Federal and Congress streets on which it proposes to erect during the next two years a building for its exclusive use.

A ten-story fireproof manufacturing building is being erected at Washington, North Causeway and Medford streets by the Keaney Square Building Trust. Spofford & Eastman, architects.

A new building law permitting the remodeling of old style dwellings into flats will enable owners of many South End houses to obtain more lucrative rents and tend to stop the exodus of families of small means to the suburbs.

The School House Commissioners' annual report ending

February 1 presents numerous illustrations and plans of recent work. The requirements of the various buildings are clearly given, and the report testifies the thoroughness with which the work of this commission is pursued.

Under the judicious care of the Franklin Fund Commission the bequest of \$5,000 by Benjamin Franklin has grown to the neighborhood of \$400,000. In accordance with the terms a building for the advancement of the conditions of mechanics, to be known as the Franklin Union, will be erected. R. Clipston Sturgis has been chosen architect.

The formation of a syndicate to take over the Park Square railroad station site and adjacent land with the extension through it of present streets and the formation of others promises to throw open for mercantile purposes a plot of 700,000 square feet of land. This station, as well as the Kneeland street station, which is being transformed into a seven-story fireproof warehouse for the Quincy Market Cold Storage Company, was abandoned on the occupancy of the South Station in 1900.

The Boston Architectural Society at about the beginning of this year suggested to the governor the creation of a Metropolitan Improvement Commission to be composed of architects, landscape gardeners, engineers and contractors who would give suggestions regarding local betterments in and about twenty-five municipalities of Massachusetts. While the matter was not put in motion in time to enter into the present session of the legislature, action on it is promised at the next session.

The attempted enactment of a law permitting the filling in of the Charles River Basin on the Boston side from Chestnut to Granby streets, giving a strip of ground 100 feet wide for building purposes and a boulevard eighty feet wide, was unsuccessful. The Act of 1903 will evidently be enforced, which allows a filling 100 feet wide from the Fens to Cambridge bridge. In connection with this improvement it is interesting to consider the reported suggestion of the Architectural Society of an island in the center of the basin from the Fens to Berkeley street.

READY MIXED VS. SHOP MIXED.

THERE is a professional prejudice against ready mixed paints, while there is a decided popular opinion favorable to them. It is easier to account for the latter than for the former. The public judges by results, the professional man, too often, from theoretical grounds or from precedent.

On the face of the matter the probabilities are all in favor of ready mixed paint and against the shop mixed product. The former is the result of accumulated and multiplied experience fortified by technical knowledge—the latter a product of tradition, inexact methods and necessary ignorance of technical conditions. As a class, painters are resolutely opposed to the use of these modern factory products. In some cities the local associations have adopted resolutions binding themselves mutually not to apply them. Is it a spirit of philanthropy or of scrupulous probity that prompts such extremes? Perhaps so, but such a conclusion is open to suspicion.

As a matter of simple fact this wide-spread opposition is prompted by two considerations: First, the assumption that the convenience and comparative cheapness of ready-mixed paints will deprive the painter of his profit on part of the materials used in painting and on the labor employed in mixing them; and second, the less excusable opposition to any material that lasts too long and thus defers repainting. The last mentioned motive probably prevails to a far less extent than the first.

In the country and the country towns of 1,000 inhabitants or fewer, probably two gallons of ready-mixed paint are used to one gallon of shop-mixed; in cities of five thousand inhabitants and upward shop-mixed products are the rule. The reason for this disparity is found in the fact that in the city the architect rules the specification and the painter (or what amounts to the same thing, painters' tradition) rules the architect.

Note the sweeping condemnation of the Painters' Associations, embracing in one category of denunciation every mixed paint, of every type and kind. Painters who openly boast of their superior success with certain proportions, let us say of zinc and lead, crudely combined in a paint bucket, condemn among mixed paints precisely the same formula ground to uniformity in a paint mill with oil and driers that are necessarily

above suspicion; whereas the oil and driers bought by the painter in the open market are generally open to question.

Paint, no matter what its character or composition, will sometimes fail inexplicably. This is true of hand-mixed lead and oil as well as of the most approved brands of ready-mixed paints; but the records of actual service—not isolated records, but the mass of experience all over the country—will show a far higher average of durability (and consequently of economy) for the better grades of ready-mixed paint than for shop-mixed paint. Moreover, the painter, who without evidence of data condemns any ready-mixed paint, simply because it is ready-mixed, is an irresponsible and unsafe adviser.

It is the record and repute of a product that counts in every case where technical standards are lacking. This is peculiarly so with paint. The American Society for Testing Materials is only now endeavoring to gather data regarding the serviceability of several types of protective paints for steel, and no one of standing has attempted to define the factors governing the service of paints for wood surfaces. Until these standards are determined there will always be more or less floundering; but the records are available, and these records empirical though they are and in the hands of interested manufacturers, nevertheless are so abundant and convincing that they leave no room for doubt of the superiority of the better grades of ready-mixed paints over shop-mixed lead and oil.

OUR ILLUSTRATIONS.

Lodge and gate. Stone, Carpenter & Willson, architects, Providence, R. I.

Building for Consolidated Gas Co., Baltimore, Md. Joseph E. Sperry, architect.

House for Hon. J. B. Henderson, Washington, D. C. Totten & Rogers, architects.

Building for U. S. Fidelity & Guaranty Co., Baltimore, Md. Simonson & Pietsch, architects.

Vandergrift Church, Vandergrift, Pa. Alden & Harlow, architects, Pittsburg, Pa.

"The Maples" apartment building, Kansas City, Mo. Edwards & Sunderland, architects.

Freight station for Baltimore & Ohio Railroad, Columbus, Ohio. M. A. Long, architect, Baltimore, Md.

Garage, Baltimore, Md. Beecher, Friz & Gregg, architects. A general and a detail view are presented.

Buildings for Sears, Roebuck & Co., Chicago. Merchandise Building, Printing Building. Nimmons & Fellows, architects.

Views of residence of F. P. Wilcox, Grand Rapids, Mich. W. M. Clarke, architect. An exterior and three interior views are shown.

The National Mechanics' Bank, Baltimore, Md. Alfred H. Taylor, architect, New York. General view and entrance detail are shown.

Views of residence for W. M. Sutherland, St. Louis, Mo. A. B. Groves, architect. An exterior, three interior views and floor plan are given.

Carnegie Library, Anderson, Ind. Richards, McCarty & Bulford, architects, Columbus, Ohio. Exterior and view in delivery room are shown.

The Louis Agassiz School, Chicago. Dwight Heald Perkins, architect for Board of Education. Strictly fireproof construction; contains twenty-six rooms, assembly hall and gymnasium.

The Friedrich Ludwig Jahn School, Chicago. Dwight Heald Perkins, architect for Board of Education. Built absolutely fireproof; contains twenty-six rooms, assembly hall and gymnasium.

Building for Maurice L. Rothschild, Chicago. Holabird & Roche, architects. The structure, located on a corner of the principal retail street of the city, is a good type of the modern retail store building. Floor space has been sacrificed to the extraordinary opportunity for display afforded by the treatment of the corner. Better provision for the admission of light could hardly have been made. The general contractors were the William Grace Co.; the terra-cotta for the street fronts was furnished by the Northwestern Terra-Cotta Co.; and the elaborate system of fire escapes was installed by the E. R. Landon Iron and Wire Works, all well-known Chicago concerns.

ASSOCIATION NOTES.

CHICAGO ARCHITECTS' BUSINESS ASSOCIATION.

The subject for discussion at the meeting last month was Waterproofing of Buildings. This was introduced by Dr. Maximilian Toch, of New York. It was pronounced one of the most entertaining and valuable lectures of the year.

ARCHITECTURAL LEAGUE OF AMERICA.

The competition for the annual traveling scholarship of the League, amount, \$1,200, was won by Chester B. Price, St. Louis, who will leave the middle of July for study abroad. Norman Vorse, Washington, received first mention, and George Awsumb, University of Illinois, second mention. The League publication, *The Architectural Annual*, will issue in July.

WASHINGTON (D. C.) ARCHITECTURAL CLUB.

At the meeting June 2 the annual election of officers occurred. This resulted in the election of W. D. Windom, president; P. C. Adams, vice-president; H. S. McAllister, secretary; W. W. Youngs, treasurer. For directors were chosen L. A. Simon, F. B. Wheaton, C. L. Harding. Auditors, W. B. Olmsted, L. J. Weissenborn. Article II was amended to read, "The annual dues shall be eight dollars, payable quarterly in advance, for regular and associate members."

NEW YORK CHAPTER A. I. A.

The chapter has voted to co-operate with a committee of citizens in a crusade against the "smoke nuisance." It has been decided to send a committee to Albany to confer with the legislators on a bill to license architects. The chapter has succeeded in having rescinded an ordinance appointing an advisory committee to prepare a building code, the composition of which was objectionable to the architects. Under a new ordinance the advisory committee will consist of "two architects, one structural engineer, one engineer, recommended by the Board of Fire Underwriters, two master builders, two mechanics skilled in building trades, and one lawyer."

RHODE ISLAND CHAPTER, A. I. A.

The Chapter has adopted resolutions endorsing the plans of the park commission for reservations and public grounds. It has discussed the new public garden in the rear of the Union station and voted that President Clarke and Messrs. Stone and Ely be requested to confer with the park commissioners of Providence with regard to the improvements. Another resolution was adopted asking that the city council should associate with George B. Francis, who has been appointed to lay out the proposed approach to the East Side, some recognized expert in civic art, such a course having been followed in most of the cities which have recently undertaken prominent and conspicuous improvements of like character. Alfred Stone gave notice of a hearing on the question of the proposed Waterman street extension.

SAN FRANCISCO ARCHITECTS' CLUB.

The regular monthly meeting was held at the temporary quarters, 2411 Clay street, last month. Plans for the future were discussed, committees were appointed, and the general club business was transacted in the customary way. A committee composed of the following members was appointed to find permanent quarters: A. R. Johnson, chairman; Wm. Crim Jr., Thos. Smith and M. B. Betts. All members were requested to register their new addresses. They should be sent to the present address of the club, where they will be entered on the records. Also all draughtsmen who are not members of the club, and draughtsmen from other cities are invited to place their

names and addresses on file, and every assistance will be given them in securing positions. All those who know of positions, and architects in need of draughtsmen are requested to communicate with the club.

ILLINOIS CHAPTER A. I. A.

At the meeting last month the subject for consideration was Building Ordinances. This was presented by Charles B. Ball, who dwelt particularly and at length upon the ordinances that have been adopted by Cleveland. The history of the Cleveland movement was in the nature of a tribute to the commissioner, John Eisenmann, who was credited with its success.

It was announced that two candidates had been elected to junior membership, Victor Andre Matteson, of LaSalle and Benjamin Emanuel Winslow, of Chicago. At the meeting of June 11th, the final one previous to the summer vacation, the subject was the experiences of the members for the past year. Mr. Winslow stated that while connected with the office of the building commissioner as engineer he had adopted a system of marking for the plans submitted by the architects. He read the names of architects who were in the one hundred or perfect class and those in the 95, 90, 85 and 80 class. It was found that the chapter members stood well in this table, from which the speaker concluded that the body was representative of good construction. A committee of five to nominate officers to be elected at the meeting in September was appointed. The question as to what extent the chapter should pay the expenses of the delegates to the annual convention of the Institute was informally considered. Three candidates were announced for junior membership, Horace S. Powers, Robert C. Spencer Jr. and Webster Tomlinson, all of Chicago.

MOSAICS.

A CONCRETE school building is planned, according to newspaper reports, for Milwaukee that "will be in the nature of an experiment" and "as nearly fireproof as it is possible to make a building." The cost will be about \$50,000 without the heating plant. Of this \$35,400 will go for "concrete cement, mason and roofing," \$3,885 for "lathing and plastering" and \$250 for "cast and wrought iron work." In view of this being a fireproof building there appears to be some intimation to waste money on iron and some on the lath and plaster.

A CANADIAN landscape architect, after a careful investigation has found, that ivy instead of injuring the walls, protects them by absorbing moisture from them. Another landscape architect adds to this that he has yet to see a single building of brick or stone that has been affected by "Boston ivy" or the Japanese ivy, which has become common in the last thirty years. Nothing has done more to add to the picturesqueness of the American city than the entrance of this Japanese vine.

THE American Bonding Company won a suit in which it was defendant as surety for a contractor, and the First Methodist Church of Warsaw, Indiana, plaintiff. The suit was for money expended in work the contractor, Owens, of Cincinnati, failed to complete. The court held that as the trustees did not retain the architect and ten per cent of the estimate was held back, the terms of the bond had been violated and the surety company was released. Judgment was, however, entered against Owens for the amount of the claim.

SIR CASPAR PURDON CLARKE, the new director of the Metropolitan Museum in New York, comes from South Kensington, where in 1862, he entered the training school as a student of architecture, the Museum having then been open about five years. At the end of three years he won a medal for proficiency in architectural design and was subsequently appointed assistant architect of South Kensington. After serving as an assistant, he was made director in 1896. His experience and knowledge as a collector of illustrative study and applied art is exceptional.

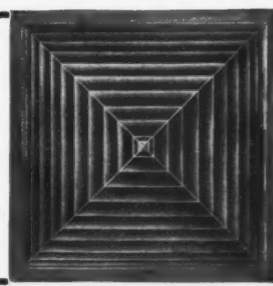


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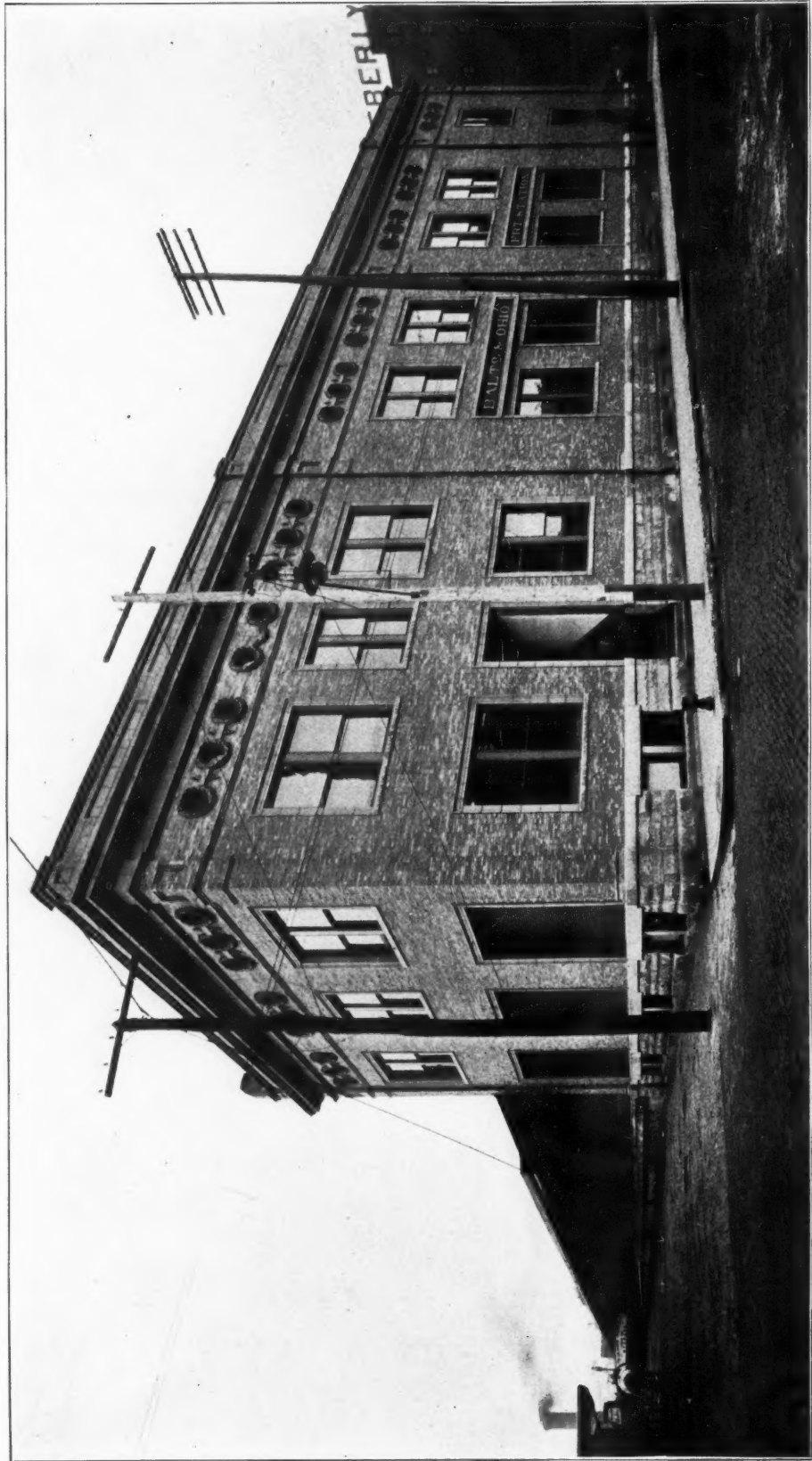
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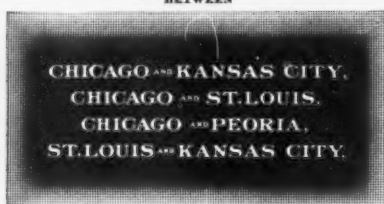
Architects' Specification Reminders

Air Diffusers. Mathis Bros. Co., Chicago.	Fire Escapes. Dow Wire & Iron Works, Louisville, Ky.	Range Closets. Standard Sanitary Mfg. Co., Pittsburg, Pa.
Air Purifying and Cooling System. Thomas & Smith, Chicago.	Fireproofing. Illinois Terra Cotta Lumber Co., Chicago. National Fireproofing Co., Chicago. The Roebling Construction Co., New York.	Recording Instruments. Bristol Co., Waterbury, Ct.
Architectural Iron Works. The Winslow Bros. Co., Chicago.	Floor Polish. Butcher Polish Co., Boston, Mass.	Reinforced Concrete Construction. Expanded Metal & Corrugated Bar Co., St. Louis, Mo. Trussed Concrete Steel Co., Detroit, Mich.
Architectural Photographers. Taylor, J. W., Chicago.	Foundations. Foundation Co., The, New York.	Refrigerating Plants. Brunswick Refrigerating Co., Chicago.
Architectural Views. Taylor, J. W., Chicago.	Hardware. The Yale & Towne Mfg. Co., New York.	Roofing Tin. Follansbee Bros. Co., Pittsburg, Pa.
Bath Room Fixtures. Standard Sanitary Mfg. Co., Pittsburg, Pa.	Hardwood Veneered Doors. Paine Lumber Co., Oshkosh, Wis.	Sanitary Appliances. Cudell, F. E., Cleveland, O. Standard Sanitary Mfg. Co., Pittsburg, Pa.
Bath Tubs. Standard Sanitary Mfg. Co., Pittsburg, Pa.	Hollow Block. National Fireproofing Co., Chicago.	Sanitary Woodwork. Never Split Seat Co., Evansville, Ind. Standard Sanitary Mfg. Co., Pittsburg, Pa.
Brass Goods (Plumbers). Standard Sanitary Mfg. Co., Pittsburg, Pa.	Interior Finishes. Adams & Elting Co., Chicago.	Sash Cords and Chains. Smith & Egge Mfg. Co., Bridgeport, Ct. Samson Cordage Works, Boston, Mass.
Builders' Hardware. The Stanley Works, New Britain, Ct. The Yale & Towne Mfg. Co., New York.	Lamps. Neuhauser, D.	Shingle Stain. Dexter Bros., Boston, Mass.
Builders' Sundries. The Stanley Works, New Britain, Ct. The Yale & Towne Mfg. Co., New York.	Laundry Tubs. Standard Sanitary Mfg. Co., Pittsburg, Pa.	Showers, Permanent and Portable. Standard Sanitary Mfg. Co., Pittsburg, Pa.
Building Directory. Tablet & Ticket Co., Chicago.	Lavatories. Standard Sanitary Mfg. Co., Pittsburg, Pa.	Sinks, Porcelain Enameled. Standard Sanitary Mfg. Co., Pittsburg, Pa.
Carpets and Rugs. W. & J. Sloane, New York.	Lead Pipe. Standard Sanitary Mfg. Co., Pittsburg, Pa.	Spring Hinges. Smith & Egge Mfg. Co., Bridgeport, Ct.
Cements. French, S. H. & Co., Philadelphia. Atlas Portland Cement Co., New York.	Locks. The Yale & Towne Mfg. Co., New York.	Store Front Construction. J. W. Coulson & Co., Columbus, O.
Cold Storage. Northey Mfg. Co., Waterloo, Iowa.	Mail Chutes. Cutler Manufacturing Co., Rochester, N. Y.	Terra Cotta. Northwestern Terra Cotta Works, Chicago. Winkle Terra Cotta Co., St. Louis, Mo.
Concrete Steel Frame. Expanded Metal & Corrugated Bar Co., St. Louis, Mo. Trussed Concrete Steel Co., Detroit, Mich.	Marble. Standard Sanitary Mfg. Co., Pittsburg, Pa.	Trees. Peterson Nursery, Chicago.
Conduit. National Fireproofing Co., Chicago.	Metal Ceilings. Berger Mfg. Co., Canton, O.	Urinals, Porcelain Enameled. Standard Sanitary Mfg. Co., Pittsburg, Pa.
Cordage. Samson Cordage Works, Boston, Mass.	Mortar Colors. French, S. H. & Co., Philadelphia, Pa.	Valves and Fittings. Union Brass Works Co., Boston, Mass.
Decorators. Sturdy, Jos. F., Chicago.	Paints, Oils and Varnishes. Adams & Elting Co., Chicago. Joseph Dixon Crucible Co., Jersey City, N. J. Muralo Co., New Brighton, Staten Island. New Jersey Zinc Co., New York. Smith, Edward & Co., New York.	Vinometers. Standard Sanitary Mfg. Co., Pittsburg, Pa.
Drawing Material and Implements. Abbott, A. H. & Co., Chicago.	Pencils. Joseph Dixon Crucible Co., Jersey City, N. J.	Window Lines. Samson Cordage Works, Boston, Mass.
Drinking Fountains. Standard Sanitary Mfg. Co., Pittsburg, Pa.	Plumbers' Fittings. Standard Sanitary Mfg. Co., Pittsburg, Pa.	Wire Cloth. Clinton Wire Cloth Co., Clinton, Mass.
Duplicator. Modern Duplicator, Pittsburg, Pa.	Plumbers' Ware, Porcelain Enameled. Standard Sanitary Mfg. Co., Pittsburg, Pa.	Wrought Iron Railings and Grilles. Winslow Bros. Co., Chicago.
Elevators. The J. W. Reedy Elevator Co., Chicago. Otis Elevator Co., Chicago.	Railroads. Chicago & Alton Ry. Denver & Rio Grande R. R. Missouri Pacific Ry. Northern Pacific Line. Santa Fe Ry.	
Enameled Iron (Plumbers' Ware). Standard Sanitary Mfg. Co., Pittsburg, Pa.		

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Dixon, Jos. Crucible Co.	XIV						

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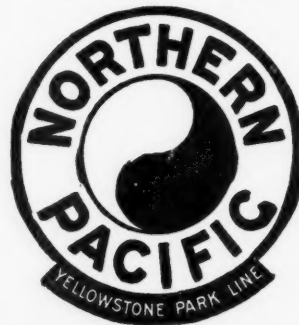
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*Is the best finish made for
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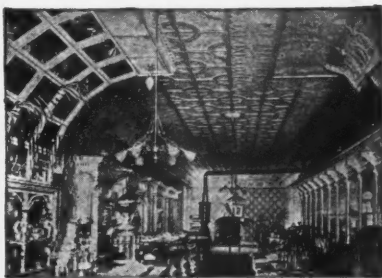
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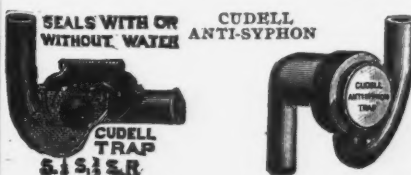
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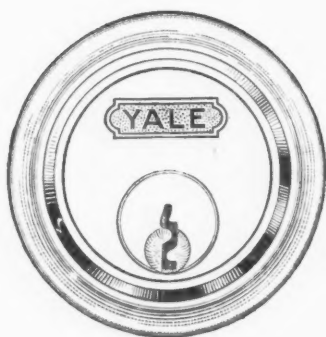
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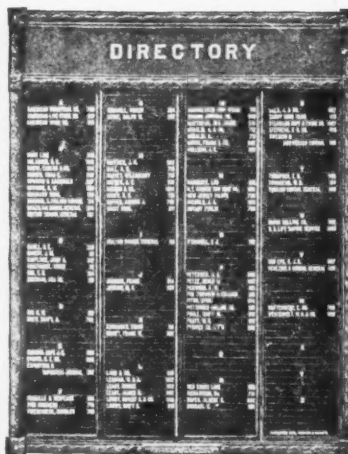
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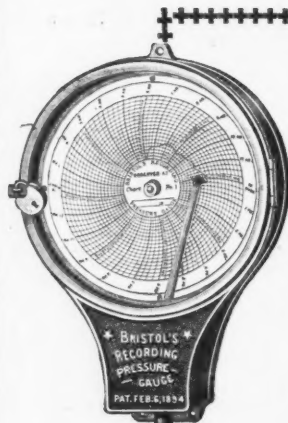
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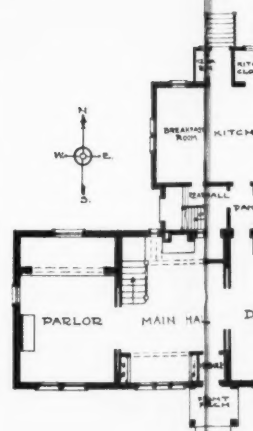


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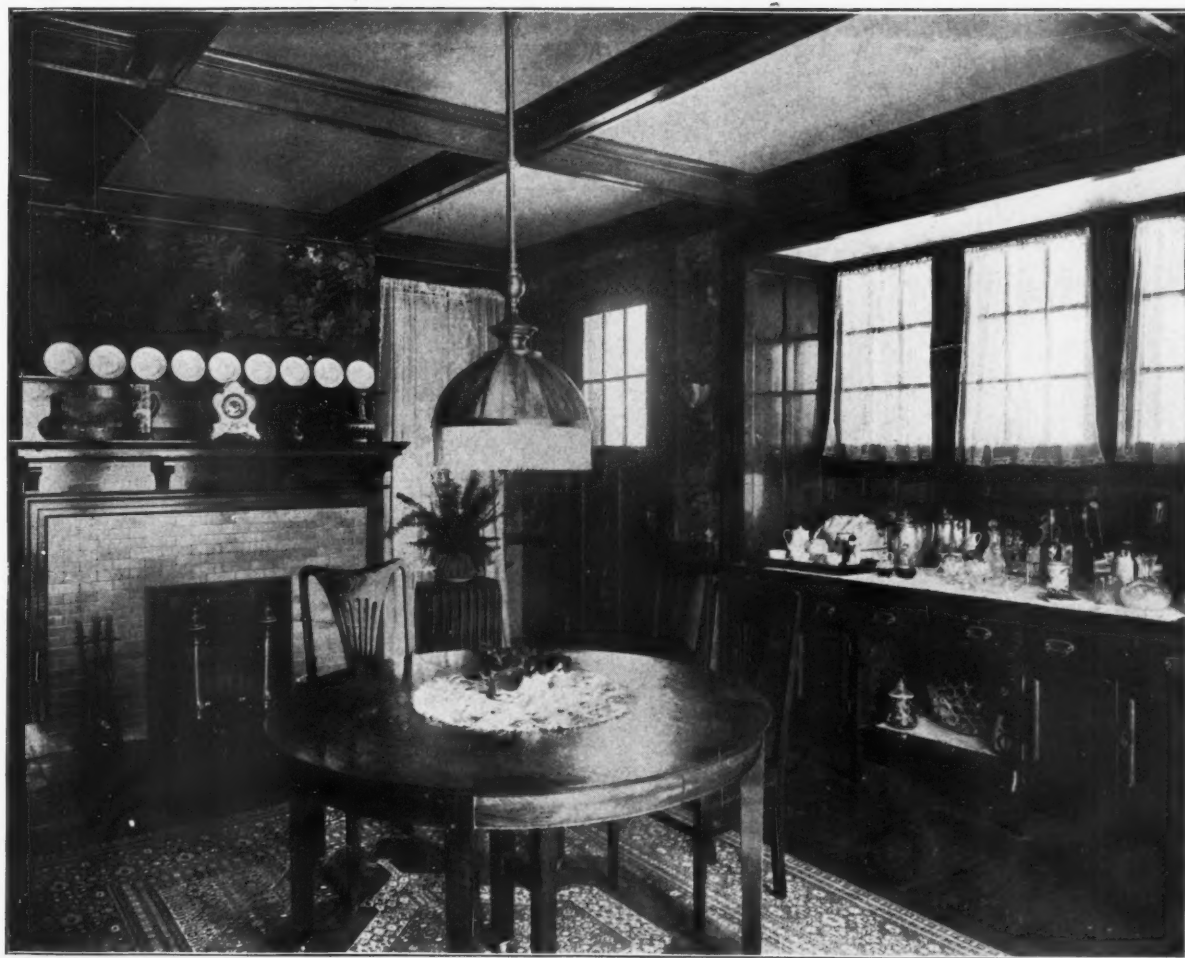
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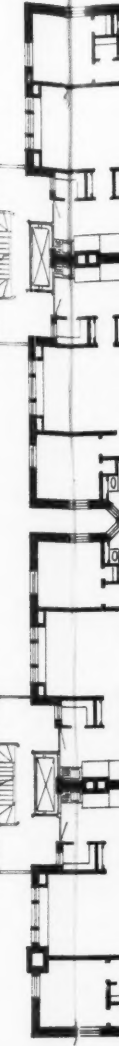
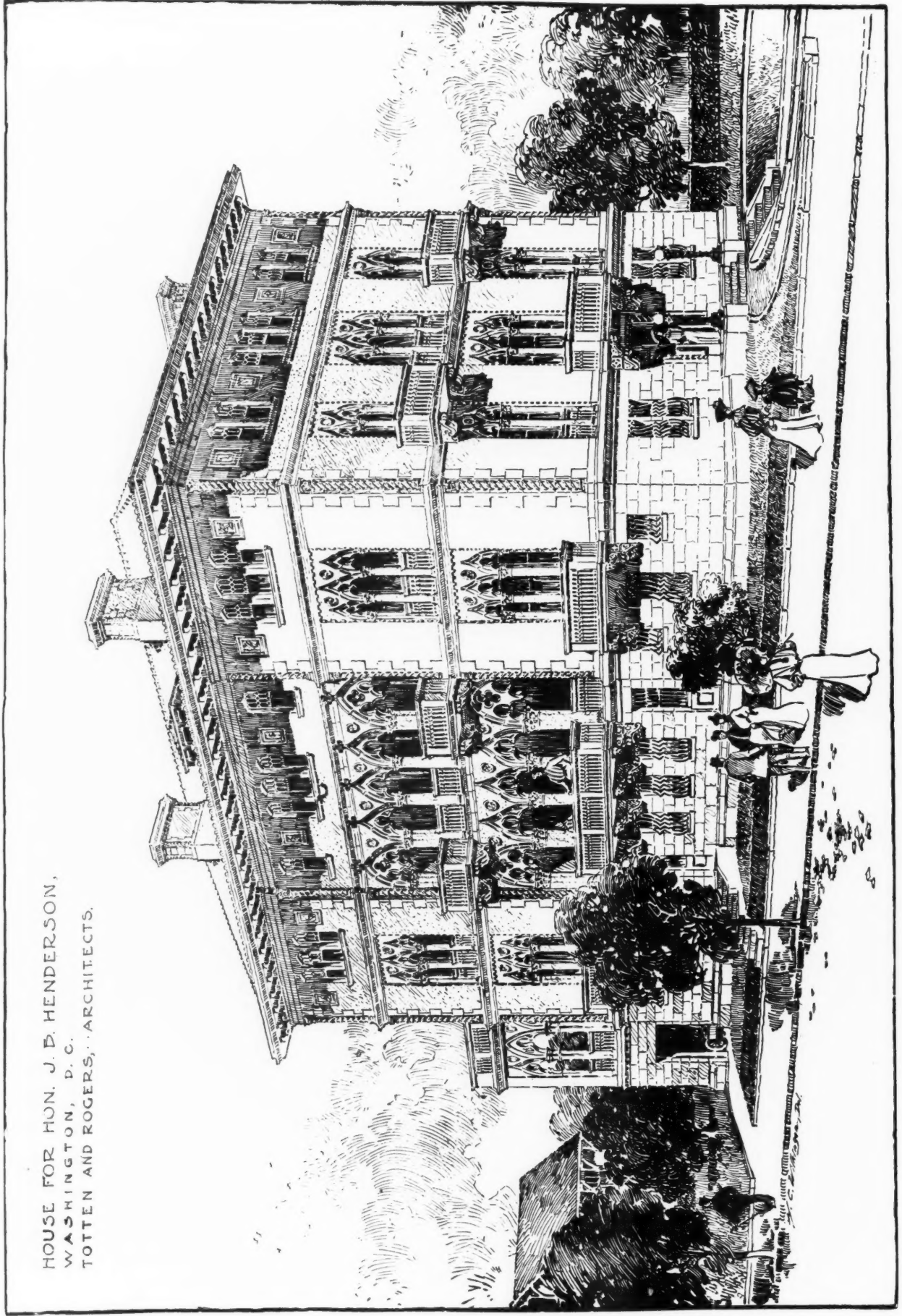


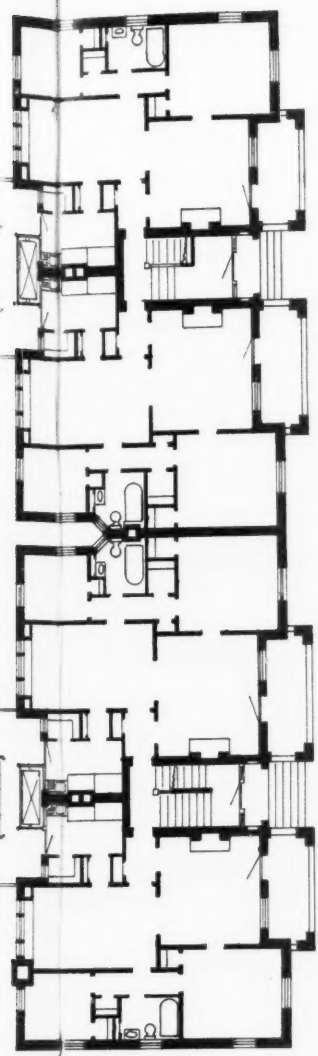
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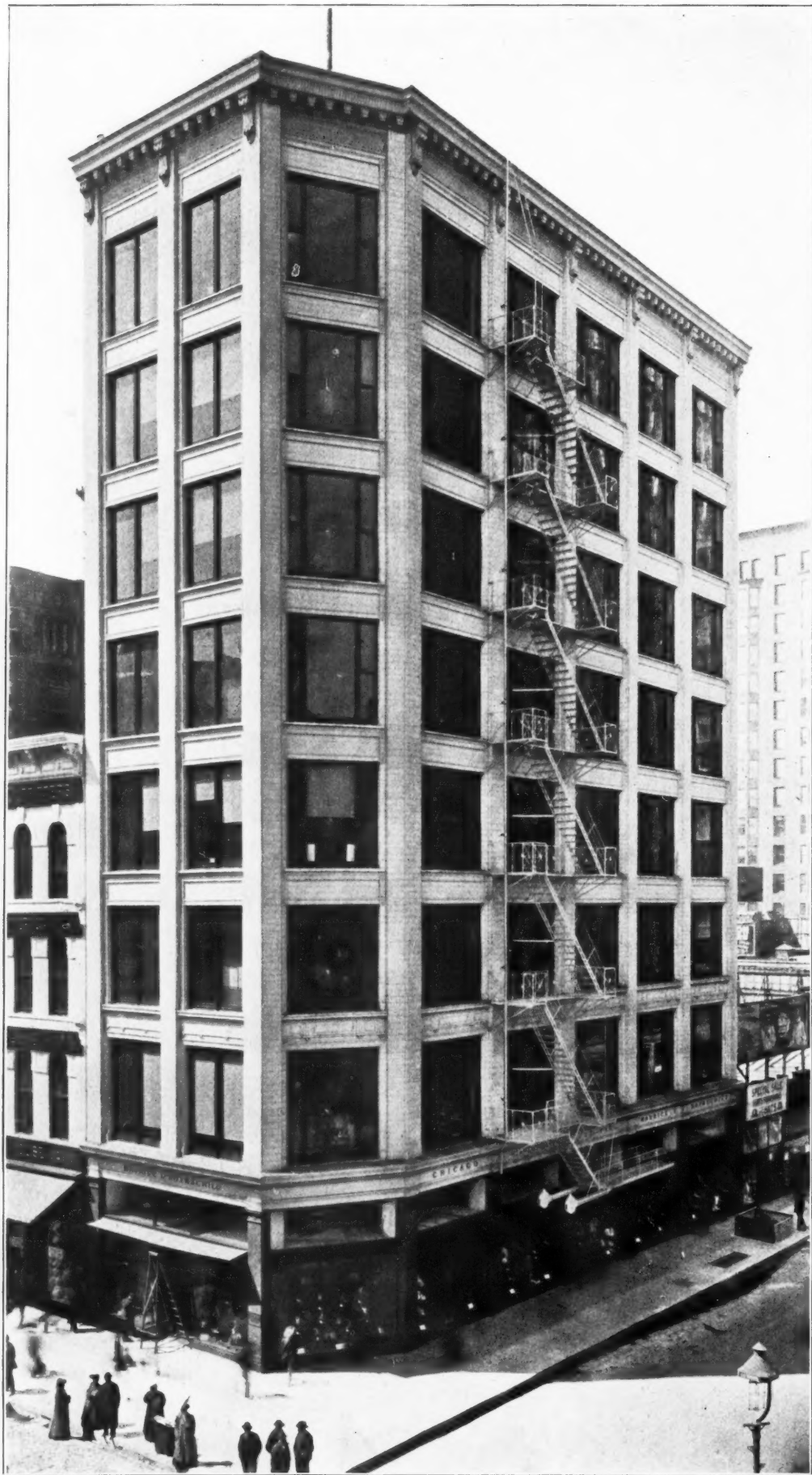
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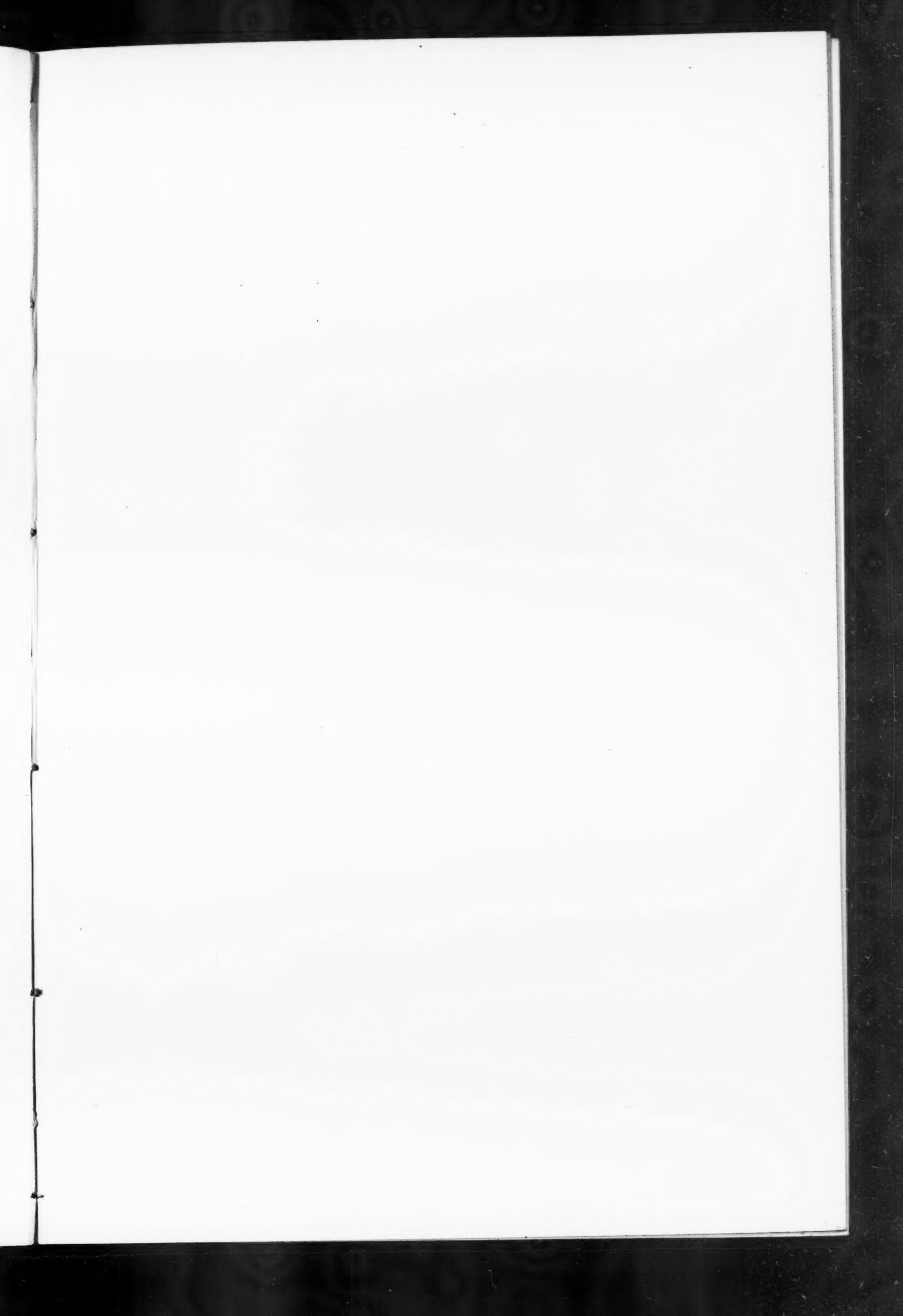
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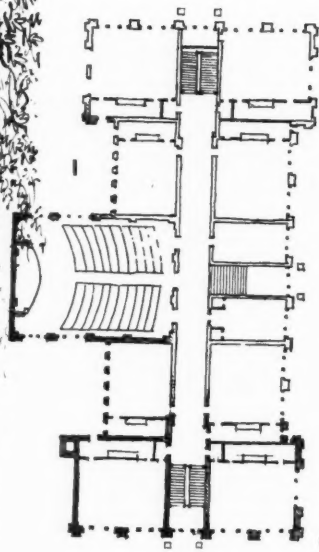
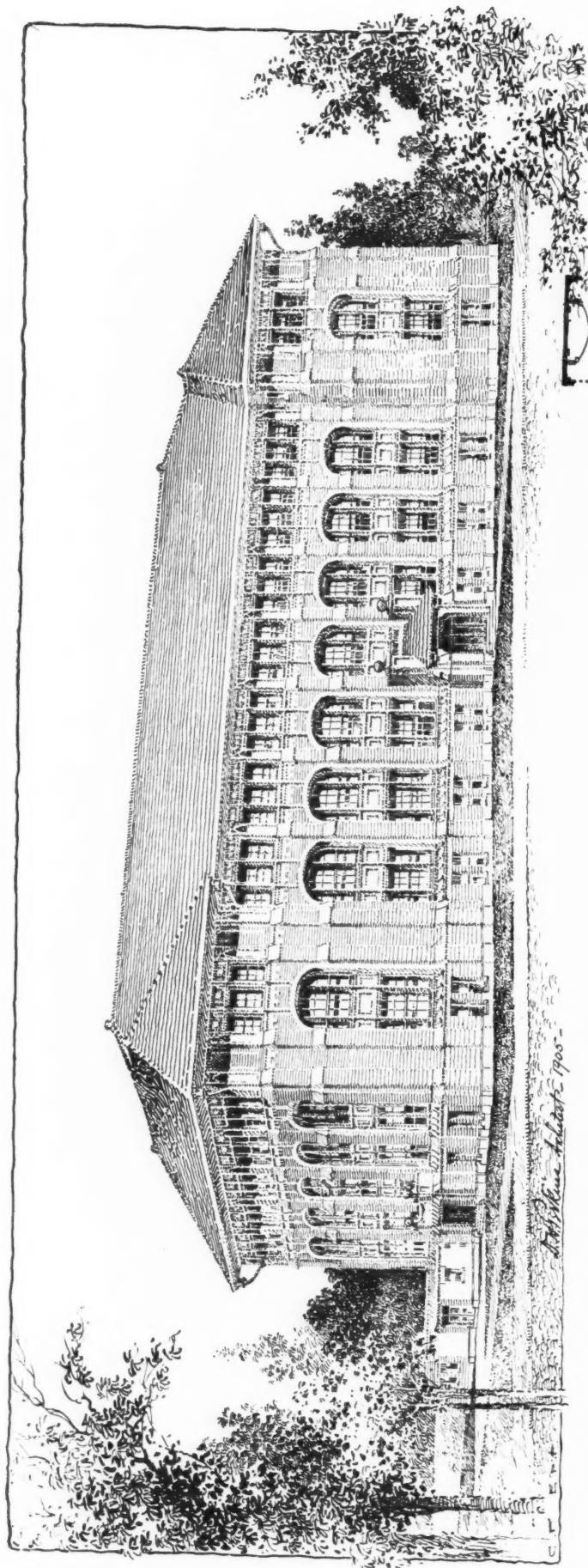


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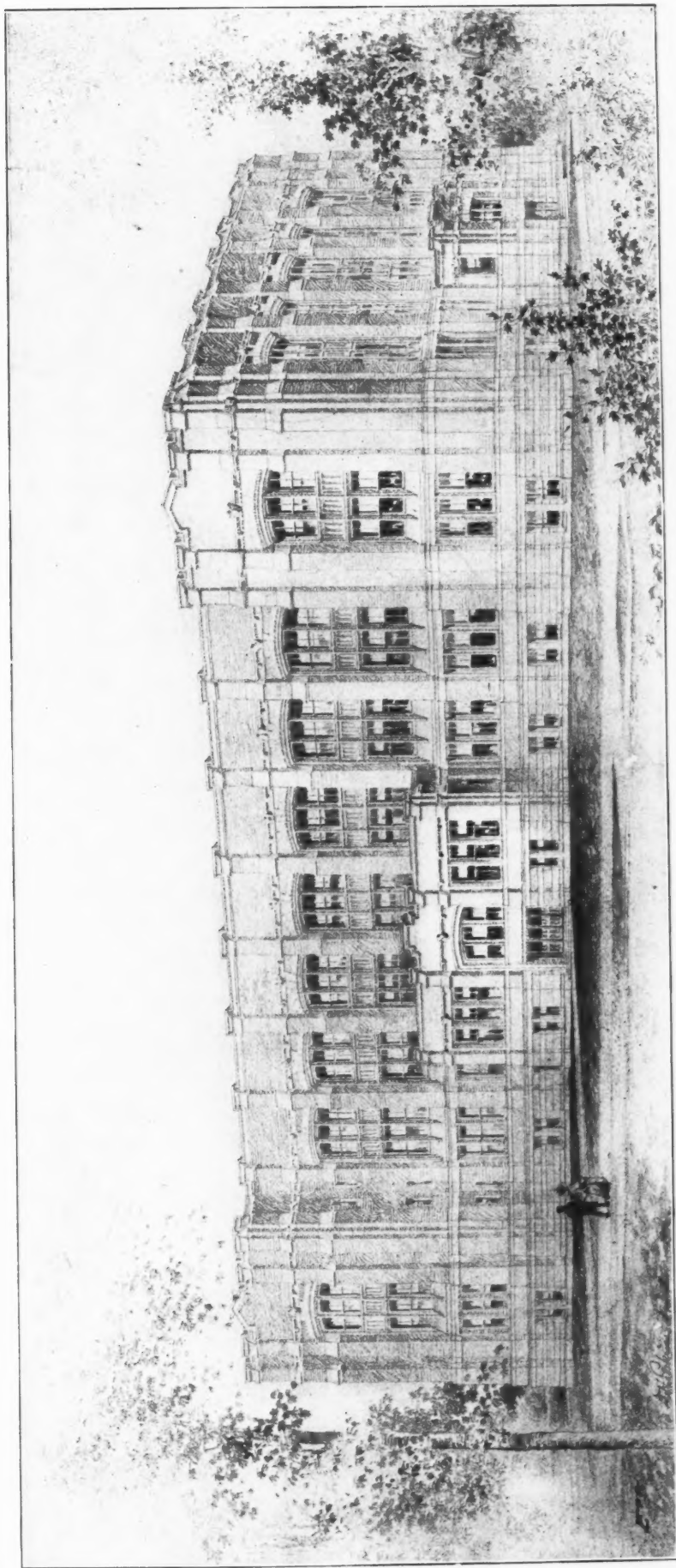
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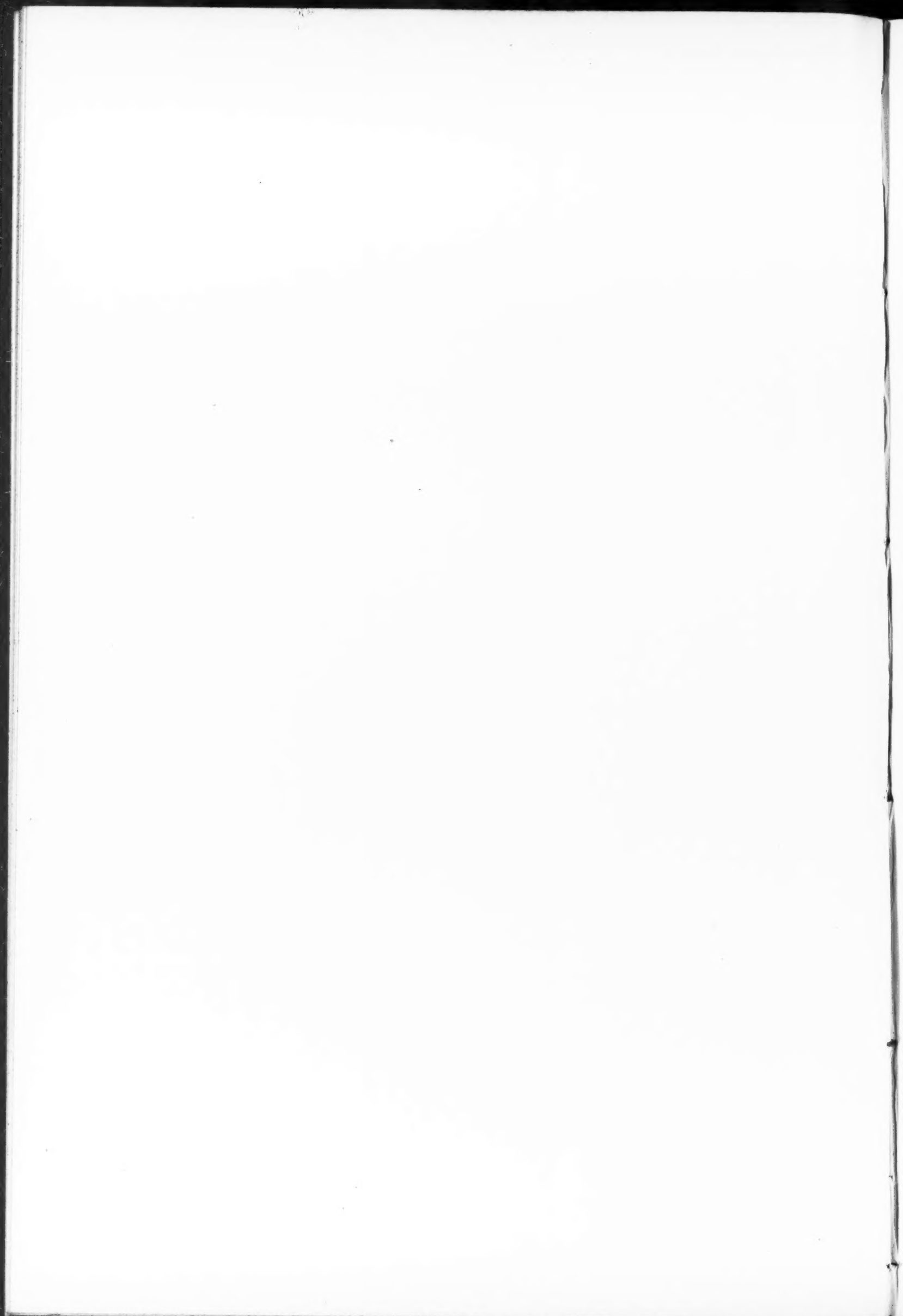




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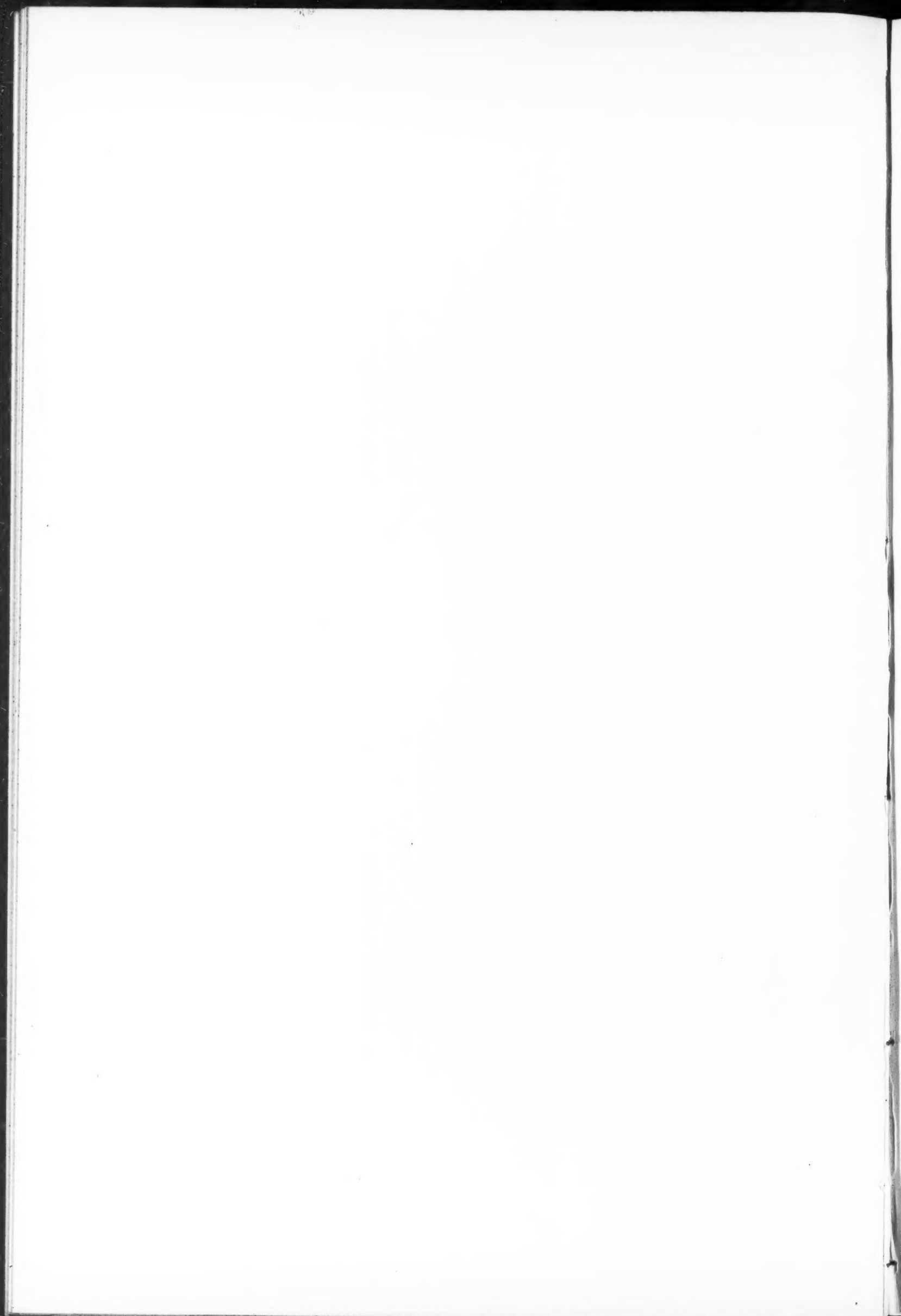
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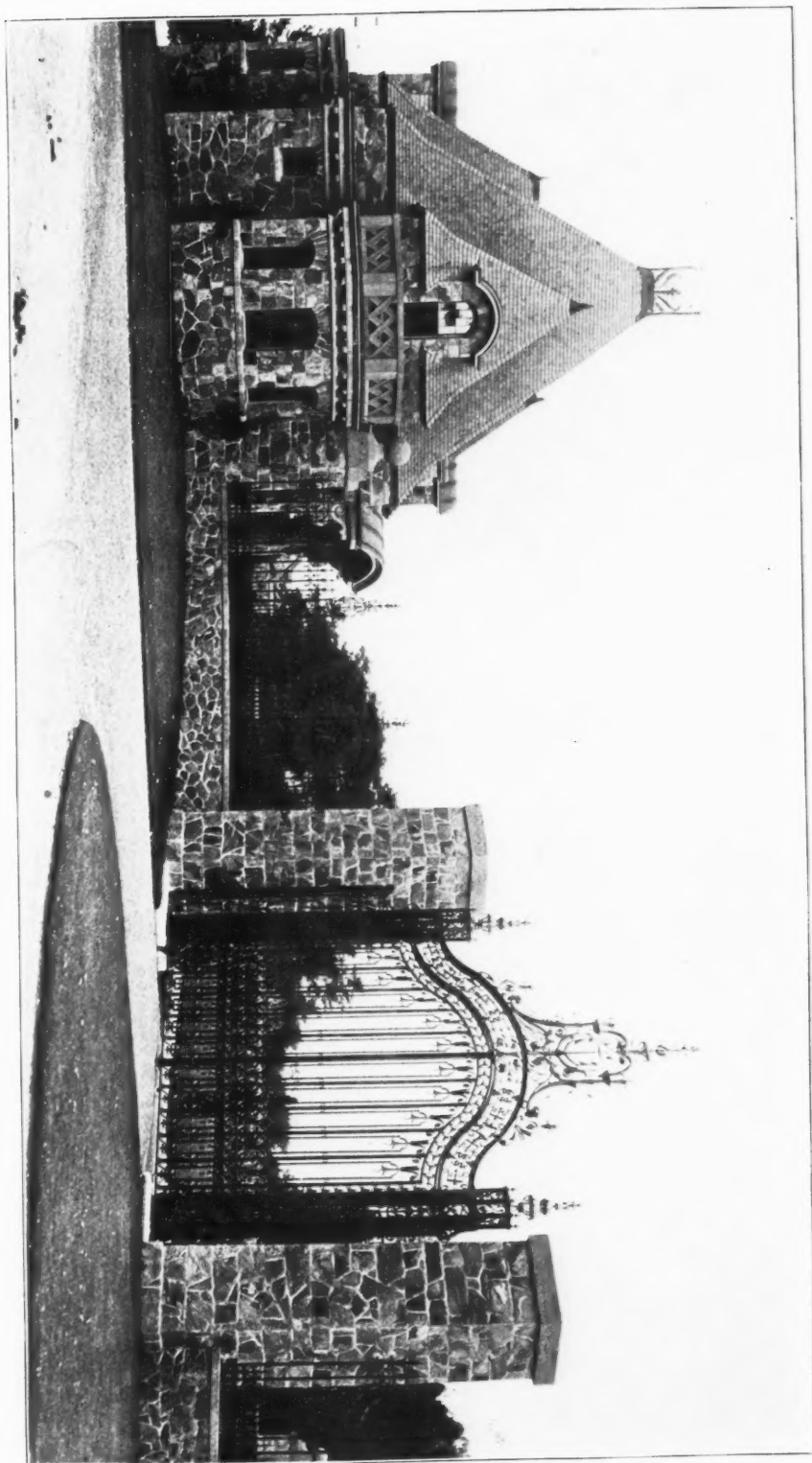
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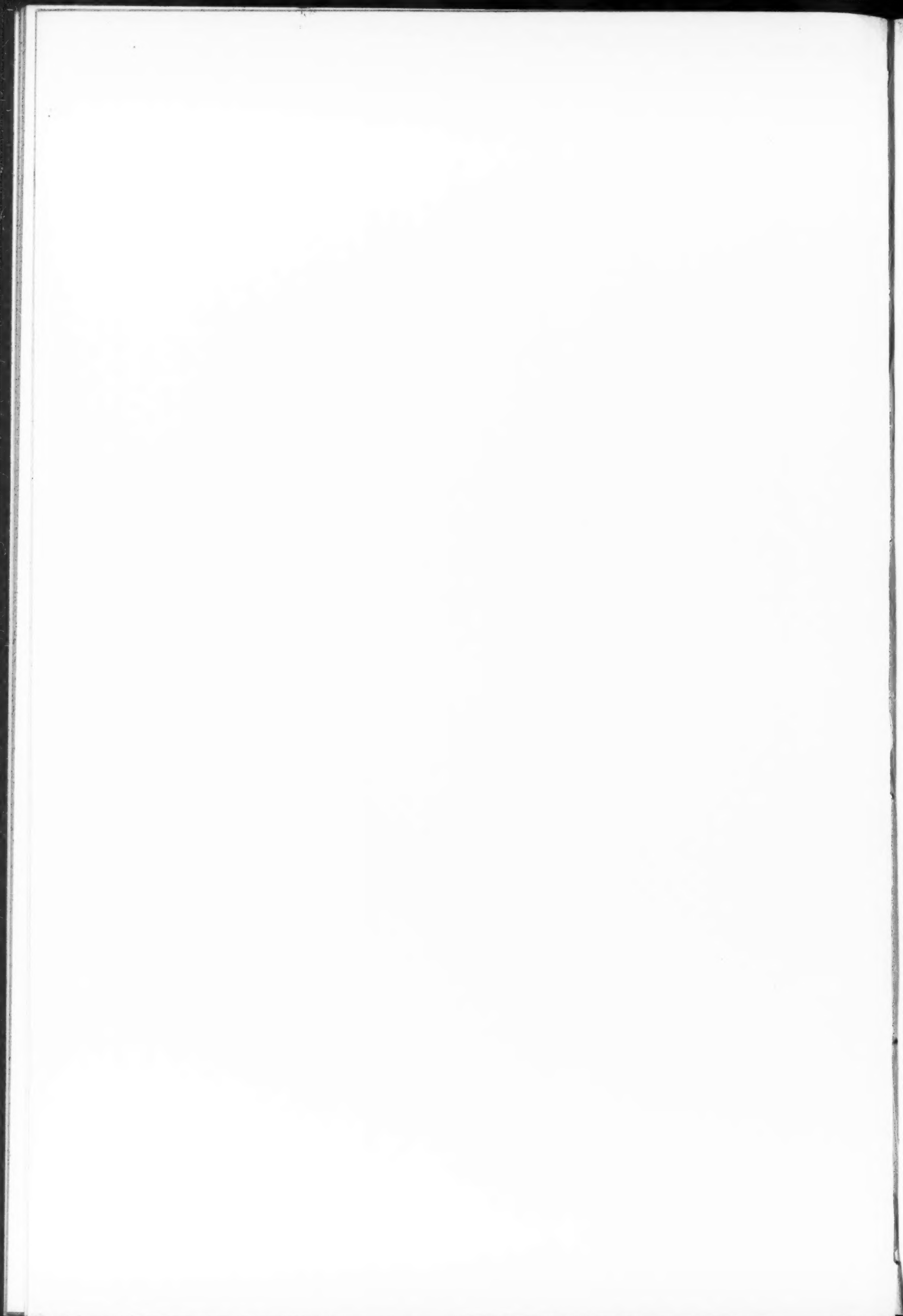


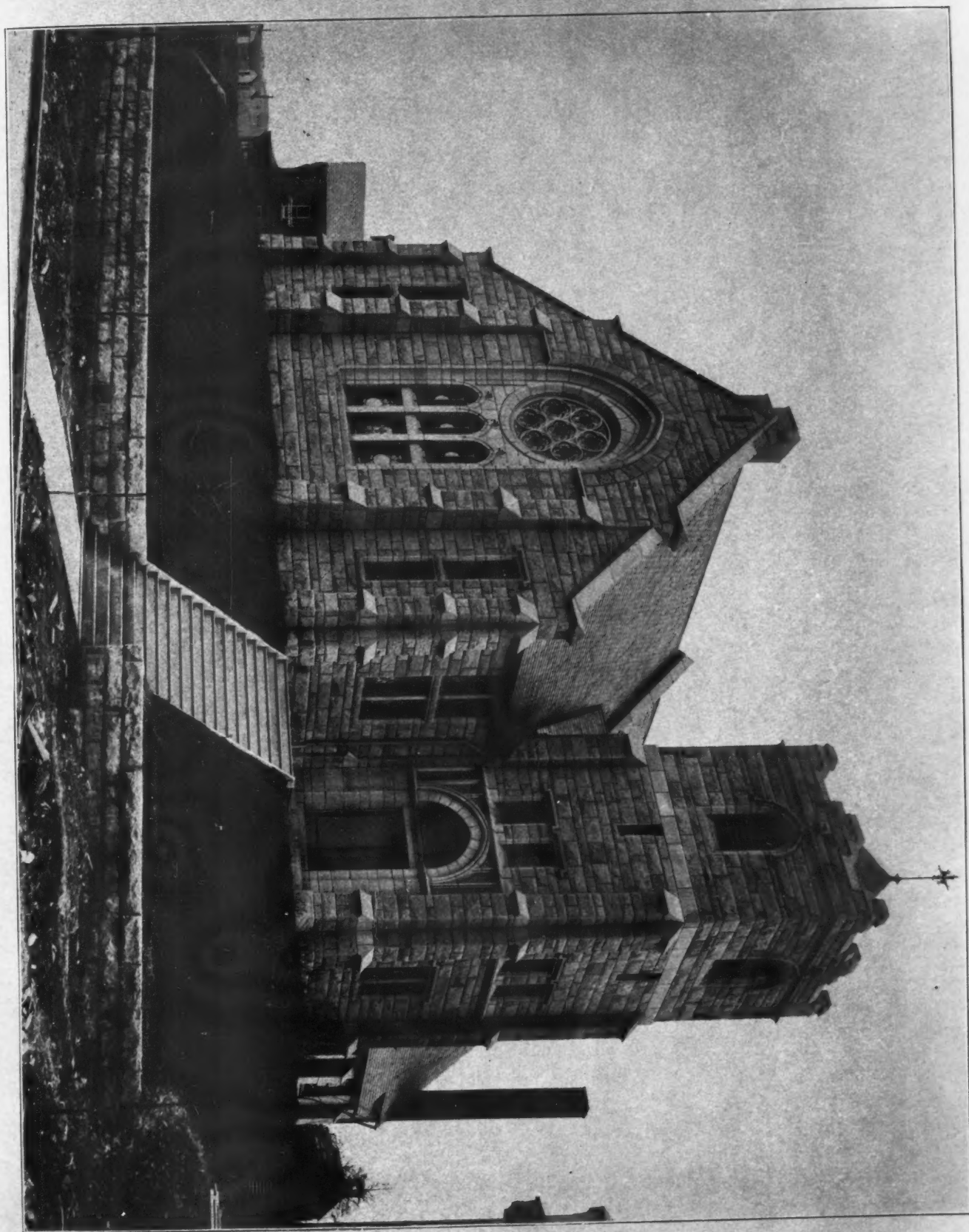




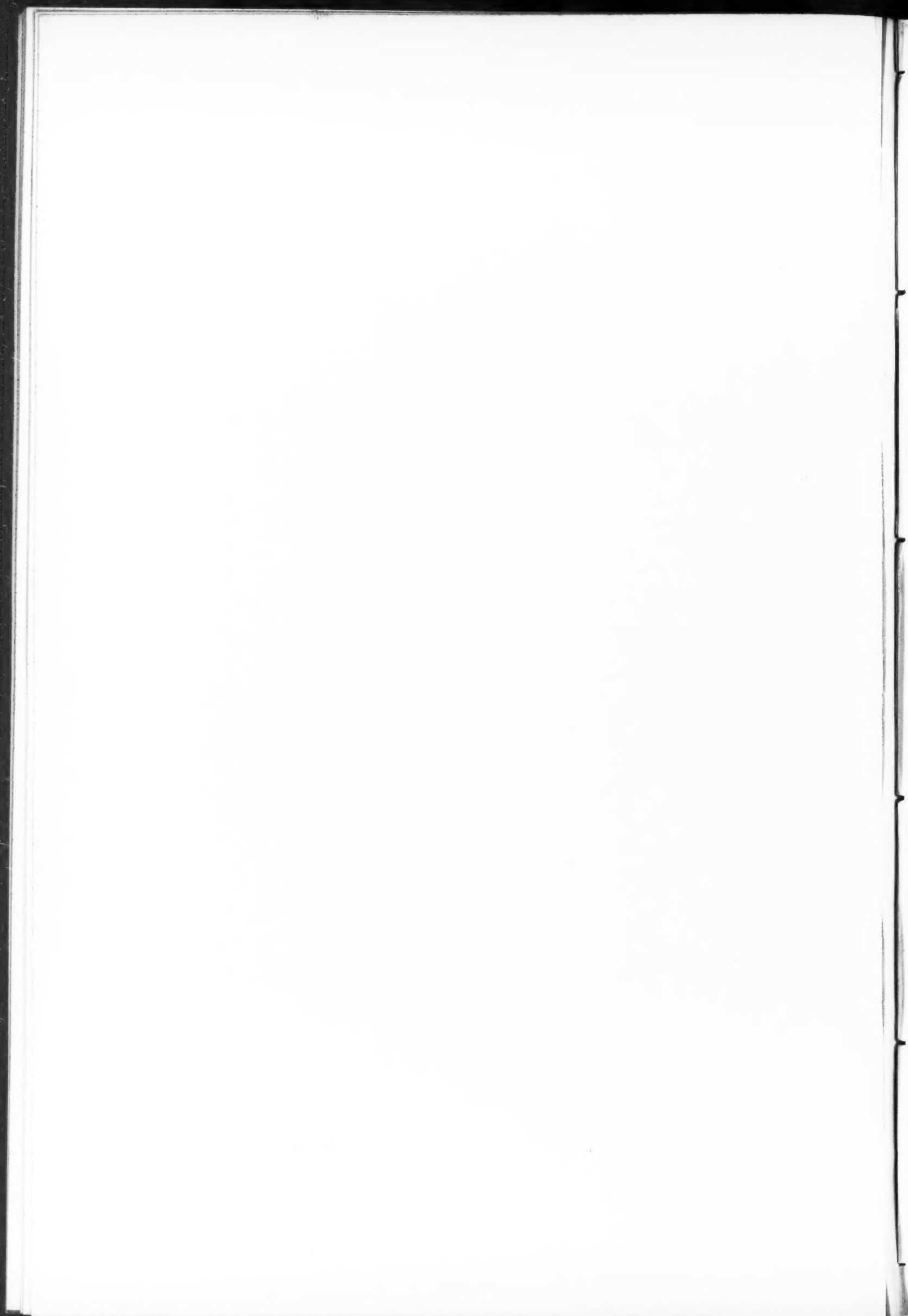
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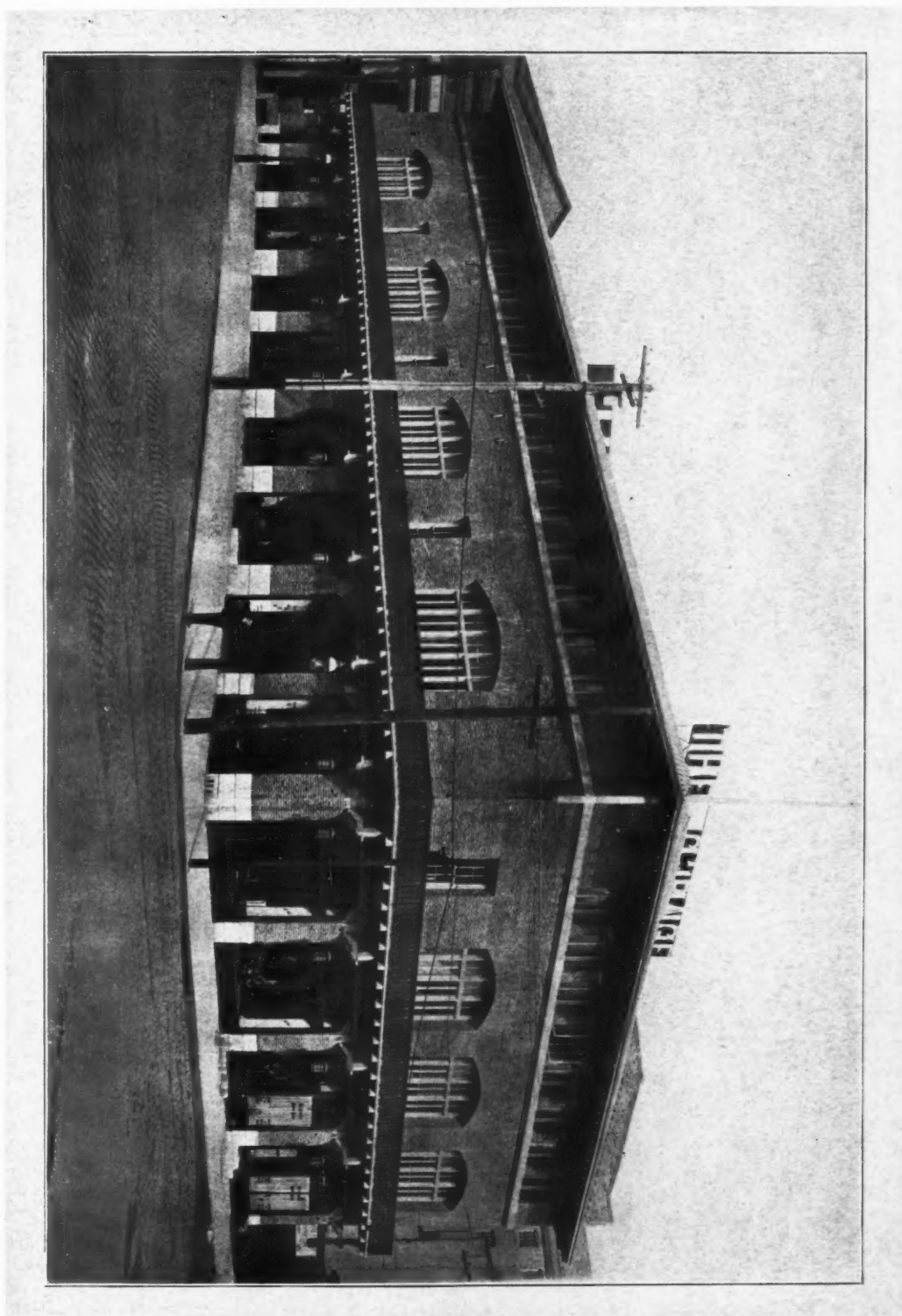
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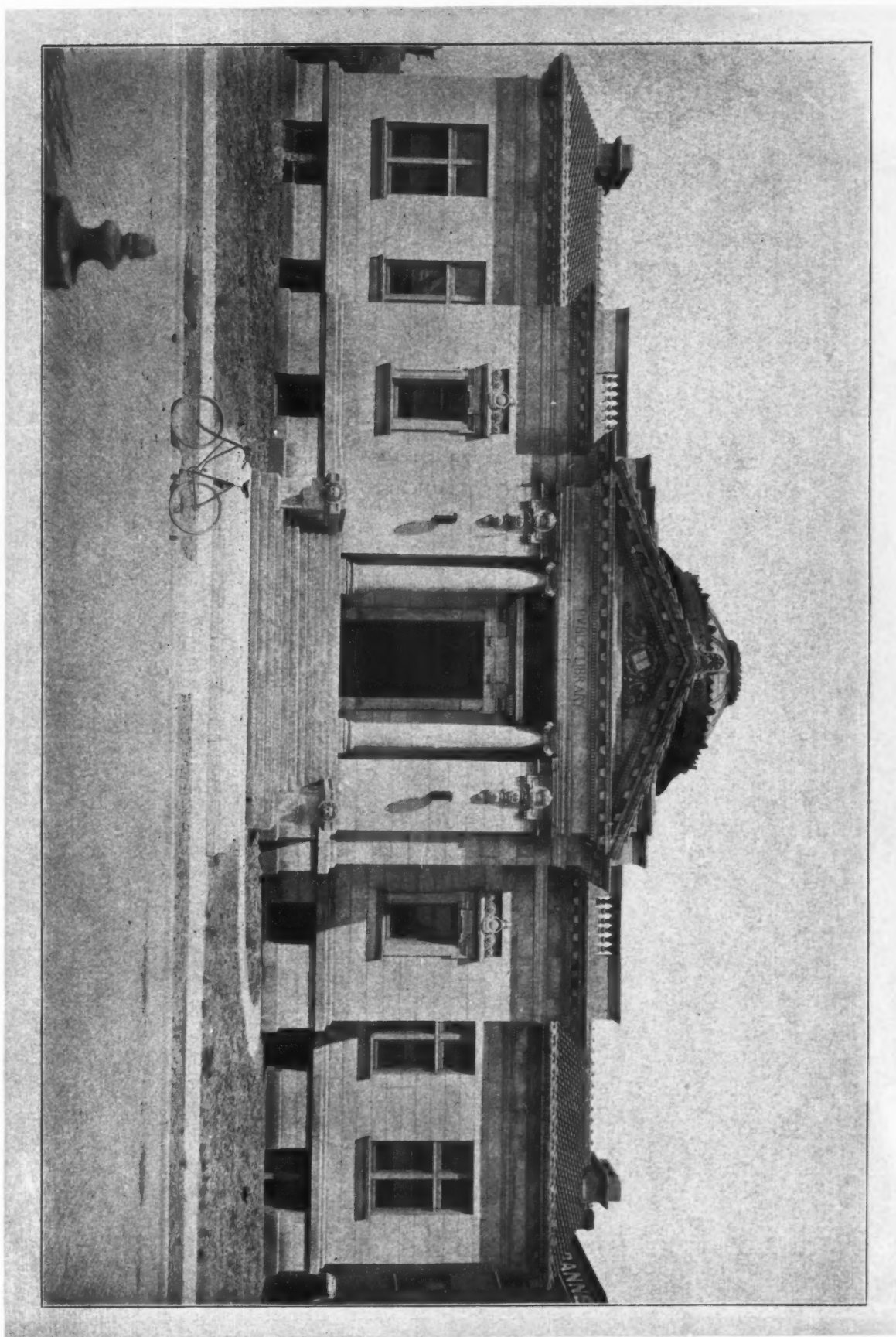


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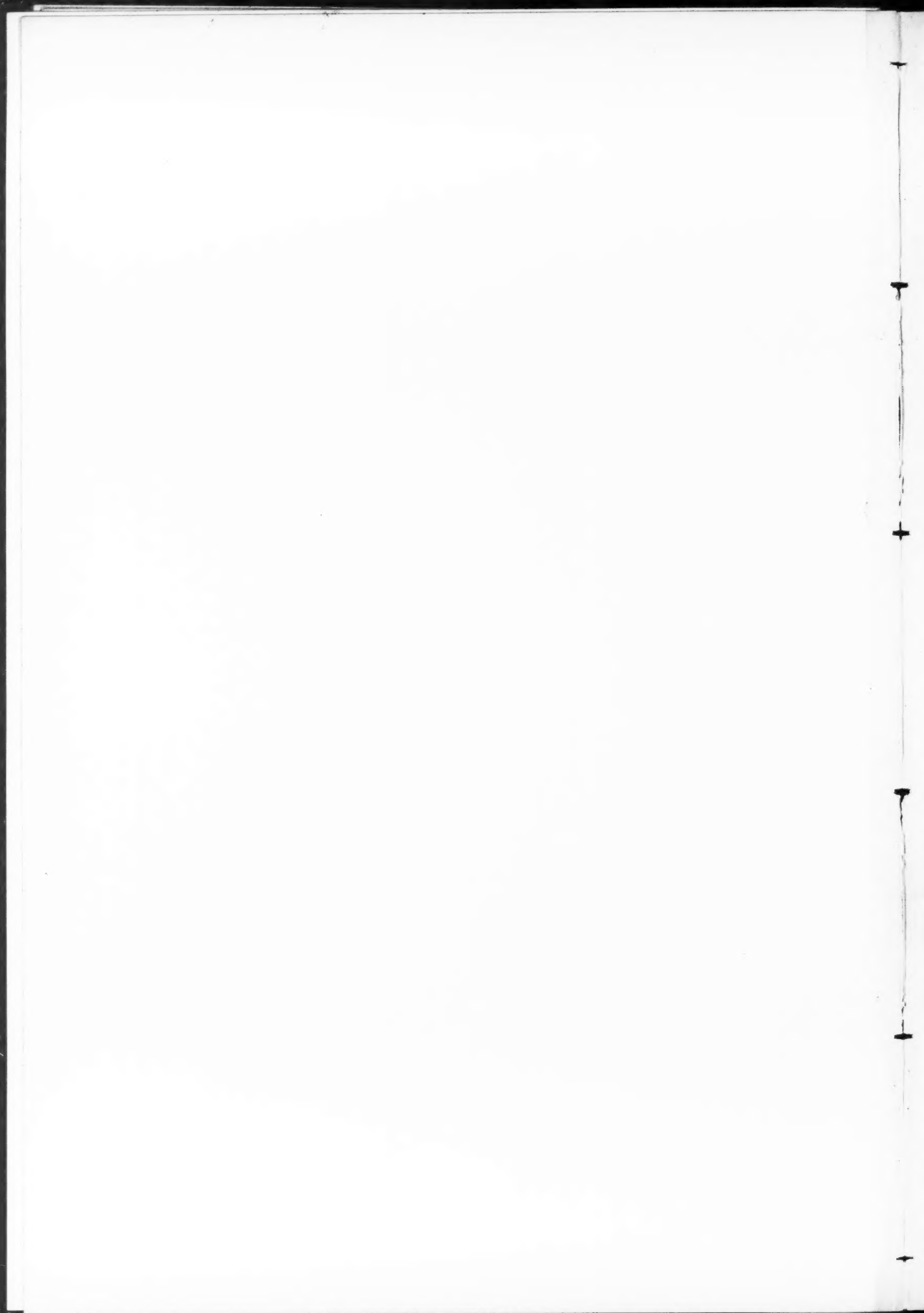


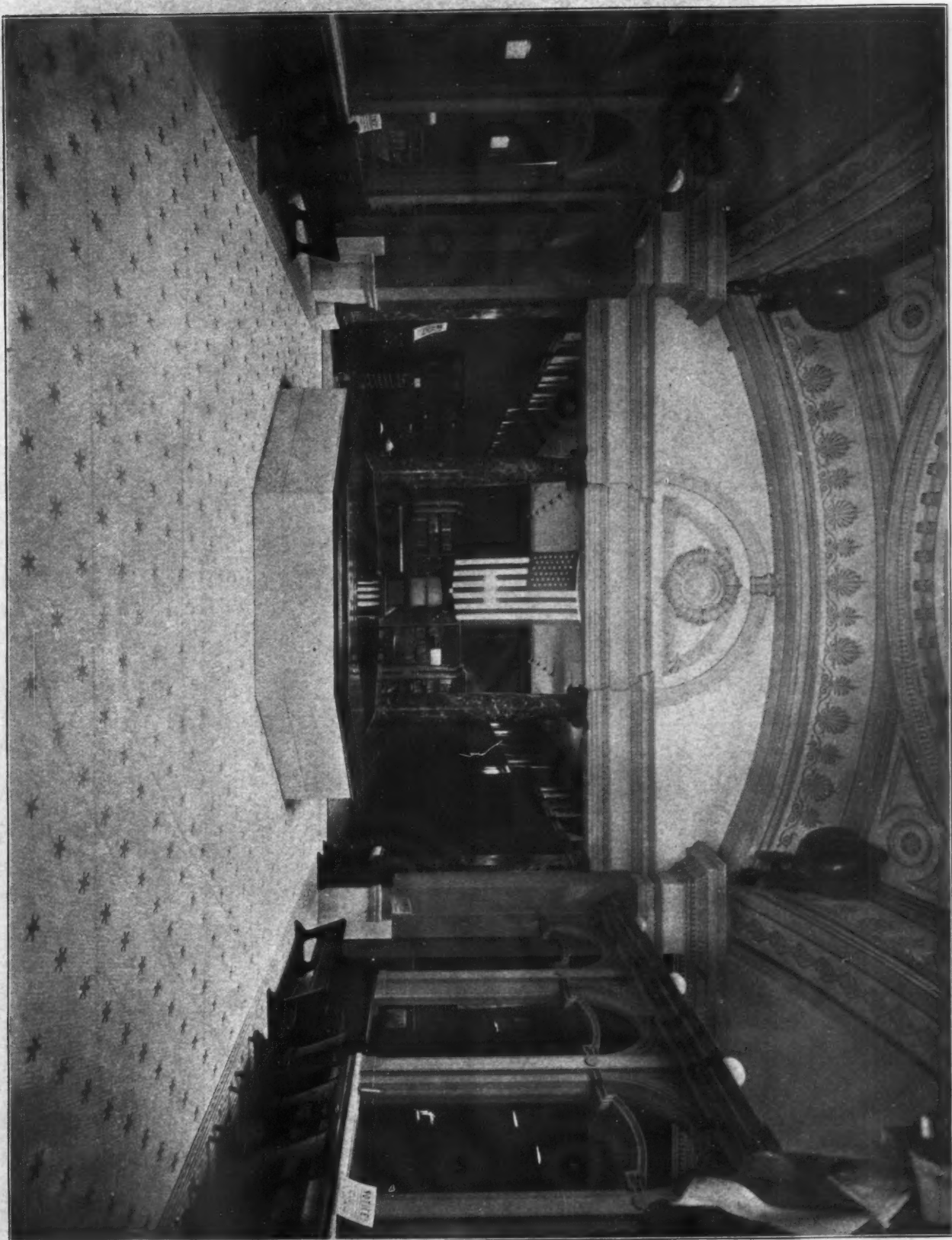


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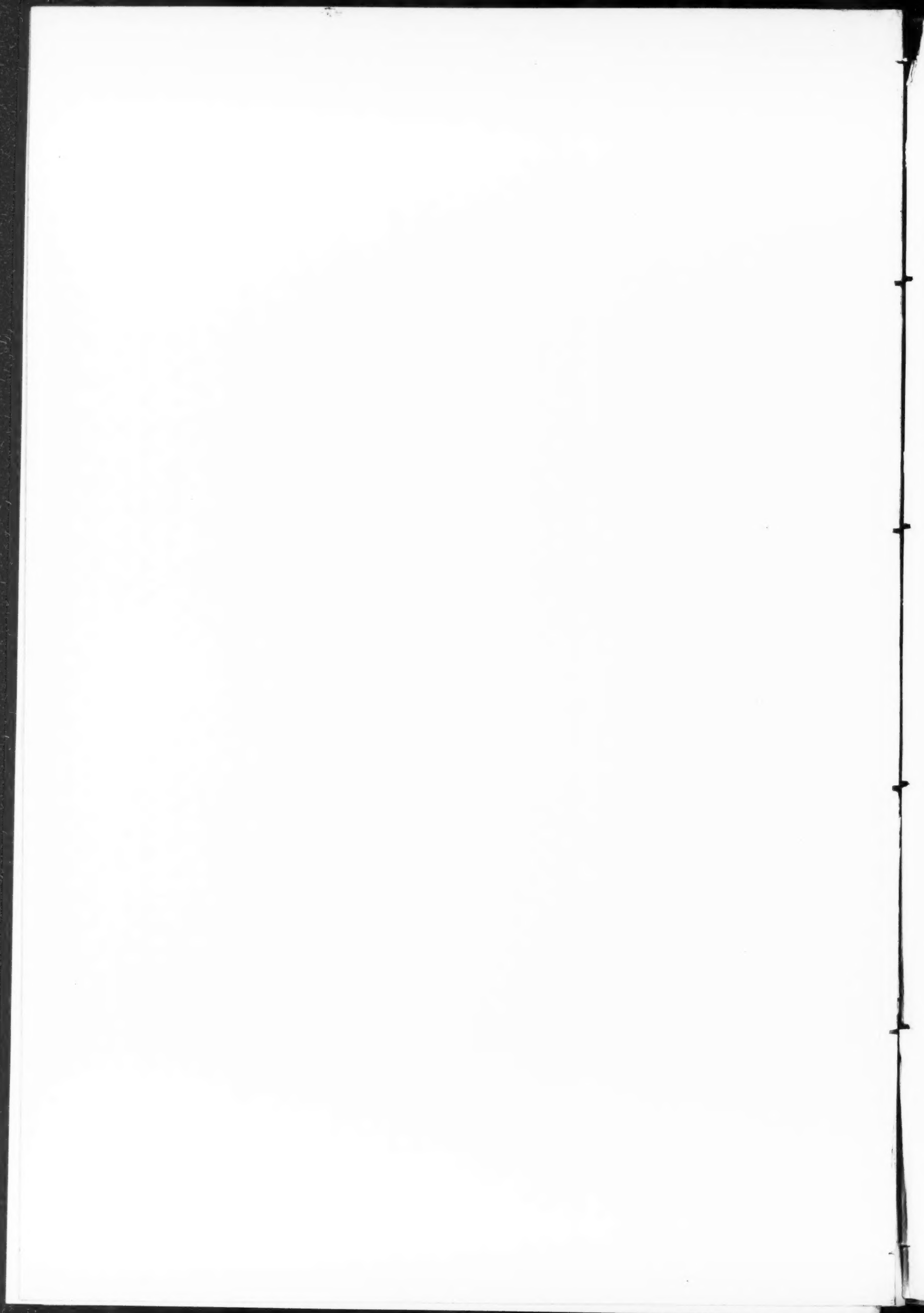


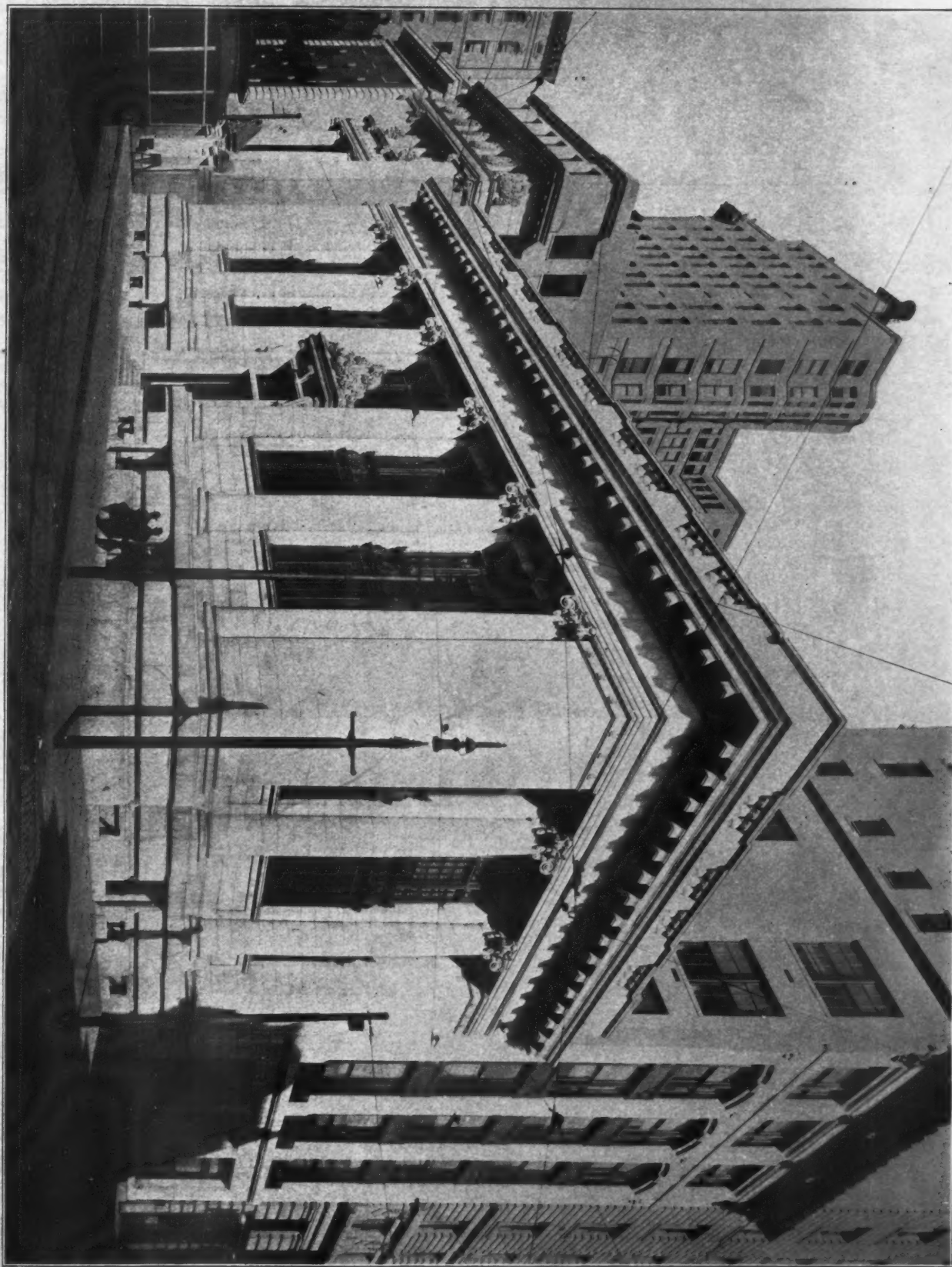
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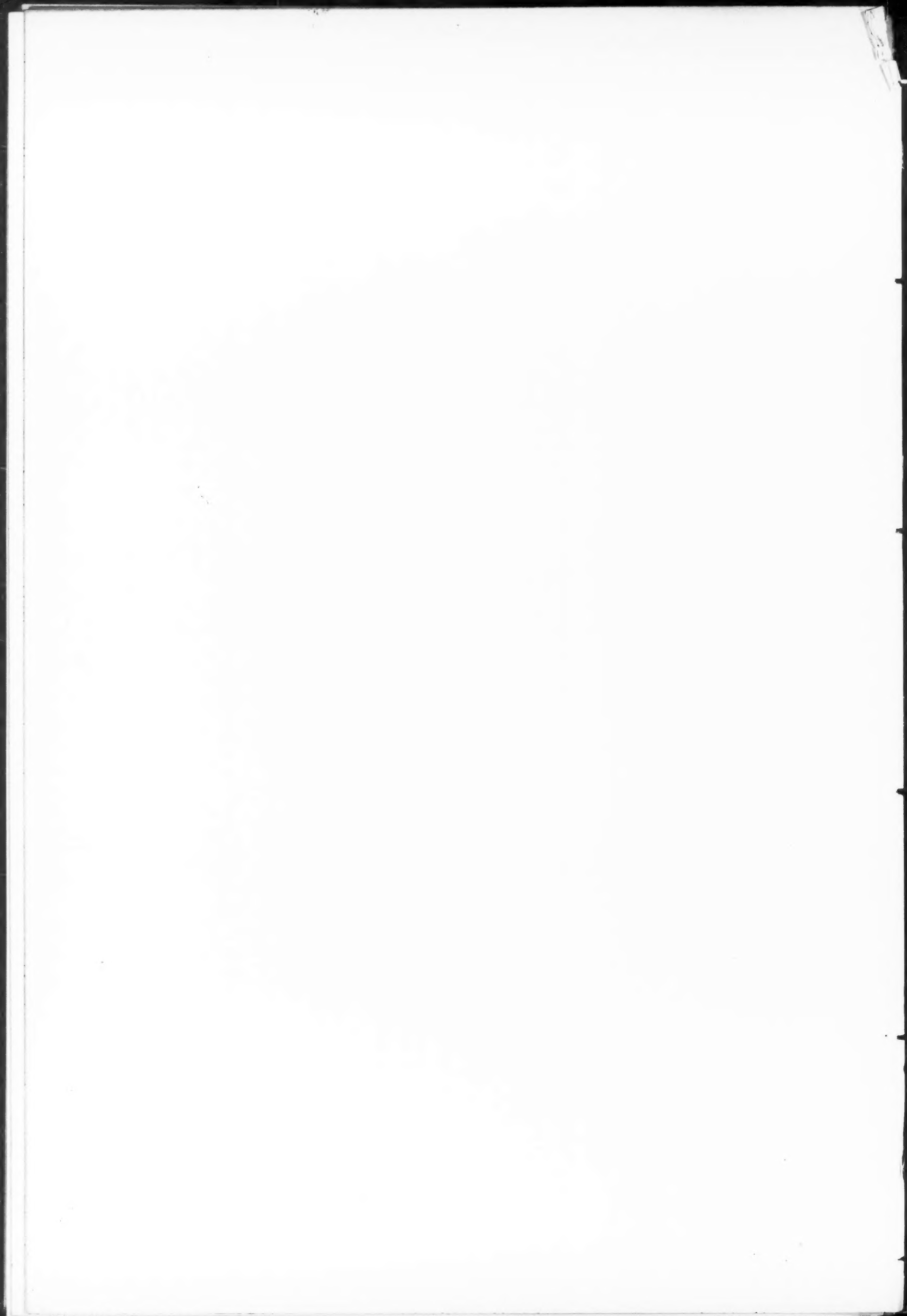
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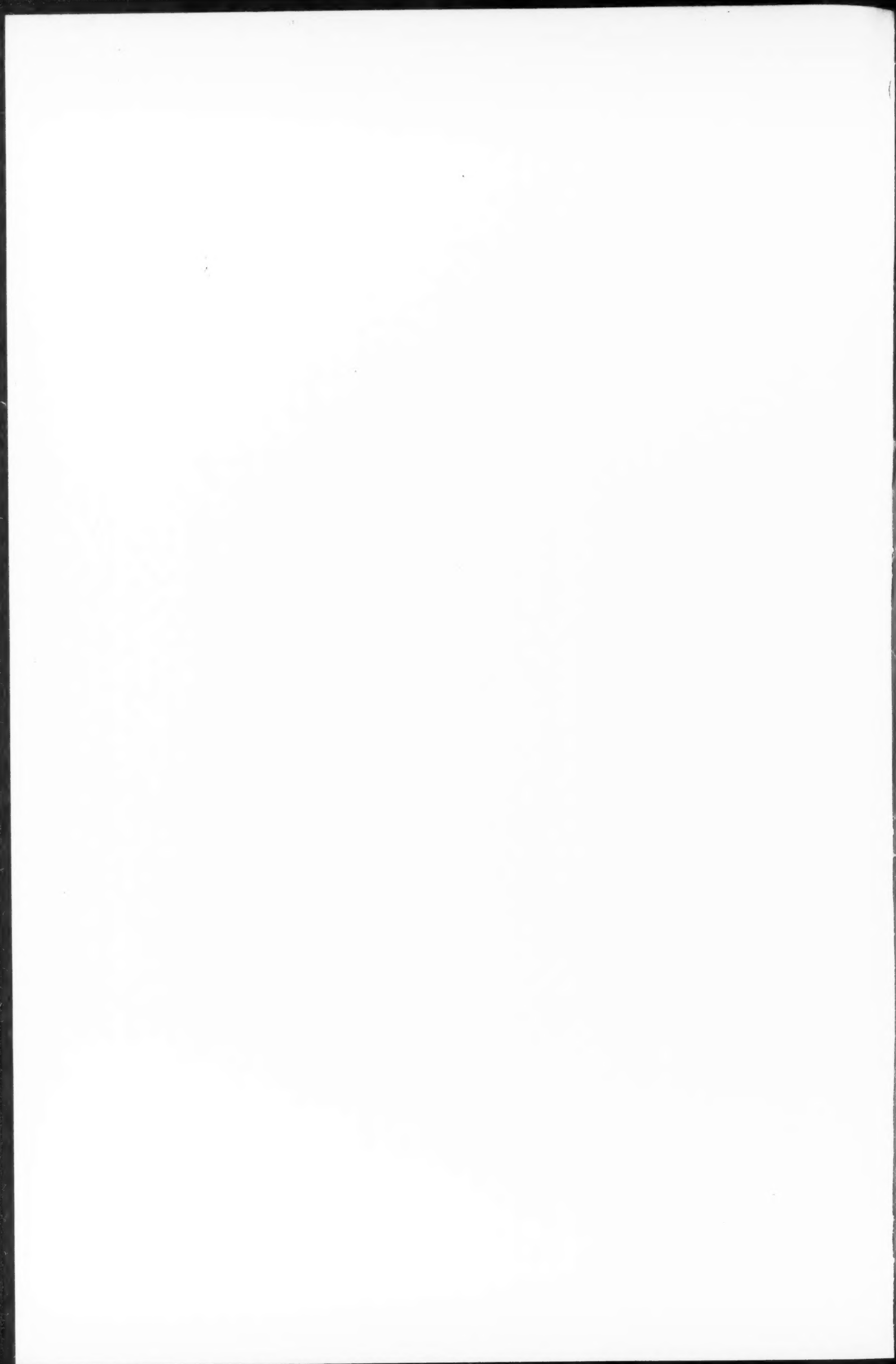
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