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GEORGE B. FERRY.
PAUL J. PELZ.

IRVING K. POND, DES.

LORADO TAFT, SCULPT.

THE INLAND ARCHITECT AND NEWS RECORD

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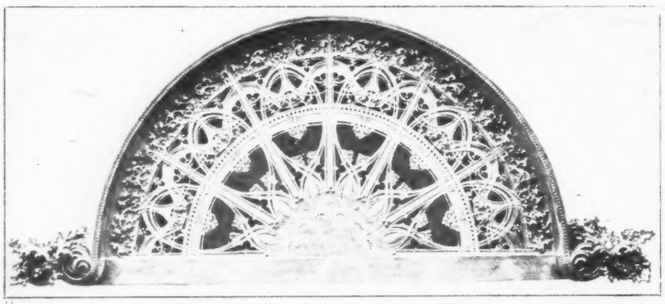

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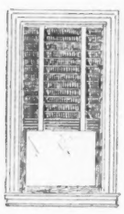

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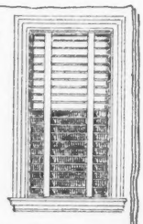

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THE INLAND ARCHITECT AND NEWS RECORD

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Folly in Building Without Fireproof Protection.

The frequent newspaper reports of fires, with the stereotyped announcement that "the best business block in the city, valued at $100,000, only one-half covered by insurance," with the frequently added bit of history to the effect that "this is the third big fire on this site, this having taken the place of the Opera House burned a few years ago," would seem to prove that ordinary business prudence was lacking in a large proportion of American investors and that destruction of lives and property weighed little against the twenty or thirty per cent it would cost to secure safety by building the structure completely fireproof. It is only common business sense that is lacking in the owner who will place $100,000 in a structure that is continually menaced with total destruction by fire, for if fire is once started, because of inefficient fire companies, the only real protection must be in the thorough fireproofing of the structure itself.

Relation of Public Library Design to Architects.

The building and maintenance of public libraries, which has always been a particularly American adjunct of the little red schoolhouse idea of universal education, has become perhaps the most marked feature in public building during the past few years. The many donations of Mr. Carnegie has added volume to the number and in some degree increased the disposition of the wealthy to give greater advantages to those intellectually inclined. And this is the opportunity of the architect, for in no other form of structure can he design with such perfect freedom from tradition and give greater play to his genius. The churches we admire in the old world were designed and built through the religious ardor of the people, and it seems that our architectural history in future centuries will not be found in our churches but in our libraries, for the trend of thought in this commercial age will be found more general toward intellectual than religious attainments. We take it as a fact that the training of the schools and the examples of architectural beauty that is left to us from the centuries which are largely found in the temples of the Greeks or the churches of western Europe must exert a strong influence upon every architectural mind, and that to speak of a "style" is to refer to some past work of a dead age. In the library there is no such tradition, and the architect can in this design more readily evolve his own conception both in form and in arrangement. It is most necessary that the library should be designed by the best talent of the age, for it is the chief art depository of the village or town or city. It is the center of its culture and the expression of its intellectual advancement. It should be fireproof in the fullest meaning of the word, not a makeshift of wire, lath and plaster. Its plan should receive the fullest study, and all the best in heating, ventilation and lighting should be found within its walls. The design should in general be secured by an adequately paid competition adjudicated by an expert. Not because a competition is the best method, but because it is the lesser of two evils when the alternate is the liability of the work being placed in the hands of the incompetent whose brother-in-law is an influential member of the library board.

PUBLIC LIBRARIES AND THEIR DESIGN AND PLAN.

BY GEORGE B. FERRY, F. A. I. A., ARCHITECT.

IF the history of a people is written in its architectural monuments it is particularly evident that its intelligence may be largely gauged by the number and use made of its libraries, which one may speak of as the crystallized experience of human intelligence.

The name of New England has always been the synonym for intelligence and activity, and one of the first acts of its founders was to establish what is today Harvard University. Of 356 cities and towns of the State of Massachusetts, all but eight have free public libraries, less than one-half of one per cent of the population being debarred from their privileges. We by this see what an enormous field opens before us in the country as the awakening sense of their importance and value becomes more and more appreciated.

Of all public buildings, the library building is distinctively the one in which the people feel that they have a direct personal interest; that it is for them, that they have a part in it, and are welcome within its doors. We all consciously or unconsciously feel the influence of the good and the beautiful, and it makes for the best in us, silently but surely. You remember the story of the old Scotch woman whose pastor found her bleaching her linen on the hillside. She spoke of the good her going to the kirk and listening to him had done her. Inquiry elicited no remembrance of any text or any particular of what had been said, and he inquired how it could be that she had received any benefit. She said: "You see this linen; I sprinkle it and lay it out on the hillside here in the sun. You see no change between yesterday and today, but with time you perceive that it grows whiter and whiter." And so with the influence of beautiful surroundings. Physical objects in the nature of buildings are persistent in their effect upon the community and they make for good just in proportion as their own merits command respect and attention, and that influence is enhanced in proportion as we are brought in contact with them. When we consider, then, what books represent and what they may and will be to the community, it becomes more evident, aside from the grounds usually taken, how important their housing is, both as to matters of planning and appearance. It would, therefore, seem to follow that, in a structure distinctively for the use of the people, such as a library, the most careful attention should be given to appearance in all matters, both external and internal, that they may work to the same ideal ends as the volumes which the structure is provided to protect.

The most conspicuous example we have ever had of the influence of such surroundings was the Fair at Chicago. Far-reaching in its effect, no one, whatever their station in life, viewed it without coming away better, broader, with an enhanced self-respect and higher ideals, and observation of the effect produced by individual structures leads to the same conclusions.

In looking over the illustrations in the report of the Massachusetts Free Public Library Commission, the failure to appreciate this important phase of the subject is evident, despite the unusually large per cent of excellently designed structures.

In the arrangement of the library building so many factors are involved that only the most general of statements can be made, and these must be naturally biased by the results of individual opinions and experiences. As with the exterior, so with the interior; strive to make the first impressions pleasing and give all of dignity possible. Let your introduction be generous, devote such space to the purpose as will produce an ample effect as you pass to the various rooms. A library is of value, as it can be used, and its arrangement must be of such a nature as will expedite the handling of its contents. The delivery-room should be the most ready of access of all rooms and so arranged in itself and in its connection with the stacks that there is the shortest possible distance to travel in the gathering and distributing of the books. There are some conspicuous examples of what not to do in this matter. The stackroom, when separated from the delivery-room, should have communicating openings of such number and size as will avoid choking, and as to the stackrooms themselves, he is fortunate who is able to handle his plan so that they may be placed at a point where they do not become a part of an important façade, such as an internal court or similar situation, and can construct them with regard only to their utilitarian purposes. The best of results have been obtained in which the external wall surfaces are the width of the double shelf end, the windows the width of the aisles between and reaching from the ceiling to fifteen inches above the floor; the shelves being five sections of three feet each, making the farthest book but fifteen feet from the window. The aisles should be of a width to pass in readily, say three feet or a trifle over, and the communicating passages of such additional width as will freely handle the increased traffic and book wagons. In addition, especially in reference libraries, a small table about two feet square bracketed to each shelf end, with a reading light attached, is found essential. As to the shelves themselves and the various paraphernalia in general, the modern "gentleman of the road" furnishes a mass of information unknown to his predecessor of the cross-roads, but perhaps with results somewhat similar. In the main it may be said that minute shelf adjustment is not as important as it at one time seemed, that shelves once placed are seldom disturbed, and that there is more than one good stack. Eight shelves in height and 7 feet 6 inches from floor to floor seems to meet with general approval, the structural supports being a part of the stack. The tendencies are all in the direction of giving the public as free access as possible to the books, and in all but the largest libraries the major portion of the books will be placed outside of the stacks, classified under their respective subjects, with rooms for each of such dimension and arrangement as will give free access and accommodations for their inspection and study.

A model library, accessible to the public, is also a present accommodation much appreciated. The stacks will thus be more generally devoted to the storage of duplicates and works less generally used.

Standing at the entrance of a large library building soon after its opening stood a youngster of some eight years with one hand on the latch and the other frantically beckoning to a group of his fellows on the sidewalk below, who had evidently sent him in to spy out the country. He shouted: "Come in, kids, and see de books." Among surroundings new and beautiful he had found that even they had a part. The children's room, one of the most important of all in its possibilities of present help and future citizenship, reaching as it does a class who have scant opportunity at home, with tables and chairs to fit little bodies, and perfect freedom of access to stories and picture books on shelves not too high to reach, the room is a happy sight at almost any time. Places provided for the display of pictures, of which there are innumerable reproductions of the best works, and the portraits of the authors displayed in connection with their books on the shelves. This room should have all that can be spared for beauty in treatment and color and be brightened by the use of plants and flowers.

The reference-room is suggestive of quiet, and needs all of dignity and character that can be given it. It will be a bookish room in its appearance, with its shelved alcoves or walls lined with books always within reach. The needs of this room are too numerous to mention here, but it should be large, roomy, accessible and impressive.

The newspaper and periodical room to a great extent takes a different class of readers, and, if possible, it is well to have it practically independent of the other portions of the building, if in a city of size. In our Northern climate it furnishes warmth and agreeable occupation for an idle class during the cold season, and at all seasons has a much larger per cent of those who are less favored than other portions of the building, and this room is also one where the influence of beneficial surroundings should be felt.

Feet and inches have but little place in such an article as this, and so about the administrative portions and the vast mass of detail that goes to make a complete institution, but a word or two may not be out of place that experience has taught upon the much-vexed question of heating and ventilation in both entire indirect, and direct and indirect together. Here theoretical and actual needs as to volumes of air are found to be at variance with each other, and that the condition of the air in rooms admits of the return of a large portion from many parts to the intake side of the fan. That toilet-rooms, such rooms as the newspaper reading-room and children's, need the full amounts computed with exhaust fans run by motors, and no returns. That in halls, corridors and large rooms, where the volumes are in excess of the needs, except for keeping up temperature where all is indirect, it is unnecessary waste to use all the air but once. In cities which are dusty or where soft coal is used, a coke filter with washer is in every way satisfactory. It is simple, compact, uses but little water, and in summer on average temperatures will reduce the heat of the external air some ten per cent by allowing the washer to keep the

filter slightly wet. In the leading of pipes from the mixing chambers to their outlets, it is well to allow all the space possible between pipes consistent with other things, and to use covering as well where they run in banks in conduits; for where the runs are long, although the thermostat opens the cool air damper, the air rises in temperature by absorbing heat from adjoining pipes.

This is a matter that needs attention, as it causes great annoyance, and is nearly impossible to remedy when once installed.

In a case where good practice required five 100-horse-power boilers, two of 100-horse-power each have, with the Hawley downdraft, done the work with entire satisfaction when the external air was twenty degrees below zero, an economy found to be proper and too great not to be taken advantage of, as appropriations are seldom much beyond the needs of such institutions.

THE STACKROOMS OF THE CONGRESSIONAL LIBRARY AT WASHINGTON, D. C.

BY PAUL J. PELZ, F. A. I. A. ARCHITECT.

THE history of the evolution of the present plan of the Congressional Library reaches back as far as 1873, when a competition was arranged by the joint committee of Congress, open to all, in which, out of twenty-nine designs, the one submitted by my old firm received the first premium.

The program had evidently been prepared to produce a combination structure out of the British Museum Library plan and that of the old Library of Congress in the United States Capitol, now removed. My ground plan, adjudged as the one best solving the problem, showed a rectangular structure, with a central reading-room one hundred feet in diameter, with side lights in the circumference and a number of offices for the functions of administration, copyright, etc., along the front. The remainder of the space inclosed in the rectangle was utilized for stackrooms. No courts having been provided, skylight illumination was used exclusively. In order to do this effectively I had adopted the alcove system of the Capitoline Library, with ample center aisles open all the way down, with galleries of communication.

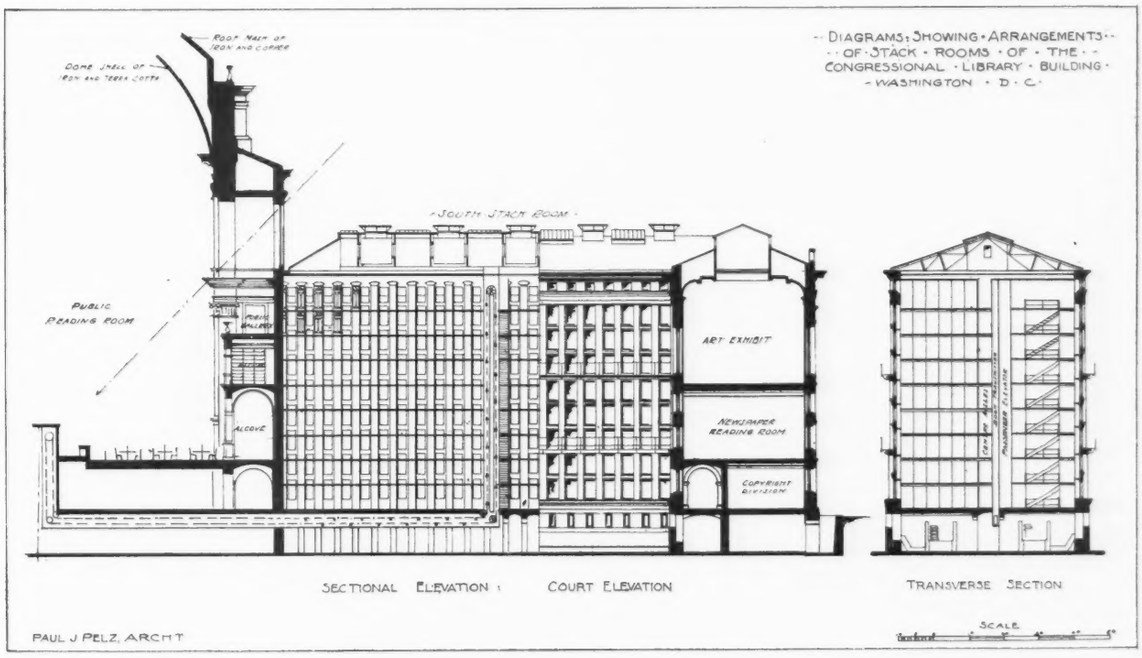
Toward the center, arrangements resulted in the shape of triangular alcoves very much like those of the British Museum Library, which I had carefully studied "in loco" and measured during a trip the summer before the competition was held.

In this plan, according to the program, no allowance had been made for the various uses of a large library, which later plans developed not thought of in the original program but necessary in order to develop the full usefulness of a first-class collection, such as newspaper and periodical reading-rooms of largest dimensions, a room for geographical matter, for the exhibits of the graphic arts, for music, etc. It was fortunate for the institution, therefore, that this plan was not then carried into execution, and equally so for myself, as the result could not have been anything but a source of regret.

We found that the claim of my firm for receiving the commission as architects of the building was anything but secure, and during the thirteen years of waiting for the concert of action of the two houses of Congress twelve more competitors, who had been encouraged to enter the lists, had to be met, flanked and defeated, and this could only be done by the evolution of improvements on the plans and elevations. As all this had to be done without pay, this running fight meant much sacrifice; everything else was staked on this particular issue, which eventually became all-absorbing; but we finally, with much perseverance and energy, carried the day. I would here like to state that, owing to certain legal complications (not of our own fault and knowingly committed), my old firm is yet a claimant before Congress for two-thirds of the commission due us on the plans finally adopted.

While this competition lasted, every design of the building necessarily had to be overcrowded with stackrooms to keep up a good showing for its capacity. As the chances of losing the work on that score became less, courts giving side-lights to the stacks and to the circumferential rooms from the interior were gradually introduced, yet the center-aisle plan (with a closed spacing of the stacks) was retained until a very late date, as is shown in the plans published in the *American Architect and Building News* in 1888.

Subsequently, in that same year, to meet the temper of Congress with a reduction in the expense of the building, I prepared two designs, adaptations of the plan previously evolved, illustrated in Mis. Doc. No. 12, Fiftieth Congress, second session; the larger one was adopted in 1889 by act of Congress. In both of these plans the number of stackrooms was reduced to three, leaving four large open courts, affording ample side light. In the "A" design the present arrangement of the stackrooms is fully developed.



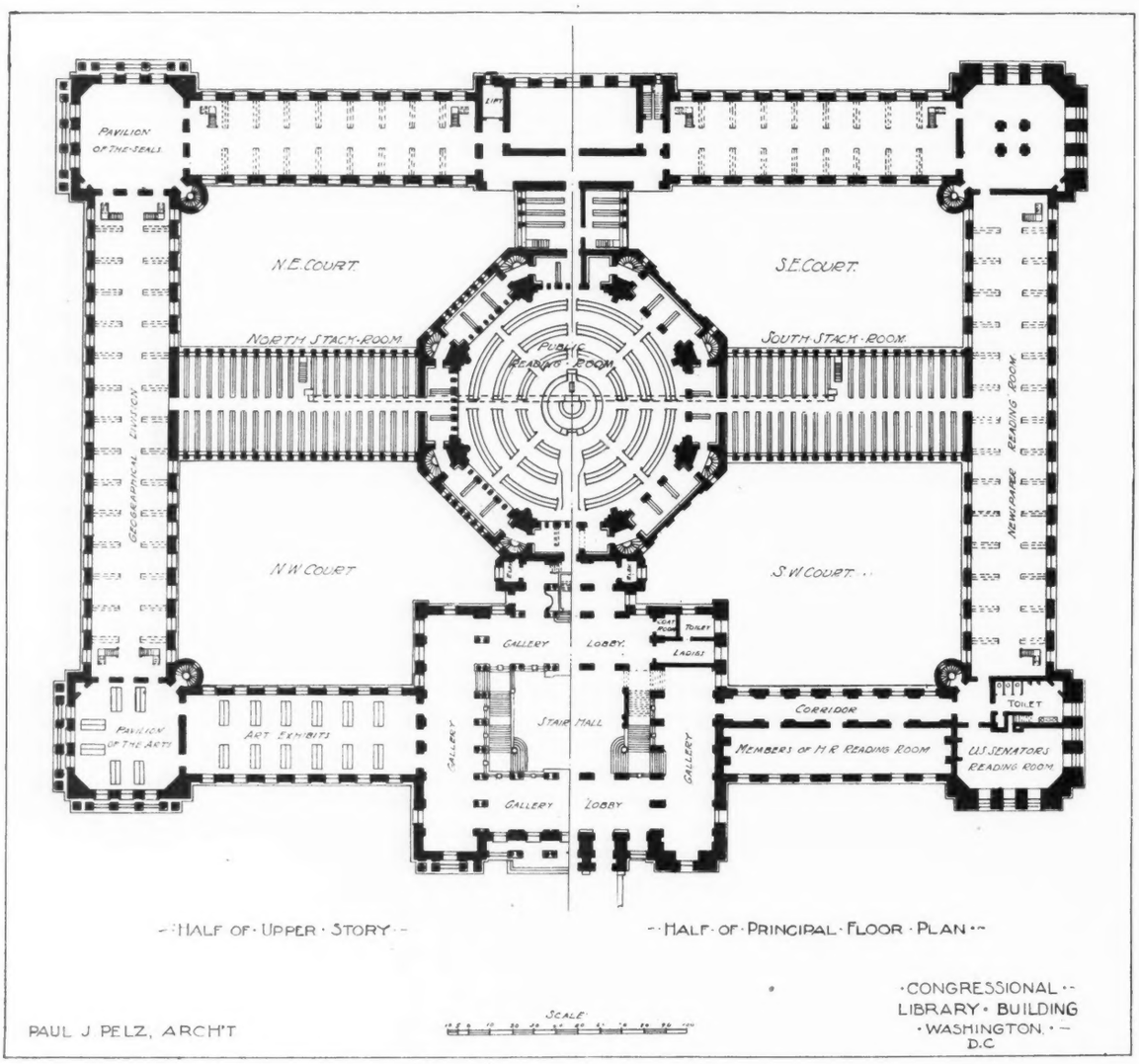
To illustrate it I have prepared a sketch plan of the Library building and sections with part elevations of the stackrooms. The plan shows half of the principal floor and half of the second floor. By referring to it it will be seen that the original one hundred feet diameter reading-room has been largely augmented by the introduction of eight niches, increasing the space inclosed to about 136 feet, interior diameter. This arrangement was for a twofold purpose; firstly, I had always intended to make the inner library dome of solid masonry, with a "roof mask," as Mr. Ruskin calls it, of iron and copper. The very foundations, the corner buttresses, the great barrel arches of the niches, in solid masonry,

were all built for the purpose and ready to receive the brick shell, for which I had the precedent of St. Paul's dome in London, and of equal diameter. My dome would have been the seventh in size, if built, but I was thwarted in my purpose by the military authority I had over me, who put a veto on my scheme, which was in every way feasible, inexpensive and perfectly stable, as I showed by accurate calculations and by quoting the aforementioned precedent in England. The military authority could not be made to understand the point that a monumental structure required a masonry dome to its principal room to make it true in its character as such, and the result was the present miserable makeshift of an iron frame with a terra-cotta shell, and further debased by a quite suitable beehive-like decoration for which I am likewise not responsible.

The second point I wished to gain, and in which I succeeded, was the best possible incident angle of light for the reading-room. The general cornice lines of the building are of the same altitude above the grade level as those of the United States Capitol, i. e., about seventy feet. The stackrooms were made the same height. I had arranged for the eight large semi-circular windows to illuminate the reading-room.

The distance from the center axis to the window surfaces horizontally measured is about sixty feet, with the reading-room floor about sixteen feet above grade; this gives an angle of incidence of forty-five degrees, the line being taken from the center of the floor through the top of each one of the large windows. In my studies and actual observations I had found this to be the best angle of light for convenient reading, and I developed the plan accordingly. By making the roofs of the stacks hipped toward the reading-room, I brought the sills of the large windows closely down to the stack building cornice lines.

These were the main considerations; incidentally I obtained a very effective decorative effect on the interior of the reading-room by the Roman alcove development, and last, but not least, the benefit of the visitors' gallery, on which the public can overlook the reading-room without disturbing the readers. Had my own design for the decoration of the dome been executed, I believe the room would have been thoroughly harmonious and not bisected into a torso of one man's way of thinking architecturally superimposed by a head of totally heterogeneous character. My own design ends with the marble work; above this there was absolutely nothing left to tell the tale of what I had intended but the most general cornice contours.



Having thus explained the limitations of height and distance of the stackrooms from the center of the building, I wish to say that the outer quadrangle buildings had been fixed by me at thirty-five feet in the clear. They were to be used and are now used for the various purposes of administration, the exhibit of the works of the graphic arts, newspaper reading, geographical exhibits, sheet music, etc., but in preparing the plans and working drawings were studied to be eventually turned into stackrooms on the alcove system for special collections, if it should be required, with sufficient floor capacity for the great weights, etc. The plan shows the possible disposition of the stacks in these rooms.

Now, taking the width of three bays and as much more space as ever possible close up to the jambs of the adjoining window openings, I obtained a clear width of stackroom of 44½ feet. Six feet of this space I reserved in the middle for a main corridor

fore and aft, which left me shelving of 19¼ feet on both sides against the walls. This shelving was made double for all isolated stacks twenty-four inches wide over all. Arranging wall shelving against the reading-room and the outer quadrangle buildings, and adopting a minimum spacing, I obtained twenty isolated stacks, with twenty-one cross aisles, each 3 feet 4 inches wide in the clear. The result of this spacing is quite satisfactory, but I should not advise a further reduction as expedient.

On the east side, each tenth stack is omitted for the purpose of accommodating a staircase of eight flights, a small auxiliary passenger lift, and a book transmitter, connecting each story of the two large stacks with the center portion of the reading-room.

The building at large has a cellar story throughout, a basement two feet above the outer grade and fourteen feet high, a principal story twenty-one feet high, both from floor to floor, and an upper story containing the tallest rooms, really the *belle étage*. The stackrooms are nine stories high, each story being seven feet from floor to floor. Starting on the general basement level, they join the two upper floors in the third and sixth floor levels. The reading-room is on the principal or third stackroom floor. The alcove architecture of the reading-room is likewise arranged to permit access on a level to the sixth stackroom floor. Direct and convenient communication between the stackrooms and the center and end portions of the building are thus secured by ample doors, in the lines of the main aisles.

The side aisles have floors 2½ feet wide, leaving 5-inch clear, open spaces against the book stacks for the purpose of illumination. With the width of courts of about seventy-five feet minimum in the clear, good and sufficient daylight illumination is thus obtained in the lower floors near the center aisles. The windows are almost continuous vertically, just enough masonry walls having been introduced to form the "woof" of the granite fabric, of which the 24-inch wide piers form the "warp." The windows are of plate glass the full width of the cross aisles, set up from each floor, so as to allow of a seat of which the sill forms the back. The sashes are stationary. Provision was made by skeleton galleries on the outside for cleaning, from movable, temporary platform planks. These galleries are accessible from the end room windows on the principal and second floors. The elevations of these stacks, although facing courts only, were made architectural by the grouping of the windows into three tiers, continuing the sill courses of the stories of the general design, the lines of horizontal accentuation being also strictly preserved in base and cornice. The exterior material of these portions is exclusively in granite, while for purposes of reflection of light, imported English glazed cream-colored brick has been used for the facing of the larger wall spaces in the courts of the outer quadrangle portions. This expedient has proven to be highly effective; even on dark days the resulting brightness of the courts is astonishing, resembling the effect of sunlight illumination — a feature well worthy of imitation for like purposes.

With a building 44½ feet wide in the clear, and small windows in the top floor, necessarily so by being placed in the frieze of the main cornice, the upper four stories would be inadequately lighted by the side windows. I therefore arranged for suitable skylights to be placed in the roof, overcoming the inadequacy of lateral illumination and rendering the whole block thoroughly permeated by daylight.

The height of seven feet from floor to floor is adequate, as I have observed on frequent visits to the building; the floors proper are thin white marble slabs, laid polished-side down for reflecting purposes, leaving an ample height as far as looks are concerned. The steel supports are angles of a minimum depth, only introduced where absolutely required.

When it is taken into consideration that the ordinary stock door in the United States is 6 feet 8 inches, that decks in ships are hardly ever made much higher, the height of 6 feet 10½ inches in the clear is surely sufficient, while the great advantage accrues that with this height no steps are required for the average-size librarian for reaching books on the top shelves.

The supporting uprights are made of doubled T-irons spaced a little over three feet from centers, placed in the middle of the stacks, into which the cast-iron shelf supports are inserted. The uprights and floor supports form a closely woven system very light but strong. The uprights rest by spreaders on masonry foundations. The stack facings toward the main aisle are of cast iron of appropriate design, with panels for classification labels.

Looking upon this construction, evolved during the long years of waiting the action of Congress, it will be seen to be the logical evolution of a very economical and compact method of housing books in large masses near the place of their use, with the very best direct facility of access to the books, and an abundance of daylight. I do not claim any priority of invention of any part, and have not taken out any letters patent, but believe that I have in this instance solved a new problem and have produced a complete and successful scheme both mechanically and architecturally. I have seen no case prior to 1888 where a stack building has had full exterior expression as a masonry structure in the way this one does.

As to the feasibility of making a bookstack a part of the exterior architecture and monumental, there must be necessarily great difficulty from the close spacing of the bays; 5 feet 4 inches, the interval between centers, is a dimension too diminutive for noble expression, especially if the stack building is in height equal to twelve times the width of a bay.

Five or six stories from the base might be treated in pier fashion with side light, with three or four stories on top as a supported wall without windows, or only small apertures, relying on these upper stories on the abundance of the skylight illumination. I wish to throw out this suggestion to my younger confrères in the profession; there may be some good in it if they will consent to give it a fair trial.

Located as they are in the courts and visible from the windows of the outer quadrangle buildings, the simple straightforward treatment of the stack buildings of the Congressional Library building is very satisfactory to the eye, and has drawn forth a highly flattering criticism from the learned Mr. Russel Sturgis, in an article on "Library Architecture" in the November number of *Brochure Series* of 1897. Speaking of stackrooms, he says as follows:

"This part of the Library building, its very center and reason for being, has been better treated, perhaps, in the Congressional Library at Washington than anywhere else. At least no other instance comes to mind where so intelligent an arrangement of the lighting has been made. It is easy to put your books in the basement and to give them nothing but electric light, but that is not to face the difficulty or to solve the problem.

"If it is assumed that daylight is, on the whole, better and more wholesome, as it is certainly cheaper, than electric light, then a well-windowed stackroom is better than a dark one. The stackrooms at Washington are indeed left in the interior, and the light comes to them from courts, from which alone their outer walls can be seen; but the treatment of these has been shown in this instance to be so easily made architectural that it is quite within possibility that a future great library will show the stackrooms as a part of its adorned exterior."

As to the book-carrier device, now in successful operation, I believe that I was the first one to suggest the arrangement for a library and to put it into shape as far as an architect is able to do so. I conceived the idea prior to the actual beginning of the Library building in 1886, as a swinging shelf arrangement, like buckets, on an endless chain, working down from the reading-room, along under the basement floor to the center of the stackroom to be reached, and up all the stories of the stack and down again the same way parallel to the point of beginning. I also conceived the idea of the dumping key arrangement used. The solution is merely the adaptation of a device as old as the hills and used in nearly every factory, on marine and river dredges and where not; I would not mention it were it not stated in the guide-book for sale at the Congressional Library building that this suggestion had been made not by me but by an official whose advent at the building dates a year and a half later than my own, and who had no particular interest in library construction and devices relating to the same previous to such advent.

The pneumatic tube arrangement to take books to the Capitol was also a device suggested by my old firm early in the '70s, to members of the committees, as we knew well of the parcel post system already then established in Berlin, Germany, and in other places.

It is confidently believed that a close study of these stackrooms, especially "in loco," and of their successful working, will be of benefit to all who contemplate designing similar structures as a basis for further advancement in this direction, and the writer will be glad to extend courtesies and counsel to all who may for this purpose visit Washington.

CONSTRUCTIVE FEATURES OF WISCONSIN STATE LIBRARY.

IN the present era of literary architecture, the Madison State building is a typical illustration of what may be attained by adopting and closely adhering to one particular style. Not only is the architecture classical in the extreme, but all details down to the minutest item conform exactly with the style of the structure. Even the hardware was made from original patterns, which it was said were immediately destroyed on completion of the building. In the first instance, the Grant Marble Company, of Milwaukee, has so closely followed the architect's drawings that the fact becomes apparent when one enters the structure. The marble stairs, railing and selections of marble all through the vestibule are worthy of notice. The design of the trim, in doors and moldings, as well as the general furnishings, bear the imprint, prominently emphasized, of the architect. This work was done by the Matthews Brothers Manufacturing Company, of Milwaukee, and one can see at a glance that it has employed its best workmen, who have followed the architect's drawings with a faithfulness that is to be commended. There is a detail, so important, that without which the general architecture would be sadly marred. Reference is made to the elaborate stone carvings of Mr. Joseph Dux, of Chicago. In this particular it may not be amiss, with the illustration of this building before us, to call attention to the particular branch of industry known as stonecutting. It is said that ninety-seven per cent of the men known as stonecutters are mechanics — experts, if you will, but still mechanics — and only three per cent of the entire trade are artists, the distinguishing difference being in the creative effect of their work. No doubt they are obliged to and do follow the architect's details faithfully in both instances, but it is an easy matter to distinguish when the work is done whether it has been done by an artist or a mechanic. An architect makes his drawings to create a certain effect. A mechanic follows the lines as given to him. An artist will study the effect, and every tap of his mallet adds to that effect, so that one can almost tell, when a piece of carving is done, what an artist had in his mind while doing the work. In this building it is more natural to speak of the stonecutter as a sculptor. In every detail of hand carving you can see the masterhand of the artist. The classical effect created by the whole structure owes not a little to the artist-sculptor, who accurately caught the effect desired from the architectural designer. Mr. Dux was a professional man and an artist before he carved stone, and in many public buildings, in both England and America, his handiwork will remain as monuments for generations to come, but none more so than Wisconsin State Library at Madison.

The matter of ventilating and heating is one that can not be passed over. In this building the work was done by the Mueller Company, of Milwaukee. The building is heated and ventilated throughout by direct radiation and a fan system. The apparatus is so arranged as to give a constant supply of fresh air to all the rooms with which the indirect system is connected. The supply of fresh air is constant under all hydrometric, barometric and thermal conditions of the outside air. The temperature of all the rooms is controlled by the Johnson Heat Regulating System. The entire apparatus, consisting of fan, engines, heating coils, radiators, return-water apparatus, galvanized iron air ducts, etc., was installed complete by the Mueller Company, and it has been successful in making this plant an up-to-date and economically operating one, for which much credit is due the company. All the galvanized iron air pipes and steam supply pipe work above the basement are concealed in the partition walls and iron framework of the building. This removes the objectionable feature found nowadays in exposing the heating work to view. The artistically painted radiators of rococo pattern and the Bower-Barff finished grillwork registers are the only parts of the heating apparatus to be seen in the various rooms. The Mueller Company, by careful selection of the very best of heating materials, has installed a model job, which coincides in every particular with the fine construction of the building.

STACKROOMS VIEWED ARCHITECTURALLY.

IN departing from the library interior of a generation ago, as the old Bates Hall in Boston, where galleries filled with books looked down into open courts, to the modern stackroom with its isolated contents, something of the attractiveness and charm lent by the presence of the books has been left behind. Whatever may be said of these old rooms from the point of utility, it is certain that, architecturally, the absence of the books as a background has been a distinct loss.

The library, notwithstanding its modern adjuncts of drafting-rooms, experimental laboratories, etc., still remains primarily a home for books. The more this thought is emphasized in the arrangement of interiors and the greater the atmosphere of books created, so much more effective will they prove architecturally.

That stackrooms may be planned to serve as attractive backgrounds for delivery-rooms is a fact often lost sight of. This arrangement may be readily effected without loss of security and with the great added advantage of a prompter book delivery. Stackrooms are frequently placed directly in the rear or at the side of delivery-rooms with an insignificant door connecting the two. Here a dead wall only is offered to the eye instead of the most appropriate of all backgrounds — massed books, attractively shelved. Something of this lack of effective result is due to the fact that in attempting to secure complete security for books, iron or steel stackwork has been increasingly employed, which, up to a comparatively recent date, has been produced largely in forms having little pretense to architectural elegance. The common practice has been, therefore, to conceal rather than expose the stack. Books have disappeared behind brick walls, leaving many delivery-rooms with more the appearance of a well-appointed hotel lobby than the heart of a great book repository. In the large libraries, with their great stackrooms, often no other treatment is possible, though in some of them, of which the Chicago Public Library is a notable example, the problem of complete security, convenience, and the employment of the stack as a valuable architectural adjunct has been solved with signal success.

In all small libraries, however, where the volume of books does not exceed 40,000 or 50,000, it is possible to store them not only securely, but attractively as well.

Three elements enter into such a handling of the question: Fireproof walls and roof for the stackhouse; an interior metallic core or stack for books designed in harmony with the architectural detail of surrounding rooms; and a system of concealed metallic fireproof curtains or doors arranged to readily and completely close the openings between the stacks and administrative rooms. The growth of purely metallic cabinet work in recent years and its adaptability to the highest forms of architectural expression has done much toward shelving books securely yet pleasingly. The above treatment lends itself readily to an economical construction, for under it the stackhouse only need be entirely fireproof, the remainder of the building being only partially so.

Small single doors, designed like a vault entrance, may effectively give way to large openings fitted with double doors slid into pockets in dividing wall, or to ample arched passageways protected by concealed coiled curtains. The effect of distance is at once added to interiors, while the stacks and their contents are agreeably set in relief as backgrounds.

The effective employment of this treatment in the Chicago Public Library has already been noted. Here the two main stacks form reliefs for the massive rotunda, whose color scheme is materially heightened by the rich metallic tones of the stacks and the warm tints of the books massed on their shelves. The direct connection of working and storage rooms has also proved so convenient that seventy-five per cent of the books in current use are handled without the aid of any mechanical appliance whatever. The Elegant Poole Periodicals Room in the Madison Historical Library, though not purely a stackroom, also illustrates the success of this treatment with its attractive volumes grouped in ornamental cases. Many of the smaller libraries are now being planned in this way, of which the Burlington (Iowa) Library is an effective illustration. Here only the stackhouse is fireproof.

Increased accessibility to dust is the main objection to be raised to this form of library construction, but when the openings are not too large, it is not a serious one. Where the stacks are built with entirely smooth, hard, metallic surfaces they are readily kept clean, and the time saved by the direct connection of stack and delivery rooms more than offsets any slight loss in the other direction.

THE CHICAGO FEDERAL BUILDING.

THE exterior of the Federal building at Chicago has now been carried to such a point, spite of strikes and other delays, that some idea can be formed of its great size, its graceful form and the scale of its parts. It is so very big — the triple entrances even are wider than most of Chicago's buildings— that it would appear cyclopean had not its design been handled so skilfully that one is not aware of the gigantic detail until he measures some of its parts. The cornice now being put in place seems an ordinary and appropriate rim, as it were, to that building, yet it projects nearly seven feet beyond the building, and the top molding course, apparently not over four or five inches thick, is made up of stones none of which weigh less than six tons.

People begin to appreciate the form of that building too. They note the cross-shapen main building resting upon the two-storied postoffice, forming a great square base for the whole that is surmounted by the great dome that rises from the intersection of the arms of the cross, that dome a building itself a hundred feet in diameter, with six stories of offices in it, rising over three hundred feet from the sidewalk. They note that there can be no interior or dark rooms; that every office must have outside light and a view of two streets.

One of our contemporaries recently attempted to poke fun at the Treasury Department by carrying out a calculation as to how many people were indirectly working at that building. It got the number up to some three hundred thousand. As a matter of fact, there are and has been, since the strikes were settled, six to eight hundred men at work daily and exclusively upon material going into that building, though there have seldom been more than a hundred and fifty men upon the building proper. Granite of the same shade of color can not be gotten from twenty quarries; it should all come from the one quarry and the one stratum even. In this case, the Department has ordered that it be taken from three quarries of nearly the same shade in order to expedite the work and make up for the loss of time caused by the long drawn-out strikes since 1898. Every piece has to be cut by hand — most tedious work. Several men can not work upon the same piece; it may take weeks to complete it, work as hard as that man may. It is a vastly different proposition from the pressed brick and

terra-cotta commercial buildings Chicagoans have seen springing up all about them. Comparisons have been made between the Government and private buildings as to speed of construction, and the self-appointed critics and experts, losing sight of the enormous size of the former building, have found that the Government is intolerably slow. As a matter of fact, take two adjacent buildings, the postoffice and the new Field building; the latter people thought was rushed up in remarkably short time, and it was, but the stonesetters on the postoffice set in place in the twenty-one good days of last April as much granite as is in the entire structure of the Field building, yet it made no great showing. Remember it is 1,463 feet around that Government building.

Soon work will begin upon the flooring, the plastering, the glazing and that sort of work where an army of men may be employed and where there is practically no restriction upon the quantity of material that may be gotten at one time.

Architect Henry Ives Cobb has substantially completed the designs for the interior. He has consulted with the various officers who will occupy that building, in the Postoffice, the Subtreasury, the War Department, the Customs, the Internal Revenue and the hundred and one others to be domiciled upon those acres and acres of floor space. And he has planned upon a most magnificent interior, for which contracts will soon be let. He has let the contracts for the exterior at a much lower figure than he ever expected to, and by judicious paring down here and there, in places that will never show, since that time has still further reduced the cost — that building will be one, at least, where there are no extras, but thousands of dollars of deductions — so that a most ample fund, nearly $2,000,000, is left to elaborate upon the interior.

It is the Department's policy, and Mr. Cobb has faithfully carried it out, that due importance and dignity be imparted to the transaction of the Government's business, and he has designed that interior accordingly, and Mr. Cobb's deputy, Mr. Fitzpatrick, has kindly given this description of those interior designs and the photographs of the sketches, bits of detail here and there, that he made, and which were published in this journal last month.

In general the offices throughout will be fitted up as handsomely as any of the big insurance or banking offices in Chicago or New York. The postoffice being but a great workshop, will be finished accordingly, the walls and ceilings of glazed brick and tile, easily cleaned, and all shelving, racks, etc., of enameled iron. The postoffice corridors for the public and the great vestibules will be magnificent in light-colored marbles, crystals and bronzes; the floors of marble mosaic, the walls paneled and pilastered in pale Siena and white marbles, the ceilings vaulted and actually built — not veneered — of marble. The glass will be colored, but most delicate in tones, and the doors, the screens, the letter boxes and all work of that sort will be of deep bronze gilt. People will enter along four great corridors opening from the main entrances into the dome. Either side of these corridors will be alcoves, deeply recessed, into which people having business with the postoffice, getting letters, etc., will go — public space and yet away from possible crowding and jostling of people going and coming.

These corridors open into the great dome, larger than that of the Capitol at Washington, surrounded by the eight galleries of the different stories of the building. The floor of this dome will be of the most elaborate marble mosaic, and being central and possibly confusing to people not entirely familiar with its surroundings, the direction of the several streets, at the intersection of which the building stands, will be indicated by their names woven, as it were, into this mosaic. Double columns of a rich Siena marble will support the eight corners of this dome. The gallery rails will be of white marble and bright gilt bronze. The cornices will be of plastic material picked out in cream and gold. The light will be introduced through great openings in the domed crown and the circular apex opening of that dome will open to a great flat panel that will receive reflected light from below and will have some suitable historical subject painted upon it by a master-hand. The stairways will be of light-colored marble, broad, monumental and easy of ascent. The elevators opening from the dome will be wonders of the metal-smith's art. Any one who has seen the great reading-room of the Library of Congress at Washington can picture to himself to a degree what this dome will look like. It is much higher in form, more elaborate in detail and lighter colored in tone. The electric lighting will be so managed that none of the light will be visible; everything will be reflected light, so that the whole interior will be suffused with light, as if it were open to the sky, and yet no one will know from whence this light comes.

There are really so very few what may be called great public rooms in this building — so much space being devoted to offices for regular business purposes — that they can be most elaborately finished and yet kept well within the appropriation made by Congress. It is Mr. Cobb's firm purpose to give the Government one building upon which there will not be 1 cent of extra.

On the sixth floor there will be four very large courtrooms. Floors of these will be of a hard-rubber tile, perfectly noiseless, and covered in the bar enclosure, bench, etc., with handsome rugs. The walls are twenty-five feet high; for fifteen feet of this height the paneling will be of richly dark marble, pilasters of the same will continue up to the ceiling; the capitals of these will be of solid bronze, and so will the deep beams forming the panels in the ceiling. The remainder of the space upon the wall will be tapestried or will be cut up into a series of painted panels representing the "Course of Justice" or some such appropriate subject. The panels in the ceiling will be most delicately tinted with a fine pattern picked out in gold leaf. From the center of these rooms will rise a domed skylight of handsomely stained glass set in bronze framing. The artificial lighting of these rooms will be similar to that of the dome above described, that is, all concealed lighting.

As a rule, when courtrooms are much elaborated they partake too much of a festive character. This will be guarded against in these rooms. While they will be very elaborate, splendid in marbles and gilding, and so brilliantly lighted that one may read the finest print anywhere in the room, yet the tone will be so low that there will be a dignity, an awe-inspired feeling forced upon one as he enters the sacred presence of the law. The bench and all the furniture in these rooms will be of black oak or deeply colored mahogany.

The Court of Appeals, on the seventh floor, will be semi-circular in shape, very dignified and somewhat on the order of the Supreme Court at Washington.

The Sub-treasury, on the first floor, will also be marble finish, but nowhere will there be paneling in marbles or other light construction. The whole will be of massive blocks, and the gratings, banking fronts, etc., of polished steel, the whole having the appearance of actually being very strong and safe.

The offices of the Collector of Customs, Internal Revenue and the other larger rooms will be, as above stated, finished as are some of the later and handsomer bank buildings in Chicago, counter fronts of marble, glass and bronze, floors of mosaic, ceilings vaulted and decorated, rich lamp and other fixtures, plate glass highly polished and beveled in all windows and doors, elaborate, dignified as befits the home of the greatest business institution on earth — the United States Government.

METAL ROWING BOATS.

WITHIN the past four or five years there has been steadily growing a revolution in the art of building small boats. From time immemorial the small boat and canoe have been made of wood or of bark, but all this has changed by the sheet metal boat constructed by W. H. Mullins, of Salem, Ohio. The idea of making metal boats is not absolutely new, for if Mr. Longfellow can be trusted as an authoritative antiquarian, the ancient Viking used metal in the construction of his warships, as in his "Skeleton in Armor" he says:

> "'Midships with iron keel
> Struck we her ribs of steel,
> Down the black hulk did reel
> Through the black water."

The Mullins boats are stamped out from sheet metal, but he has gone further than the Viking builder, and no matter how hard the impact of boat or of rocks, his boats can not sink, as they are all supplied with preventive air-tight compartments. The duck

SECTIONAL METAL BOAT.

boats made of metal are too well known to hunters throughout the United States and Canada to need description. They have been tested under all conditions and have proved the one boat that has all the attributes of a safe, light, steady and indestructible hunting boat.

It is not strange therefore, that a demand has arisen for a metal canoe built upon the lines of the bark canoe of the Indian, or its prototype, the "Peterborough," and obtainable at a low cost. This is where the indestructibility of metal finds its chief value, for a canoe is used because it is small and light, and therefore can be paddled through various rivers and carried over rocks and through forests. It is always watertight, a dent in the side can be straightened in an instant, its lines give it speed, and its safety in all emergencies make it the ideal craft for the canoeist. That boats should be built of metal is not strange, as it only conforms with the advancement of the age and is the logical result of the demand of civilization upon the thought and energy of the times to evolve something better than the thing of yesterday through the great forces of discovery and invention that are changing old methods for those that are newer and better everywhere. Thus we have the perfect boat for pleasure, for it is always in order, and years of use do not seem to make any change in its durability and the graceful lines it is modeled upon.

PAINTS FOR STRUCTURAL STEEL.

STRUCTURAL steel is becoming every day of more importance in architectural work, and methods of preserving it from rust are consequently of great interest. The various materials offered for this purpose are well known — red lead, iron oxides, graphite and asphaltum leading in favor. Harry Smith, F. C. I., two years ago published in the *Journal of the Society of Chemical Industry* (p. 1096, December 30, 1899), the results of

a series of exhaustive experiments on this question which will well repay reading by every architect interester in steel construction.

The résumé of his tests, which were very thorough and extended over a long period of time, is that while red lead, under certain conditions, affords the best protection, it is almost a practical impossibility to secure these conditions. They are that the pigment must be ground with oil by machinery and applied before the inevitable chemical action between the lead and the oil has proceeded very far. This means that the grinding must be done on the spot where the paint is to be used.

Of all other pigments he found that zinc white gave the best and longest protection, and recommends that, even when red lead is used for the under coat, zinc white or iron oxide paint be applied over it. He found zinc oxide, when used without other admixture than oil, "to have a very high protective value as a pigment for use on iron," while no other white pigment was found even moderately effective.

Since the other protective paints are all very dark, it is useful to know that tints can be made with zinc white without in the least impairing the protective value of any of them, while all of them under most circumstances have their value enhanced by the addition. CHARLES JOURDAIN.

LAKE TRIP TO THE PAN-AMERICAN.

ALL the world, that is, the architectural world, is going to the exposition at Buffalo, or ought to; as from the standpoint of color and exuberance of design in which each is held within bounds of harmony and artistic lines, there has not been its like known in modern times. This knowledge has been so well and thoroughly spread that the question of going is not near as important as that of how to go. Of course, the railroad is the direct route, but to those who can take the time and wish to mingle recreation with sightseeing, there are other ways that present all the attractiveness of a trip to Europe. Those are by the different lines of steamers that sail from all parts on the great lakes for the harbor of Buffalo. To those at or west of Chicago a particularly attractive route is open and, what is always a desideratum, at a very nominal cost. It has been known to a large and increasing number of people that the most healthful and picturesque portions of the United States during the summer months

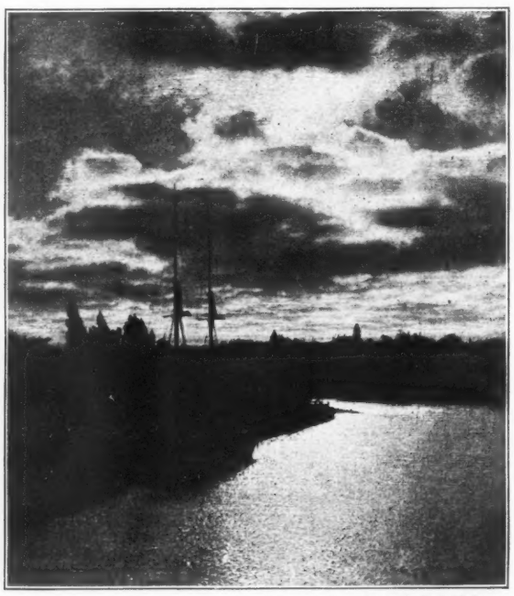


Photo by R. C. McLean.

BEHIND THE HARBOR LIGHTS.

lie at the foot of and east from Lake Michigan, where that lake turns eastward through the straits of Mackinac. In order to give a lake passenger service that would conbine every comfort known to modern travel, the Northern Michigan Transportation Company has for many years placed large passenger steamers at the command of the public, and by careful study of the needs and desires of the summer tourist, has acquired a perfection of management and appointment on its steamers that is beyond criticism. Two years ago this company added to its steamer equipment the palatial Illinois, which, with her splendid sister ship, the City of Charlevoix, makes regular trips to Mackinac Island and the cities and health resorts on the east shore of Lake Michigan. It is suggested that this year the trip be extended to Buffalo, by way of the famous Georgian Bay route to Collingwood, and thence a six-hour ride by train to Buffalo by way of Niagara Falls. The entire trip to Buffalo from Chicago would consume about five days, about eight hundred miles of water travel, and the entire cost for the round trip of ten days about $40, for on all the steamers en route the rule is "meals and berth included." As this is the season when recreation becomes a business, there is no route or destination that presents a greater attractiveness than this contributed by the Northern Michigan Route, for it not only reaches all the best and most

S. S. ILLINOIS ENTERING HARBOR AT MACKINAC ISLAND.

salubrious of the northern Michigan points, but lands the traveler at the gateway to Lakes Superior, Huron or the wonderland of Georgian Bay, and no rest is as perfect as that upon one of these great steamers that are fast, safe and spacious, catering to every want, and equal in appointment to the best hotels in the country.

OUR ILLUSTRATIONS.

Residence, Denver, Colorado. W. E. Fisher, architect.

Monument in Graceland Cemetery, Chicago. Jenney & Mundie, architects.

Monument to George A. Fuller, Oakwoods Cemetery, Chicago. Bruce Price, architect, New York.

Interior Details, United States Postoffice and Customhouse, Chicago. Henry Ives Cobb, architect.

United States Postoffice building, Joliet, Illinois. James K. Taylor, Supervising Architect, Treasury Department.

Accepted competition design for United States postoffice and Customhouse, Cleveland, Ohio. Arnold W. Brunner, architect, New York.

Library Building, State Historical Society, Madison, Wisconsin. Ferry & Clas, architects. View in Picture Gallery; View in Reading-room.

New United States Mint Building, Philadelphia, Pennsylvania. James Knox Taylor, Supervising Architect, Treasury Department. Initiatory work by William Martin Aiken, ex-Supervising Architect. View in Entrance Vestibule; View in Numismatic Room, showing Coin Cases. Inscriptions on bronze tablets: "First United States mint was established by act of Congress, approved April 2, 1792, by President George Washington. Corner-stone laid July 31, 1792, and first coinage executed in October, 1792. Permanently located at Philadelphia by act of Congress, approved May 19, 1828. Purchase of site and construction of a new building authorized by act of Congress, approved March 2, 1829. Building completed in May, 1833. Present building authorized by act of Congress, approved August 5, 1892. Actual construction commenced September, 1892. Building completed, 1901." "Secretaries of the Treasury: John G. Carlisle, Lyman J. Gage. Directors of the Mint: Robert E. Preston, George E. Roberts. Superintendents of Philadelphia Mint: Herman Kretz, Henry D. Boyer. Supervising Architects: William Martin Aiken, James Knox Taylor. From 1895 to 1901."

Photogravure Plate: Library Building for State Historical Society, Madison, Wisconsin, General View. Ferry & Clas, architects, Milwaukee, Wis.

PHOTOGRAVURE PLATES.

Issued only with the Photogravure Edition.

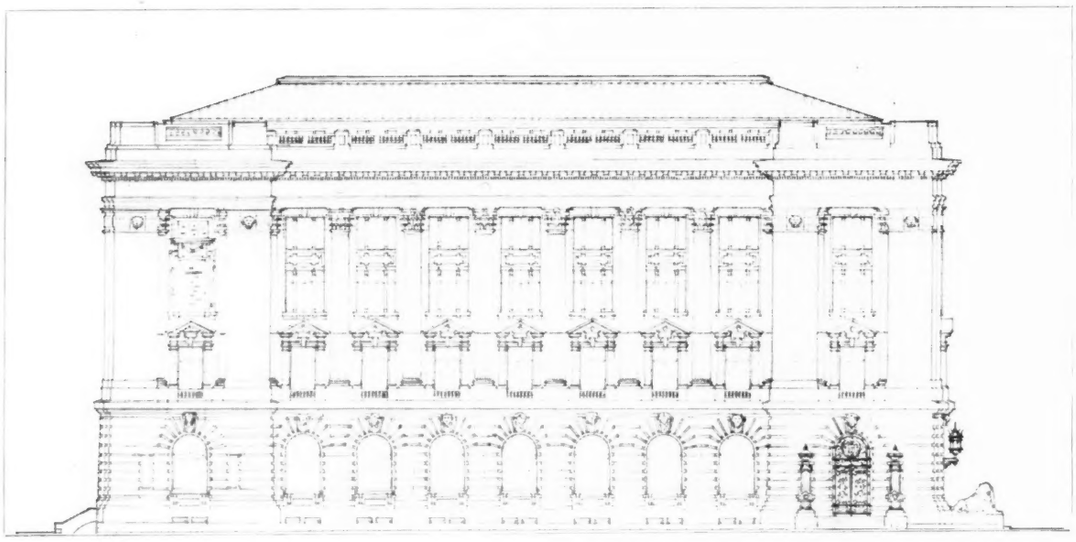
Residence of E. K. Dunham, New York city. Carrère & Hastings, architects.

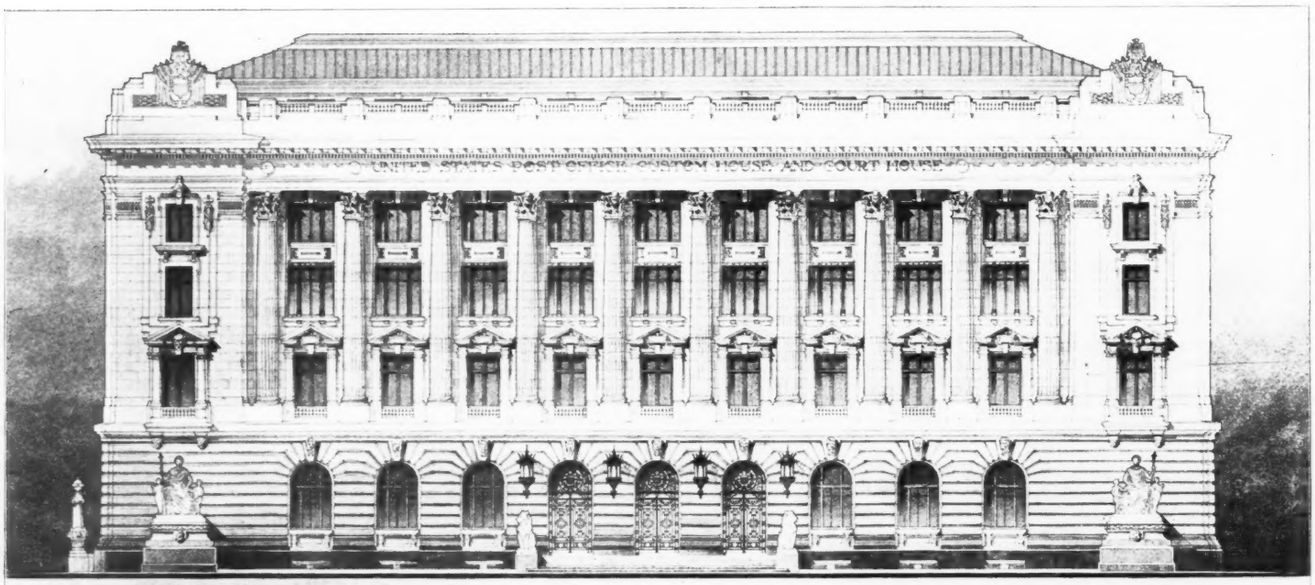
Residence of Mr. Pendleton, New York city. Warren & Wetmore, architects.

Library Building for State Historical Society, Madison, Wisconsin. Ferry & Clas, architects, Milwaukee, Wisconsin. Detail View of Entrance; View in Entrance Hall, showing Main Stairway.

New United States Mint, Philadelphia. James Knox Taylor, Supervising Architect, Treasury Department. Initiatory work by William Martin Aiken, ex-Supervising Architect. General View from Northeast; Detail of Main Entrance; View of Main Stairs.

Correction.— New York residence illustrated in June number credited to Carrère & Hastings, architects, should read N. C. Mellen, architect.





FRONT ELEVATION

ACCEPTED COMPETITION DESIGN FOR U. S. POSTOFFICE AND CUSTOMHOUSE, CLEVELAND.

ARNOLD W. BRUNNER, ARCHITECT, NEW YORK.

VIEW IN READING-ROOM, STATE HISTORICAL SOCIETY LIBRARY, MADISON, WIS.

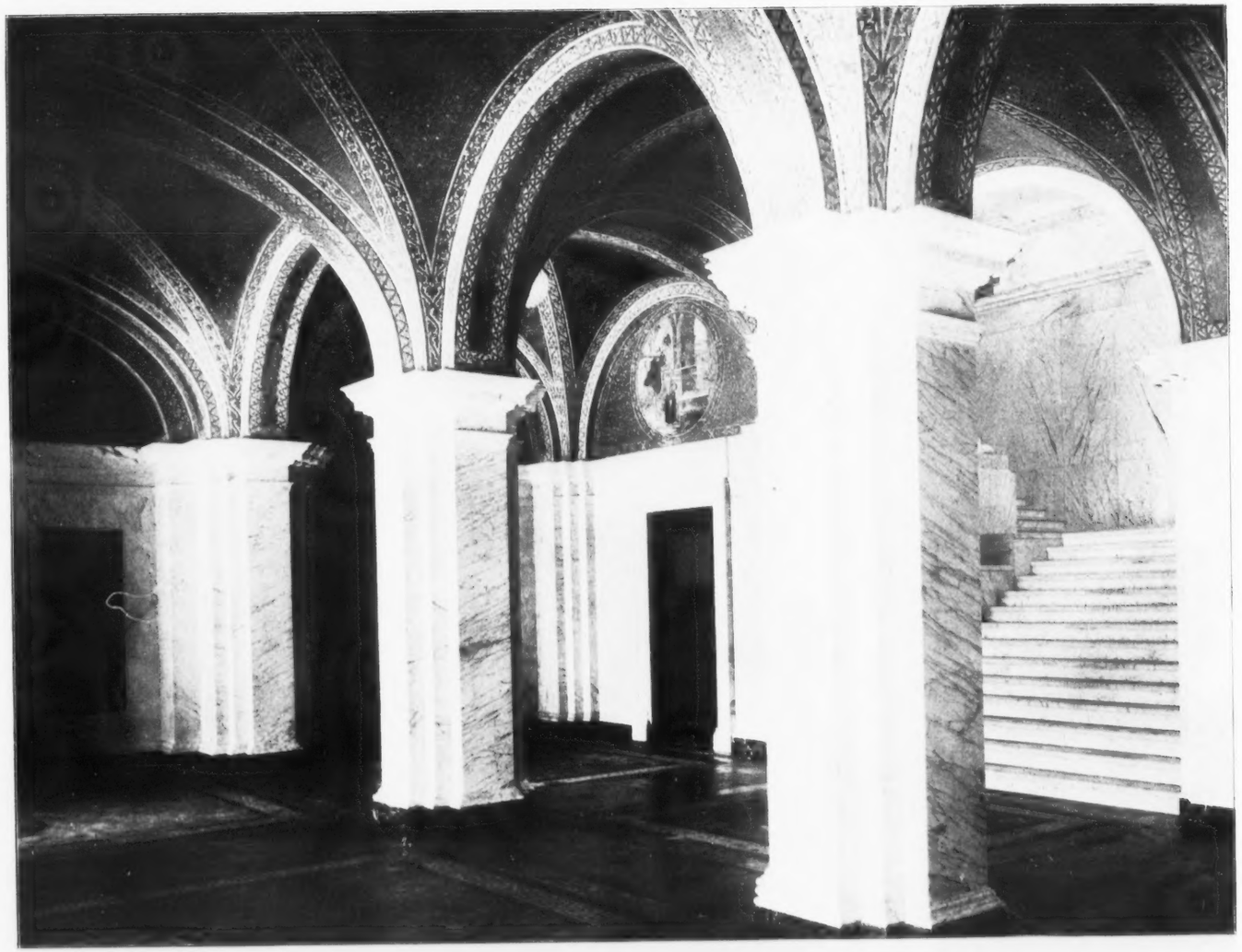
FERRY & CLAS, ARCHITECTS, MILWAUKEE, WIS.

FRONT VIEW.

RESIDENCE, DENVER, COLORADO.

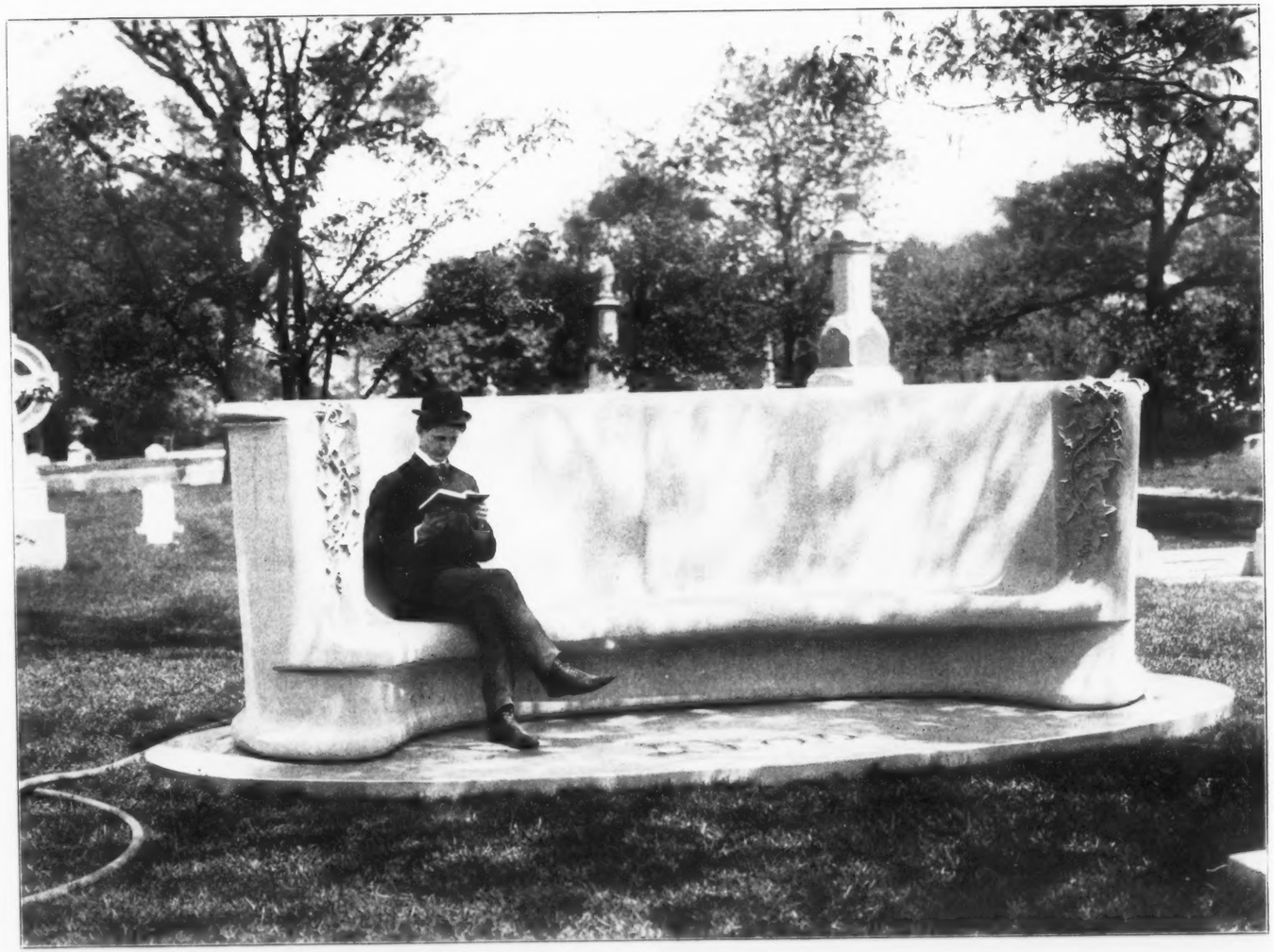
W. E. FISHER, ARCHITECT.

VIEW IN NUMISMATIC ROOM, NEW U. S. MINT, PHILADELPHIA, PA.



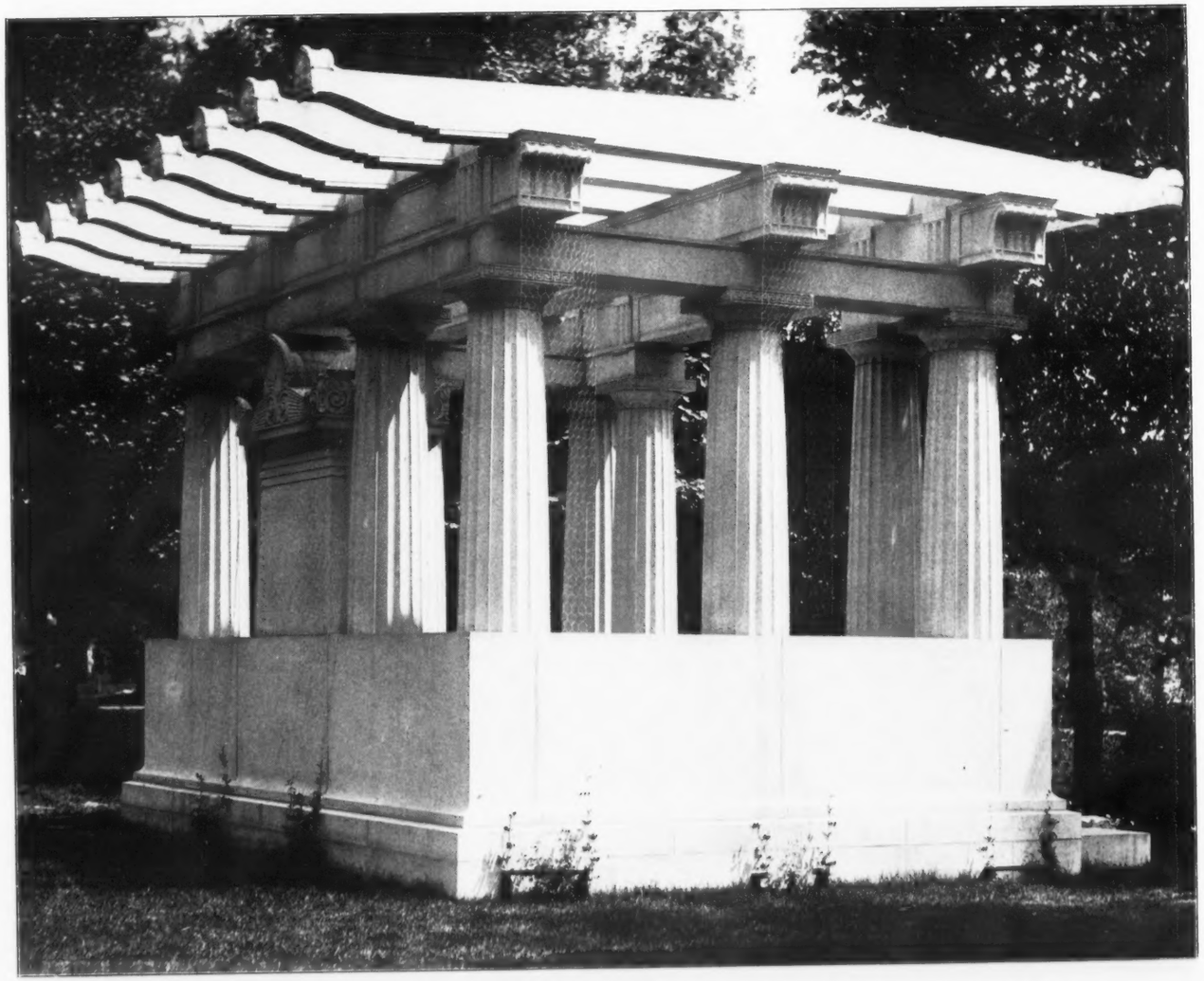
VIEW IN ENTRANCE VESTIBULE, NEW U. S. MINT, PHILADELPHIA, PA.

JAMES KNOX TAYLOR, SUPERVISING ARCHITECT. WILLIAM MARTIN AIKEN, EX-SUPERVISING ARCHITECT.



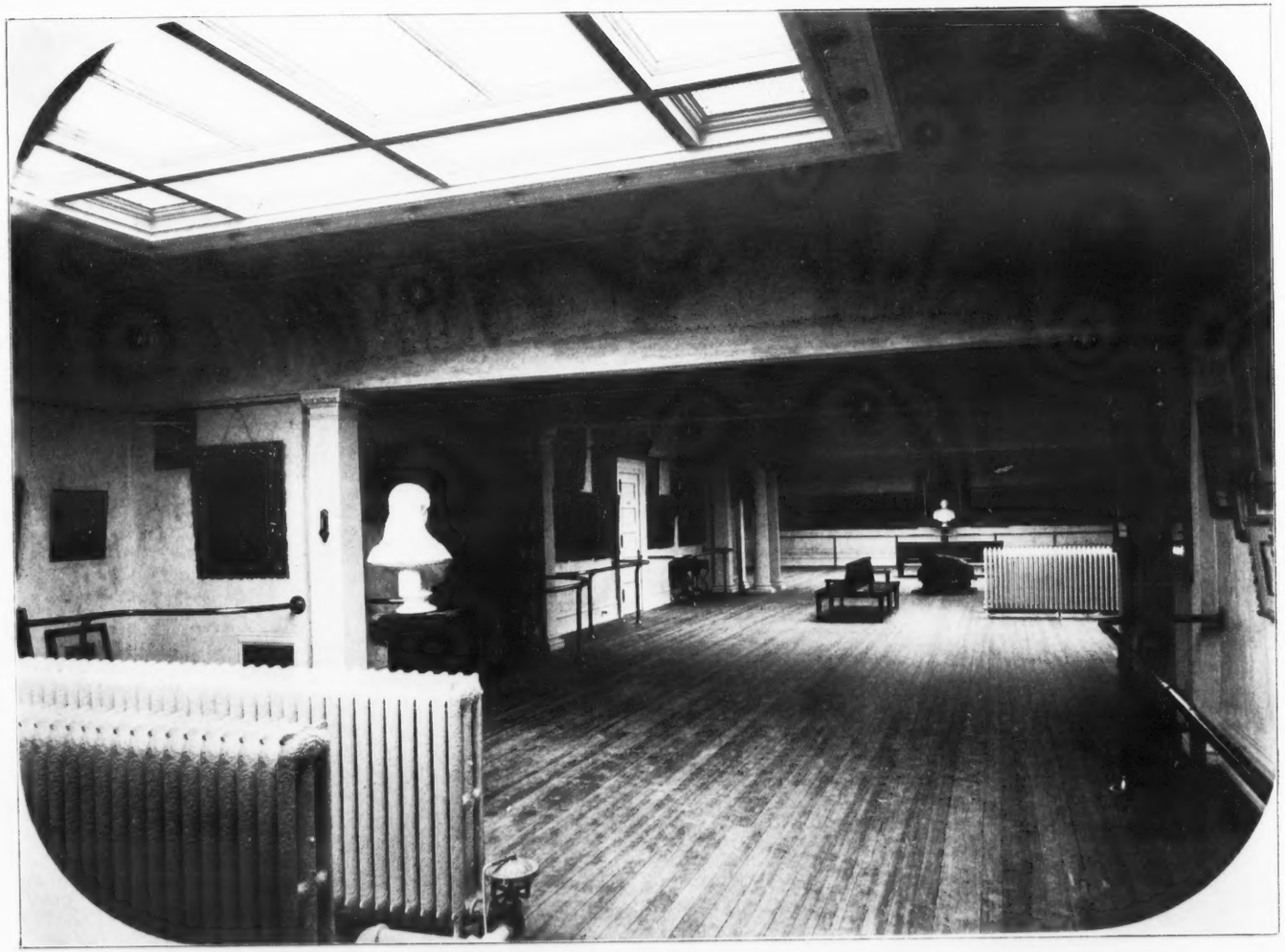
MONUMENT, GRACELAND CEMETERY, CHICAGO.

JENNEY & MUNDIE, ARCHITECTS.



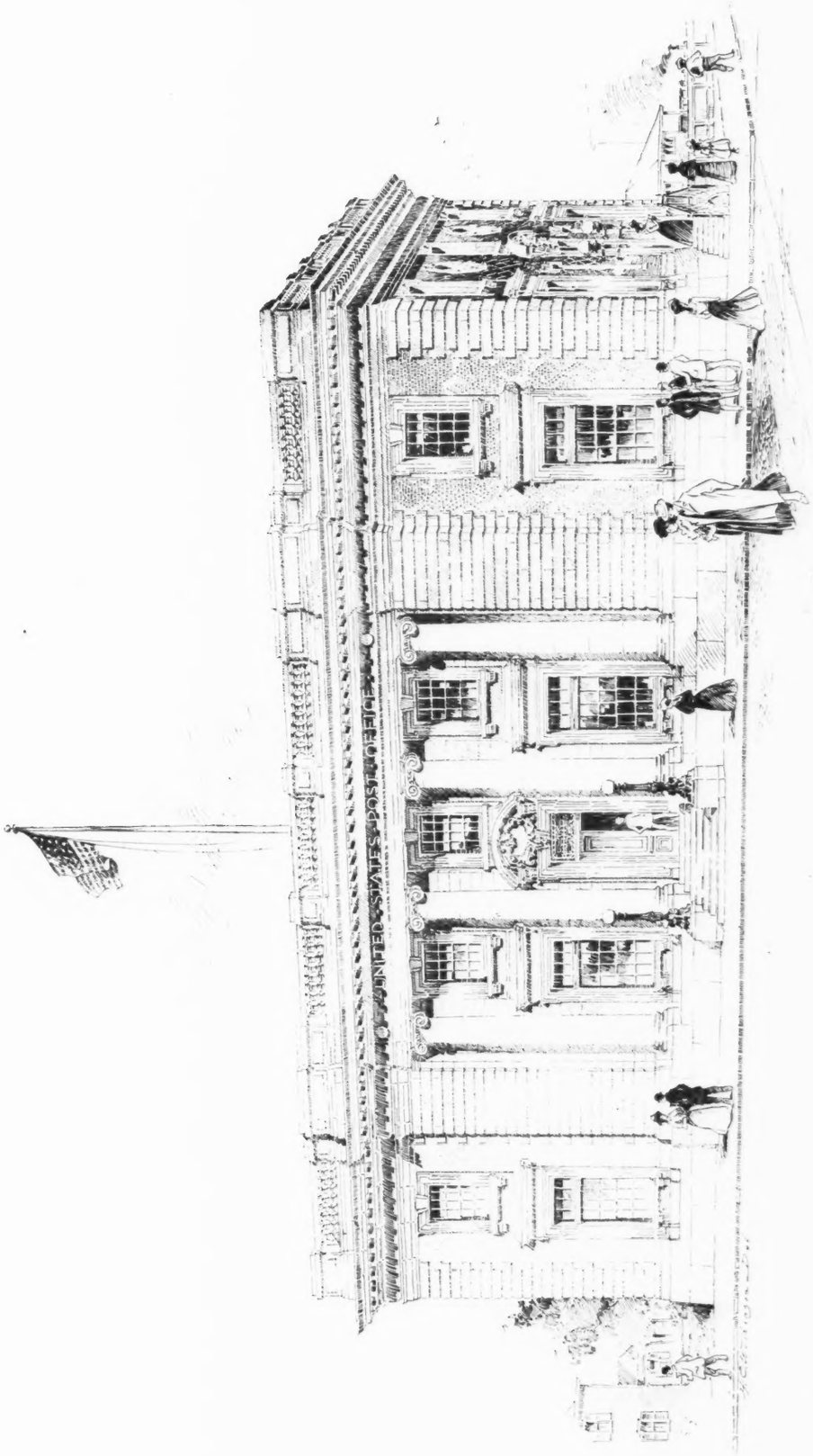
MONUMENT TO GEORGE A. FULLER, OAKWOODS CEMETERY, CHICAGO.

BRUCE PRICE, ARCHITECT.



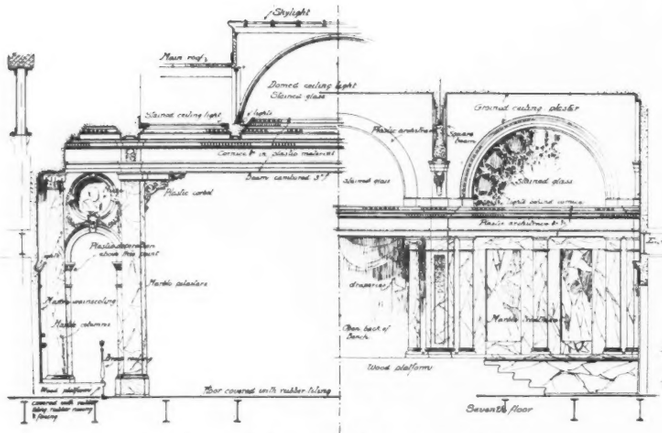
VIEW IN GALLERIES, STATE HISTORICAL SOCIETY LIBRARY, MADISON, WIS.

FERRY & CLAS, ARCHITECTS, MILWAUKEE, WIS.

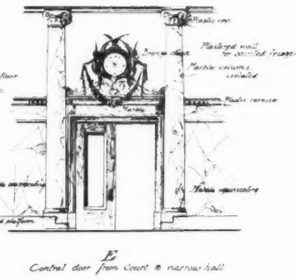


U. S. POST OFFICE . . . JOLIET, ILL.

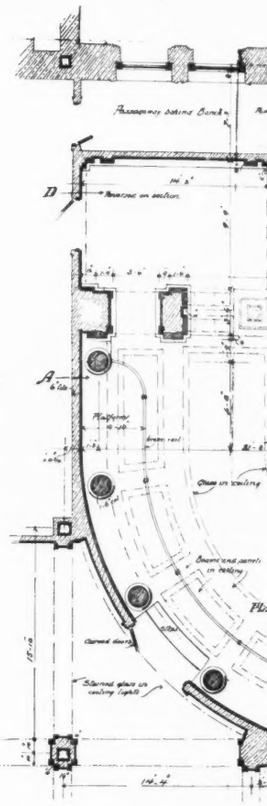
JAMES KNOX TAYLOR, SUPERVISING ARCHITECT

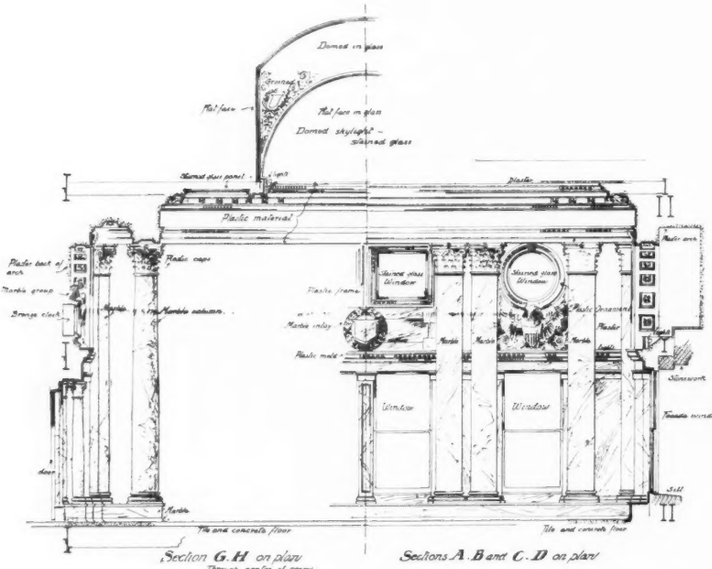


Section at A.B on plan | Section at C.D on plan



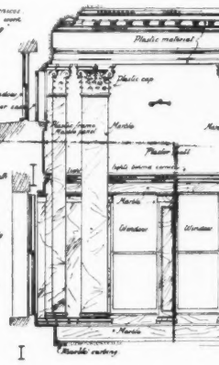
E
Central door from Court to narrow hall

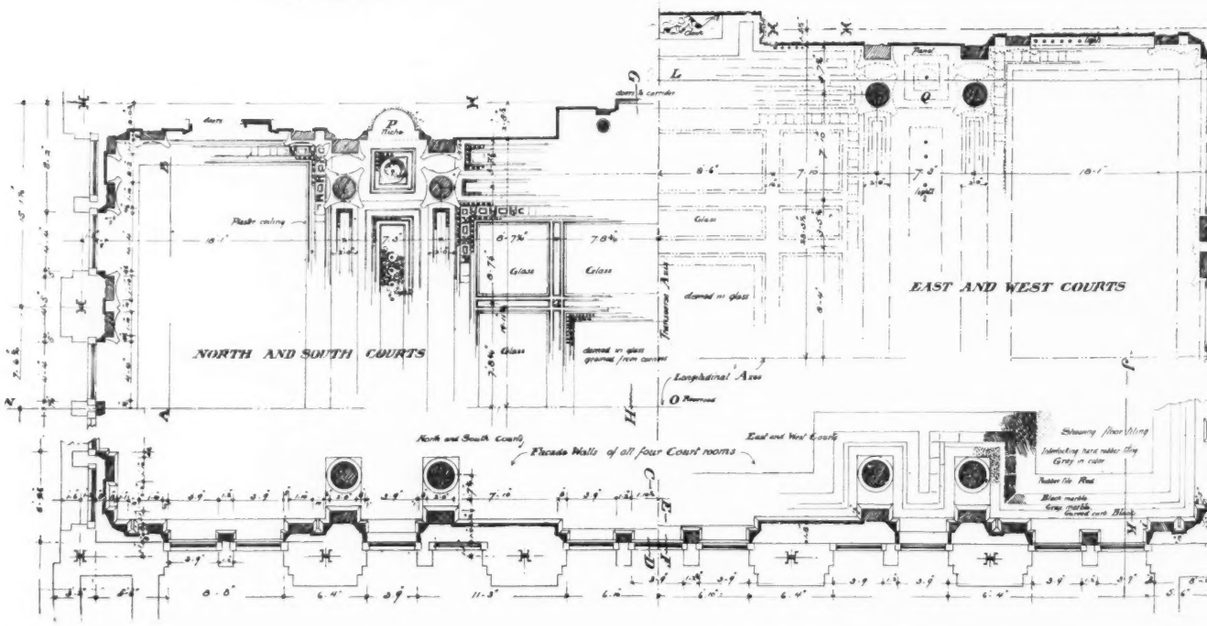




Section G.H on plan
Through centre of rotunda

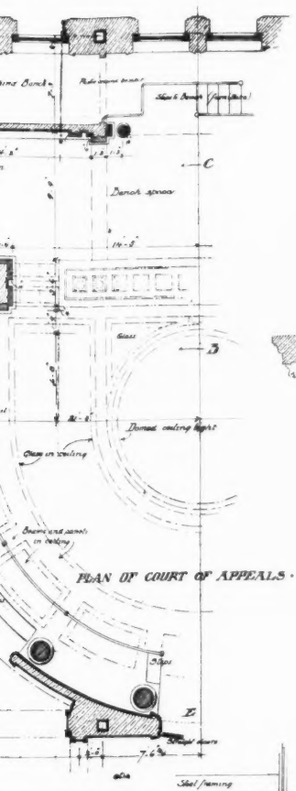
Sections A.B and C.D on plan





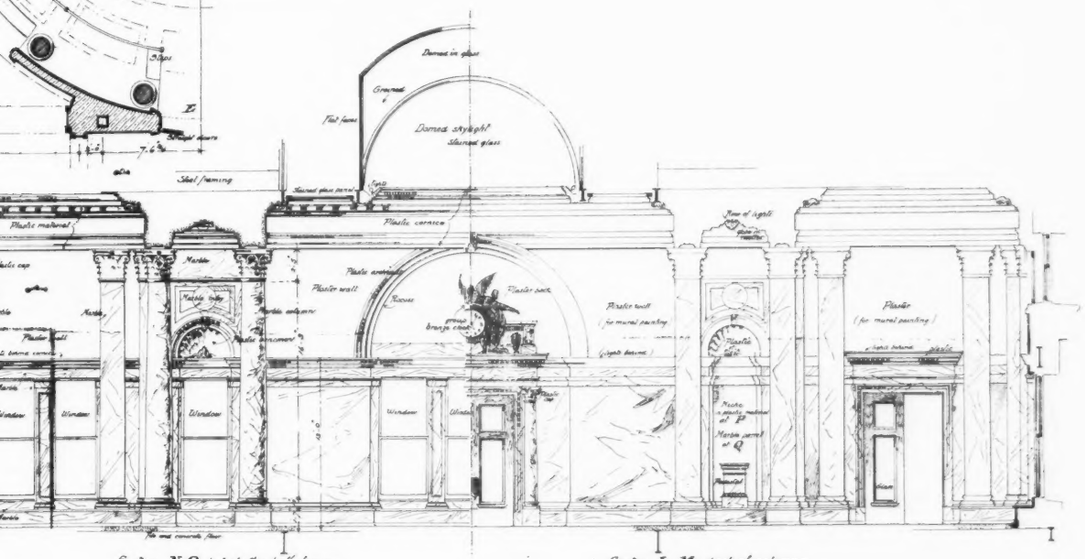
INTERIOR DETAILS, U. S. POSTOFFIC

HENRY IVES COBB,



PLAN OF COURT OF APPEALS · 7th FLOOR.

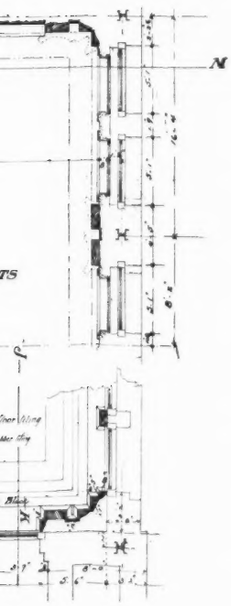
Section on line F G on plan

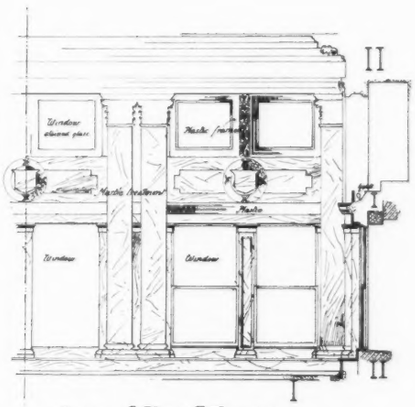


Section N O but of other half of room and looking toward facade.

Section L M back of columns

SIXTH STORY COURT ROOMS.
(U.S. CIRCUIT AND DISTRICT)





Sections J K and E F on plan

STOFFICE AND CUSTOMHOUSE, CHICAGO.
IVES COBB, ARCHITECT.

LIBRARY FOR STATE HISTORICAL SOCIETY, MADISON, WIS.

FERRY & CLAS, ARCHITECTS, MILWAUKEE, WIS.

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