

THE INLAND ARCHITECT AND NEWS RECORD

VOL. LI

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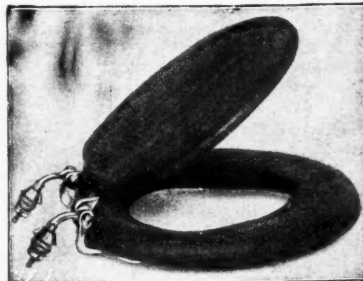
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ISSUED ON THE 15TH

Entered at Chicago, Ill., Postoffice as second-class matter.

PUBLISHED BY PORTER, TAYLOR & CO.

PONTIAC BUILDING, CHICAGO, ILL.

NEW YORK OFFICE: 320 Broadway, Phone 636 Worth

SUBSCRIPTION:

\$10.00 a year in advance—Single copies, \$1.00

Vol. LI.

JANUARY, 1908

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Architects and the Daily Press.

One of the greatest aids to an appreciation of architecture by the public is the support of the daily press. That this support is woefully lacking in many cities is apparent to all. The instances are numerous where scant notice is taken of architects and their work, notwithstanding that a city is praised or condemned chiefly for the character of its buildings. It is of importance to architects to ascertain the reasons of each newspaper in their city for the apathy shown, and systematically strive to overcome this, and secure more interest in current architectural work. The attitude of the newspapers with relation to the last convention of the Institute was a conspicuous example of how little support is given the profession of architecture by the daily press. This was not due to lack of effort by the press committee of the local chapter, who left nothing undone to secure publicity for the event. The principal reason was, doubtless, that the subject of architecture did not appeal as strongly to the editors in charge as other subjects that at the time were pressing for recognition. The systematic campaign for public recognition of architecture may well begin with the editor-in-chief of the great dailies, and follow down to the reporter who makes the round of the architects' offices for news. Courteous and considerate treatment of the reporter is not the least effective way to obtain the desired end.

The Architect's Opportunity.

The professions of architecture, law and medicine are frequently compared, usually to the disadvantage of architecture. It is felt that the status of practitioners of the law and medicine is more clearly defined and recognized by the public. In the question of fees, it is expected that the doctor and the lawyer will gauge their charges by the importance of the case in hand, the responsibility assumed and the skill required. In this way some adequate return is obtained for the years of study and the expense involved in preparation for practice. There are none of the commercial methods that prevail when the client approaches the architect and seeks to buy his ability as he would so much masonry and carpentry. In one particular at least the architect has the advantage of these other professions. His opportunity is greater to win public recognition and a profitable practice earlier in life. The personification of the successful physician is a man with a wealth of years and experience, and this is measurably true of the prominent lawyer. In architecture it has come to be a common saying, that the young men get all the work, meaning the work that brings reputation and profit.

Though the facts scarcely warrant so strong a statement, the cases are numerous where the young man wins an important competition, carries out the work successfully, and gains a profitable practice. The opportunity afforded the young man to make his way is the strongest argument in favor of the open competition.

**The Influence
of Free
Art.**

The reintroduction in Congress at the present time of the bill to abolish the duty on works of art will be under advantageous conditions. Through the earnest work for the past two years of the American Free Art League, the question at issue is better understood by the people and members of Congress, and it is believed that a majority in Congress now favors free art. It is feared that the leaders in Congress will delay action until there is a general revision of the tariff. This would not seem necessary, as the question of free art stands by itself, and has nothing in common with the other tariff questions. It is to be hoped that this fact will be recognized by Congress, and that the free art bill will have prompt and favorable action. The sentiment of the American people is none too favorable to art products, as is shown by the campaign of education that the Free Art League has found necessary to secure the present favor for the bill. The passage of the bill would at once greatly stimulate interest in art in every direction. In recent years there has been great activity by American art collectors who have secured abroad many great works of art. These are being held in Europe pending the abolishment of the irksome duty. Their exhibition in this country will awaken an interest in art study that will promote the taste of the people, and have a beneficent influence upon all American art products.

**Chicago's Beauti-
fication Scheme
Unsettled.**

A project is under consideration that on first thought may seem to threaten the full realization of the grand scheme of D. H. Burnham's for the beautifying of Chicago's Lake Front. The mayor has directed attention to the falling off in the shipping interests of the city, and suggests that a probable reason is that there are not adequate harbor facilities. In view of this condition, the mayor has petitioned the National Government to withhold permission for the building of the boulevard in the Lake from Twelfth street to Fifty-seventh street, which is planned in the Burnham scheme. He asks the withholding of this permission till full investigation can be made of Chicago's needs for an extensive harbor on the Lake Front. It is believed that the government engineers are in accord with the mayor's views, and that an opportunity will be given for a careful study of the problem. This would delay the fulfillment of the Burnham plans and possibly modify them. However, as the growth of the city has always been and will continue to be dependent upon her commerce, it is of supreme importance that her needs in this direction be fully considered. It is best that the subject of shipping facilities be taken up in connection with the plans for the beautifying of the Lake Front that one may fit into and supplement the other. It is probable that a series of wharves and docks will be decided upon and that they will be built and controlled by the municipality. These need not be unsightly; they should have every adjunct possible to make

them otherwise. It is very sure that they would be built with due regard to the æsthetic side of the Lake Front improvements. These have advanced to such a stage and have such a hold upon the citizens; and the organizations that have aided in their fulfillment are so powerful that it is safe to assert that the beautifying of the water front of the city will be eventually realized. Modifications of the Burnham plans for Chicago are possible, as are those of Burnham, McKim, Olmsted and St. Gaudens for the improvement of Washington, but there is scarcely a doubt that in both cities the improvements will be largely in accord with the plans of these experts.

**Uniform Sizes for
Catalogues Etc.,
Desirable.**

Manufacturers and material dealers are receiving requests from members of the Chicago Architects' Business Association to make their printed matter accord in size with architects' filing cabinets. The association has given careful consideration to the subject of filing the printed matter that comes to the architect's table, and has formulated its recommendations in the form of a "request" to be signed by the members and issued to dealers. After advising the manufacturer against wasting money on fancy covers and useless laudation of materials, the "request" continues: "If you wish to receive the thoughtful consideration of architects, give accurate scale or full sized detail drawings and descriptive specifications of your material, so that same can be intelligently judged by technical men. Where you manufacture several articles for practically the same purpose, please give your own opinion as to which of these should be used for various purposes. Do not print descriptions of articles falling under different classification on the same page, as this prevents filing each article under its proper heading. Give name, address and branch agencies with telephone numbers, on each page, either on the back or front. To determine classification in which your material would naturally fall, refer to Dewey Index published by the Library Bureau, or special extension of same applying to Architecture and Building, given in Vol. X, page 303, Handbook for Architects and Builders, published under the auspices of the Chicago Architects' Business Association; also in Bulletin No. 13, published by the University of Illinois Engineering Experiment Station, Urbana, Illinois. Two sizes are recommended: first, 10½ inches x 13 inches, the average size of most of the architectural magazines including 'Sweets,' and convenient for filing in the standard sized vertical Architectural filing-cabinet. In no case shall the extreme size of cover be over 12 inches x 15 inches, as this is the maximum size which can be filed in the standard sized cabinets. The second size is 4 inches x 6 inches, the standard index rerum size, convenient for mounting post cards, small pamphlets, etc., especially convenient for pocket data. This is the size now used by a large number of architects for inspectors' report cards, bid blanks, account cards, certificate blanks, memorandum notes, etc." Much of the printed matter received by the architect that now goes into the waste basket would be preserved for reference if of convenient form for his filing cabinets. It will be profitable to the material men to study the requirements of the architects' filing systems, and see that their catalogues, pamphlets, etc., conform to them. Much will be accomplished in this direction by following the suggestions of the Chicago Architects' Business Association.

HYGIENIC CONDITIONING OF PUBLIC BUILDINGS



FEATURE which has always militated against the more general use of mechanical ventilation in public and office buildings is the presence of dust and soot carried through the ducts and deposited in the rooms. In crowded localities and manufacturing districts it is frequently decided to forego the advantages of adequate ventilation, or if the sacrifice is too great, the presence of dust has long been considered a necessary evil. A new era seems to be at hand, as mechanical means of excluding this nuisance now leaves no reason for the omission from public or semi-public buildings of a ventilating system supplying pure air in plenty, and introduced in such a way as to afford uniform temperatures and avoidance of draughts.

In a ventilating system as usually installed the air is drawn from a point above the level of the streets, but in the modern city with its dense population and its myriads of chimneys discharging poisonous gases, soot, smoke and other impurities into the air, it is impossible to find pure air at any level available for connecting to the intake of a fan system; this means that we are every minute taking soot, smoke, dust and germs from the chimneys and streets and discharging the same into our offices, dwelling rooms, auditoriums, etc. It is evident that the air must be cleansed in some way, but how? This cleaning must be done in the short time which elapses between the entrance of the air into the building and the time when it enters the fan, that is, the cleansing must be done at a high velocity.

The coke screen over which water is allowed to trickle when placed in the intake of the system will arrest some of the impurities of the air, but when all the rough edges on the coke are filled it is necessary to renew the apparatus. The same is true of the cheesecloth screen placed across the fresh air inlet; not only do these forms of air filters require constant attention, but as they do not work efficiently with air at high velocity, it is necessary to make them large in order to reduce the velocity. As a result the use of such an apparatus is often vetoed by space requirements. It is also prohibited on account of operating cost, for these filters offer a high resistance to the flow of air, thus greatly increasing the power required. The common-sense method which have proven to be the most efficient is to pass the air through a chamber or air washer in which there is a sheet of water spray as fine as mist. This spray thoroughly washes all the air, for it must pass through the fog, and as water is the most universal solvent known, there is no avenue of escape left for the foreign matter. Such air washers have been installed in numerous places, and are now built in various standard forms by some of the more progressive manufacturers of ventilating and heating apparatus. When tested under actual working conditions these have been found to have nearly 100 per cent cleansing efficiency.

Following are the results obtained from a test made to determine the cleansing efficiency of one of these forms of air washers. A white cheesecloth screen was placed in a current of air coming through the air washer when one

pound of lamp black was being distributed in the air behind the washer, and another similar screen was placed in the same position when one-hundredth of a pound of lamp black was being distributed in front of the washer. If the amount of air was the same in the both cases and the distribution was uniform and the rate the same, which conditions were actually approximated, we can safely say that the washer removed over 99 per cent of the impurities contained in the air, as the second screen was more discolored.

The air in passing through such a form of washer is bound not only to be thoroughly washed but also moistened, the amount of moistening depending upon the dryness of the air. It has been found by careful tests on washers in actual service that the air can be saturated at practically any desired temperature and that this temperature can be automatically controlled, thus controlling the relative humidity of the air in the rooms. The method of control is most simple and efficient.

It seems strange that architects and ventilating engineers have not before this time realized the importance of maintaining the proper relative humidity in our buildings. As a rule the climate in our ordinary office building is as dry as that of a desert, and this is undoubtedly the cause of many diseases. Furthermore, the human body is most sensitive to the wet bulb temperature, which is always lower than the dry bulb temperature and depends on the amount of moisture in the air. If the amount of moisture is increased it is evident that the amount of heat required will be decreased.

Not only should air furnished to our living rooms be clean and humid, but it is often the case in summer that a cooling effect is desirable. This cooling can easily be done by changing the temperature of the spray water in the air washer. The following test shows results obtained in a large public library and points out readily the efficiency to be obtained by the use of this form of apparatus:

Time p. m.	2:30	2:50	3:15
Auditorium basement	75	75	74
Stall room basement.....	79	80	77½
Stall room basement.....	77	77	76
South reading room—main floor.....	78	78	78
North reading room—main floor.....	78	78	78¾
Stock room	79	80	79½
Average	77.7	78	77.2
External air	86		
Air entering rooms.....	73		
Circulating water	69		

It is interesting to note the effect of this apparatus in cooling the building. Although the temperature of the external air was 86° F. it entered the rooms at 73°, and kept their temperature down to between 77° and 78°, a cooling of about 8½°.

During the first two series of readings the windows in the three basement rooms were open. Before taking the 3:15 p. m. reading they were closed. The result shows that the temperature of these rooms was noticeably lowered by excluding the external air, and supplying only washed air from the fan.

THE RELATIONS OF THE ARCHITECT TO THE BUILDER*



AT the outset of his paper Mr. Greenwood pointed out that the relations of the architect to the builder were, or should be, confidential, taking this word to mean not "private," but mutual confidence, otherwise their relations could not be pleasant and were not likely to be advantageous.

THE ELEMENT OF SUSPICION

with regard to the builder which pervades and permeates all building contracts need not be imputed into the subsequent relations between the architect and builder. "Without adequate and unmistakable grounds the builder should not assume that the architect is striving to get 21s. for £1; and the architect should not assume that the builder is scheming to give him 19s. for £1. If in the course of a contract it occurs to a builder that some better method of securing a desired end can be adopted without detriment to the structure, and he makes to the architect a suggestion accordingly, there is no need for the architect to jump to the conclusion that the builder is seeking any unfair advantage, even if the improvement should afford some benefit to the author of it.

"The builder in the course of his business has to employ all sorts and conditions of men—often through the fluctuations in trade he is unable to know by experience the character and disposition of all those whom he has to place in positions of more or less control and responsibility; and, if in any case such persons should act without his authority or knowledge in a manner that might be described as questionable, it does not follow that the builder is untrustworthy, provided he is ready at once to rectify the fault and provide against its repetition. I have known cases where work has been deliberately done badly and then reported to the architect in order to damage the builder's foreman."

THE QUESTION OF REMUNERATION.

In the second place, the relations of the architect to the builder should be mutually beneficial. "Neither party poses as a philanthropist. The architect expects, and rightly expects, that the contract shall enhance his own prestige and reputation, and gratify his clients; and the builder in his sphere has similar expectations. The architect expects, and rightly expects, that the contract shall be remunerative, and I imagine that he very seldom if ever fails to realize that expectation, although I have heard rumors that the remuneration is not always consistent with the professional ability and energy displayed. The builder also expects that the contract shall be remunerative; but in this case, unfortunately, his expectations are frequently doomed to disappointment, and it is no uncommon experience for the builder to contribute unwillingly if not ungraciously to the cost of the building.

"Under the depressed state of the building trade that has prevailed during the past two years, I am afraid this experience has become lamentably common; but I think I may safely admit that builders need not be credited with motives of philanthropy in this matter, for if they

contribute to the cost of their contracts, it is neither by desire nor intention, and it is not unusual for them to make laudable efforts to avoid such occurrences."

VARIABLE RELATIONS.

In the third place the relations of the architect to the builder were inevitably variable, because of the widely differing characteristics and customs of the individuals concerned. "As to the varied individuality and customs of builders, I have very limited knowledge or experience. Builders are not particularly confidential amongst themselves; on the contrary, there is generally a considerable amount of reserve in trade relations, and the delightful theory that I believe was held at the London County Council some years ago, that builders were a happy family replete with confidence and mutual concern for each other, was altogether a fanciful apprehension. Recent experience leads me to think that builders may rather be likened to a pack of hounds when the scent is hot.

It needs a clever man to talk apparent sense on a subject about which he knows little or nothing. I therefore pass the inviting topic of the variable relations of the architect to the builder, arising from the varied characteristics of the builder, and proceed on what is, perhaps, more delicate ground, namely, the variable relations of the architect to the builder arising from the varied individuality of the architect.

For instance there is

THE "AUTOCRATIC" ARCHITECT.

His relations to the builder are not as other men's. He is careful to emphasize the impassable gulf between the profession and the trade. When an audience is granted to the builder, it becomes him to proceed with great deference, if not with awe. If the builder has opinions of his own, they must not be advanced, and suggestions or advice would be regarded as impertinence. . . .

Then we may sometimes meet

THE "LEGAL" ARCHITECT.

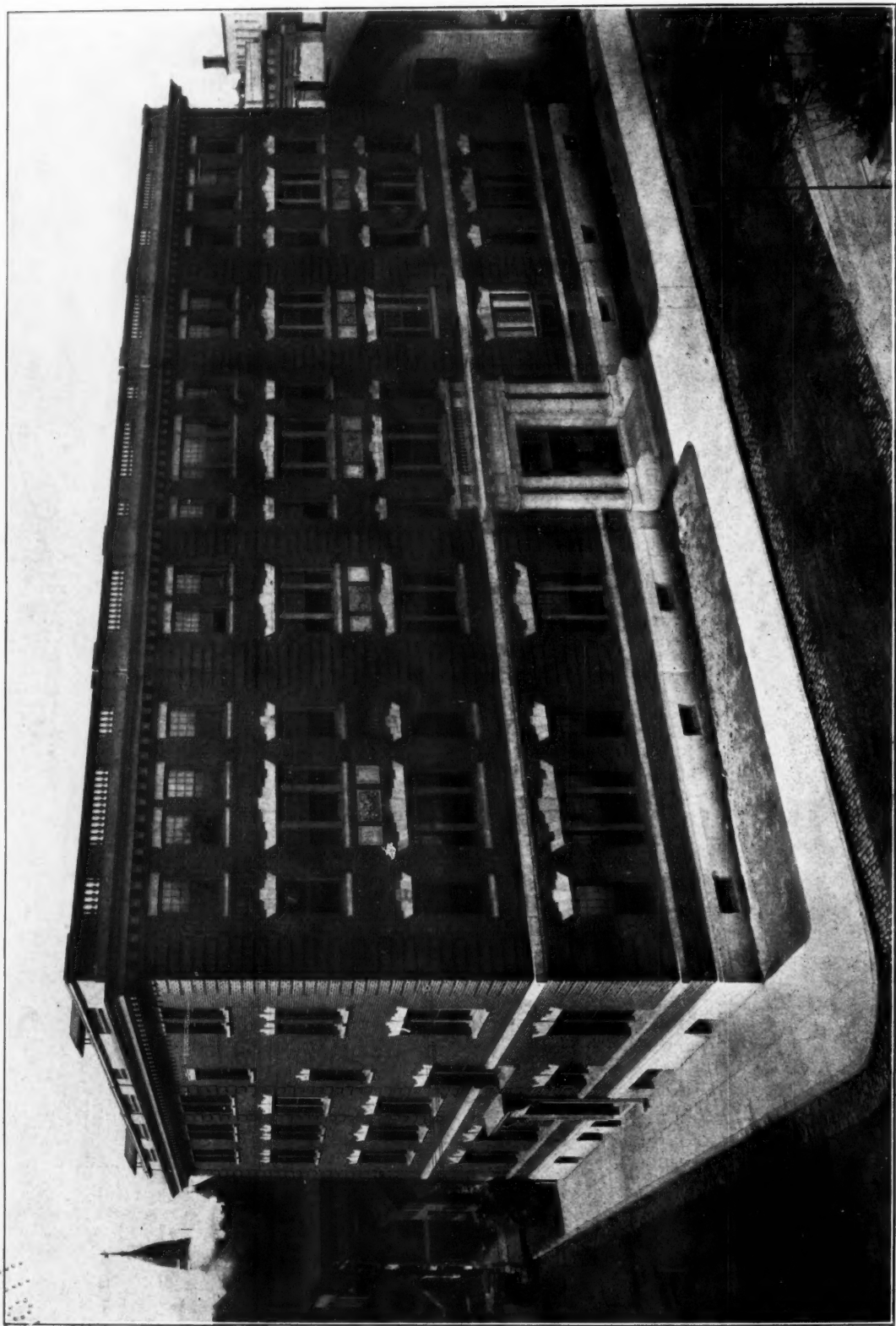
His relations with the builder are not the same as the others; he has a patent pneumatic form of contract so constructed that by the movement of a simple lever the commercial life of a builder is crushed out of him without any troublesome noise or struggle—a sigh, and he is gone. The architect carefully explains that he will never touch the lever—unless it becomes necessary. His variation orders are printed in elaborate and legal form; variation orders are issued for additions and omissions—chiefly omissions. If in foundations a good bottom is found at 3 ins. less depth than anticipated, although in the process the builder has had to cut out concrete foundations at the price of ordinary digging, an omission order is promptly delivered. Unless official orders are secured for every extra, there is considerable doubt whether the work will ever be paid for.

I express here no opinion as to the desirability or otherwise of this rigid form of procedure—it undoubtedly has its advantages as well as disadvantages, for the legal architect is generally just though his justice is not often tempered with the other thing. . . .

Then there is

*Paper read before the Architectural Association of London.

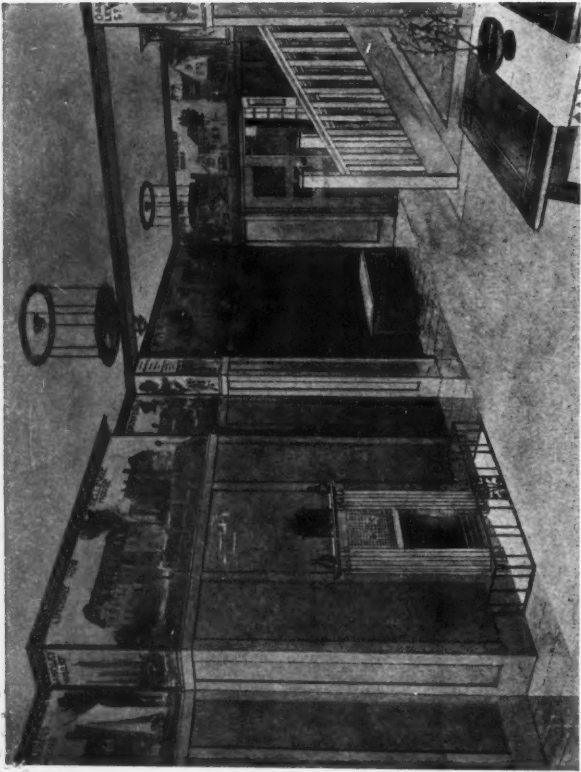
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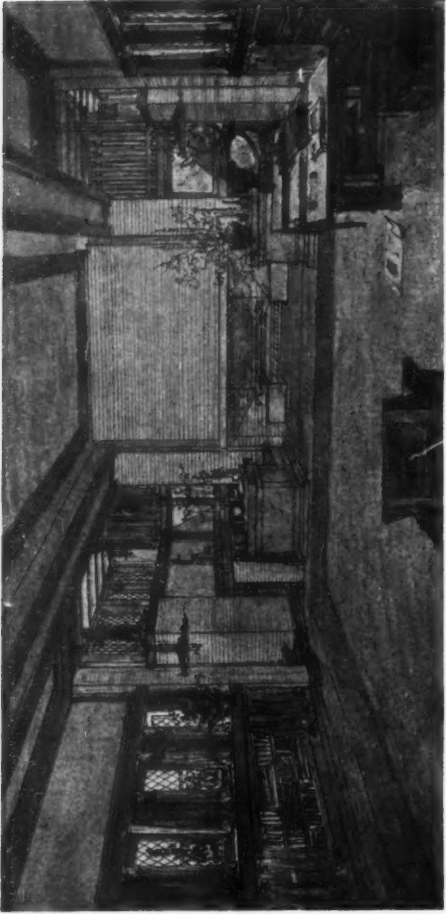
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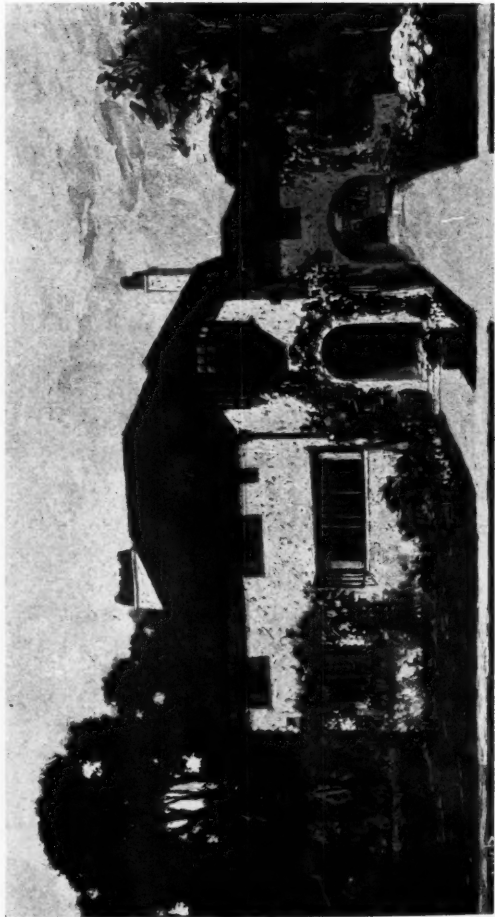




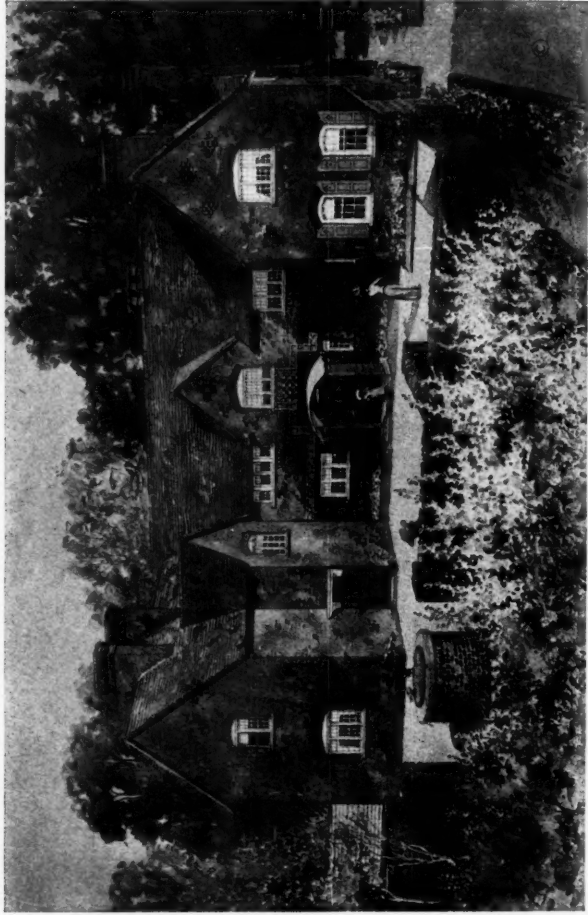
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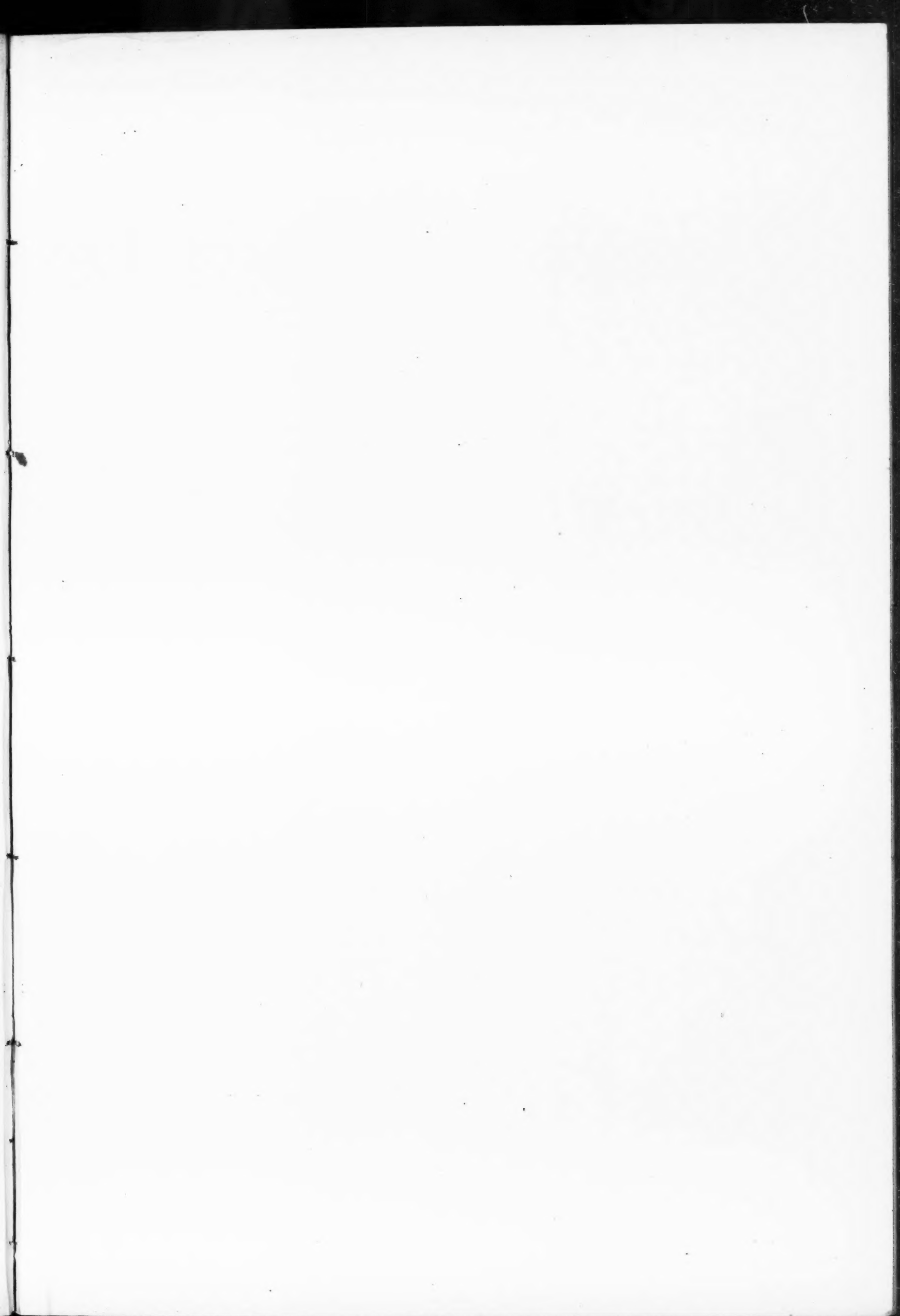
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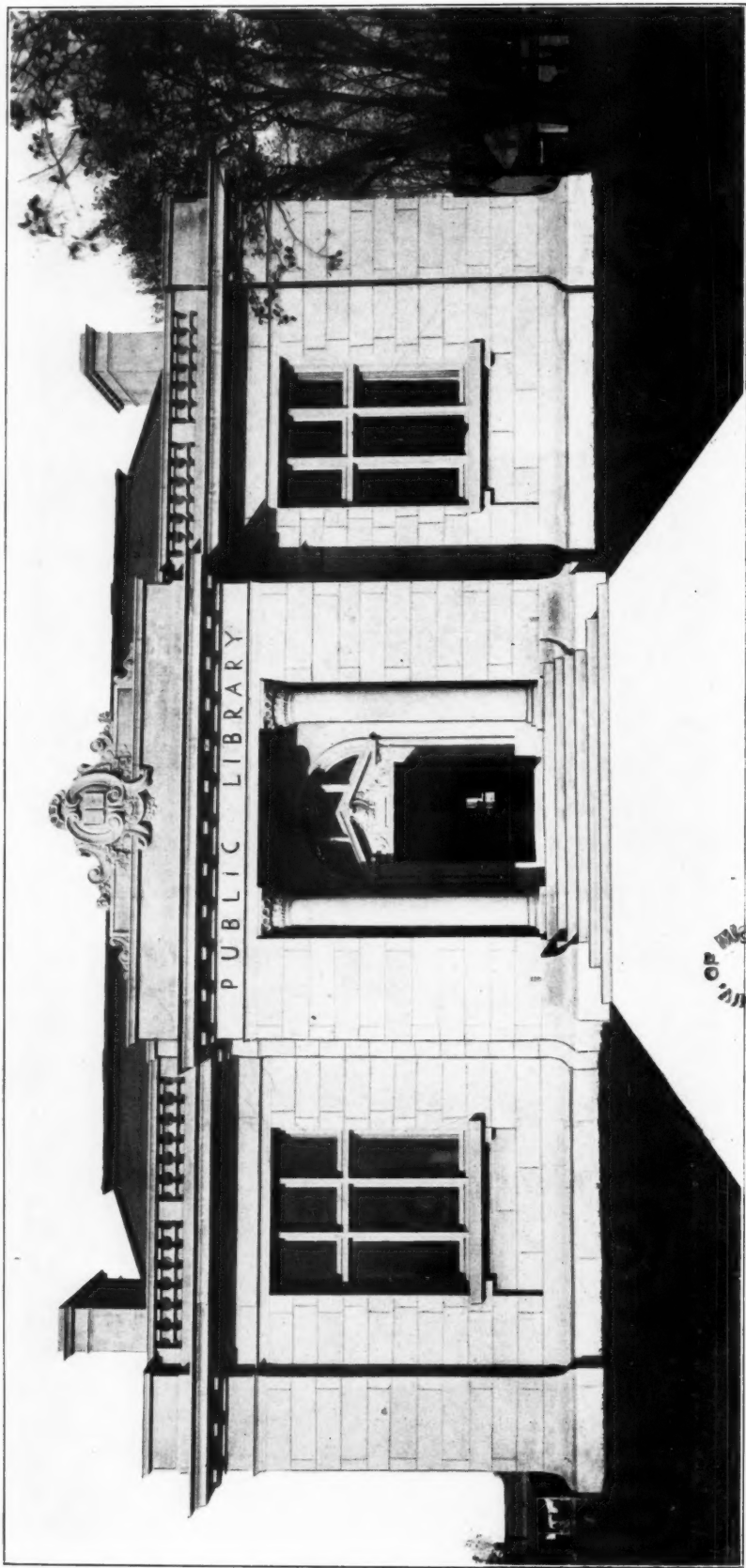


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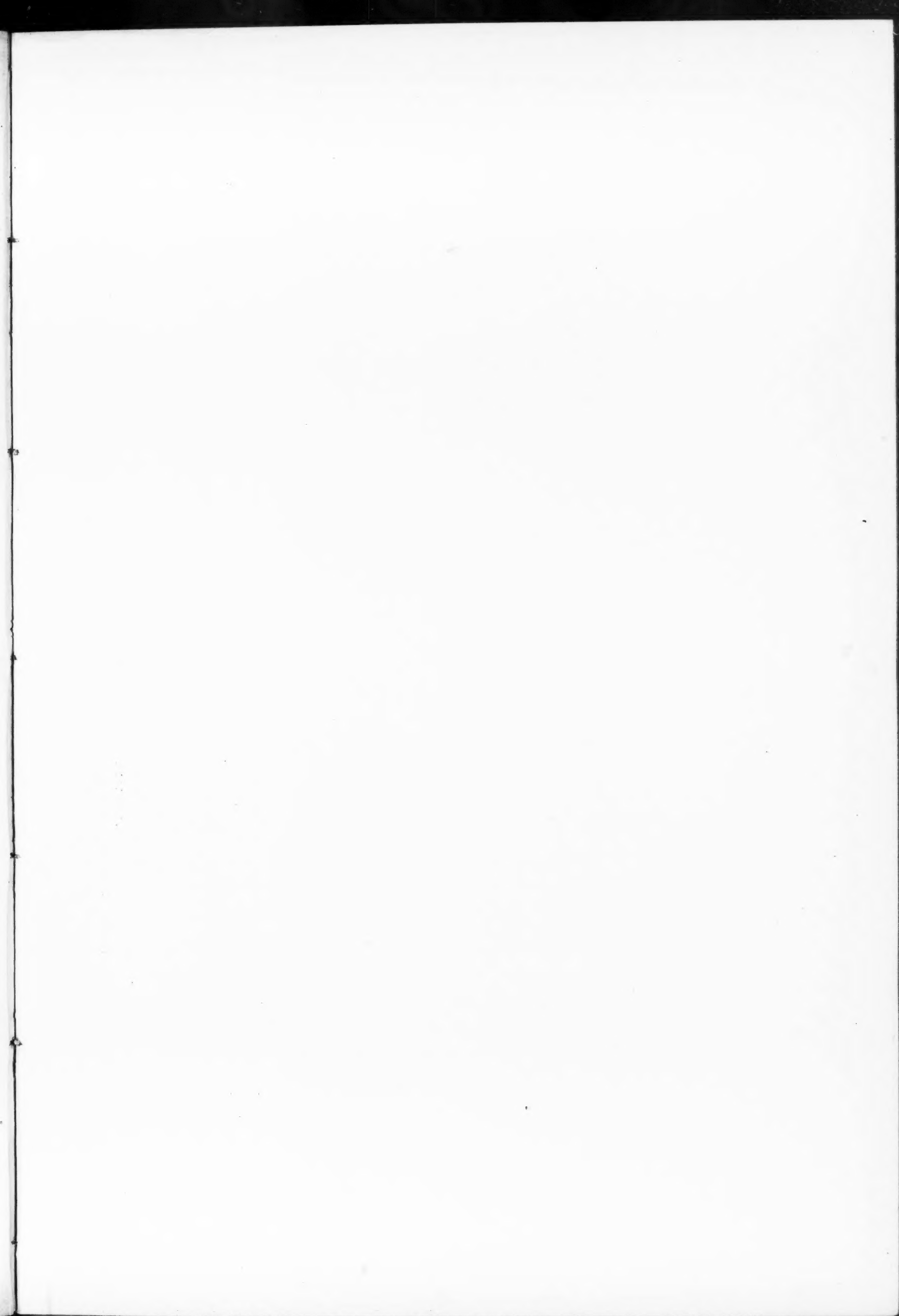
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BELDEN APARTMENT BUILDING, CHICAGO
S. N. Crowen, Architect

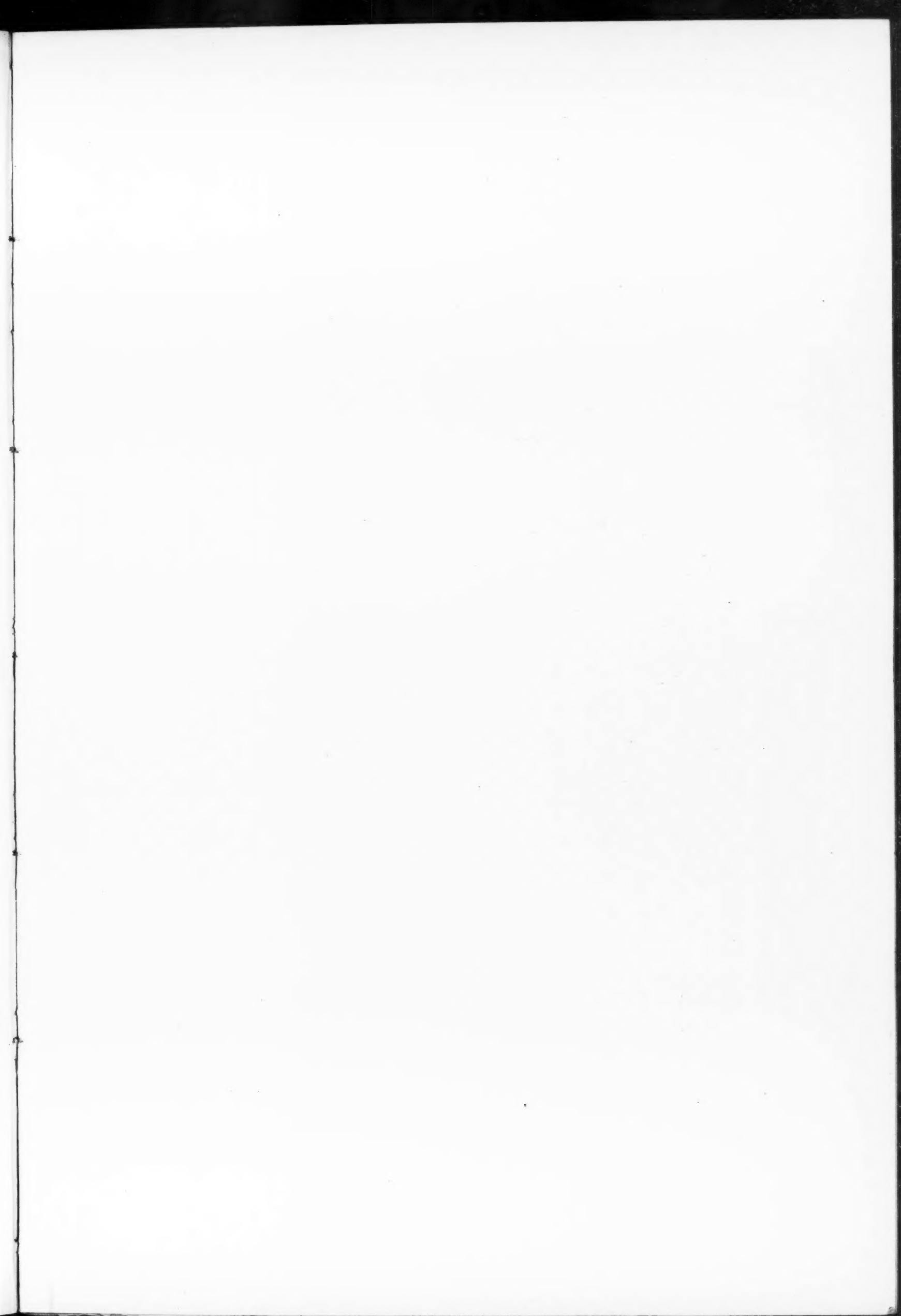
THE INLAND ARCHITECT
AND NEWS RECORD
JANUARY, 1908





VIEW IN FOYER, STUYVESANT HIGH SCHOOL, NEW YORK
C. B. J. Snyder, Architect

THE INLAND ARCHITECT
AND NEWS RECORD
JANUARY, 1908

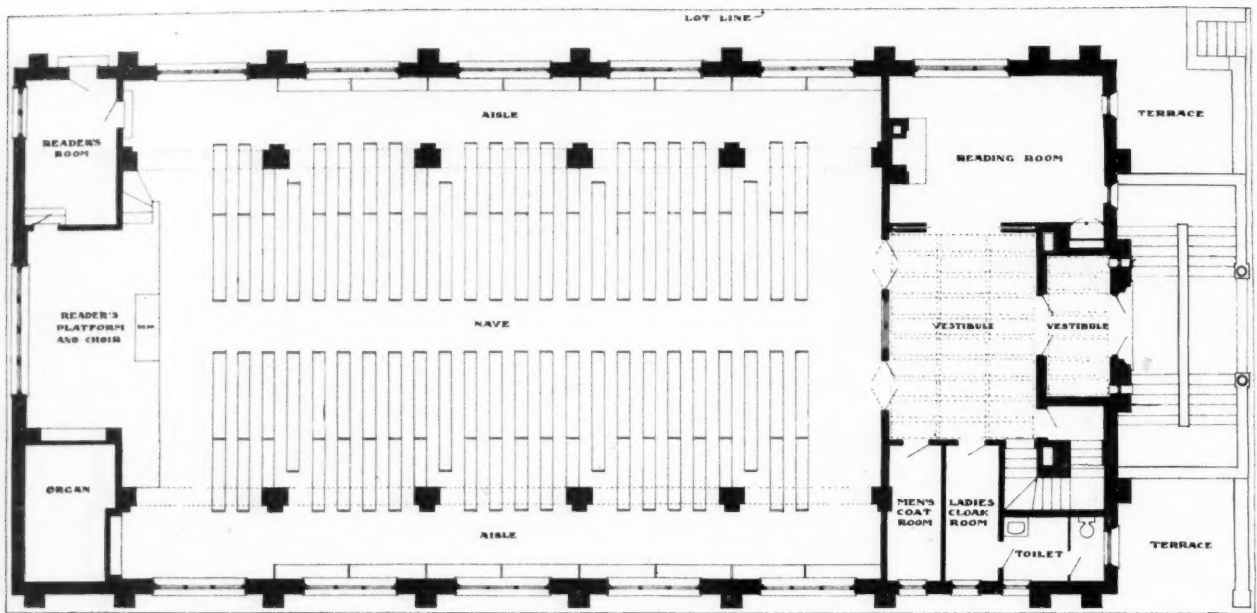




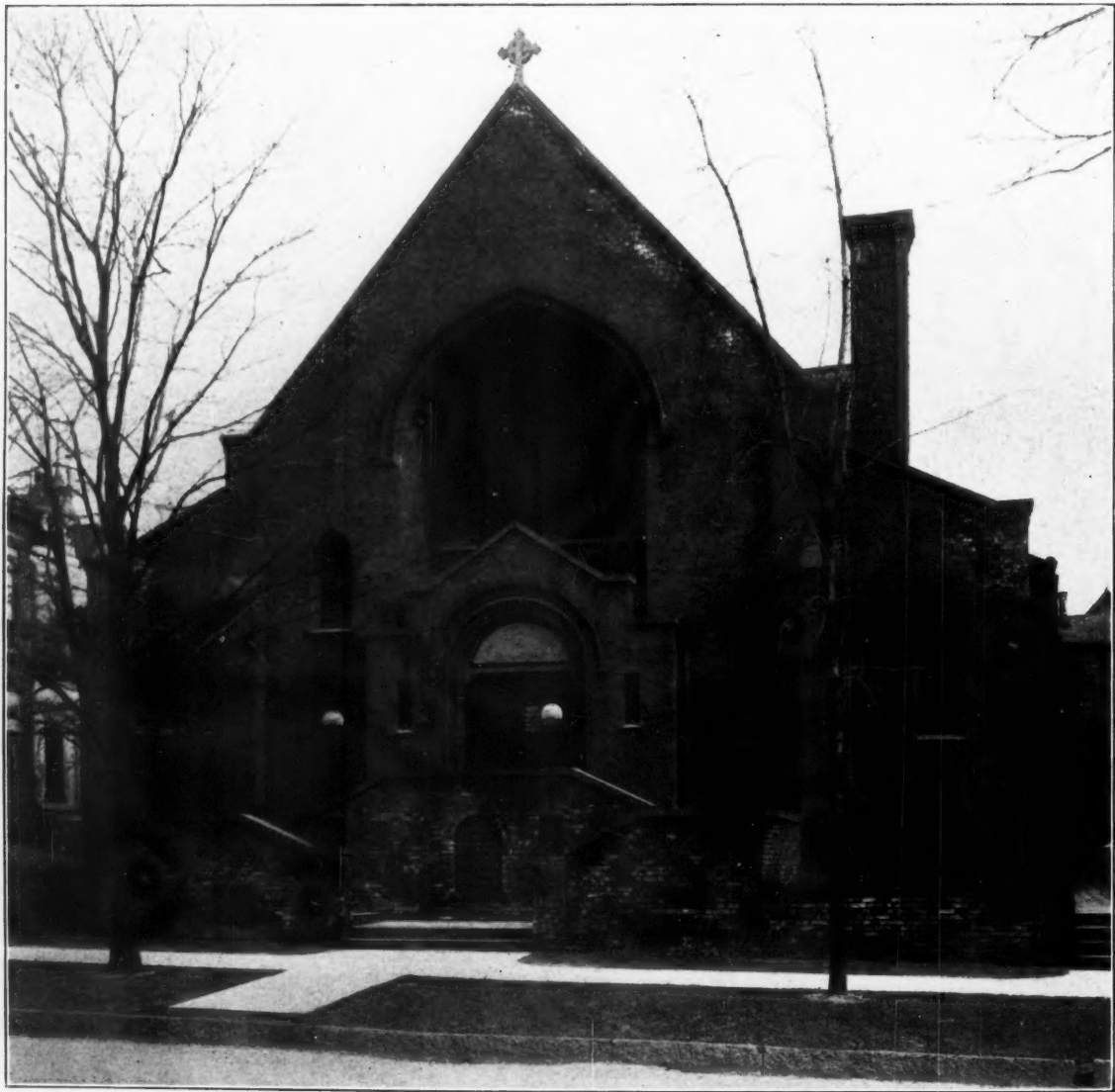
ENTRANCE DETAIL RESIDENCE OF MRS. F. J. GERAGHTY, CHICAGO
Egan & Prindeville, Architects

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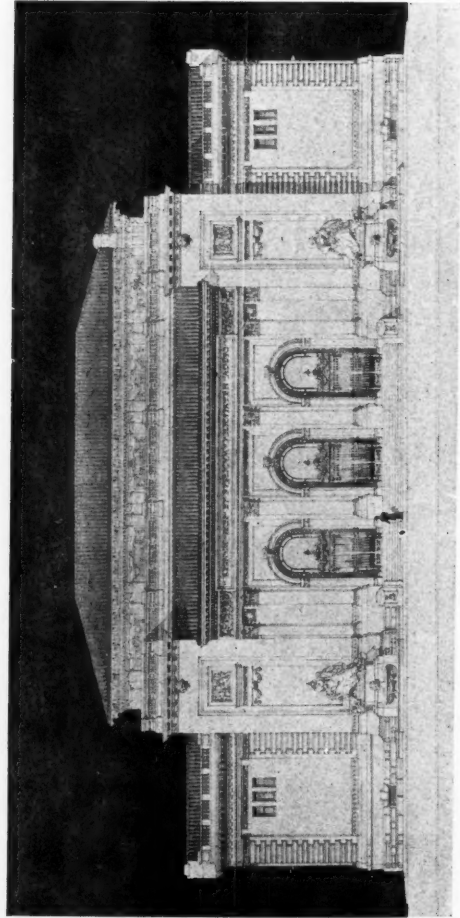
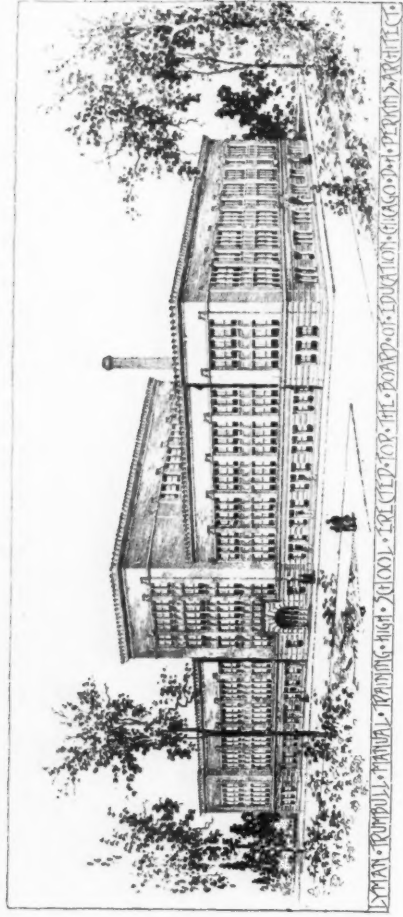
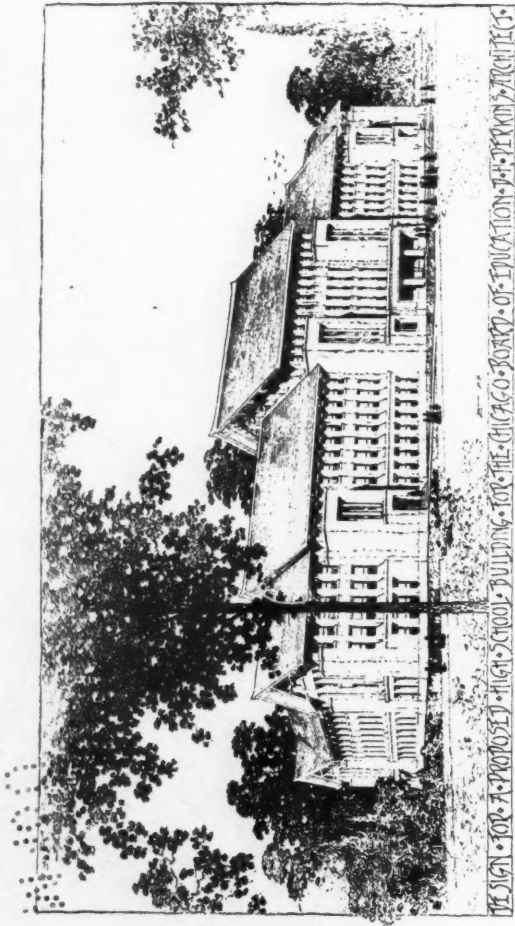
PLAN OF THE CHURCH OF THE CHRISTIAN SCIENCE SOCIETY
MILWAUKEE WISCONSIN
ELMER GREY ARCHITECT.
LOS ANGELES CALIFORNIA



CHURCH OF THE CHRISTIAN SCIENCE SOCIETY, MILWAUKEE, WIS.
Elmer Grey, Architect, Los Angeles, Cal.

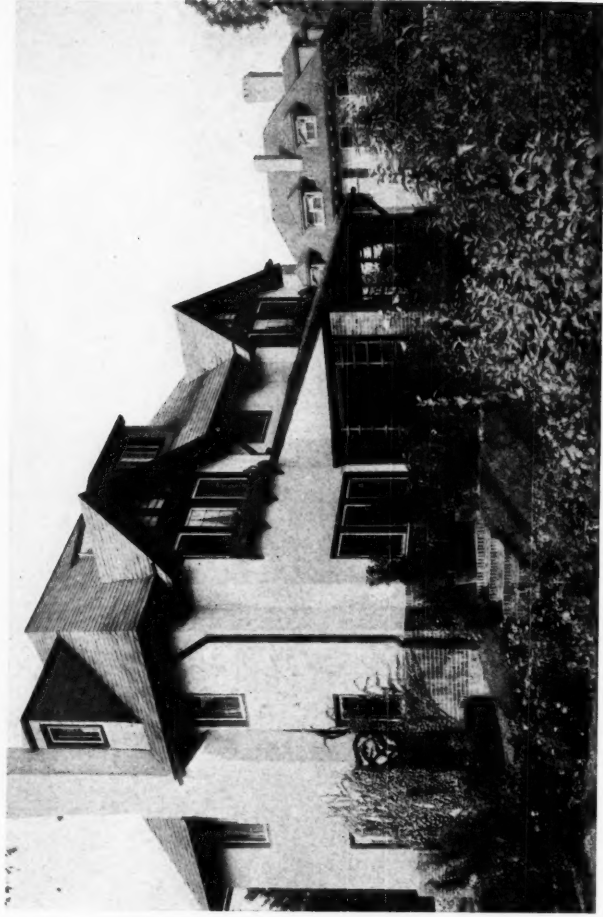
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AND NEWS RECORD.
JANUARY, 1908

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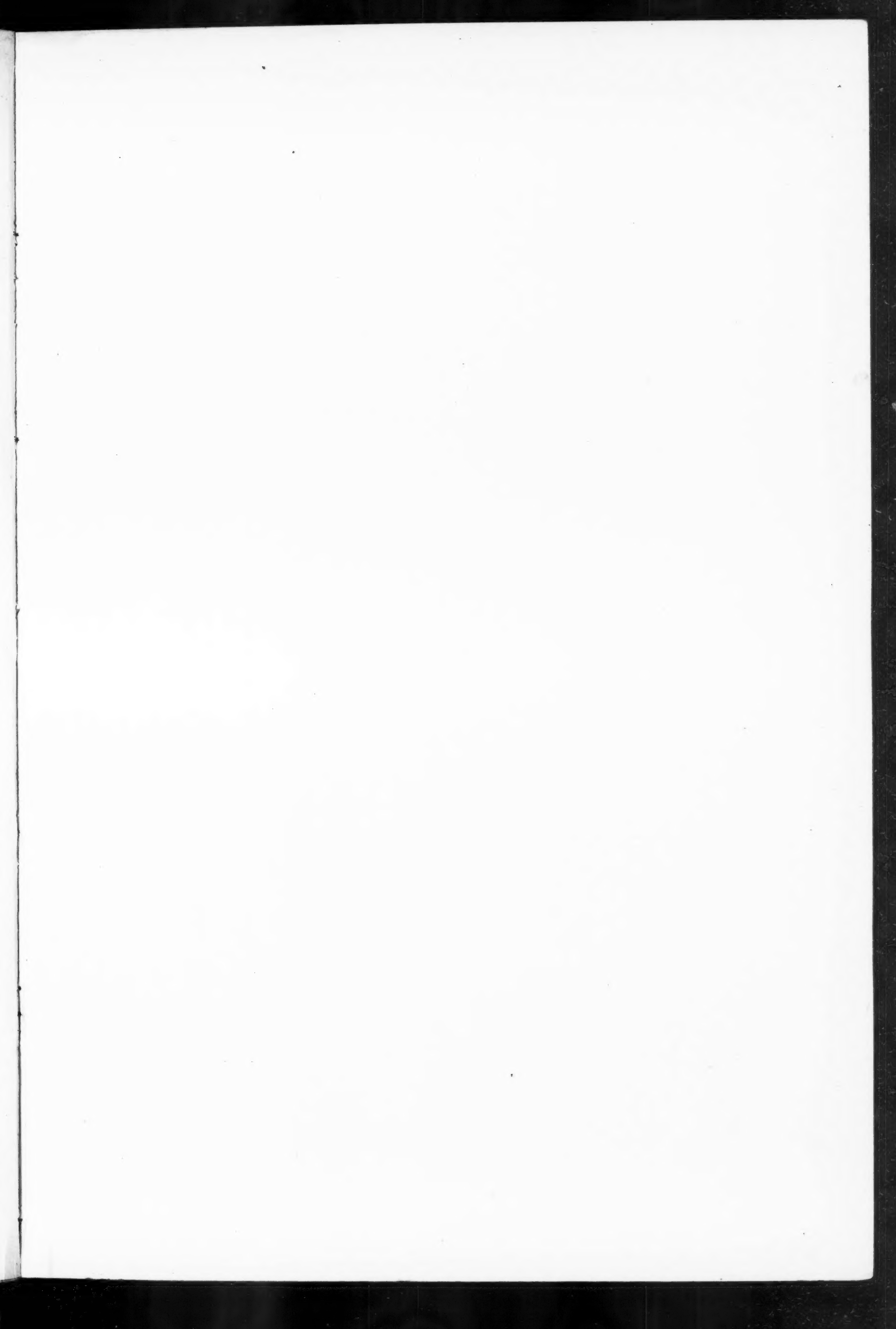
International Bureau of the American Republics, Washington, D. C.
A. Kelley and F. P. Cret, Architects.

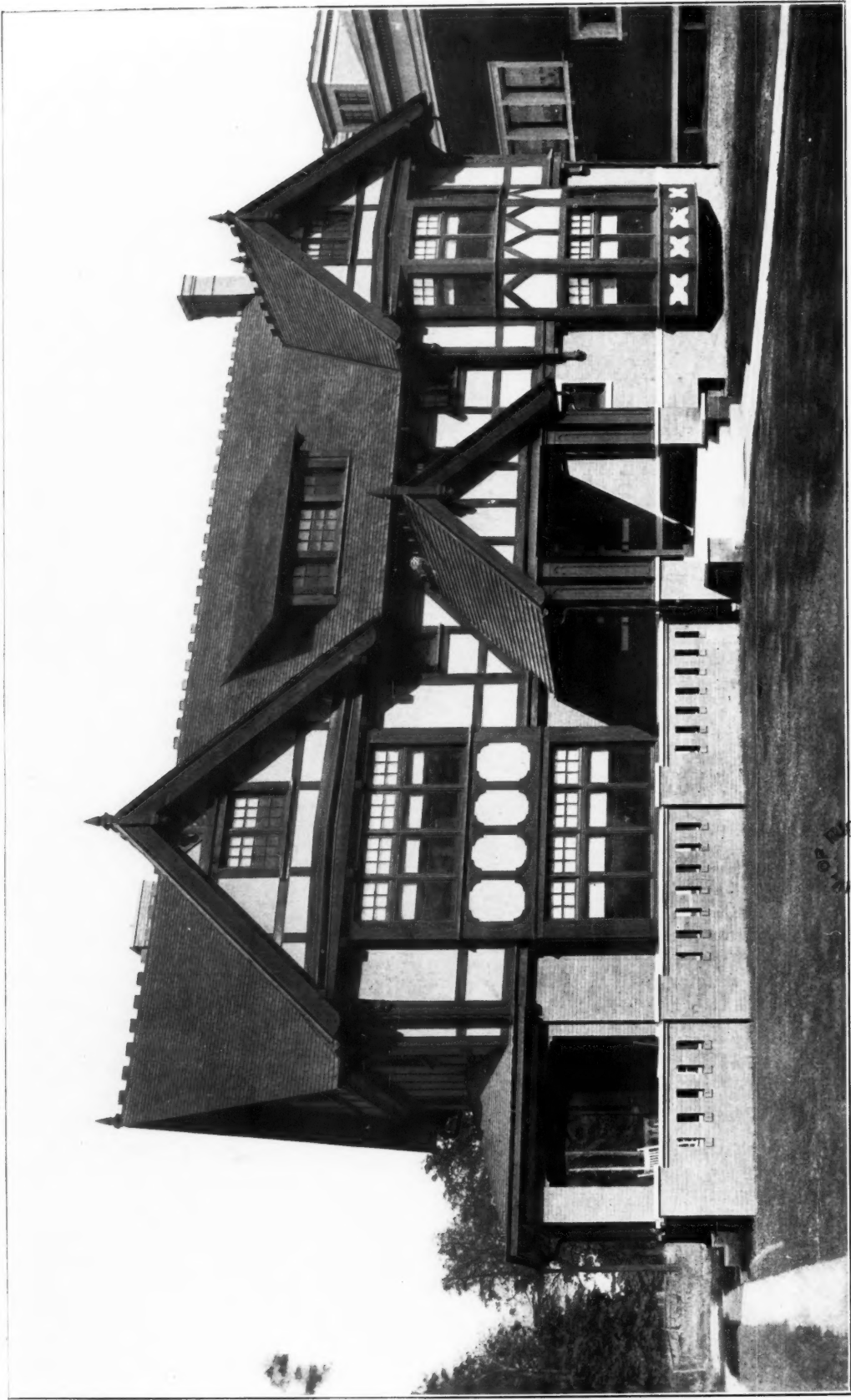
SELECTIONS, PITTSBURG ARCHITECTURAL CLUB EXHIBITION, 1907.



Residence, A. H. Spahr, Sewickley, Pa. MacClure & Spahr, Architects.

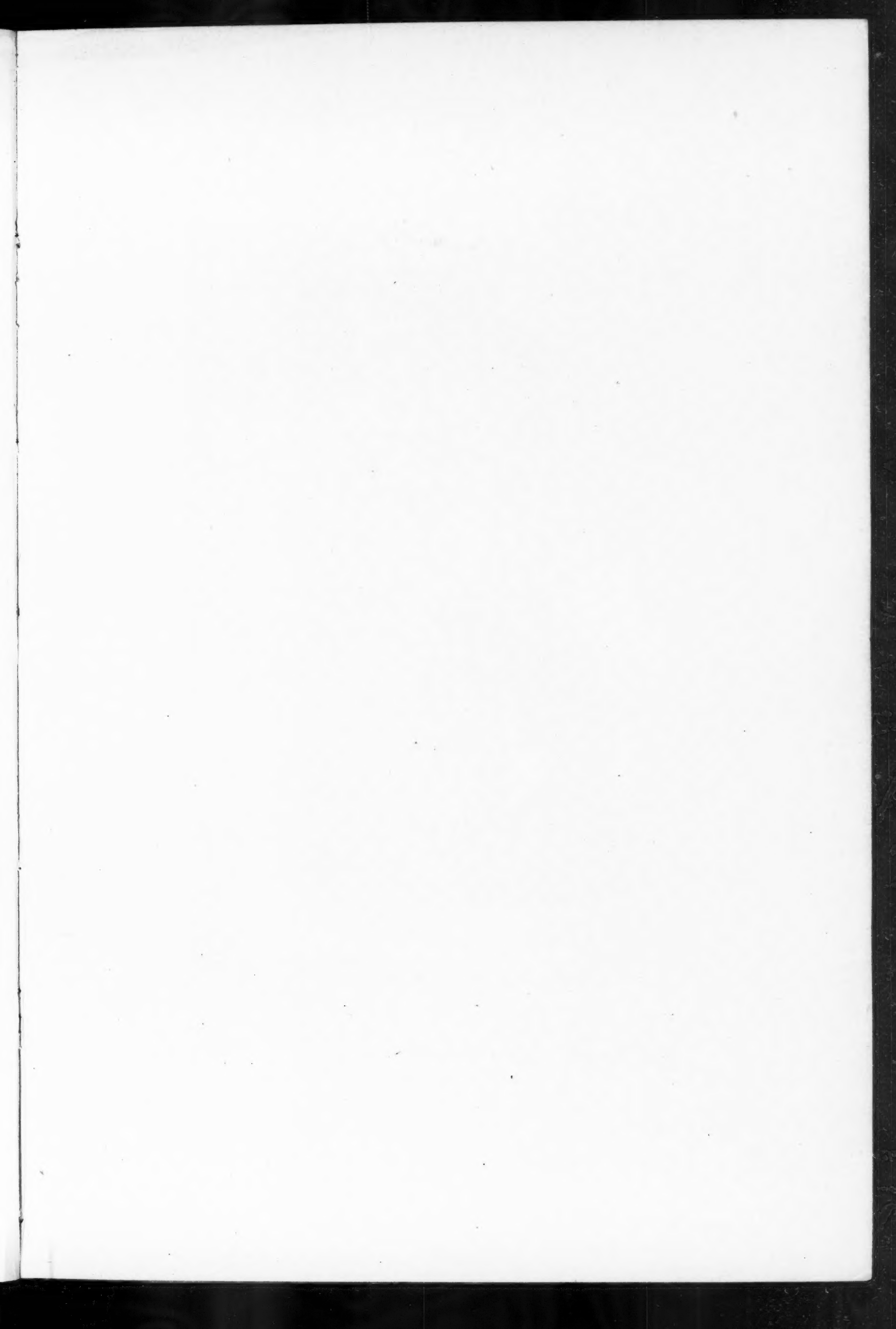
THE INLAND ARCHITECT
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RESIDENCE OF FRANK POWELL, INDIANAPOLIS, IND.
Foltz & Parker, Architects

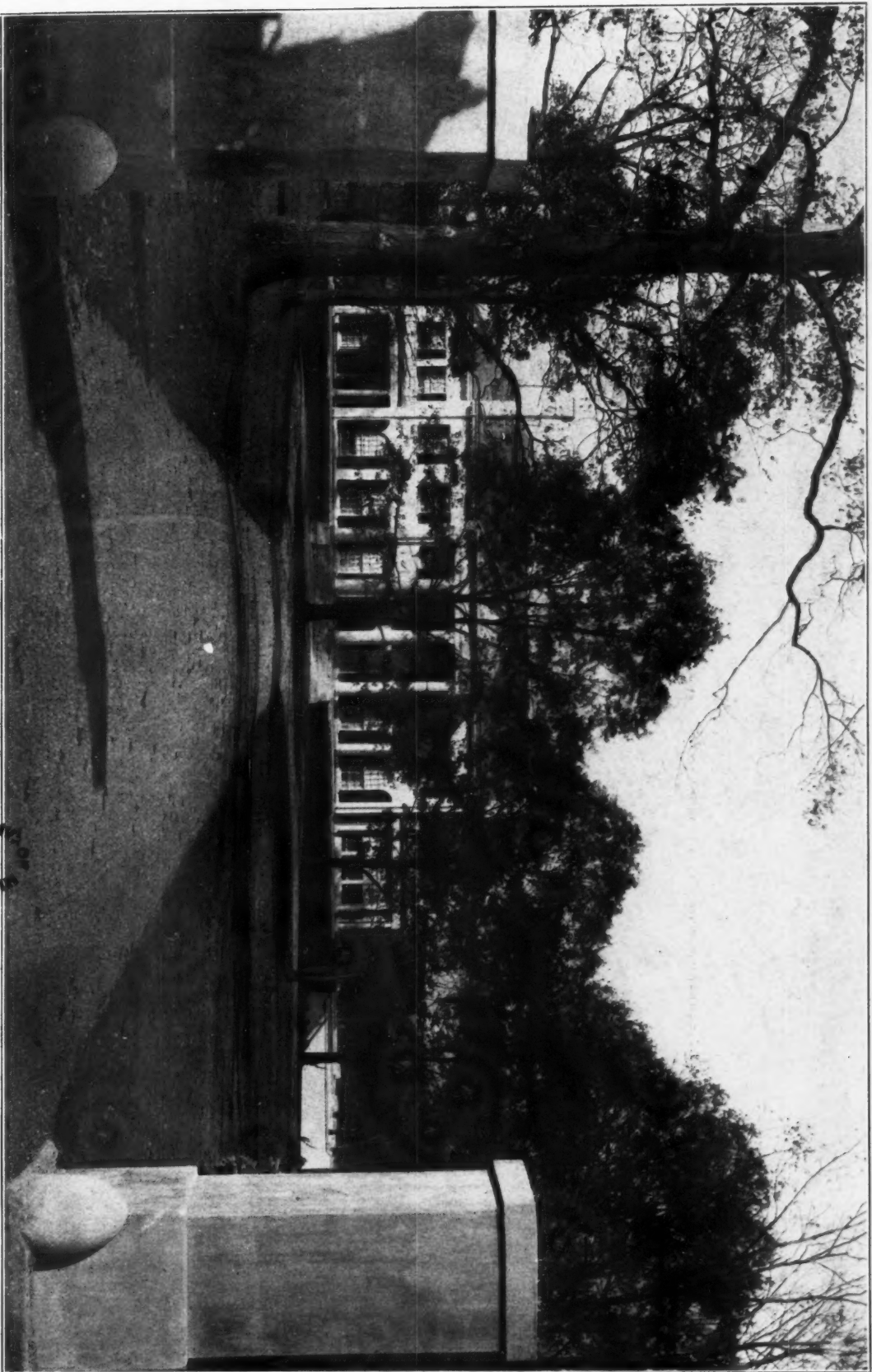
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JANUARY, 1908





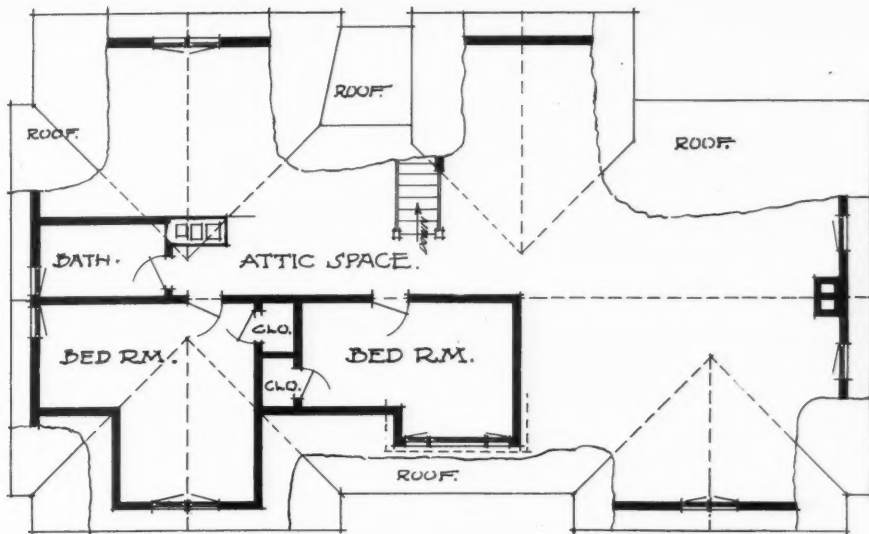
MAE COTTAGE, OAKLAND, CAL.
Julia Morgan, Architect

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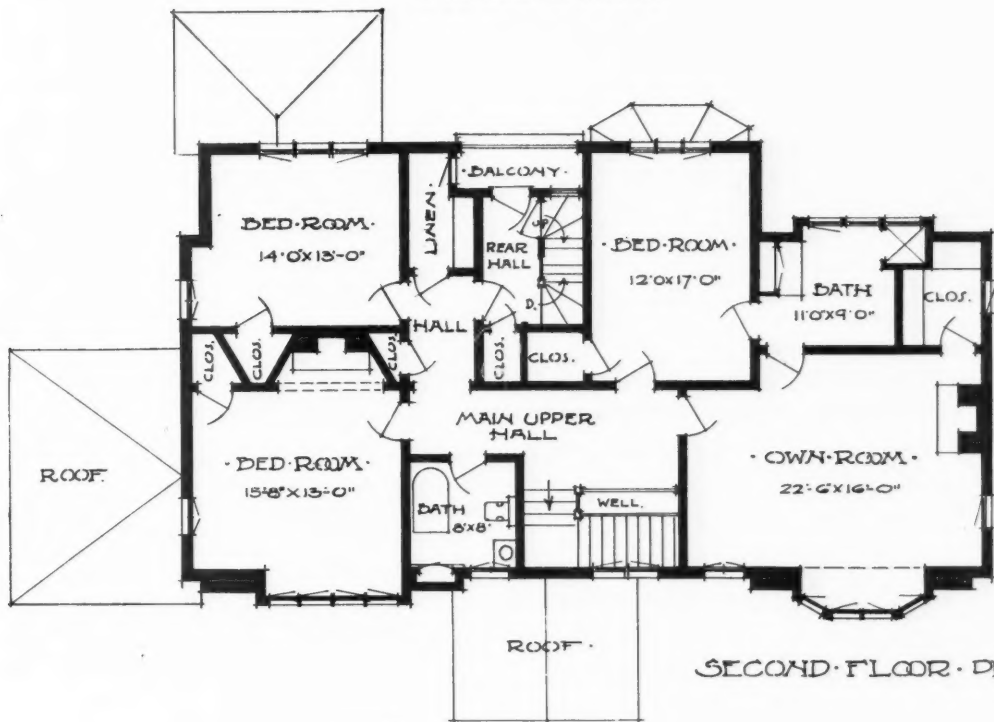


RESIDENCE OF L. STODDARD, NEW HAVEN, CONN.
Peabody & Stearns, Architects, Boston

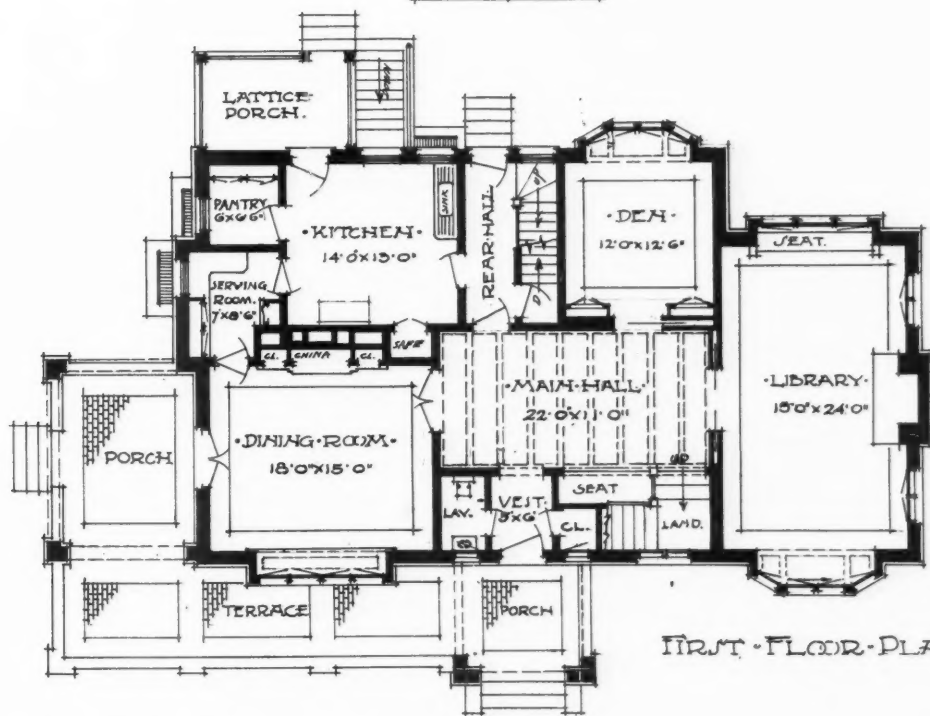
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ATTIC STORY



SECOND FLOOR PLAN



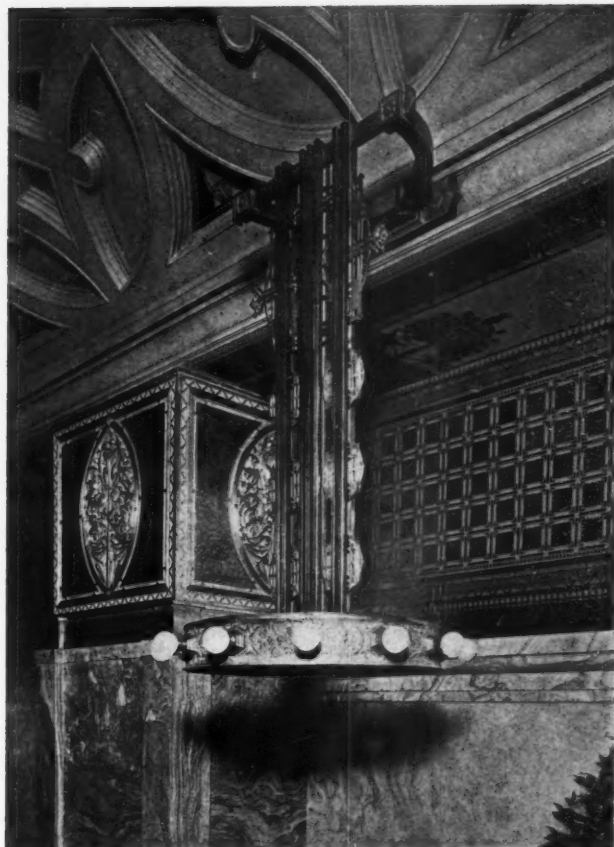
FIRST FLOOR PLAN

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Annex Chicago Athletic Association

Schmidt, Garden & Martin, Architects.

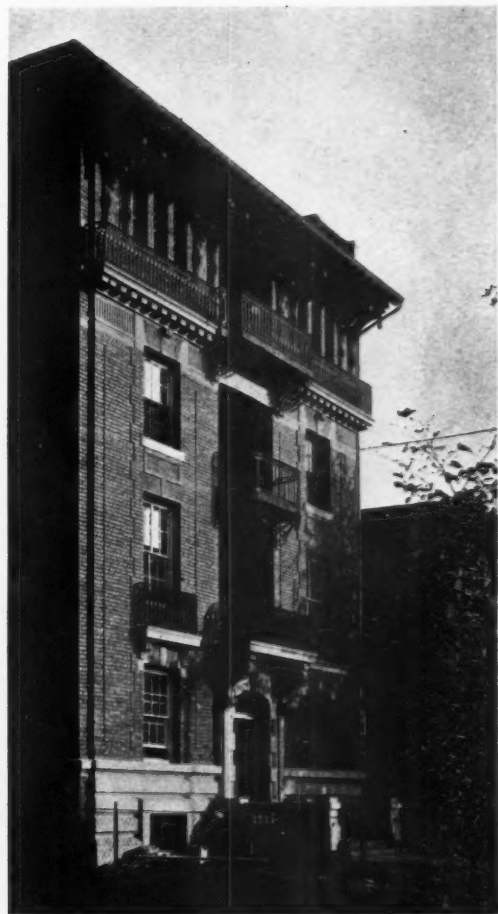


Fixture in a Restaurant in Chicago



Residence D. L. Gillespie, Vrydaugh & Wolfe, Architects

SELECTIONS FROM PITTSBURG ARCHITECTURAL CLUB EXHIBITION, 1907



Apartment Bldg., Cleveland, O. G. H. & J. F. Steffens, Architects

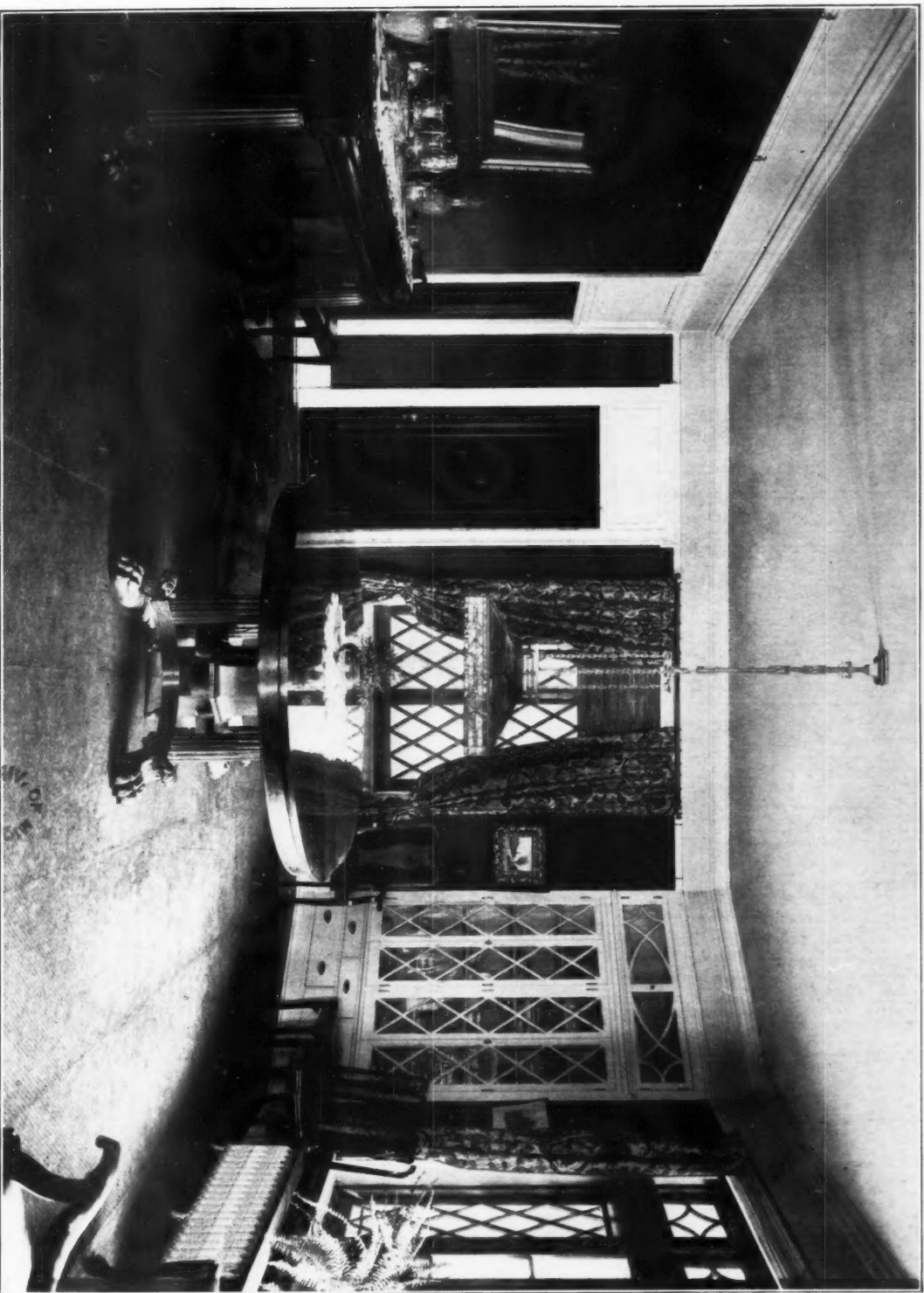
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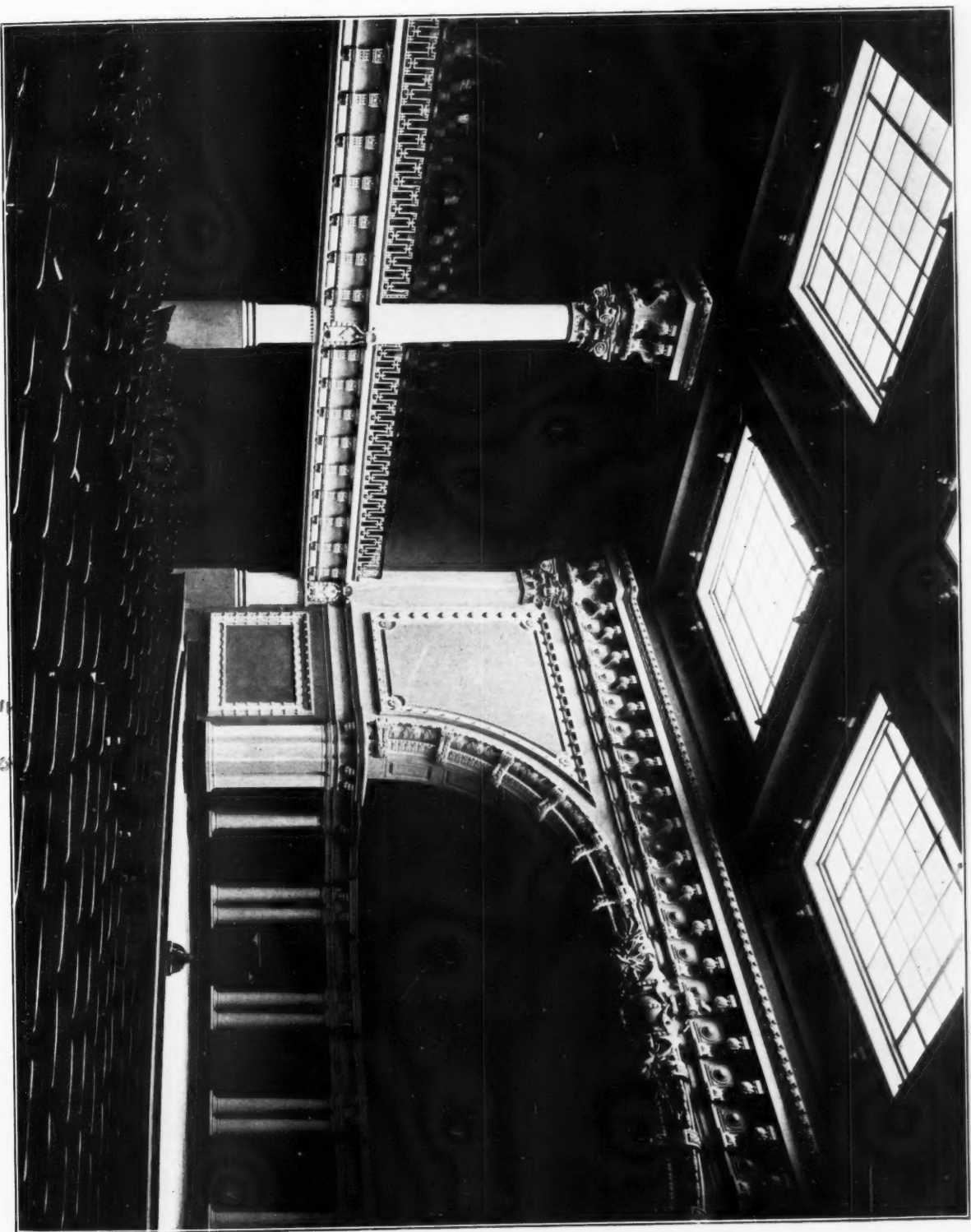
INTERIOR, CHURCH OF THE CHRISTIAN SCIENCE SOCIETY, MILWAUKEE, WIS.
Elmer Grey, Architect, Los Angeles, Cal.

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JANUARY, 1908



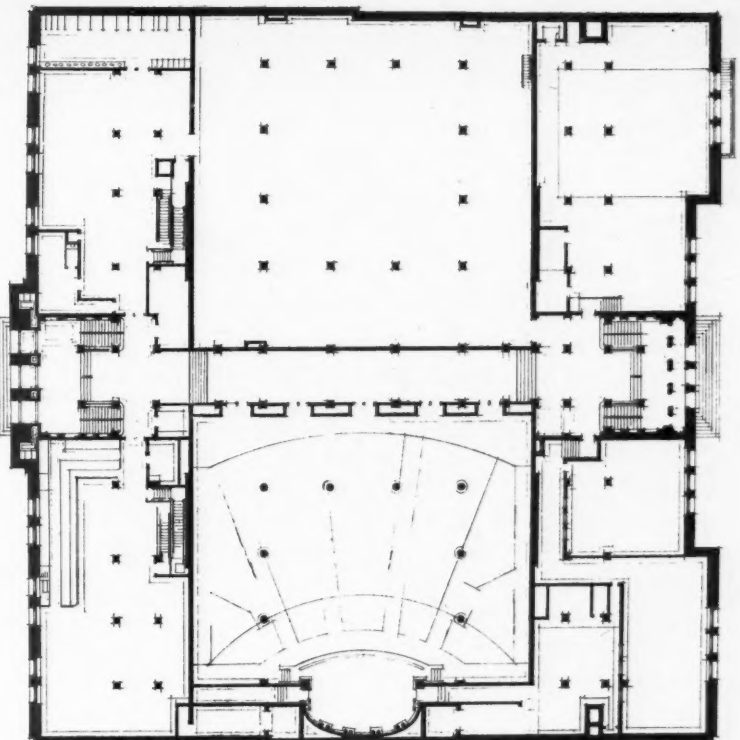
VIEW IN DINING ROOM, RESIDENCE OF MRS. F. J. GERAGHTY, CHICAGO
Egan & Prindle, Architects

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JANUARY, 1908



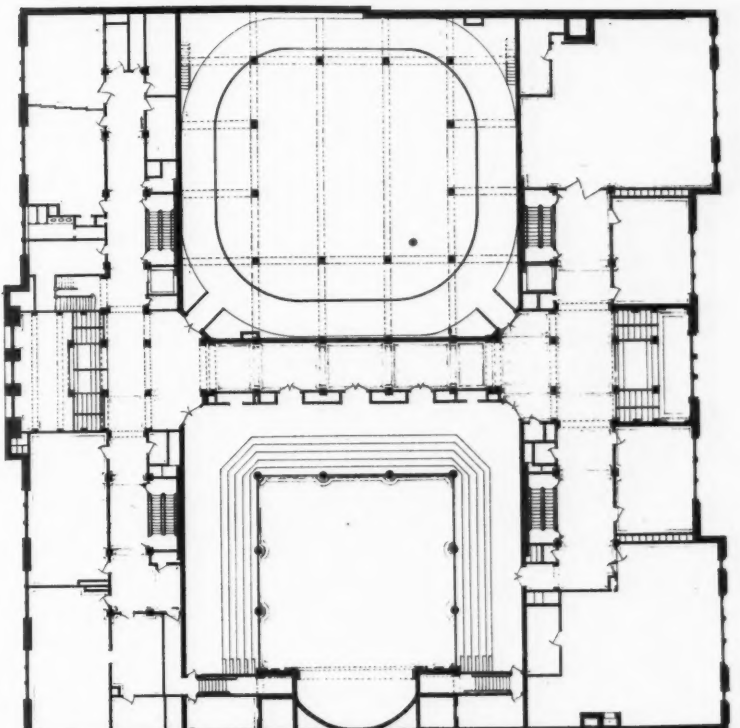
VIEW IN AUDITORIUM, STUYVESANT HIGH SCHOOL, NEW YORK
C. B. J. Snyder, Architect

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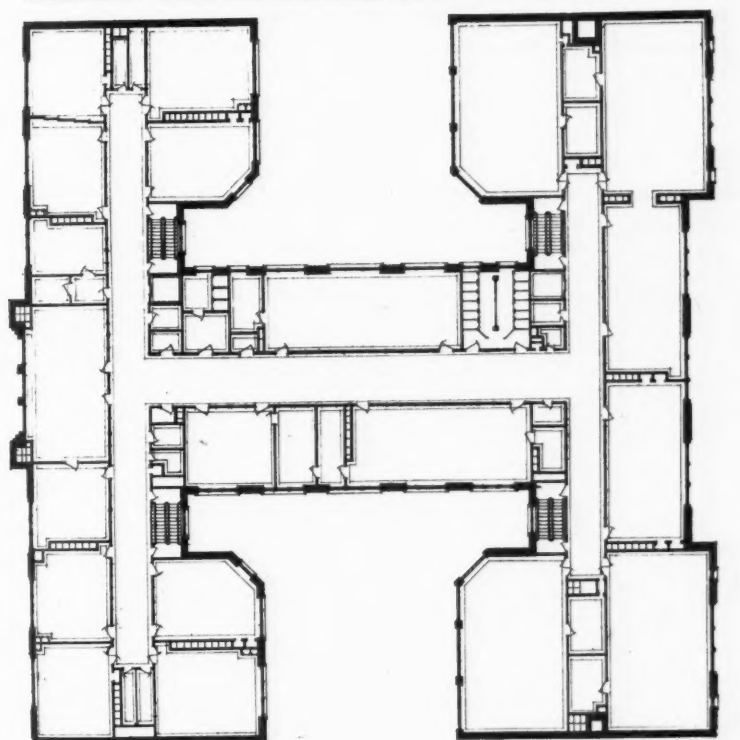


"Basement Plan"

FLOOR PLANS, STUYVESANT HIGH SCHOOL, NEW YORK CITY
C. B. J. Snyder, Architect



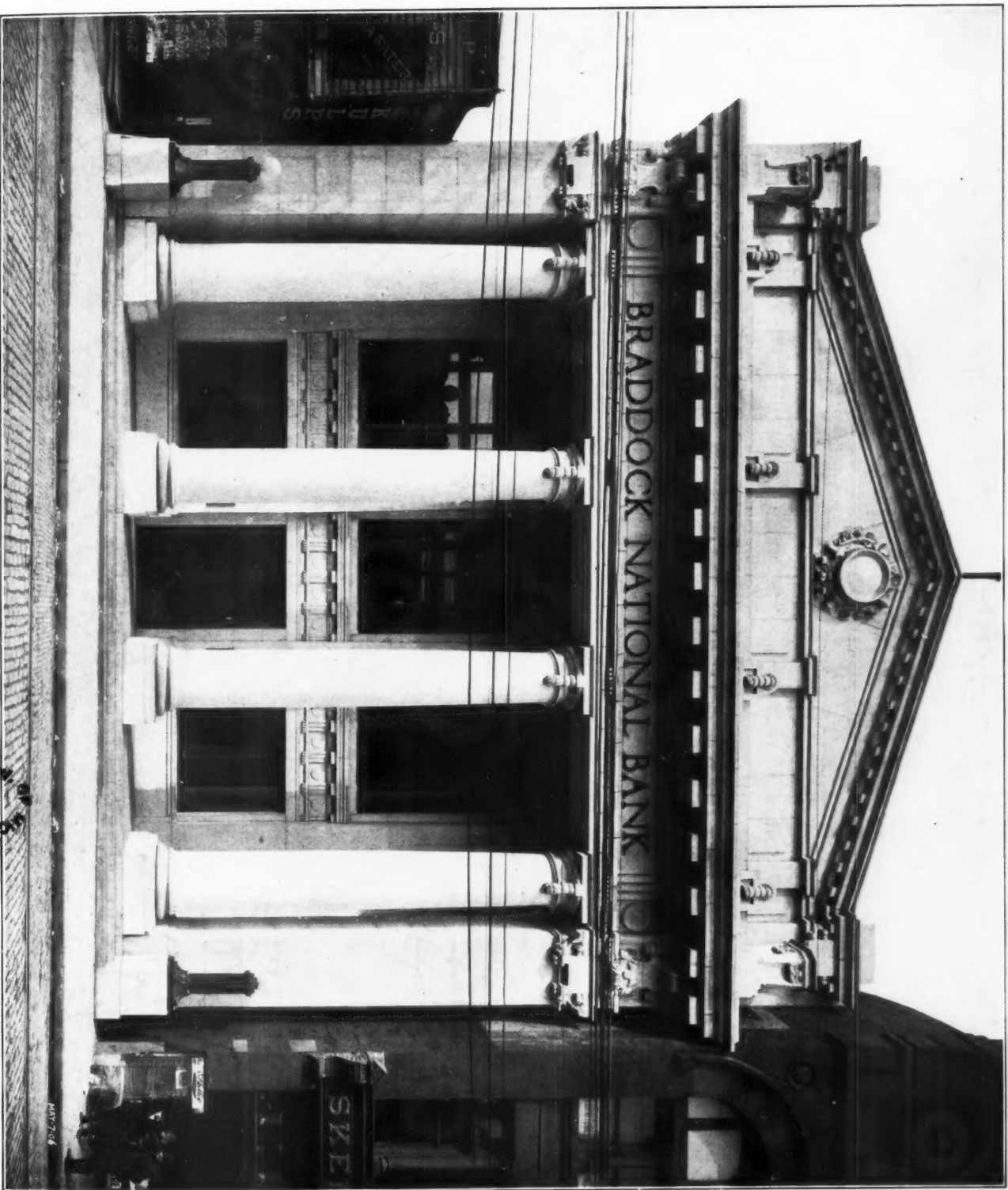
"First Floor Plan"



"Second Floor Plan"

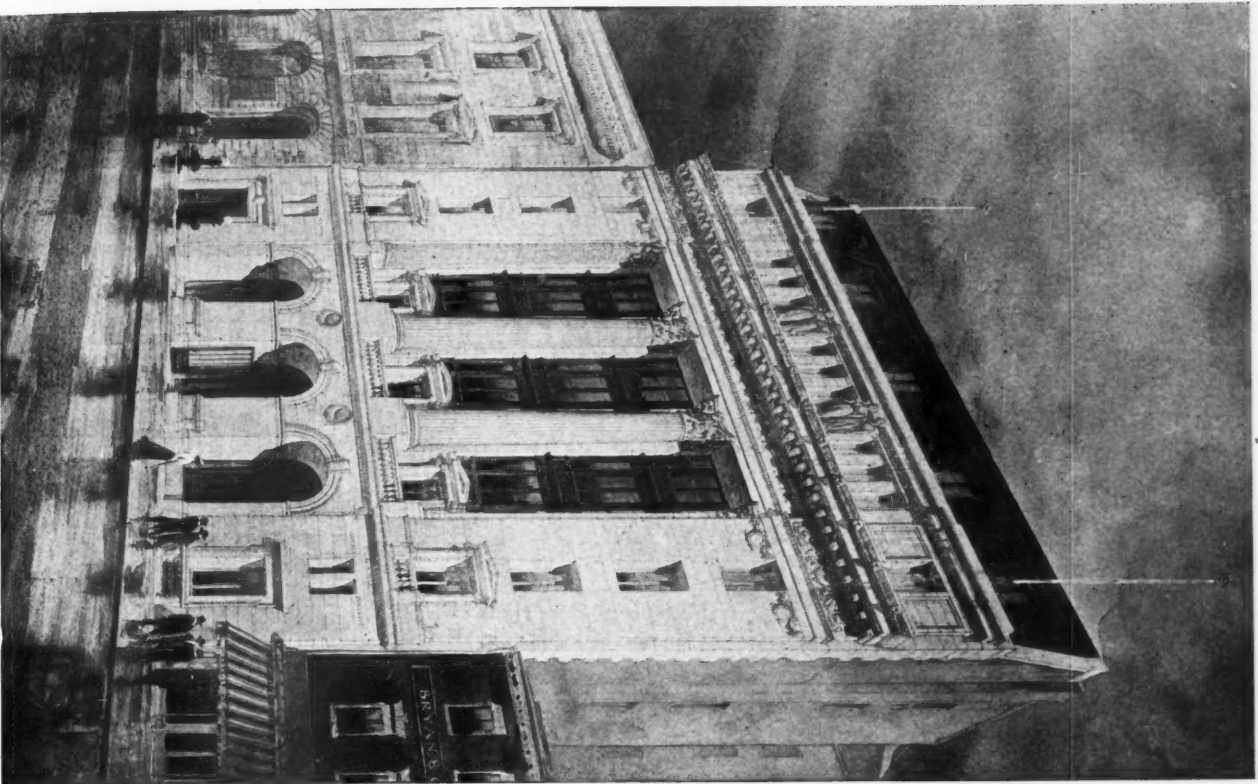
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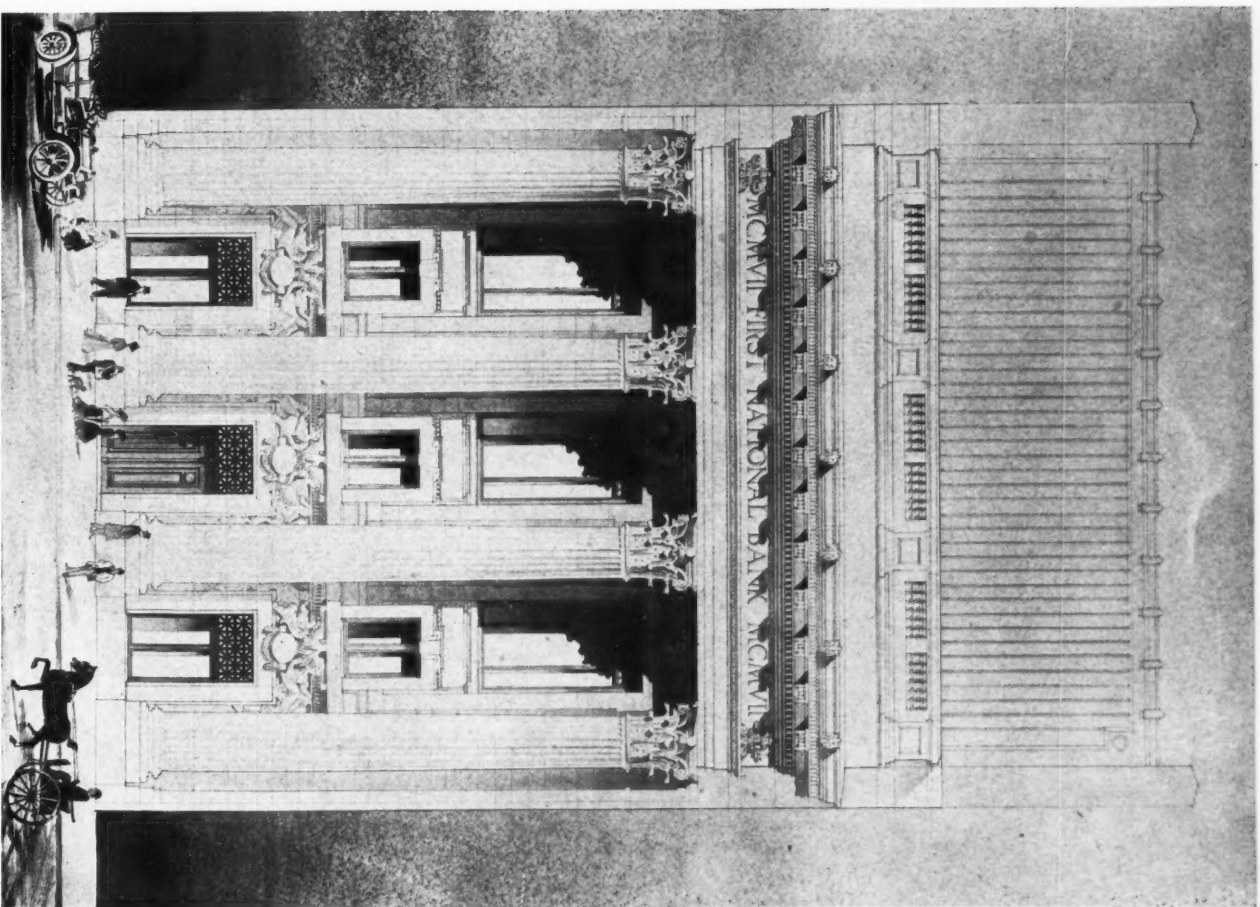


BRADDOCK NATIONAL BANK, BRADDOCK, PA.

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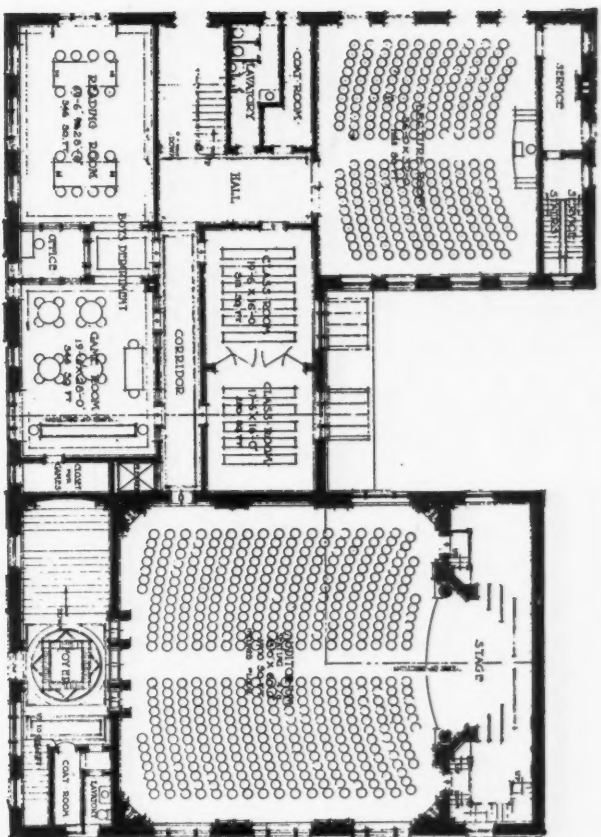


National Metropolitan Bank, Washington, D. C. Gordon, Tracey & Swartwout, Architects, New York
SELECTIONS, PITTSBURG ARCHITECTURAL CLUB EXHIBITION, 1907

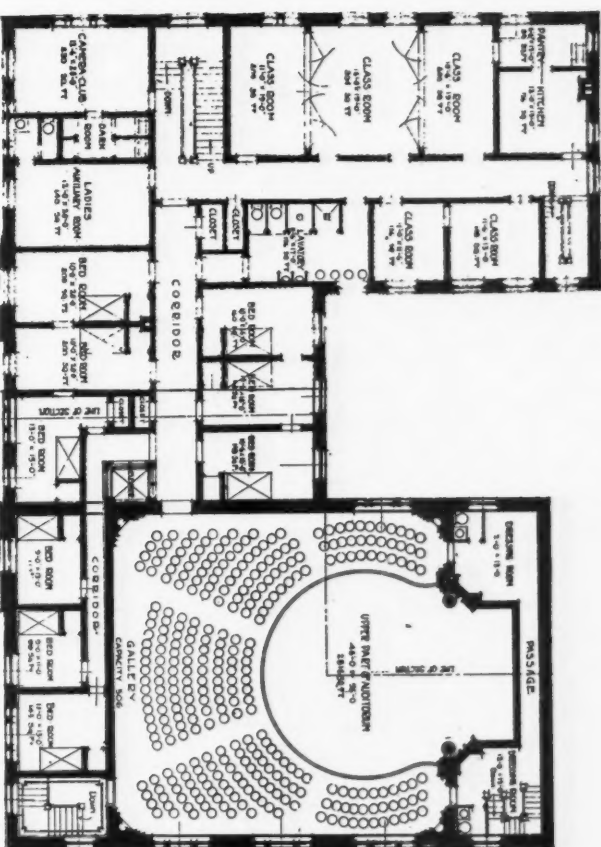


First National Bank, Cleveland, J. Milton Dyer, Architect
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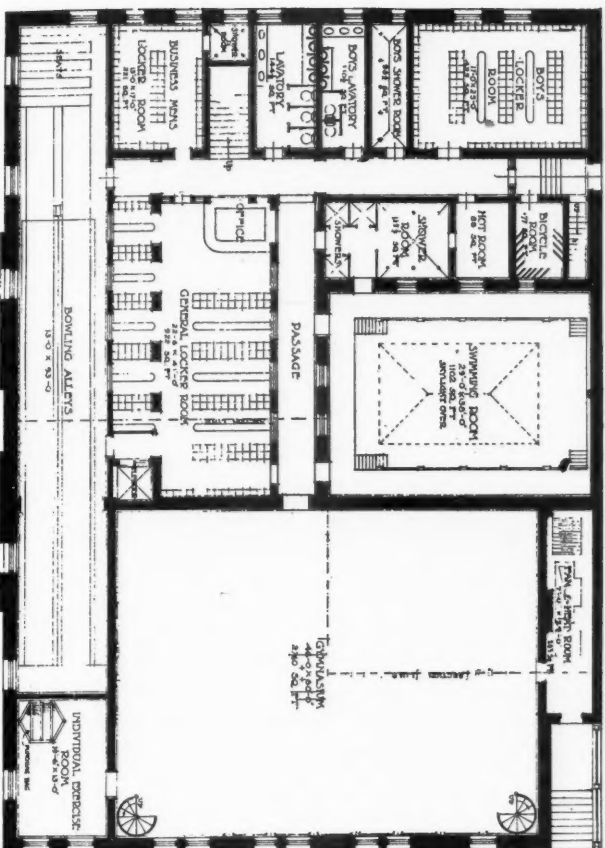
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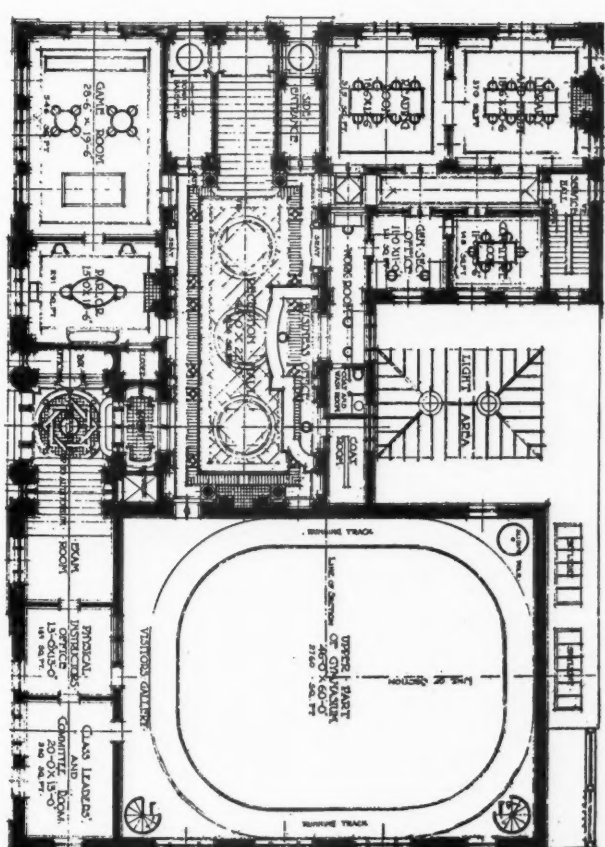
SECOND FLOOR PLAN.



THIRD FLOOR PLAN.



BASEMENT PLAN.



FIRST FLOOR PLAN.

FLOOR PLANS BY M. C. A. BUILDING, PAWTUCKET, R. I.
H. D. Hale and W. Atherton, Associated Architects

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THE "EASY GOING" ARCHITECT

and his relations to the builder are not as other men's. He gets out the contract drawings more or less accurately to a small scale, and virtually says to the builder: "Now I want a good job; get it done, and don't bother me. Details! Make your own details," and, beyond an occasional detail on the cuff of his shirt, no more drawings are supplied. The specification is brief and leaves ample scope for the imagination. No agreements have been made with the adjoining owners as to party walls or ancient lights; "I always settle them as we go along," and the correspondence on the contract is virtually confined to the application for and issue of certificates. Such architects, if they have a good quantity surveyor and a good builder's foreman, often get through difficult contracts with marvelous success, but it is not always so.

THE "SCRUPULOUS" ARCHITECT.

As a contrast to the "easy-going" architect, let me mention the "scrupulous and painstaking" architect who holds the builder in leading strings. The foundations of a garden wall must not be put in as shown on drawings before the bottom has been carefully tested. Elaborate details are issued in profusion for every subordinate item; although it is true that, by oversight, a builder is sometimes allowed to use his own discretion as to the position in which the nails are to be driven in fixing an architrave moulding to a pantry door. I have known 100 sheets of drawings to be issued for the construction of a small addition to a private house, and it makes me sometimes anxious as to whether such voluminous services are adequately remunerated.

Then there is

THE "NERVOUS" ARCHITECT

who writes to his client to ask if he may issue a certificate; and then, through sheer nervousness and with no evil intent, retains twice the amount provided in the contract. Rather than report a perfectly legitimate extra to his client he would offer to pay the cost himself, which the builder cannot permit, and consequently loses the money, and so on.

Now, I have ventured in a friendly and possibly humorous manner to refer to these exceptional characteristics of architects, or rather the characteristics of exceptional architects, in a more or less imaginary and exaggerated way, not for the purpose of criticism, but for two reasons:—(1) Because they directly affect the subject of my paper, and (2) so that you may grow sympathetic with the builder in his difficult position, and perhaps admire the consummate skill with which he sometimes steers his frail bark clear of the rocks which surround him. . . .

But the builder still survives, and in an experience of over a quarter of a century I have had dealings with architects possessing to a more or less extent all the little peculiarities I have been bold enough to exaggerate, and I confess that in the long run the builder has more cause for congratulation than complaint.

But what about the varied individuality of builders? What do architects have to put up with? Really, I am very ignorant about this matter, but I know that the architects have an effectual remedy that builders have not. A builder must put up with the varied customs of architects; but architects can easily escape all these vexatious variations in builders by a very simple expedient which innate modesty makes me hesitate to indicate.

But the position I occupy here this evening calls for self-sacrifice, and begets a sense of duty sufficiently powerful to even overcome my timid modesty; so with blushes which may not be apparent externally, I suggest that all the vexatious variations in the customs and practices of builders might be avoided if all the architects in this honorable association were to systematically place their contracts with the firm I have the honor to represent (without competition).

THE JUDICIAL RELATIONS.

Having surmounted, or rather wriggled through the most delicate and dangerous part of my topic, I proceed with a sense of relief to remark that the relations of the architect to the builder are judicial.

When a professional man, or any other man, is appointed, retained, employed, and remunerated by one party he is generally bound in honor to seek to protect and promote the interests of that party exclusively. But an architect holds a very peculiar and unique position, for his duty is not to promote and protect exclusively the interests of the person by whom he is appointed and remunerated, and from whom he may expect further appointments; but to act impartially, judicially between his client and the contractor, who has nothing to do with his appointment or remuneration. . . . In this particular aspect the architectural profession seems to be placed on a higher pinnacle of honor and integrity than even His Majesty's judges; for, I suppose, that after a judge was appointed to try a case, if it was admitted that one of the suitors in the case had secured the judge's appointment and was providing his remuneration, I imagine that public opinion would declare that these facts would disqualify the judge from acting judicially. But in the case of an architect, public opinion raises no such protest, and he exercises his judicial functions under similar unfavorable circumstances with conspicuous honor and ability. No one need wonder that architects holding such a position require an arbitration clause inserted in building contracts. . . .

In conclusion, I may mention that the relations of the architect to the builder are, or should be, co-operative. They are both devoting their energies and abilities to a common end, and mutual assistance is of mutual benefit. The builder may render considerable assistance to the architect, and *vice versa*, and this statement is so familiar that it needs no emphasis or illustration. . . ."

WHAT HIS MUSIC BILL MEANT.

An architect who had planned and superintended the building of a west side residence had turned over the completed house to its owner. The architect has been in nowise hampered in the expenditure of money, yet his customer, being a good business man, gave his personal attention to the details of the cost.

"What does this mean?" he asked on a final inspection of the bills. "Three hundred dollars to a quartet of trained musicians. How can anybody have given a concert already in my house when no one is living there?"

"They were testing the acoustics of the rooms," the architect explained. "Every room in your house has been submitted to that test. There will be plenty of music there later on, and I certainly wouldn't want to finish the house without being sure that the sounding properties were satisfactory. In these days every private house or hotel that amounts to anything is put through the acoustic test before it leaves the architect's hands."—

New York Sun.

ARCHITECTURAL AND STRUCTURAL ENGINEERING

BY MAURICE M. SLOAN, ARCHITECTURAL ENGINEER—Continued from September



It is interesting to note the advantage taken of the Baltimore and San Francisco fires by the several fireproofing companies, in order to laud their own product and display to disadvantage that of their competitors, but expert investigation of these fires reveals the fact not that the efficiency of the fireproof protection was particularly dependent upon any system, but that the adequate protection existed where care had been exercised in the design of the protection. From the results of these fires it cannot be definitely stated that hollow tile construction is superior to concrete fireproofing, provided equal care is exercised in the construction of both of these systems. An examination of several buildings in these fires show that cement and lath and plaster partitions in some instances have withstood the test; in others, that hollow tile has successfully come through the ordeal. An adjacent building shows that both of these have been destroyed. It is not for anyone to say, nor to state with any degree of truthfulness, how severe the conditions were that caused the destruction of either of these forms of construction. It is known that all materials are subject to disintegration and destruction at extremely high temperatures. Brick walls, which are one of the most fire-resisting constructions, have been known to melt under intense heat, and while porous terra-cotta, which like bricks, in its very process of manufacture has been subjected to a very high heat, is a more refractory material than concrete, which depends for its stability upon the water crystallization contained within it, yet nevertheless the monolithic character of the latter gives it an advantage for fireproofing purposes.

It is also evident from the result of these fires that the fireproofing of columns and important structural members by means of metallic lath and a thin plaster of cement mortar is not always an adequate fireproof protection and that the fireproofing of structural members, when of concrete, should possess a monolithic character, and that if metallic lathing is used the greatest care must be exercised to obtain security by carefully designed fastenings adequately protected.

The advocates of terra-cotta fireproofing make broad charges of inefficiency for concrete as a fireproofing material, and apparently forget or fail to note the fact that all terra-cotta fireproofing is ordinarily laid and held in place by cement mortar, the principal constituent of the material which they condemn.

In the planning of office buildings and similar buildings of skeleton steel construction there are so many things influencing the plan that the entire fabrication must be a compromise. The primary influence, and one which predetermines the existence of the building, is that of the return on the investment; as the value of the ground upon which the structure is to be erected increases this requirement becomes more stringent.

Not only is it sufficient to so arrange the offices or other subdivisions of a floor as to obtain the greatest amount of rentable square feet of floor area, but these units or subdivisions of the plan must be so conveniently arranged and placed as to command the highest possible unit rental.

While the return on the investment is undoubtedly the

primary factor in the regulation of the planning, this is frequently overruled by the requirements of the building department, where the percentage of light-well area, compared with the floor surface of the building, is fixed. Unfortunately for the designer, a considerable percentage of the high office buildings and similar structures that are erected, must be placed on irregular shaped lots, which demand careful study in order to obtain a plan of even fair excellence.

With the property lines defined, and the office subdivisions made, regulated by the building laws and requirement, the structural engineer approaches the problem of the framing plan, with no easy road to solution. First, it is evident that all structural members in the exterior walls must be concealed; also that interior columns pass through partitions, or if they do not, must form an architectural feature of the hallways or corridors, and must not occupy a position in front of or adjacent to the elevator enclosures. These requirements of the column spacing influence the beam framing plans, frequently making them intricate, and increasing the cost of the steel by requiring heavy girders supporting concentrated loads. Where possible, it is ideal construction for the beams and girders to be of the same depth, and this can be accomplished by using the girders on the short spans and the beams on the long ones.

In office buildings and similar structures the problem of lighting is always one of importance, and as the best light is obtained from the upper part of the window, it is advantageous to keep the window-head as near the ceiling as possible; this sometimes influences the framing plans in that the lintel construction is modified by these requirements. Another feature in the structural planning of the building is to have, where possible, all of the connections at right angles, as oblique connections make expensive framing; again, axial lines should be preserved, so that beams and girders intersect on column axes.

It is of the utmost importance that the structural designer carefully studies the architectural treatment, and the composition of the architectural details should be definitely decided upon before the structural framework is designed. It is not unusual to find the architect's estimating drawings very deficient with regard to clearness of detail construction, and with few and carelessly studied details of spandrel sections. It is no exaggerated statement to make that the details of a building should be designed first, and in fact they are actually designed before the elevations and plans are completed, but frequently with too little study given them.

Much of the trouble of construction, and many mistakes are avoided if the details of the spandrel sections, cornices, etc., are actually worked out to full size before the eighth-inch plans and elevations are finished, for only by this method can intelligent construction plans be made, and bids received based on actual conditions that will prevail in the structure. The spacing of the floor beams is fixed by the type of fireproof floor construction which it is proposed to use; with the tile arch, ordinarily the distance from center to center of beams will not exceed six feet, while with re-enforced concrete floor construction the spacing of the beams may be from eight to ten feet.

(To be continued.)

ARCHITECTS' RESPONSIBILITIES

BY F. W. FITZPATRICK, ARCHITECT—Continued from October



THE architect who pleads that he does not know much about fireproof building and is not aware of the appalling losses of life and property that are the result of just such ignorance, as his, has no place in the profession, and the sooner he is ruled out of it the better. There is only one class to whom shoddy building is profitable, and that is the building speculator, the man who builds quickly, most flimsily and the worst kind of fire-traps, solely to sell them and be rid of them while the paint still remains on them, the Buddenseicks of our day; and the architects who design them and carry out their instructions are no better than their employers, and become "accessories before the fact," criminals, parties to the wilful and damnable exposure of life and property to certain destruction.

Appreciating that the average man thinks he knows a lot but actually knows less than a little about safe construction, and that the architects cannot be depended upon to insist, to urge, to advise only that kind of a building, most communities have come to the conclusion that compulsory methods have to be resorted to and that the safety of life and property in the community can only be insured by the adoption of wise and stringent regulations and their unwavering enforcement. It seems too bad to have to take a man by the back of his neck and make him do something, but apparently this is a case where the necessity is present; our architects have forced it upon us. Various and sundry means of inducing and compelling better construction have been discussed in these columns, and, I am glad to say, some most beneficial and flattering results have followed. But there is yet much to do, and to those in the profession who really have the best interests of the community and of the profession itself at heart should we appeal to come in and co-operate and aid in the various movements that have been inaugurated to secure something like adequate preventive measures against the growth of the plague of fire aided and abetted by poor, slovenly and ignorant construction of buildings.

Three things could be done, either one of which would be of enormous benefit, and all three of which would absolutely settle the matter. Two of the suggested means are governmental; the third lies with the insurance companies. These companies have seen the disadvantage of doing an enormous business and insuring anything and everything, collecting vast revenues from premiums but likewise suffering irreparable losses, almost bankruptcy, every once in a while as the result of some appalling conflagration. And they have raised their rates and are doing what they can to advise good building, and they must certainly know what is good construction and what is not. But the advance in rates upon poor building and the reduction upon fireproof construction has not been sufficiently marked. People do not yet appreciate, judging by that indication, the advantage there is in building well. The companies should be induced to make their rates on flimsy, combustible construction *absolutely prohibitive*. The government has done so very much in the way of cleaning up life insurance, taken such a hand in saying what could and what could not be done, that it may not be utterly impossible to devise some scheme

whereby, in sheer self-defense, in the protection of its people, it could direct that certain particularly bad risks may not be assumed by the companies at all.

The other two expedients are essentially governmental. One is the scheme of making a sliding tax, assessing the maximum rate against property requiring the maximum of protection, fire departments, etc., and the minimum rate on good, first-class fireproof construction. The other is the plan of gradually raising the requirements or building regulations so that fire limits are being enlarged and, little by little, everything but the best of non-combustible construction being eliminated from within the city's borders.

One phase of this scheme, and that was first broached in these columns and that has met with considerable favor and some action already, is a state enactment regulating just what can and what cannot be done in the way of building. So far several states have lent ear to our pleadings and have taken the first step by creating the office of fire marshal and giving that officer certain duties and authority in the premises. The idea is to establish a uniform code defining the minimum of good construction that would be permitted within any state. Our cities are growing so rapidly that what is today perhaps but a village is the city of tomorrow, and its buildings, erected without regulation, without regard for the safety of surrounding property, remain sometimes for years a menace to all about them in the crowded sections of the larger municipality. Once this minimum requirement is established in all the states, it is an easy matter for the cities, starting from that basis, to work up to the most exacting requirements if they are sane enough and public-spirited enough to do so, spite of the opposition of interested speculators. But each city would have that state enactment, that would regulate everything outside of the city, as its basis or starting point in the municipal code adopted.

The trouble in this and in all else of a public nature is the preponderance of the ego. Each city or little town that does decide upon having a building ordinance goes to work and organizes a commission, sometimes composed of men who have more or less local information upon the subject, but oftener of gentlemen who have scant notion indeed of what constitutes good building. Some such commissions that I have heard of are composed of a doctor, a lawyer, a real estate owner, a builder, and a banker or other business man. Now what, in the name of heaven, sort of a building ordinance is such a commission going to get up? What will they do with the finer technical points, the mooted question of reinforced concrete construction, for instance? What steps will they take to prevent the collapse of such buildings under construction? In the vernacular, "Where are they at?"

The adoption of a standard building code would be of incalculable benefit, and to have uniform laws all over the country is the only reasonable end for which we should aim. There is the Cleveland Code, that was given years of study and zealous work on the part of the leading specialists in every line. It in every way is worthy of being made the standard for all cities. Or there is the Board of Underwriters' Code, that was gotten up with

equally great pains. Use that. I prefer the former, but what's the use of having personal opinions when it comes to so important a matter? Rather than jeopardize the whole matter let us compromise on anything that is good and take it as the basis, the standard for all cities to adopt.

This is something in which the leading architects, the men who have some professional pride left, in every city should take the keenest interest. They can do much to help the work along, whereas if it is carried to a suc-

cessful culmination, and that without their assistance, the profession will take but another step down in public esteem, for, as in politics, if you are not with the party the reasonable presumption is that you are against that party, and if it becomes still more patent to the general business man that the architect is apathetic to or actually opposes anything that leads up to better construction, what sort of an opinion, I ask you, is that business man going to have of that profession whose primal function is that of a builder?

DURABILITY OF BAKED CLAY TILE

BY CHARLES JAMES FOX, PH. D.



ONE of the most remarkable qualities of the baked clay floor and wall tile is its great durability, which enables it to resist for centuries the deteriorating influences of the elements as well as the constant abrasion to which flooring materials are unavoidably subjected. The permanent character of the floor and wall tile is due to two general causes; first, the physical and chemical qualities of the material itself, and second, character of the bonding which unites it with the cement foundation in which it is set.

Floor and wall tiling is manufactured in four general varieties, the glazed, the unglazed, and the vitreous tile, and ceramic mosaic. The last variety is merely tiling in which the individual pieces are small, and is nearly always made in the unglazed or vitrified form. Except for the body of the glazed tile, which must be porous in order to take the glaze that is applied to it in liquid form, the clay is burned in the kiln so that it becomes harder than steel or ordinary stone, including sharp sand. If a pointed steel blade is drawn across a piece of unglazed or vitreous tile it will be noticed that the steel is worn away, as it leaves on the tile surface a lead pencil-like mark, which can be wiped off with a damp cloth so that it does not leave even the slightest scratch. For the purpose of removing the surplus cement from a newly laid tiled floor, its surface is often rubbed with sharp sand or other gritty substances. It is quite difficult to cut even the newly set cement with the sharp sand, and quite impossible to make it even scratch the hard tile surface. The great importance of these two facts in connection with the wearing qualities of a flooring material is fully appreciated when one considers the character of wear to which floors are subjected. The two most destructive agents of all pavements are the sharp steel nails in the shoe and the dirt, sand and other gritty substances which are ground into the surface when it is walked upon. Baked clay is really the only material used on floors that is so hard that it cannot be scratched by steel or sharp sand. Consequently it offers the most effective resistance to the abrasion to which floors are subjected.

The non-porous character of tiling is another important factor in its durability, as it prevents it from absorbing moisture and foreign substances of all kinds that are deposited upon its surface. As an inorganic material it cannot decay or decompose.

As a silicate of aluminum, baked clay is not attacked or injured by the numerous acids which in one way or another are spilled or splashed upon floors or walls, or

which are sometimes used for disinfecting purposes in the water with which the floor is washed. Marble, for instance, which is often used for floor materials, is readily attacked by many acids. Even ink stains leave a permanent mark upon it, although they can be easily washed from the clay tile. The vitreous tile are absolutely impervious to moisture, and the unglazed floor tile absorb only a small quantity of water, and absolutely no dust, dirt or organic matter. Even the tiny micro-organisms contained in impure water cannot pass beneath the surface of the unglazed tile. The glaze of the wall tile completely covers the exterior surface and is absolutely impervious to moisture or septic matter. Its porous body beneath is entirely protected, and the only moisture which can be taken up by it is that which passes as dampness through the wall upon which the tile are set. The usual dampness, due to the condensation of moisture as the warmer air comes in contact with the wall, remains of course on the glazed surface of the tile and cannot injure it, or pass into the porous body beneath.

The character of the foundation upon which it is set or applied, as well as its union with this foundation, are important considerations in the durability of every flooring material. Tile is set upon a rigid foundation composed of concrete and cement mortar. Baked clay has two qualities which are of utmost importance in its relation to cement. In the first place, it has a chemical affinity for Portland cement and unites with it by chemical union instead of by mere mechanical adhesion. If a tile is broken from its cement foundation, it will be noticed that the line of cleavage runs through both materials without any reference to their union. The tile and cement break as if they formed one body. Of course, to bring about this union the clay tile must be properly set in cement. Sometimes, owing to carelessness of the tile-setter, the tile are applied to the cement after it has gone too far in the process of setting, or a thin layer of water, sand or dried or drowned cement is permitted to come between the tile and its foundation. In these cases the proper union of the two materials has been prevented and the tile can be removed or will even work itself loose.

The other important consideration in the relation between Portland cement and baked clay is the fact that the coefficient of expansion of the two materials are almost identical. If this were not so it would be impossible to unite them in a rigid union in any place where they would be subjected to even ordinary changes of temperature. Glass, for instance, would make in many respects an ex-

cellent wall covering, were it not for the fact that its large coefficient of expansion makes it impossible to set glass firmly in Portland cement or any good mastic. What is true of glass is true to a less extent of many other materials that could otherwise be safely set in a cement foundation.

The coloring of the tile does not fade, even if exposed to the direct rays of the sun for years or even centuries. Moisture, dust, smoke or other foreign substances with which the atmosphere of our modern cities are laden do not stain, discolor or otherwise injure it. When tiling is used on the exterior of buildings, every shower washes it thoroughly, and removes all dirt from its hard, non-porous surface, which contains no recesses in which foreign matter can find a lodging place.

The mechanical and chemical reasons or explanations of the great durability of the clay floor and wall tile are well understood by those familiar with the subject. The numerous examples of cracked, broken or chipped tiled floors are the result of several well known and easily avoidable causes. Either the concrete or cement mortar foundation is of faulty construction, or cracks because of the settling of the building, or the tile are not set properly in the cement, or the joints between the tiles are not properly 'grouted,' that is, filled, with pure Portland cement. The crazing of tile, that is, the parting or cracking of the glazed surface, is caused by the difference in the coefficient of expansion of the clay body or biscuit and the glaze which is applied to it in liquid form, and then baked in the gloss kiln. While it is impossible to give a positive and truthful guaranty against this crazing, great

technical improvements in the manufacture of glazed tile have been made within the past few years, and now this defect is greatly minimized, although not absolutely eliminated. The crazing, however, is merely a defect in the appearance of the tile, as the glaze never comes off and the crack is so minute that no dirt or septic matter can pass into it. The only way in which the glaze can be lifted from the tile is when the porous body absorbs moisture from a damp wall, and this moisture freezes behind the glaze. This fact should be borne in mind when the glazed tile are used in exterior work, in climates where frost occurs. In such cases it is advisable to use the unglazed tile or ceramic mosaic.

The durability of tile is amply demonstrated by many historical examples. The oldest tile in existence are those that were baked thousands of years ago in Babylon, Assyria and Egypt. The specimens that have been dug out of these ancient ruins and which are on exhibition in many of the museums of Europe are remarkably preserved, and retain even their brilliant coloring.

Many of the best archaeological evidences we have today of prehistoric races are the well-preserved fragments of pottery, which, in addition to the indications they give of ancient peoples, demonstrate likewise the durability of baked clay materials. Tiling is used quite extensively as a floor covering in Europe, not only in private dwellings but in public buildings as well. In many European churches there are tiled floors that were laid during the Middle Ages, and even in the older houses there are tiled floors that have been used for hundreds of years.

THE CORROSION OF STEEL — Concluded

SOLUTIONS of ferrous salts are directly oxidized or rusted by standing in the air. The rôle of oxygen is therefore secondary, but it is none the less important for the simple reason that by precipitating the insoluble rust the iron ions are destroyed and removed from solution, thus lowering the osmotic pressure and making room for more to be formed. The scientific explanation would be that the appearance and precipitation of the solid phase (rust) lowers the osmotic pressure, thus enabling the iron, driven by its solution pressure, to pass rapidly into the ionized condition.

To sum up, then, as far as we have gone, the rusting of iron is caused, first, by the solution of the metal by exchange with hydrogen, and, secondly, by the action of oxygen on the dissolved portion, both actions being accompanied by a transfer and neutralization of electric charges on the reacting atoms or ions.

The next important point is that the solution of the iron does not, as rusting proceeds, take place uniformly over the exposed surface, but on the contrary the solution is stimulated at certain nodes or points and inhibited at others. To this direct local electrolysis is due the peculiar form of corrosion known as pitting, which is almost always observed when iron and steel are deeply rusted.

The fact that iron does not tend to go into solution uniformly and evenly all over the exposed surfaces, but

passes rapidly into solution at certain surface points, can only be interpreted in one way, namely: that local electrolysis is taking place.

Now, applying what has already been said, it follows that as each iron ion appears in the solution a hydrogen ion must leave the system in order to maintain the equilibrium and so that no energy be lost or gained. It follows from this that hydroxyl ions must be left behind as the hydrogen changes to the gaseous form and disappears, so that we should expect to find a congregation of iron ions at one pole in the electric circuit and hydroxyl ions at the other. Owing to the formation, then, of these local electric couples, the surface should be protected at the negative poles around which the alkaline hydroxyl ions cluster, and attacked at the positive, where the iron is passing into solution, and being acted upon by oxygen.

Now, this action can be easily made visible as it takes place by means of a special indicator to which the writer has given the name ferroxyl. There is a certain reagent called potassium ferricyanide that forms a beautiful blue color, known as Turnbull's blue, when it comes into contact with ferrous ions. There is also an organic substance known as phenol-phthalein, which makes a beautiful rose-pink color with hydroxyl ions. Specimens of steel immersed in a solution of these mixed substances, and stiffened with Agar Agar jelly so that they can not shake about, invariably show blue and red nodes, proving beyond all doubt the development of positive and negative nodes as corrosion proceeds.

*Paper read at the A. I. A. Chicago Convention, November 19, 1907, by Allerton S. Cushman, Assistant Director, Office of Public Roads, United States Department of Agriculture.

Time will not allow of the presentation of a full discussion of the proofs that have been given to show that the corrosion of iron is always due to local electrolysis on the surface of the metal itself. The subject has been presented in detail in a bulletin recently issued by the Department of Agriculture. One of these demonstrations will, however, probably be of interest here.

If a section of rolled steel, such as sheet or plate, is immersed in water, if the electrolytic theory is correct, rusting must take place with the establishment of positive and negative spots or areas. At the positive points iron will pass into solution and be rapidly oxidized to a loose, gummy, or so-called colloidal form of ferric hydroxide which is characteristic of rust formed under these conditions. It is a well known fact, as has been proved by experiment, that colloidal ferric hydroxide will move or migrate to the negative pole if subjected to electrolysis. We may therefore consider the possibility of two separate effects that may be produced, viz., when a positive center is surrounded by a negative area, and vice versa. These two conditions may be graphically represented by the two circles, A and B: $\begin{array}{c} -\ominus- \\ - \end{array}$ $\begin{array}{c} + \\ \ominus+ \\ + \end{array}$.

Now, as rusting proceeds we should expect in the case of A that the ferric hydroxide would be piled up in a crater formation, while the metal is eaten out at the center. In the case of B the effect would be reversed, and while the metal would be attacked in the surrounding area the hydroxide would be piled up in a cone at the center. That this is precisely what is taking place whenever a sheet of metal rusts under water a low-power microscope very clearly shows.

The photomicrographs in which the craters and cones are clearly shown have been published in the bulletin referred to above.

If you are willing to accept the electrolytic theory of corrosion you will very naturally inquire in what respect does it point the way to an improvement in the conditions as they exist at the present time. It follows from what has been said that the more carefully lack of homogeneity and bad segregation are guarded against during the processes of manufacture the less likely is the metal to suffer from rapid corrosion. If the iron contains metallic impurities dissolved in it, such as manganese, which differ electrochemically from iron, trouble is sure to ensue if there is a lack of homogeneity in the distribution of the impurity. In the old days when iron was made more slowly and received more careful working than is possible in the present day, serious corrosion was not the important problem it has since become.

The writer has in his possession a hand-forged nail which is still in good condition, which was driven in the old Masonic hall at Richmond, Virginia, in 1807, and for a long period of this time it has been freely exposed to the weather. There is a widespread opinion, which the writer shares, that the old wrought or puddled iron of thirty years ago is more resistant to corrosion than most of the modern steels.

But the interesting point is that modern steels vary so widely from each other. Here are two pieces of angle steel which constituted two members of a signal bridge on the Boston & Maine Railroad, erected in 1894. These members were only six feet apart in the structure, and the conditions of environment, exposure and care were pre-

cisely similar and yet one is corroded to the condition of lace work, while the other is hardly touched. The chemical and microscopical examinations of bright samples cut from these two specimens do not show any essential differences, both contain about 0.5 per cent of manganese, and yet electrolysis has proceeded rapidly in one and almost not at all in the other. Does it not seem probable that the ingot, or portion of ingot, from which one of these members was rolled differed in segregation, or in chemical homogeneity, from the other? At all events, if all the members in this bridge structure had been as good as this best one, they would still be in service instead of on the table before you. It is of the utmost importance that we should learn to control the resistance to corrosion of structural steel, and to this end we should unite to urge upon manufacturers the necessity of making special efforts in this direction.

It would follow from the electrolytic theory that in order to have the highest resistance to corrosion a metal should either be as free as possible from certain impurities or should be by careful working and heat treatment rendered so homogeneous as not to retain localized positive and negative nodes for a long time without change.

Manganese is an element which is almost always associated in modern metallurgy with iron and steel, owing to the fact that this element is used as a flux in the great processes used today for changing cast iron into steel. Manganese, however, increases the electrical resistance of iron and as the percentage of this element, starting from zero, rises, the electrical conductivity of the metal decreases up to a certain specific maximum. Now, you will see, if the dissolving of manganese in iron raises the electrical resistance, that any changes in the equilibrium or distribution of the manganese in the metal means that there will not be an even or homogeneous electrical conductivity throughout the mass.

If we have a metal in which the electrical conductivity for any reason varies from point to point on the surface we have the precise conditions which are necessary in order to establish the local nodes of electrolytic action on the surface which lead to rapid corrosion. It is apparent, therefore, that if we are to allow the presence in structural steel of comparatively high percentages of metallic impurities, such as manganese, we must attempt to obtain an extremely homogeneous distribution of such impurities. It is for this reason principally in the opinion of the writer that the more quickly and more carelessly the metal is manufactured and rolled, the more quickly it disintegrates under corrosive influences. As has been pointed out before, there are two methods of meeting the problem: First, to keep the percentage of metallic impurities as low as possible, and, secondly, to guard against segregation and imperfect chemical homogeneity in the metal. In experiments we have made looking to the manufacture of a corrugated steel culvert for use in road building, it has been found by the author that corrugated metal, running as low as .04 manganese, has been more resistant to the corrosive test employed than the ordinary steel of the day, which usually carries about .5 per cent manganese. Material of this kind has not been available for a sufficient length of time to determine whether under service conditions this low manganese metal will be longer lived, but it can safely be stated that the indications are all in its favor.

The writer has urged the manufacture of manganese-free steel for certain purposes, not because manganese is necessarily the cause of rapid corrosion, but because this impurity enables the metal to be rolled more easily and more cheaply, and in many cases permits the working in of larger amounts of heterogeneous scrap. It is possible to manufacture shoddy steel as well as shoddy cloth, and though both of these materials have their legitimate uses for certain purposes, no one will claim for them high resistance to disintegrating influences. It is a hopeful sign of the times that manufacturers are beginning to pay serious attention to the manufacture of iron and steel for certain purposes which shall be to the highest possible degree rust proof.

Considerable attention has been given to the peculiarly passive condition that can be induced on the surface of iron by contact with solutions of certain oxidizing agents. Without going into the details of this phenomenon, which have been already published, I will refer briefly to the peculiar action of chromic acid and its salts. Polished specimens of steel may be kept indefinitely without suffering corrosion when immersed in a dilute solution of potassium bichromate. On first thought it would seem a paradox that a strong oxidizing agent should have the effect of preventing the oxidation of iron, and yet this is the case.

According to the theory of the writer the oxidizing agent polarizes the surface of the iron to the condition of an oxygen electrode, so that it is immune from the attack of the hydrogen ions; thus the whole electrolytic process is checked or inhibited. A curious feature of this action is, that it is, to a certain degree, persistent after the metal has been removed from contact with the oxidizing solution, washed and wiped. This phase of the phenomenon requires further study, but at the present time it does not appear probable that the induced passive condition can be maintained on the surface to an extent that would make it of practical value for treating structural steel. With regard to the preservation of boiler tubes, and for certain special purposes, it is not unlikely that a practical application of these principles will be found.

In conclusion it may be said that there is reason to hope that the time is not far distant when specifications may be drawn for material that is going into service under conditions which make it particularly subject to corrosive influences. The possible added cost of such specially resistant metal will be small in comparison to the benefits which will be derived from its use in the long run.

ARCHITECTURAL QUESTIONS AND ANSWERS.

The secretary of the Chicago Architects' Business Association, E. Stanford Hall, issues occasional bulletins that are brightly suggestive. Extracts from his latest bulletin are of interest:

"After noting continuous violation of the Building Code on the part of certain architectural practitioners, Commissioner Downey has preferred charges against certain of the more flagrant of these before the State Board of Licensing and Examining Architects, which board, after a fair and impartial trial, has found two of these persons 'guilty of wilfully aiding and abetting in the flagrant violation of the Municipal Code of Chicago,' and has revoked their licenses to practice in the State of Illinois. Let the good work go on. Members of the Association knowing of similar offenses should follow the example of Commissioner Downey.

SOME QUESTIONS WHICH HAVE COME TO THE SECRETARY'S OFFICE.

Q. If an architect is a quasi public official licensed by the State as competent to give technical advice to those desiring

same, how should the State deal with him when this service is performed in a careless and reckless manner, so as to jeopardize or actually cause the loss of life or property?

A. How does the State deal with the surgeon who is reckless or careless with the knife or drug? Is poor eyesight or ignorance considered an excuse in such cases?

Q. Architect Blank says Architect Blankity Blank tells him that he never takes work for less than the minimum charge shown on Schedule of Charges recommended by the Chicago Architects' Business Association as fair and reasonable remuneration for ordinary professional service. Architect Blank further states that he knows of his own personal knowledge that Architect Blankity Blank actually does pay a commission to Mr. Real Estate Agent of 50 per cent of his commission for doing the work and asks: "Do you think he is consistent?"

A. Study Judge Landis' decision in the Standard Oil case for accepting rebates from the Chicago & Alton railroad. What is the difference between a rebate and a cut price?

Q. Mr. T-Square asks: "Is it legitimate to pay Mr. Real Estate Agent for sending one of his clients to my office for professional assistance?"

A. Ask Mr. Real Estate Agent if he would consider it legitimate for his personal architect to accept a commission or reward from a contractor for awarding a contract for the construction of his building. Verily, "What is sass for the goose is sass for the gander."

Q. Mr. Triangle asks: "Can you tell me why I am not making any money? I do considerable business and my time book shows that I make 50 per cent profit on my men."

A. Rent, stationery, telephone, books, periodicals, time put in by draughtsmen on work that cannot be charged to any particular job, vacation time, holidays, bookkeeper's time, time of employees taken up by solicitors and agents—all constitute a fixed charge, which, in the thorough and careful offices amounts to an average of about 25 cents per hour in addition to the cost of the draughtsmen's time for each hour of time actually put in by draughtsmen on the work and about 5 cents per hour for the actual time of superintendents put in on the work.

Q. Architect Business asks: "Should the charge for professional services be proportioned entirely on time consumed in performing such service?"

A. Does the physician and surgeon charge the same for the treatment of a case of measles as for an operation in the cranial cavity? The time consumed in each case is not very different and both require professional knowledge and skill, but one involves great jeopardy of human life and one small. The State assumes unlimited expense to assure even a common criminal a fair and impartial trial for his life. It takes a comparatively short time to compute the load-carrying power of floors, columns and trusses, yet the jeopardy of human life and property in case of mistake is enormous. Is it not fair that the architect should be paid in proportion to the responsibility assumed in the case of load-carrying certificates instead of time consumed or the cost of work involved in preparing same?

* * * * *

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One of the marvels of the age is the growth of the idea of education by the correspondence method. The building trades were among the first subjects taught by correspondence and always have been among the most prominent. So much attention has been given to instruction in the building trades that they are among the most successfully taught by correspondence of any subjects. The success, or the very existence, of the correspondence schools depends upon the value of their text books. For this reason, large expenditure is made to secure the ablest authors and incorporate in the books the most complete and accurate information that the world affords concerning the branches taught. The latest work of this character is this *Cyclopedia of Architecture, Carpentry and Building*.

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The section on "The Architect and His Legal Relations" (Vol. I, Page 315), defining the law as it relates to building contracts.

The section on "Reinforced Concrete" (Vol. IV, Page 11), discussing the latest developments in this new and important branch of building.

The section on "Estimating" (Vol. II, Page 229) and the section on "Steel Construction" (Vol. V), as well as the sections on "Specifications," "Superintendence," "Wiring for Bells and Light," "Plumbing," "Heating," "Ventilation," "Sheet Metal Roofing," "Cornices and Skylights," "Elevators," etc., full of practical, ready-to-use, up-to-date information.

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Apartment Building, Cleveland. O. G. H. & J. F. Steffens, Architects.

Living Room, House of H. J. Ullman, Oak Park. F. L. Wright, Architect.

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Residence, A. H. Spahr, Sewickley, Pa. MacClure & Spahr, Architects, Pittsburg.

Entrance Hall, House, London; Dining Room, House, London. C. R. Ashbee, Architect.

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International Bureau of the American Republics, Washington, D. C. A. Kelsey and P. P. Cret, Architects.

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Church of the Christian Science Society, Milwaukee, Wis. Elmer Grey, Architect, Los Angeles, Cal. Exterior, interior and plan.

Residence of L. Stoddard, New Haven, Conn. Peabody & Stearns, Architects, Boston.

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