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CONTENTS.

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Louisiana Purchase Exposition, St. Louis.

The St. Louis Exposition seems to be an assured fact. The preliminary steps have been taken and the herculean task of accomplishing the seemingly impossible in two years' time is begun. As usual, in the recent expositions, this one, too, will resolve itself into an architectural exhibit. One goes away from those things with a vague idea of numberless pictures, much machinery, miles of groceries, carriages and farm products; but the picture as a whole, the ensemble, the buildings, are no vague remembrances with him; he sees that picture in his mind's gallery time and again; it remains firmly impressed upon him; we repeat, expositions resolve themselves into architectural exhibits. What do we remember of the thousand and one wonders in the World's Fair exhibits; but who has forgotten or can ever forget that architectural dreamland, that lovely "White City" that has made us more famous the world over than all our inventions — than even our commercial supremacy? The commission of architects appointed consists of Isaac S. Taylor, Eames & Young, Barnett, Haynes & Barnett, Widman, Walsh & Boisselier and Theo. C. Link, all of St. Louis; Cass Gilbert, of New York and St. Paul; Carrère & Hastings, of New York; Van Brunt & Howe, of Kansas City; Walker & Kimball, of Omaha and Boston, and Daniel H. Burnham & Co., of Chicago. It is a strong commission and that the buildings will be artistic and impressive is a foregone conclusion. Everything points to success and these men have before them the results of the world's last three great expositions to guide them to that which is good to have and to warn them from that which it is good to avoid. They have opportunities their predecessors had not. They have as clear a field to work in as there was in Chicago, no buildings and permanent improvements to contend with as in Paris, and topography that lends itself to artistic manipulation that neither Chicago, Paris nor Buffalo enjoyed. The chosen location, Forest Park, is admirably situated; it adjoins a park that has been made beautiful by much outlay of money and time — its garden, as it were; it is sightly, high and dry, with variations of nearly a hundred feet, so that there are "hills and vales" as well as broad expanses of "veldt." There is a little river winding through it and a thick growth of fine old trees as well as shrubbery, covers the hill sides. An ideal spot and one where man need but help nature, not simulate it. Fifteen millions of dollars will be spent there. The buildings have not yet been portioned out, but Mr. Isaac S. Taylor has been made chairman of the commission as well as Director-General of Works, a most happy selection and a natural one. The success of the Chicago Exposition is largely, if not wholly, attributable to Daniel H. Burnham, its Director-General of Works; so does the success or failure of this one lie with Isaac S. Taylor. Fortunately his shoulders are broad enough to carry the load—in fact, the two men are not unlike, both large men, of commanding presence and forceful, indomitable, overpowering will, who carry all before them and *compel* success. Mr. Taylor is artistic, but has none of the what is generally termed "frills" of the artist; he is intensely practical, preëminently an executive, and has the physique to carry him through this ordeal he is entering upon.

THE ARCHITECT IN RELATION TO LIBRARY ARCHITECTURE.

BY NORMAND S. PATTON, ARCHITECT.

THE professional services rendered by an architect in the matters of design and plan may take on one of two forms: First, the architect may seek to give his clients what they want; second, he may persuade his clients to take what they ought to have.

In practice an architect's duty combines both of these and it is rarely the case that one condition alone prevails. The natural procedure for an architect in his negotiations with his client is to ascertain, first, the client's wishes and personal preferences; second, to acquaint himself by investigation with the requirements of the problem, so as to be in a position to give his client advice, and, lastly, to carry out his client's personal wishes as far as they prove to be for his best interest, but to advise a better method when such is the architect's judgment.

In doing this the architect will find that in one case his duty is clearly to yield to the preferences of the owner, and limit his services to putting into practical and artistic form the program laid out for him. In another case, however, the owner may have little knowledge of the subject, or his opinion may be in error, and the whole responsibility devolves upon the architect, of mastering the problem and submitting to his client the proper solution.

In the case of a private residence, the owner may be presumed to know his own mind, and if he is suited, the public has no interest. The architect may well allow his client even to be cranky to a reasonable degree with the house for which he is to pay, and in which he will live. If told to "put no sliding doors in my house," it will be politic to reply, "My dear sir, I can plan a most excellent house without them."

If the architect deals with a committee instead of an individual he will find a new responsibility in that he must harmonize the divergent views of the members. Again, the members of a building committee, who are not spending their own money, often do not give as much study to the details of a building problem as an individual owner, and the architect must not presume upon the accuracy of the information from the committee, but needs to pursue his own investigation and form his independent judgment.

The architect who plans a public library will usually deal with a committee, and he will find that he has not only the increased responsibility due to this circumstance, but that the responsibility is greater than in most classes of building.

For the purpose of illustration, the planning of a library may be compared with the more familiar problem of the schoolhouse. In some localities the public library is in charge of the school board, and it would seem at first sight that there should be no difference between the school and library problems, as far as the personal relation between architect and committee is concerned; but the writer, having had occasion to plan a public library and a school building for the same board of education, has learned that the two problems are quite dissimilar.

The library involves greater responsibility on the part of the architect than the school, because it is a new problem as compared with an old; there are few examples for study as compared with many; the ideas of library management are in a state of transition, as compared with more fixed school traditions; and lastly, there is usually no local expert. All these differences are comparative. The evolution of the American schoolhouse has by no means reached its final stage, and yet the architect is dealing with a long-established system; there are many good examples of school buildings, and if the members of the school board are not familiar with the practical details of school planning, there is usually the principal, or superintendent, or county superintendent, with whom the architect can confer.

The library, truly, is an old institution, but the popular public library is of very recent growth. There are few library buildings, good or bad, from which architects may take suggestions, and librarians make bitter complaint that most of the buildings are bad. It has too often happened that libraries have been planned to perpetuate the generosity of the donor and the artistic skill of the architect, with little thought of the use to which the building is to be put.

The librarians of the country, in convention and out of it, have for the last fifteen years been crying out against the architect who could not or would not plan a library on a rational scheme. These appeals of the librarians have not been in vain; for now there may be found a reasonable number of libraries that have been planned from the librarian's standpoint.

Now, I think I hear some one say, "It is only necessary to find out from a librarian which these buildings are, and then copy them." Not so fast, my friend! These librarians are the most industrious set of educated mortals that ever conspired to perpetuate new ideas upon a confiding public. They have been saying to the architect, "Why do you pile up the books, tier above tier, in those galleries and alcoves, so pretty to look at, but so killing to us librarians, who must climb up and get the books? Now please put the books all on one level, so that we won't have to climb stairs." What gallant architect could resist such an appeal, the librarian being a lady? But when he has duly mastered the scheme, and starts to get library No. 2, exhibiting his plan of No. 1 as a perfect and practical arrangement, he is told, "Oh! that plan is out of date; don't you know that we want 'open shelves' in our library?" Then the architect's pride suffers as he asks, "What are open shelves?"

If an architect calls upon a library board expecting to be informed exactly as to their program, he is likely to meet with a surprise, when, instead of being given information, he is met with questions: "What do you think of the idea of open shelves?" "Are most libraries adopting this scheme?" "What do you think of having a lecture room in the library?" "Where would you put it?" "Is it best to let clubs into the library building?" "If we let the Art Club have a room, where can we draw the line, and keep out other clubs?" "What salary would we have to pay for a trained librarian?" "For how many books do you think we ought to provide?" "What is the idea of putting shelves in the children's room?" etc., as long as the architect has an idea that he is able or willing to give forth.

"But why," you say, "should these questions be asked of the architect? Can not the librarian give this information to the committee?" No; because often there is no librarian. Some benevolent gentleman, whose name most likely is Carnegie, has made an offer of a library building to a town, which has no public library and has no librarian, or, if there be a library, it is a small affair, and the librarian has had no occasion to investigate the arrangements of recent fully equipped buildings.

The library architecture of the future will be what the librarians and architects working together make it, but the fact that the architect must work in many cases without the help of a trained local librarian makes it necessary that he become an expert in every detail of library arrangement and equipment. The successful library architect must know the idea, not of one librarian alone, but must gather up the ideas of the library profession and be prepared to meet each special case from his own well-digested opinions.

In short, the library architect has an urgent need of making himself what every architect must be to a certain extent — a specialist.

PUBLIC LIBRARY BUILDINGS.*

DURING the past winter several articles have appeared in the newspapers of Bangor about the location of the proposed new building for the public library of this city. Such have shown a measure of high interest on the part of our people in a subject of much importance to the future welfare of the city, and as such deserve only the heartiest commendation.

But of far greater importance than the location of a library building is the plan of the building itself, and its adaptability to the uses for which it is designed. It does not matter in the least whether the library building is a few rods further to one side or the other or upon this lot or that — but it does matter that the building when erected shall be complete, satisfactory, well arranged for its splendid uses and such as will not need alteration or enlargement for half a century. Wheresoever it is located it will accommodate the people of Bangor as well as most libraries of the larger cities accommodate those who use them; but once built wrongly, not well planned, not sufficiently large for its future growth and increase in all lines, not so arranged internally as to be well administered for the ease of the library force and the satisfaction of those who use it, the building will forever be a disappointment.

Within the past fifteen years there has been a great change and a great advance in the matter of public library architecture and public library administration. Library architecture has become a special study with designers and builders; library administration

* Facts and fancies collected by a "Library Student" and published in the Bangor *Commercial* as comments on "Library Buildings Should be Built from the Inside Outwardly — Librarians' Buildings and Architects' Buildings."

has almost become a science—it has at least become a distinct profession, as much so as that of teaching or of journalism, which are coming to be regarded as among the learned professions — and for which a special and peculiar training is as necessary as for the law or engineering. And during the past eight or ten years there has also been a still more noticeable evolution toward perfection in library building — that is to say, towns and individuals are now erecting more librarians' buildings and less of architects' buildings. Formerly in the erection of public libraries it was the architect who did a big job for himself — left his monument in an imposing pile of granite and brick, while the interior of the building was a secondary consideration. No matter about interior adaptability and advantage so long as the architect had his way in the design of the exterior, and the governing board — who knew as little of library administration probably as did the architect — accepted his design.

An instance of the absurdity of architects' buildings for public libraries instead of librarians' buildings may be mentioned. Several years ago a handsome building, from the architect's standpoint, was erected in one of the central Maine cities for a public library. The windows giving light to the stack room did not accommodate the stacks. When the stacks were put in place it was found that the windows came opposite the ends of the stacks instead of opposite the alleys between the stacks, as they should. This may be regarded as a matter of small importance, but in the practical administration of the library it was a matter of great importance. It was the question between light in the alleys to assist in finding the book desired, or dark alleys for which a greater amount of artificial light had to be furnished. In this case the architect built from without in — he should have built from within out. In many other details it has been found that architects' buildings when in actual use for the housing of large collections of books, have been deficient in convenient interior arrangements which could have been avoided had the architect consulted with any well-informed librarian previous to making his plans. It has been found also that for almost every city or town a different library building is required. The same general plan may appear feasible but there will always be special local conditions for meeting which the architect planning the building should be well informed.

Take the city of Bangor, and its future. It is not a large city now, nor will it be a large city for half a century to come. Probably not within that time will the population, the public taste or the public liberality demand or provide for a library building, an art gallery, a historical building or a natural history museum. Yet all of these are subjects in each of which a considerable number of very intelligent and respectable citizens are interested. Why should they not all be represented and have a certain degree of embodiment in a public building? All are corelated branches of learning which a library is designed to foster and be the headquarters of the accumulation of books and objects of art and of history. Should not a library building for the city of Bangor also be a building about which art and natural history and general literary culture may center? Should it not be to the people their one university and storehouse of information; the receptacle for whatever of book, or picture, or print; of map, or old document, or natural history specimen that can in any way contribute to or aid human knowledge, art, general information or local history? While there is no likelihood that each one of these studies can ever have a separate storehouse or home of its own in our city, is there anything inconsistent in having them all center in a public library building?

The tendency of library architecture during the past few years has been to put less money into buildings, and more into endowment or vested funds for the purchase of books. This has led to the building of plainer, less imposing, less elaborate structures. In general the plainer a library building can be, consistent with a certain degree of harmony and mild effect outwardly, the more satisfactory. The relation of building to a particular lot or location, about which architects haggle, or surroundings, is of secondary consideration. It is desirable that a library have a location that shall be quiet and free from the noise of streets or business marts and it should also command an abundance of light from all quarters, but beyond these conditions there are few that weigh in a decision of location.

It is a somewhat unusual proceeding for a board of library management to accept a design and plan for a building involving an expense so considerable as $150,000 without a competitive award and a conference of all persons interested in library administration. Some years ago when a library building was to be erected in another Maine city sixteen architects presented plans and the entire lot was open to public inspection and examination for several days before the award was made. Yet in this city a plan has been accepted and paid for, which embraces an imposing building for a particular lot, and to what extent the interior plan is susceptible of changes or modification is not known. The one person to be most consulted in the making of a plan for a library building is the librarian, and he must, indeed, be but illy fitted for his business if he can not give to any architect scores of the most valuable points in the interior arrangement of a library building. Yet how often plans for such buildings are accepted and the buildings erected without any consultation between architect and librarian as to how its interior shall be arranged.

One of the main provisions in library buildings that have been erected within the past few years is a children's room, while buildings that have been used for many years have been changed in such way as to provide a children's room. This has been notable in many of the public libraries of Massachusetts, especially in those at Brookline and Worcester. Children's rooms have been set apart in the public libraries of Boston, San Francisco, Cleveland, Minneapolis, Milwaukee, Buffalo, St. Louis, Somerville, and in other libraries all over the country. Minneapolis has a children's room having a library of 12,000 — the largest collection of any children's room in the world. Boston and Buffalo each have libraries of 7,000 in their children's rooms. Milwaukee has a splendid children's room in its public library, with 8,000 books free for them to use, on the walls pictures and plaster casts, in which room two hundred children read books and magazines daily, while on a single winter day 1,200 books have been drawn for home reading. In Buffalo the circulation of books from the children's room averages 425, while in Denver it is 300 books a day. Nothing in connection with the administration of libraries has engaged more attention or given greater satisfaction than the setting apart of special rooms for children, which are provided with a special reference library and a collection of the best books of the best literature adapted for children of different ages. The city which builds a library building without a large children's room is far behind the best spirit of the new library movement of the present day. Charles Stuart Pratt believes in the abolishment of the age limit in every public library and in making the children's room a place where all children may become acquainted with the best literature. Herbert Putnam, librarian of the Congressional library, in a thoughtful article in *The International Monthly* for January says:

"With the modern public library came the opportunity for the library to serve the young, and it has been utilized. The children's department has been developed by coöperation with that other institution where the children are subject to organization and control, the public schools. Books for supplementary reading, books for research and theme work, books for recreation and pictures for all these — a very profusion of incitement and opportunity. With it also a hospitality which the child had little reason to expect in the formal library of the olden time — sympathy, friendliness, interest, good cheer. The library assistant who is to greet him now 'must be clean, cheerful and not use too long words.' She must also have the dramatic instinct, for not merely the child's wonder and his pleasure, but his interest, must be excited. The library is to be made welcome to him and also comprehensible. In other words, the library is to undertake with him the service of true instruction; the service, in a way, of the school, but without formality."

John Cotton Dana, librarian of the Springfield public library, argues for the children's room and says: "Let all of them come, even to the very youngest, for no one has discovered that good books hurt children, and children who hurt books are few and easily cured."

In a recent lecture before the library school of the Pratt Institute, Brooklyn, New York, Mr. William R. Eastman, inspector of libraries for the State of New York, said the most desirable type of a library building was one built with a central entrance, wings on either side for reading room and children's room, a central delivery desk and a semi-circular bookroom in the rear with radiating cases, all of which could clearly be seen from the desk at the center.

The late Justin Winsor, who was for a long time librarian of the Boston Public Library, and later librarian of Harvard University, said the ideal library would be, to his mind, an almost exact reproduction of the Boston and Providence railroad station at the foot of the Common, in Boston. Those who recall this building will remember the front elevation where offices of administration were located, and the long, low rear extension which served as a stack room, well adapted for indefinite extension with no cost of tearing down and enlarging — only to open the rear and build the extension when more stack room was needed.

Notwithstanding the fact that a plan for the Bangor Public Library building has been accepted — which must be regarded a very unfortunate affair — I venture to submit to the people of Bangor a suggestion for a plan for a public library. It has been evolved after a long study of library buildings and library economy, and possesses more advantages than almost any other plan for a moderately sized library I have ever seen. It has the advantage of being all on one floor, having abundant light and all rooms of the building really radiating from a given center. It is not drawn to a scale, and will be readily understood by the lettering on the plan and the following references: A, librarian's room; B, directors' room; C, delivery room; D and E, rooms for private study or special collections. Build outwardly from this plan, put over it such a sensible, inexpensive shell as the managers may decide upon, and you have pretty nearly the ideal library. The art room can be so built as to be lighted from above; and the sizes of the rooms may be modified at pleasure.

In order to give an idea of the plain, simple architecture of the best type of the modern public library, there is given in connection with this article a reproduction of the Converse Memorial Library, of Malden, Massachusetts. Modify this to the accompanying ground plan and you get very near the ideal public library.

THE State of Connecticut has authorized the establishment of a technical school at Bridgeport, where architecture, free-hand and mechanical drawing will be taught.

MYSTICISM AND ARCHITECTURE.*

BY CLAUDE FAYETTE BRAGDON.

MAETERLINCK affirms that there are certain periods in the world's history when the soul, in obedience to unknown laws, rises to the very surface of humanity, and in countless ways gives evidence of its existence and its power; that ancient Egypt passed through one of these spiritual epochs, and France, during the two mystic centuries of the Middle Ages; moreover, signs are not lacking that we stand now upon the threshold of such another.

If it be true that the soul of the world is about to animate the materialism of modern life, it will create for itself a new language of power and beauty, and architecture will again become a living art, for architecture deals in visible symbols, and visible symbols form the very language of mysticism. The mystic imagination uses nature only as an alphabet with which to spell spiritual meanings; it creates such forms of wonder, mystery and beauty as are sculptured on the walls of Egyptian temples; it assembles the stones of a cathedral according to laws as organic as those which determine the courses of the stars. When the mystic spirit departs from a people, the forms of its creating survive by reason of their beauty, but they are meaninglessly employed. In like manner we today use or misuse the architectural language of ages past, and until the mighty leaven of mysticism works in us we must inevitably continue to misuse it. What aspects our architecture will assume, under the impulse of the mystical spirit, whether existing forms will be reanimated, or new ones evolved, it is impossible to predict, but the laws of beauty to which that architecture must inevitably conform may be known perfectly, for these are inherent in the nature of human intelligence, the same in all styles and at all periods.

The man who would participate in this new movement toward a more sincere architecture should not only educate his eye to a sensitiveness to beauty, but he should also make his soul hospitable to truth. First, let him study nature, for in nature the simple yet subtle laws by which all have their being, by which they wax and wane, are written large in time and space. Secondly, let him study the human figure, the microcosm, wherein these same laws are condensed and focalized. Thirdly, let him study number and geometry, for in these the beautiful necessity reveals itself to the consciousness through the mediumship of the mind and the imagination; and finally, music, for music, as Schopenhauer points out, is the very utterance, in terms of beauty, of that undying will to live which is behind all natural phenomena.

I. Nature. The laws of Nature are the laws equally of art, for art is, as Balzac says, "idealized creation"—nature carried to a higher power by its passage through a human consciousness. Nature's first law is that of unity, but this unity is seen to be twofold, threefold, manifold. "Balance-loving nature makes all things in pairs." In the language of oriental mysticism, "Brahma, that the world might be born, fell asunder into man and wife." Two sexes, two contending activities, are evident in every form of life, though they are but different aspects of one force. Of the two activities the world is full of symbols. They are typified in sun and moon, in fire and water, man and woman, night and day. They are the In and Yo of Japanese painting; all music may be resolved into two chords, the dominant seventh and the tonic, one of longing and striving, and the other of rest and fulfillment. All architecture, similarly, is support and weight; the vertical member which resists the force of gravity and the horizontal member which succumbs to it. A close inter-relation is seen to subsist between the corresponding members of such pairs of opposites, since they are all only symbols and semblances of the same unknown reality which forever hides itself behind phenomena. Wherever the two occur they exhibit certain constant characteristics which distinguish one from the other, those pertaining to the masculine being motion, force, activity; all things which are hard, straight, vertical; and the feminine, passivity, quiescence, supine resistance to motion.

The beauty of an architectural form depends not only upon the perfection with which it expresses its peculiar nature and function, but also on the perfection with which it expresses this universal nature as well. It is easy to show in what manner many admirable architectural forms have been developed simply through necessity, and that every increase in their fitness marked a corresponding increase in their beauty, but there remain many others which can not be accounted for in this way. The secret of their survival and of their undying charm lies in the perfection with which they portray masculine and feminine characteristics. Indeed, in rendering them thus sexually expressive, the construction itself is sometimes weakened or falsified. Take, for example, the familiar Classic console of modillion. Although in general contour it is well adapted to its function as a supporting bracket embedded in, and projecting from a wall, yet the scroll-like ornament with which its sides are embellished gives it the appearance of not entering the wall at all but of being stuck against it in some miraculous manner. This defect in functional expressiveness is compensated for by the perfection with which masculine and feminine characteristics are contrasted in the exquisite double spiral opposed to the simple straight lines of the molding which it subtends. By fluting the shaft of a column its area of cross-section is diminished, yet it looks stronger, because its masculine character as a supporting member is emphasized. The volutes of a Corinthian cap seem scarcely adequate to support the angles of the abacus, yet this form satisfies and delights because it obeys a higher law of beauty than any of which the mind is conscious. This law of sex-expressiveness is of such universality that it can be taken as a basis for the analysis of any architectural ornament whatsoever. It is more than mere contrast. The familiar egg and tongue motif which has persisted through so many centuries and outlived so many styles, exhibits an alternation of masculine and feminine forms even phallic in its significance. The two are well suggested in the alternate metropes and triglyphs of a Doric frieze, and in the torches and festoons of the architecture of the first empire, in the banded torus and in countless other familiar ornaments.

In nature each sex is constantly in process of becoming the other, and this alternation engenders and is accomplished by means of a third term or neuter, which is neither masculine nor feminine, but partakes of the nature of both, just as a child combines the physical characteristics of both of its parents. Earth is the child of fire and water; between day and night comes twilight; in music, besides the chord of longing and striving and the chord of calmness and fulfillment, there is a third, or resolving chord, in which the two are reconciled. In architecture, the arch, which is both weight and support, which is neither vertical nor horizontal, may be considered the neuter of which the column and the entablature are respectively masculine and feminine. The application of column and entablature to an arch and impost construction, familiar in Roman and Renaissance architecture, is a redundancy, and finds no justification in the reason, yet the sense of beauty is satisfied because the arch furnishes a transition between the vertical column and the horizontal entablature and completes the trinity of father, mother and child. Three is preëminently the number of architecture, because it is the number of space, which is three dimensional, and architecture is of all the arts most concerned in expressing spatial relations. Nearly every important architectural composition is discovered to be at least threefold. The twin pylons of an Egyptian temple, with the entrance between, have their prototype in the twin towers of a gothic cathedral and the intervening screen wall of the nave. The orders are divided threefold into stylobate, column and entablature, and each is again subdivided, the first into plinth, die and cap, the second into base, shaft and capital, and the third into architrave, frieze and cornice. There is a natural and instinctive effort on the part of a designer to divide his composition into three related parts.

In nature every part of a thing echoes, or repeats in a modified form, the whole to which it belongs. "As is the small, so is the great." The leaf is a little tree, the blossom a modified leaf, every vertebrate is a system of spines. In painting, this law is exemplified in the recurrence of certain lines and colors in different parts of the same picture, so arranged as to enhance the effect of the main composition; in music, in the return of the tonic to itself in the octave and its partial return in the third and fifth; also, in a more extended sense, in the repetition of a theme in the major and in the minor, now in the treble and again in the base, with modifications also of time and key. Such recurrences, such inner consonances, are common in architecture also. The channeled triglyphs of a Doric frieze echo the columns below. The balustrade which crowns a colonnade is a repetition, in some sort, of the colonnade itself. The modillions of a Corinthian cornice are altered and elaborated dentils, each pinnacle of a Gothic cathedral is a little tower with its spire. The same law is more obscurely present in the form of recurring numbers, identical geometrical foundation figures, parallel diagonals, and the like.

There is another natural law closely allied to the foregoing. It might be called the law of series—of harmonious relation. In music it is typified in the key, or chosen series of notes which may not be departed except through proper modulations. In painting it is tonality; in architecture, everything implied by the words style and scale—the adherence to one manner of construction and ornament throughout, and the just relation of every part to every other part and to the whole.

There is in nature a universal tendency toward refinement and compactness of form, or contrariwise, dispersion or distension in space, and accelleration or retardation in time, governed, in either case, by a known mathematical law, whose operation may be traced in the widening circles in still water when disturbed, in the diminishing spirals of a shell, in the branching of a tree and in the veinings of a leaf. It is seen in the diminishing sizes of the pipes of an organ and in the spacing of the frets of a guitar. There is no escape from this rhythmic diminution; it is in the very eye itself, for any series of mathematically equal units, such as, for example, the columns and intercolumnations of a colonnade, become, when viewed in perspective, rhythmically unequal. The entasis of a column is determined by this law, the spiral of the Ionic volute obeys it, the annulets of the Parthenon caps illustrate it. In recognition of this principle, a building is made to grow lighter and finer from the ground upward, an end attained by various devices; in the Riccardi palace by diminishing the rustication of the ashlar in successive stories, in the Farnese by successively reducing the sizes of the angle quoins of the first story. In an Egyptian pylon by simply battering the wall, and in a Gothic cathedral by means of a kind of segregation not unlike that of a tree, the strong plain base corresponding to the trunk, and the multitude of delicate pinnacles and crockets to the outermost twigs and branches.

These are only some of the more general and obvious principles of natural beauty. It would be absurd to contend that the prime object of a work of architecture is to obey and illustrate these laws. The prime object of a work of architecture is to fulfill

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certain definite conditions in a practical and an admirable way, and in fulfilling to express these conditions; but in compassing this, the architect who is also an artist (and every artist is an unconscious mystic), will instinctively work according to natural laws of beauty. He will "follow the rules without knowing them."

II. The Human Figure. Carlyle says, "There is but one temple in the world, and that is the body of man." If the body is, as he declares, a temple, it is not less true that a temple, or any work of architectural art, is a larger body which man has created for his uses, just as the individual self is housed within its stronghold of bones and flesh. Architectural beauty, like human beauty, depends upon the proper subordination of parts to the whole, a harmonious inter-relation between and adjustment of these parts, the expressiveness of each of its functions, and when such functions are many and diverse, their reconcilement, one with another. In the ideally perfect human form are exemplified all those principles of natural beauty dispersed throughout nature. Though essentially a unit, there is well-marked division into right and left, "Hands to hands, and feet to feet; in one body grooms and brides." There are two eyes, and two ears, the nose has two nostrils, the mouth two lips. There is, moreover, a threefold division into trunk, head and limbs; a superior triangle of head and arms, and an inferior triangle of trunk and legs. The limbs are divided into upper arm, forearm and hand; thigh, leg and foot. The hands flower out into fingers, the feet into toes, each with a threefold articulation, and in this way is effected the inevitable transition from unity to multiplicity, from simplicity to complexity, of which a tree is the universal symbol. The body is rich in those veiled repetitions, echoes, consonances, observed in nature and in art. The head and arms are in a sense a refinement upon the trunk and legs. There is a correspondence between their various parts. To the palm are attached four fingers and a thumb and to the trunk a head and four limbs. Each finger is a little arm; the lips are the lids of the mouth; the lids are the lips of the eyes. The law of rhythmic diminution is illustrated in the tapering of the entire body and of the limbs; in the graduated sizes of the fingers and toes, in the successively decreasing length of the palm and the jointed fingers, which thus describe, in closing, natural spirals.

While it is true that a Gothic cathedral is an evolution from a Roman basilica, it is also true that it became, in the hands of the mystic Masonic guilds of the Middle Ages, a great symbol of the body of man — the crucified body of Christ. Its main proportion was determined by the vescia piscis, which forms the aureole about the virgin and Christ in early paintings. The apse, with its radiating buttresses, corresponds to the head with its crown of thorns; the choir to the heart, the nave to the trunk, the right transept to the right arm, the left transept to the left arm, and the north and south towers to the right and left feet respectively. The north tower was the sacred male pillar, and the south tower the sacred female pillar. All this may seem to be only the meandering of a mystical imagination, which finds a symbol in everything, but it should be remembered that in the Middle Ages mysticism was the very habit of the thought of the age and that Gothic architecture was the expression of that habit of thought. Compare the two towers of Tours cathedral and an actual sex distinction will be discovered to subsist between them, extending to the minutest details. In Notre Dame, the north or masculine tower is perceptibly sturdier than the south or feminine, and there is an angular label-mold above the north entrance which serves to define it sexually as effectively as does the beard on a man's face.

The human figure has been variously analyzed with a view to establishing numerical ratios between its parts. Some of these are so simple and easily remembered that they have obtained a certain popular currency, such as that the length of the hand is equal to the length of the face; that the span of the arms is equal to the height, etc. Vitruvius, writing in the age of Augustus Cæsar, formulated the important proportions of the statues of classical antiquity, and except that the head is small, they may still be accepted as those to which the ideally proportioned figure should conform. The ratios which he established are musical ratios, made up of quantitively small numbers.

III. Geometry and Number. Nature everywhere geometrizes, in the fugitive and invisible patterns which sound weaves in the air, in the phenomenon of crystallization, where the exquisite skeleton of things is sketched for man's unheeding vision; in tree and flower forms, and in animal structure as well, though here more obscurely.

The human body is beautifully geometrical, being founded on the square, the circle and the equilateral triangle. If a man stand with heels together and arms outstretched horizontally in opposite directions, the distance spanned equals the height; that is, the body will be inscribed within a square. Also, the extended arms will form the base of an inverted equilateral triangle, whose apex touches the ground at the feet. If the arms be extended upward till they are level with the top of the head, and the legs separated so as to enclose an equilateral triangle, the hands and feet will touch the circumference of a circle whose center is the navel, the center of the body.

Architecture is of all the arts the most clearly and the most closely related to geometry; indeed, it may be said that architecture is geometry made visible, in the same sense that music is number made audible. Behind its obvious geometry, every truly great and beautiful building, from an Egyptian pyramid to a Gothic cathedral, is harmoniously proportioned, its various parts being determined sometimes plainly, more often obscurely, by simple, symmetrical figures of geometry, which, though invisible to the sight, and not consciously present in the mind of the beholder, yet perform the important function of coördinating the entire fabric into a single memorable impression.

The square, the circle and the equilateral triangle, taken singly, and variously combined, commonly form such an invisible geometrical frame for a work of architectural art, since they are the most elementary and symmetrical of plane figures. The great pyramids of Egypt had for their bases a square, and for their sides four very nearly equilateral triangles. Such a pyramid may be considered to be a universal architectural prototype, since the various plane figures which compose it, together with their developing arcs and circles, form a basis for all architectural forms whatsoever. It is analogous to that chord in music which embraces the important consonant intervals within the octave. The equilateral triangle particularly makes quite a special appeal to the eye, which seems to have for it a peculiar fondness, just as the ear has for certain related musical sounds. (The tonic, with its third and fifth, may be taken as the equilateral triangle of harmony.) It may be stated as a fact that whenever three important points in any architectural composition of whatever style approximately coincide with the three extremities of an equilateral triangle, it gives the impression of being in good proportion. This rule applies with equal force to the spacing of an Egyptian colonnade, the proportioning of an Ionic temple, a Roman triumphal arch or the façade of a Gothic cathedral. The entire system of Gothic window tracery is based upon the square, the circle, and the equilateral triangle. Viollet le Duc, in his "Discourses," and Gwilt, in his "Encyclopædia of Architecture," give many illustrations of the employment of these and other simple geometrical figures in determining architectural proportion, and still others can easily be discovered.

The fact that the eye rejects certain proportions as unpleasing and accepts others as satisfactory is an indication of the existence of certain governing laws, like those of harmony in music, which have their basis in number. The secret of the deep reasonableness of such selection by the senses lies hidden in the very nature of number itself, for number is the invisible thread on which the words are strung — the universe abstractly symbolized. Number is the within of all things. It is the measure of time and space; it lurks in the heart-beat and is blazoned upon the starred canopy of night. Substance, in a state of vibration, that is, conditioned by number, ceaselessly undergoes those myriad transmutations which produce all the phenomena of life, becoming in turn sound, heat, light and electricity. Elements separate and combine chemically according to numerical ratios. Everything is some number made manifest, for numbers are not less the symbols of things than things are the symbols of numbers. All thoughts, all emotions, all passions have their numerical coefficients, and it may be that music is potent in arousing emotion, because it stirs their corresponding numbers into sympathetic vibration. Number proceeds from unity to infinity and returns again to unity, as the soul, defined by Pythagoras as a self-moving number, proceeds from and returns to God. These two acts, one of projection and the other of recall, these forces, centrifugal and centripetal, are typified in the operations of addition and subtraction. Within them is embraced the whole of computation, but because every member, every aggregation of units, is also a new unit capable of being added or subtracted, there are also the operations of multiplication and division, which consist, in the one case, of the addition of several equal numbers together, and in the other, of the subtraction of several equal numbers from a greater, until that be exhausted.

The study of the properties of numbers is made easier by employing geometrical symbols, because in that way the eye is made to assist the mind. To state, for example, that 4 is the first square, and 8 the first cube, conveys only a vague idea to most persons, but if 4 be represented as a square enclosing four equal circles, and 8 as a cube containing eight equal spheres, the idea is apprehended immediately and without effort. The irregular and vital beauty of five appears in the heptalpha, or five-pointed star. The faultless symmetry of 6, its relation to 2 and 3, its equal division of the circle, are all shown in the familiar hexagram, or shield of David. Seven, when represented as a group of tangental circles, reveals its singular beauty and perfection. Seven is a return to unity; it represents the close of a numerical series just as ten does; and four also, for four is the least number in which the unit can be completed, in which a series can be closed. If the unit be represented by a square, it requires four of these to complete the original figure; if an equilateral triangle be employed, the result is the same; if a circle, the number is advanced to 7. This obscure and beautiful affinity discovered to subsist between the numbers 4 and 7, is not accidental and meaningless.

IV. Music. In one of its aspects, a work of architecture is a visible exposition of such numerical combinations and successions as go to make up the rhythm of our lives and of all life, just as music is an exposition of number through the medium of sound.

Walter Pater has said that all art constantly aspires toward the condition of music. This is perhaps because all art has its root in number, being, in its last analysis, only a system of harmoniously numerical ratios, and music is the direct sensuous expression of such ratios — number made audible. Because architecture is in space alone and music is in time alone, it is possible to translate one into the other after a fashion, by reason of the correspondence which exists between intervals of time and intervals of space. The laws of simple harmony in music and of proportion in architecture are identical. By translating the consonant tone intervals into number, the universal solvent of both arts, it is possible to give these a spatial, i. e., an architectural expression, and

such expression will be as pleasing to the eye as its correlative is to the ear, because it is not the special organ of sense which is gratified in either case, but the soul itself, in which all senses are one, and which alone, knowing the beautiful mystery of number, thrills responsive to every audible and visible expression of its inmost nature. Two distinguishing characteristics of the ratios which represent the principal consonant intervals within the octave are that they consist of quantitatively small numbers, being all within 10, and that they advance by the addition of 1 to both terms 1: 2, 2: 3, 3: 4, 4: 5, and 5: 6. According to W. Watkiss Lloyd, the scale of ratios which determine all the important proportions of the Parthenon, was similar in character, advancing by consecutive differences of 5, by the addition of 1 to both terms. Such ratios continually approach unity, or, if represented by parallelograms, arranged one within another in the order of their size, they tend always toward a square. From this may be deduced a general rule that if architectural ratios be simple and musical, that is, formed of significant, quantitatively small and properly contrasted number, it makes for beauty, and that they should be in some way related one to another, or should obey some law of simple numerical progression.

It is one of the functions of architecture to divide space rhythmically, just as music divides time into equal and regular beats, certain of which are accented. A colonnade, arcade or aqueduct, for example, in which the void is twice the width of the pier or column, corresponds to three-four time, with one of its beats accented and two unaccented.

Music and architecture are analogous in a larger sense than any of these, a sense that is felt rather than fathomed. Music voices the manner in which the soul of things, the will-to-live, moves in time, successively; architecture publishes the manner in which that same will-to-live manifests itself in space, and the two are discovered to be identical in essence. In nature, in number, in geometry, in music, also, there is but one law, a law infinitely simple, infinitely subtle, incommunicable, evanescent. It is what Emerson calls the beautiful necessity. Gentlemen, let us build altars to that beautiful necessity.

THE ENGINEER IN THE TWENTIETH CENTURY.*

BY VICTOR C. ALDERSON.
(Dean, Armour Institute of Technology.)

THE twentieth century will be preëminently the age of the engineer — the man of applied science. It will be permeated by the scientific spirit. Historically speaking, this scientific spirit has long been in the minds of men, but only within the small reach of the latter part of the nineteenth century has it filtered through to the masses, influenced their daily life, and become an important factor in the industrial world. To realize what inventiveness and ingenuity — the precursors of the scientific spirit — have done, note that in 1819 the cost of ruling one hundred reams of paper by hand was $400; the same work can be done now by machinery at a cost of 85 cents. The watch that in 1862 cost $65.41 made by hand, can now be made by machinery for $1.10. To print one hundred rolls of wall paper by hand would cost $42, but with the aid of machinery it would cost only 13 cents.

The next twenty-five years will show still more marvelous improvements, for the work of the engineer has just begun. Wherever new lands are to be opened, bridges built, railroads constructed, water or sewerage systems installed, there the civil engineer will be needed. Wherever in the broad field of industrial activity new machinery is to be devised, more economical power plants constructed, cheapened processes of manufacture invented, or new applications of electricity suggested, there the mechanical engineer, the chemical engineer, or the electrical engineer will find his special field of activity.

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It is pertinent to ask, then, what kind of a man will the twentieth-century engineer be? In the first place he will be a cultured man. "By culture I mean," said Charles Dudley Warner, "that fine product of opportunity and scholarship which is to mere knowledge what manners are to the gentleman." In the future this culture will not come from a study of the classics, but from a familiarity with the best literature in the modern languages. While the education of the engineer must come largely from the shop and the laboratory, yet no error can be greater than to suppose that he can divorce himself from books. Herein are the records of those experimenters who, perchance, have tried and failed; likewise the stories of successes; from both the engineer may learn much. Engineering literature in books, in the technical press, in the publications of technical colleges, and in the proceedings of engineering societies is growing apace. As neither the lawyer, the doctor, nor the minister can succeed without a well-selected library, so the engineer can not hope to succeed without the aid of the published records of the work which other members of his profession have accomplished.

The man who would pretend to succeed without the aid of books is the so-called practical man, the rule of thumb man. But he is rapidly passing away and his place is being taken by the technically trained man — the one who has learned from the shop, the laboratory, the book, the fundamental principles of science and their applications. The industrial ruler of the twentieth century will be the engineering specialist, who will add to sound general scholarship and broad scientific training highly specialized knowledge in some chosen field of work. He will be a practical idealist. He will be so trained that he can correctly use his constructive imagination, can reason accurately and clearly, and through printed records can make use of the work of his predecessors.

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In the realm of mathematics his training will be most rigid and exact. He will cut loose from the idealistic, academic mathematics, as the student of higher literature will cut loose from mere grammars. His mathematics must run down through his fingers, as it were. Mere juggling with symbols will be useless to him. He must regard his mathematics as one of his tools, as a means to an end, or as a language in which to express his thoughts. The future engineer may be successful if his training has included a greater or less amount of shop practice with perhaps indifferent laboratory instruction and a meager equipment, but no engineer can be broadly successful and thoroughly competent without a deep and exhaustive theoretical treatment of engineering subjects. This does away with the common opinion that literature and books are not essential to the engineer's success, for the next quarter of a century will see the engineering profession rise to the dignity of the older professions. It behooves the young engineer, then, to recognize this tendency and to do his part toward raising the standard of his chosen profession.

The relations which the engineer will bear to the great political and industrial changes are many and important. The coming era of industrial regeneration will be the result of a more accurate knowledge of science and a closer application of its principles; the engineer will be the missionary. The mechanic, the trained artisan and the technical man, not the farmer, will be the pioneer. The warfare of the future will be industrial and political, rather than military. Already we see the signs. The barbarous idea of depleting conquered lands or dependent colonies for the benefit of the conquering nation is yielding to the more civilized idea of internal improvements, with material advantage to both parties. Because Spain plundered her colonies and refused to advance with the age of science, she is no longer a factor in Western civilization. The world will become an industrial battlefield. The diplomat will become more and more a high-grade commercial agent; the military leader will be a preserver of law and order, rather than a destroyer of life and property; and the engineer will be their chief executive in adapting the forces of nature to the convenience of man. The great change in economic and industrial life of the twentieth century will be the work of the engineer.

* * *

The conditions which will beset the engineer of the twentieth century will be exacting beyond anything we now know. The importance of a strong foundation in scientific principles can not be overestimated, for scientific principles are only the laws of nature. These principles can not be learned readily after a man has begun his life work. His whole energy will then be devoted to applying these principles correctly, not in acquiring them laboriously. It will be a prime necessity for the technical college of the future to lay these foundations broad and deep. It will be regarded as a weakness for a college to teach its students only the knacks of the profession, only just enough to be an ordinary draftsman, a tolerable surveyor, or first-class linesman.

The technical graduate of the twentieth century will be marked by certain characteristics which are too rarely found in men trained in the colleges of literature and arts. Among these are directness of purpose, intellectual accuracy, and clear thinking. The student of science and technology is trained in the realm of realities, where to commit error, to act without purpose, or to think vaguely are seen at once to be fruitful of harm. Economic and industrial needs will bring education from the cloistered lecture-room into the open air of the laboratory. Technical education will have a practical, helpful bearing upon the problems of life. No longer will the seclusion of the scholar be a mark of honor. Education will be found at the bench, by the forge, in the shop, the laboratory, and the drafting-room, as well as in the library. The lesson to be taught will be how to apply scientific ideas to the solution of problems actually arising in the struggle to bring the forces of nature under the sway of man.

The tendency at the present time — one which will become more pronounced as the years go by — is toward a broader and more varied extension of the work of the engineer. Just as nature knows no such thing as classification — this being arbitrarily arranged by the intellect of man — so nature, in yielding to the efforts of man to subjugate her, draws no lines of demarcation between mechanical, electrical, civil, or chemical engineering. These are only division lines drawn to aid the young man in selecting the field in which he may make himself most proficient. But, when he enters upon his struggle, he may, and probably will, need a knowledge of each of these departments. Consequently the undergraduate work of the technical college of the future will be broad and diversified. Not until the years of post-graduate study, or during busy professional life, will the pursuit of a specialty be begun.

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As technical education develops, questions of far-reaching importance must be settled. Probably the most important will

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be the decision as to what kind of man shall guide the technical college. In law, medical and theological schools, the lawyer, the doctor and the minister, respectively, hold first place and have much to say, both in the actual training and in the management of the schools. Prominent members of the profession direct the destinies of the schools. To a much less extent do practicing engineers influence the technical schools.

This condition is due to the fact that engineering schools are at present less professional in character than either the law, the medical or the theological school. Most of them include cultural subjects in their curricula; they have been organized, in many places, in connection with state universities and have been subordinated to the general university plan. Frequently their development has been retarded by the conservative, if not baneful, influence of other departments. In only a few instances have the engineering colleges been granted the privilege of growing in fertile soil, adapting themselves to their own appropriate environment and producing such fruit as they were most capable of growing.

The engineering college represents that form of scientific education most suitable to the exacting demands of advancing civilization. The particular form of education which it gives through shop and laboratory practice, through practical tests, through acquaintance with the needs of industry, must not and will not be retarded by the classic heirlooms of the literary college. The engineering college must fill its own niche and work out its own salvation. Technical education is an educational and not an engineering problem.

The technical college in which the future engineer is to be trained has several important characteristics to maintain. First, to educate scientifically and technically those who shall lead the march of the coming civilization in industrial lines; second, to educate the public to a true sense of the value of applying scientific principles to industrial processes; third, as the university has for one of its functions the extension of human knowledge in any and all lines, so the technical colleges will recognize that the investigation of questions relating to applied science is within its own sphere of usefulness. Probably no investigation today would be more fruitful of good results to the engineering profession and to the public at large than the systematic study and thorough test of materials of construction. Such an investigation done on a large scale, on specimens of full building size, in a scientific manner, would save millions of dollars and put the science of construction on a scientific and economic basis. While the university asks no questions about the usefulness of the information gathered within its walls, the technical college must make its investigations in fields that are distinctly useful.

The most significant tendency which an observer of educational progress sees today is that of specialization. The time is fast approaching when it will be recognized that merely a general education, whether on classical or scientific lines, is not alone a suitable preparation for life. Not that culture is less desirable than formerly, rather it is more desirable; but above this general substructure must be placed a technical education which will give that special application to some calling which the coming age will demand. Colleges which devote their attention solely to general cultural training will become of less importance. The institutions now known by various titles as technical colleges, institutes of technology, and polytechnic institutes, are the colleges of the twentieth century which will do most for their students, which will be in closest touch with the needs of civilization, which will provide at once the most cultural, the most rational, and the most scientific instruction. These institutions, by whatsoever name designated, will be the important colleges of the future, because they will give that perfect unity of thought and action, that harmony of theory and practice, which the educational needs of the future demand.

CORRESPONDENCE REGARDING GOVERNMENT COMPETITIONS.

THE following correspondence of recent date between the Secretary of the Treasury regarding improvements in the president of the American Institute of Architects and the adminstration of the provisions of the "Tarsney Act." indicates that the president is alive to the necessary improving feature and that the Secretary of the Treasury is thoroughly in accord with the spirit of the suggestions:

BOSTON, May 1, 1901.

To the Honorable Lyman J. Gage, Secretary of the Treasury, Washington, D. C.:

DEAR SIR,—As a result of your wise enforcement of the provisions of the Tarsney bill, the buildings of the United States Government promise soon to set the standard for buildings of their class in this country. The buildings themselves and the methods by which they are produced become, therefore, a constant subject of discussion in our profession, and suggestions in regard to them not infrequently come to me in my official capacity. It has seemed to me that perhaps I should offer for your consideration some of these suggestions about which all seem agreed, and the kindness with which you have received various communications from our officers and committees in the past encourages me to think that you will not object to my laying these before you as possible changes in the administration of the Tarsney bill, which would, perhaps, render it more effective.

It seems to be largely agreed that an early appointment of the jury in each case, and giving to them more influence in framing the program and in approving the competitors, would do more at this time to help the cause than any other step. If the appointment of the jury is made the first step in organizing a competition, the jury would early become acquainted with the problem, instead of having to master it in a few hours or days at the time of the judgment. A jury thus early appointed might review the program arranged by the Department. As they are less likely to be hampered or influenced by old established methods, a program subject to their supervision might be productive of more original results.

It would be also possible for a jury thus early appointed to pass on a list of competitors proposed by the Department, approving of them as fitted by experience and general reputation for such Government employment as is demanded by the competition. It is difficult to say how this could apply to the nominations made on political suggestion, if that system must continue, though it might offer a solution of the difficulties presented by such nominations, but it could certainly be applied to the other candidates and would relieve the Department of an undesirable duty.

The impression prevails that for an architect to be invited to a Government competition he must make a direct request for an invitation. If any such process is necessary, it obviously bars out many desirable people whose self-respect forbids this action. It may safely be taken for granted that almost any architect in the country who is fitted for it, would like to join in a Government competition. The interest would be greatly increased if the invitation to do so carried with it a certain distinction, and this in some measure would be obtained if the jury passed on the Department nominations. It would seem best, however, for the nominations to come, as now, from the Department, as they are informed in regard to the desirable men who have had opportunities to gain Government employment and as to who will shortly be given such opportunities, and it is desirable that the circle of competitors be as large as is consistent with obtaining work of the highest class for the Government.

At present the jury meet and examine the competitive drawings in Washington. It easily may happen that no juror has seen the site under consideration. He may know little or nothing of the surrounding city. Might it not be better for the jury's decision to be made where the building is to be built, so that judgment will be made on a specific problem and not on an abstract one?

There seems to be at present a definite obstacle in the way of giving a fee to the competing architects, but probably there is none to prevent compensation for the jury. Each competition now involves the gratuitous service of several high-class men for several days. The total of this is considerable. As a fact, the jurors are always cordially ready to serve because they want to help the cause, but there seems to be no reason why the United States Government should accept this indefinitely, even though it is willingly accorded.

The present contract made between the Government and an architect does not cover the payment of traveling expenses. So long as competitors are nominated from the locality where a building is to be placed, this is not a matter of moment. In some cases it has happened, and in many cases it may necessarily occur, that the architect lives far from the work entrusted to him. It is not in general wise to place obstacles in the way of frequent visits by an architect to his building. Whenever an architect is selected whose visits involve serious travel, it would be well to change the contract so that traveling expenses would be included.

It would seem as if a good training for Government work might be obtained by a wider circle of architects than is invited to the great competitions, perhaps including younger and less experienced men if some of the many smaller Government buildings were offered in competition as has been done with those of great importance. If the provisions of the Tarsney act could be extended to some of these buildings, I believe the Government would gain good results, and possibly greater variety and more local character in the buildings than if all this work were done in the Government office.

What I have said in this letter is entirely approved of by Mr. George B. Post, the chairman of our Committee on Government Architecture. I trust you will forgive my taking so much of your time and will appreciate that I have written only from the strongest wish that the good work in which you have engaged may be brought to the very best issue.

I remain, with great respect, yours very truly,

ROBERT S. PEABODY,
President American Institute of Architects.

TREASURY DEPARTMENT.—OFFICE OF THE SECRETARY,
WASHINGTON, May 10, 1901.

Mr. Robert S. Peabody, President American Institute of Architects:

SIR,—The Department has given careful attention to your letter of the 1st instant, receipt of which was duly acknowledged, in which you make certain suggestions in regard to methods of conducting competitions under the act, approved February 20, 1893 (Tarsney act), and reply is now made as follows, taking up the several points in the order in which they are discussed in your letter.

The Department does not object to the early appointment of the commission in each case, and will supply the members with copies of the program that they may have opportunity to submit their suggestions thereon before they are finally completed and sent to the competitors.

The members of the commission will also be requested to submit to the Department names of architects to whom it will be, in their opinion, advantageous to extend an invitation to enter the competition.

The Department will also make trial of the suggestion that the commission shall assemble and canvass the competitive drawings in the city where the building is to be erected.

The proposition that the members of the commission should receive compensation for their services is also favorably considered, but a definite decision on this point, and as to the amount of the fee, must be reserved for a further study of the Statutes and Regulations.

As to the suggestion that travel expenses for visits to the building should be allowed the successful architect, in addition to the fee of five per cent, that proposition does not receive the approval of the Department.

The Department has never decided to withhold the smaller buildings wholly from competition, but must continue, as in the past, to consider and decide each case according to its conditions, as relate to remoteness of locality, limit of appropriation and other attending difficulties affecting the probability of securing satisfactory results by the competitive method.

Respectfully, L. J. GAGE, *Secretary.*

PAINTS IN ARCHITECTURE.

A QUESTION THAT CAN BE ANSWERED.

SELF interest, in one form or another, dominates most human actions, and it is not remarkable, in view of this fact, that every one who has anything to sell should proclaim it to be the "best." It is perfectly natural that the manufacturer of paint, for example, should laud his particular product above all competing products; but it is quite as natural that he, whose interests lie in securing the "best," should closely scrutinize all *ex parte* claims.

This obvious proposition is here laid down to account for the widespread prejudice that exists among a certain class of artisans against combination paints. The prejudice is partly a traditional inheritance from the time when there was no good paint except pure white lead, and partly it is a carefully fostered result of misinformation.

Whether combinations containing a large proportion of zinc white are superior or inferior to "straight" paints or not is easily determinable by specifying the two to be used side by side on the same building, and it is to the interest of architects as well as consumers to have the question settled beyond question. Architects in their more or less complete control of specifications are in a better position than any other class to settle the matter and keep it settled.

CHARLES JOURDAIN.

OUR ILLUSTRATIONS.

Residence, Denver, Colorado. W. E. Fisher, architect.
Residence, Denver, Colorado. Varian & Sterner, architects.
Carnegie Library, Dallas, Texas. M. R. Sanguinet, architect.
Flat Building for A. C. Clas, Milwaukee. Ferry & Clas, architects.
Carnegie Library, Oklahoma City. M. R. Sanguinet, architect, Fort Worth, Texas.
Public Library, Jacksonville, Illinois. Patton & Miller, architects. Bedford stone, tile roof; cost, $40,000.
Portland Public Library, Portland, Indiana. Patton & Miller, architects. Vitrified brick, Bedford stone, tile roof; cost, $15,000.
Streator Public Library, Streator, Illinois. Patton & Miller, architects. Vitrified brick, Bedford stone, terra-cotta; cost, $35,000.
The Carnegie Library, Freeport, Illinois. Patton & Miller, architects. Vitrified brick, Bedford stone, terra-cotta; cost, $30,000.
Competitive design for U. S. Postoffice, Customhouse and Courthouse, Cleveland, Ohio. Totten & Rogers, architects, Washington, D. C.
The Washington School, Evanston, Illinois. Paton, Fisher & Miller, architects. Bedford stone basement, buff Roman pressed brick, terra-cotta, tile roof; cost, $37,000.
Correction: Residence in Denver in July number credited to W. E. Fisher, architect, is the work of Architects Marean & Norton.
Photogravure Plate: Library, Newark, New Jersey. Rankin & Kellogg, architects, Philadelphia, Pennsylvania.

PHOTOGRAVURE PLATES.

Issued only with the Photogravure Edition.

Glen Ridge High School, Glen Ridge, New Jersey.
Residence of C. E. Eaton, Orange, New Jersey; R. S. Stevenson, architect.
Residence of William Barr, Orange, New Jersey; R. S. Stevenson, architect.
Bloomfield Bank, Bloomfield, New Jersey; Charles Jones, architect, New York City.
Library, Newark, New Jersey. Rankin & Kellogg, architects, Philadelphia. The following views are given: Interior View of Stairway Hall; View in Reading-room; View in Distributing-room.

MOSAICS.

IN Central New York a firm of architects recently offered to plan and superintend a $350,000 courthouse at Utica for nothing, except $500 for plans made in competition, and "bids" received in Syracuse for five stations ranged from 2½ to 4½ per cent.

STATE Builders' Exchanges were recently organized in the States of Texas and Ohio. In the former, the exchanges in San Antonio and Galveston combine; in the latter, those of Cleveland, Cincinnati, Toledo, Columbus, Dayton and Youngstown.

A NEW edition of Crane & Co.'s circular, giving lists, dimensions, etc., of flanged fittings and gate valves for steam pressure up to 125 pounds, has been issued. The measurements have in some cases been changed so that it is necessary for architects or others to have access to one of these circulars in completing plans for piping. Crane & Co. will send the circular upon request, and as in all like correspondence, the mention of this journal in connection with the information asked for will confer a favor that is appreciated to a much larger degree than the trouble it costs to make it.

MR. FRANK G. BRIGGS, F. R. I. B. A., of the firm of Briggs & Volstenholme, architects, of Liverpool, England, has just concluded a visit to the cities of the United States, where he has spent some time in inspecting building methods, visiting the cities of New York, Washington, Boston, Philadelphia and Chicago. Mr. Briggs was accompanied by a client, Mr. Young, and the visitors expressed their appreciation of the uniform courtesy with which they were received by architects generally, and the exceptional degree of interest taken in their mission and facilities offered for carrying it to a satisfactory conclusion.

As a result of a final competition between six architects, plans for the National Home for Disabled Volunteer Soldiers, to be erected near Johnson City, Tennessee, have been accepted from Joseph H. Freedlander. The announcement was made July 11, and after consultation with Gen. John T. Richards, of Maine, the Superintendent of Construction, Mr. Freedlander will proceed with the working drawings. The object is to provide a home for 2,500 volunteers, both of the Union and Confederate armies of the Civil War and of all other wars in which the United States has been engaged, and the plans as already prepared call for the expenditure of $1,000,000.

IN asking American architects and decorators to contribute to the first international exhibition of modern decorative art at Turin in 1902, the directors graciously declare: "It is well known to us that the esthetic revival in architecture and house decoration has reached in North America the highest degree of development through the inspiration of eminent artists and the work of intelligent manufacturers." They want to show the modern house and its decorative elements: Oil or frescoed sketches of ceilings, friezes, panels, plastic or figured decoration, doors, windows, pottery, glass, mosaics, carpets, tapestries, galoons, lace, embroidery, table linen, wall papers, leather and imitations, basket work, metals, arms, jewels, furniture, prints, bookbindings, fire-dogs, etc. Dr. L. Roversi, 35 Broadway, is secretary of the American committee.

Inland Architect: GENTLEMEN,—I send you herewith a matter that concerns us all. I am just in receipt of the following letter from my brother in Cincinnati:

Mr. Reuben H. Warder, of this city, has been appointed superintendent of Lincoln Park. He was superintendent of our parks until quite recently when, simply for political reasons, he was deposed, and a much inferior man put in his place. I congratulate Chicago upon obtaining him for the position, for he is admirably equipped for the place. I have known him for a number of years. His father, Dr. Warder, lived at North Bend, just below the city, and was foremost in all matters pertaining to the culture of fruits, trees, etc. I hope you will meet Mr. Warder, and I am sure you will be very much pleased to know him.

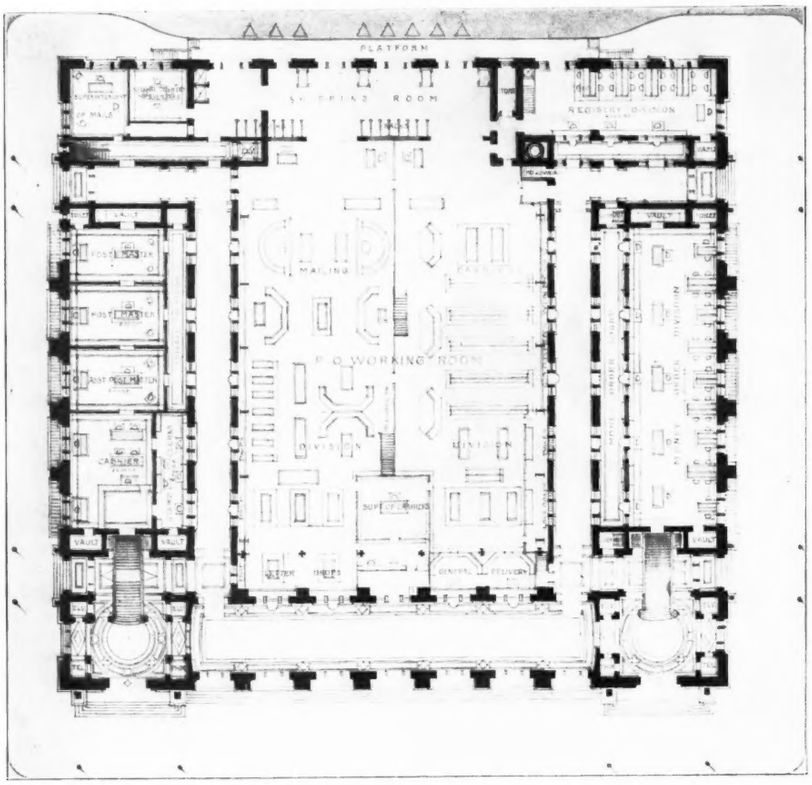
(Signed) HERBERT JENNEY, Cincinnati, Ohio.

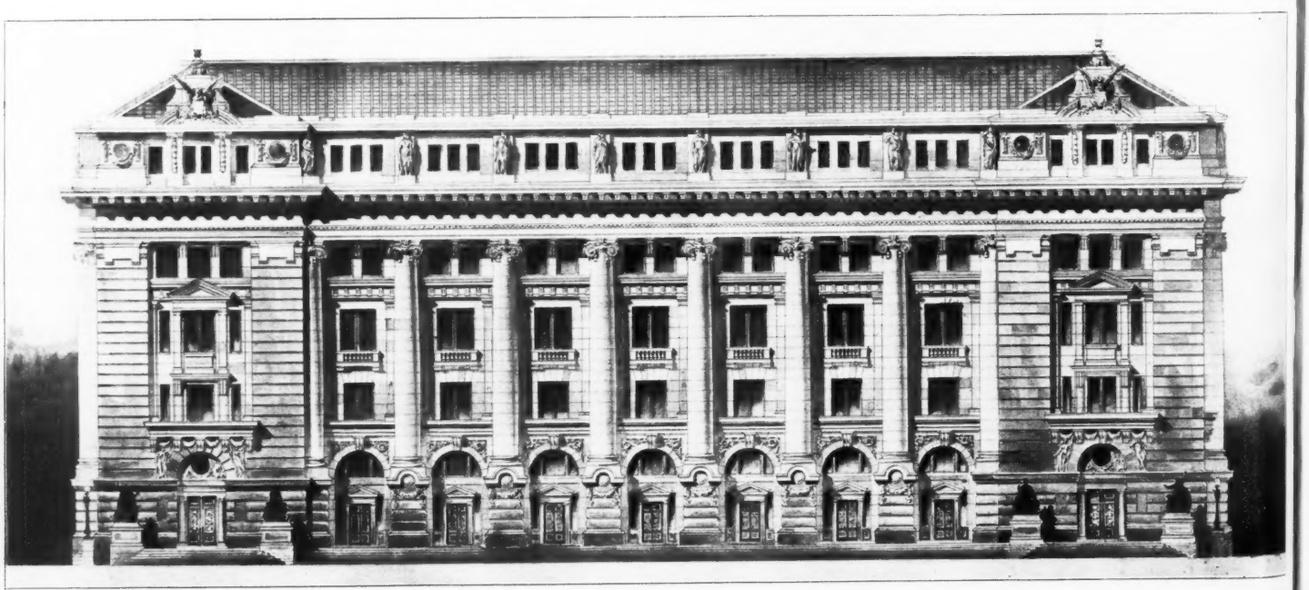
Very respectfully, W. L. B. JENNEY.

ONE of the most influential journals devoted to hotel interests gives voice to a growing desire among hotel men throughout the country. It asserts that there is a legitimate and increasing demand for "hotel architects"—architects who have made a special study of planning and designing hotels. There are scarcely two dozen architects in the Union who have devoted any considerable time to the special study of hotel construction, to planning, designing and the hundreds of details which contribute to the creation of a perfect modern hotel. Here indeed is a field which may well challenge the careful attention of young architects. Take the problems touching upon the cold-storage building construction, for instance. Here is a class of building which has multiplied in numbers in the United States during the past ten years to an enormous extent. What does the average architect know about planning such a structure? This class of work from an architectural and an engineering standpoint forms an entire professional field by itself. Of brewery construction and the planning of mills, factories and various sorts of industrial plants and buildings, the same thing is true.

VERY soon, at a little distance from Philadelphia, on the West Chester Railroad, the nucleus will be established of an association which has not in all time had its counterpart among the myriad of social and industrial organizations which have sprung up full blown, or half blown, with the purpose of solving the problem of worldly happiness. While business and professional men, craftsmen and laborers of the superior type are interested, the prime mover is William L. Price, the architect, whose dwelling is one of the finest in the pretty suburb of Overbrook. It is to be an industrial association in the highest sense of the phrase. The proposition is to produce all that is needed to make home pleasing and elegant and esthetic in accordance with the highest art forms, and yet with a lively view to the practical and utilitarian; and, most important of all, to produce it by honest hand processes, without the shams and deceptions and imitations which mark almost all the machine production of the day in the interests of mere profit. Mr. Price is himself an enthusiast in the matter of artistic furniture. He is an expert amateur woodcarver, and in his house at Overbrook has fine specimens of his "art work done for art's sake." It is probable, therefore, that the initial industry will be the making by hand of that type of furniture.

A STRIKING novelty about the exposition at Buffalo is the pictorial effect, carefully designed and successfully executed, in the construction, grouping and general setting of the buildings. Attention has been given heretofore to artistic effects in detail and in arrangement, but this is the first attempt to make an actual picture of an exposition, not appealing to the eye and the esthetic sense alone, but expressing in external form and color its character and significance. It was a venturesome undertaking, says the New York *Mail*, and its success, which will add a potent attraction to the Pan-American Exposition, is due to the ability of those employed upon it, and the freedom with which they were allowed to work out their plans. There were no competitive designs for the whole or for any part, and no prizes or special inducements were offered to provoke emulation or stimulate rivalry; but a board of architects was chosen, composed of men of proved capacity and established reputation, and they were left to work out plans and direct their execution without interference from committees or managers. The result has been a notable lack of friction or delay and general satisfaction. A scheme having been laid out for the grounds and buildings, and general features of the architectural plan having been adopted, with a view to ultimate harmony of effect, the designing of the various structures was assigned to different members of the board, while its president took charge of the setting and decoration of the whole. A competent sculptor was selected to plan and direct the plastic adornment of grounds and buildings in conformity with the general purpose, and a painter of exceptional ability in producing decorative effects was appointed to devise and apply a scheme of color to the colossal picture. The result is a remarkable triumph of the principle of coöperation between large-minded and capable men over what can be accomplished by competitive effort and professional rivalry. From the beginning the architects and artists planned and wrought together, with a purpose that all understood and all were equally zealous to fulfill. Much has been written and much more will be written about the gigantic work of art that has been executed in the vicinity of Niagara Falls—its meaning and its beauty—but what it best illustrates is the value of expert talent and training left to work untrammeled, when artistic results are the objects to be attained.





COMPETITION DESIGN FOR UNITED STATES POSTOFFICE, COURTHOUSE AND CUSTOMHOUSE, CLEVELAND, OHIO.

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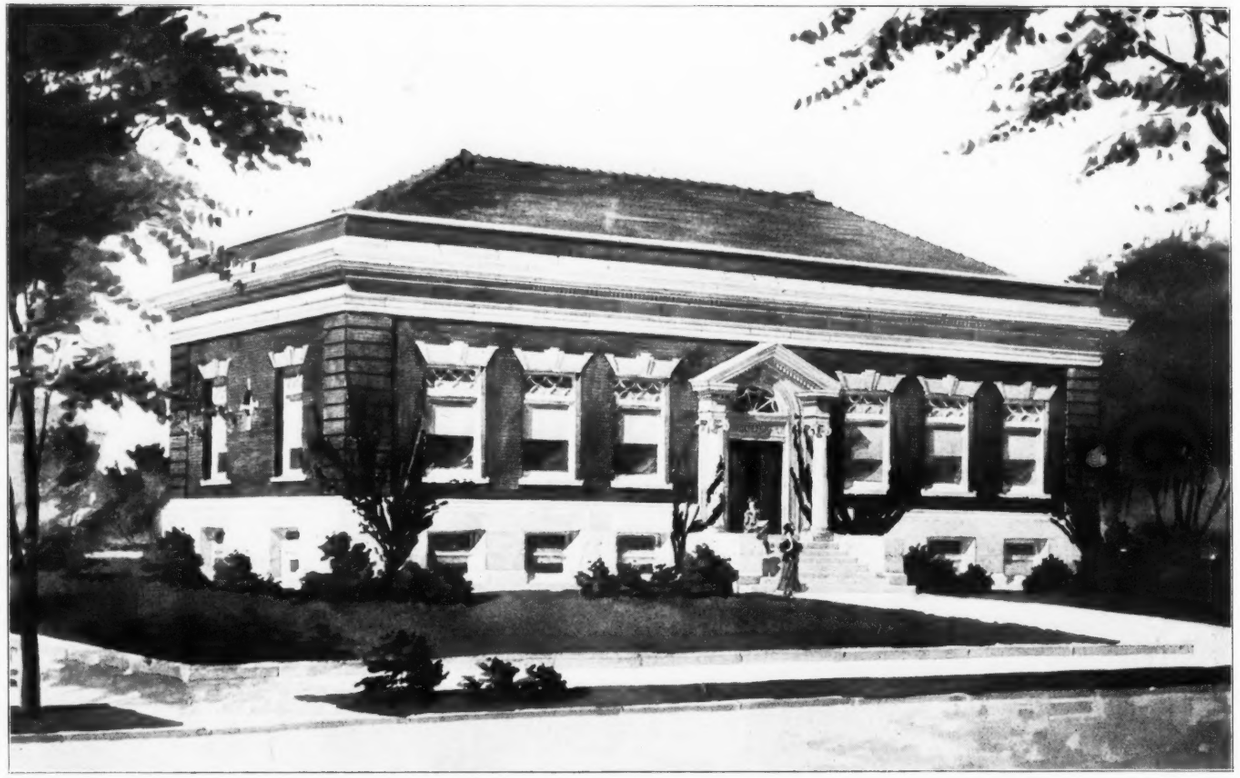

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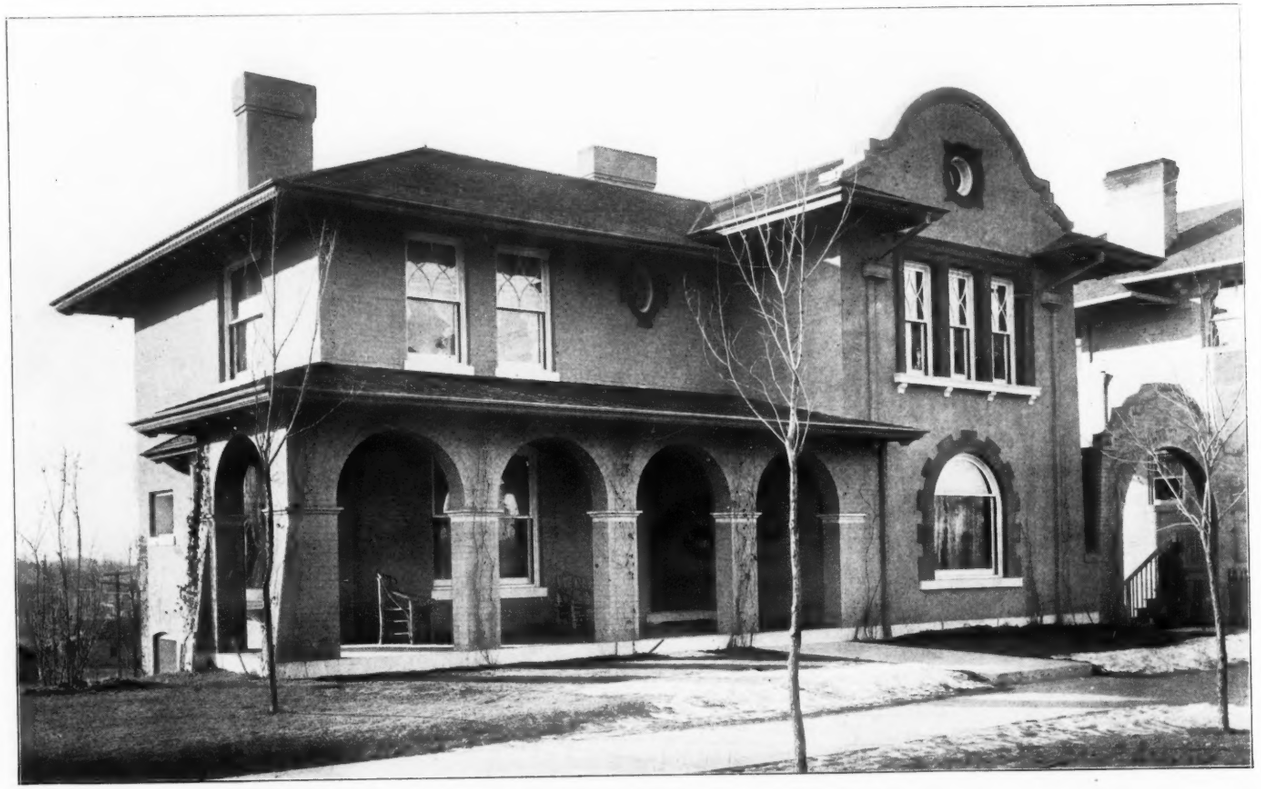

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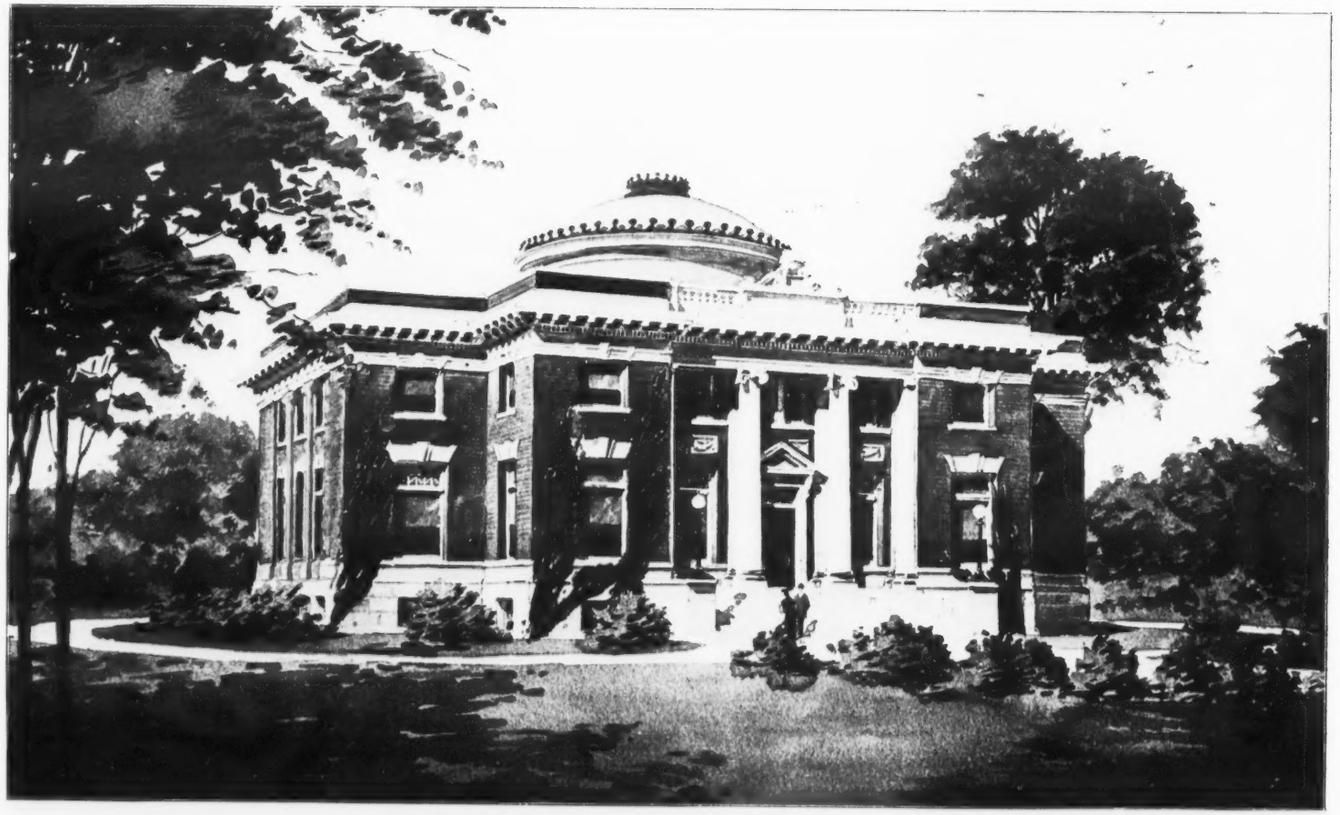

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FIRST FLOOR PLAN.

THE WASHINGTON SCHOOL, EVANSTON, ILL.

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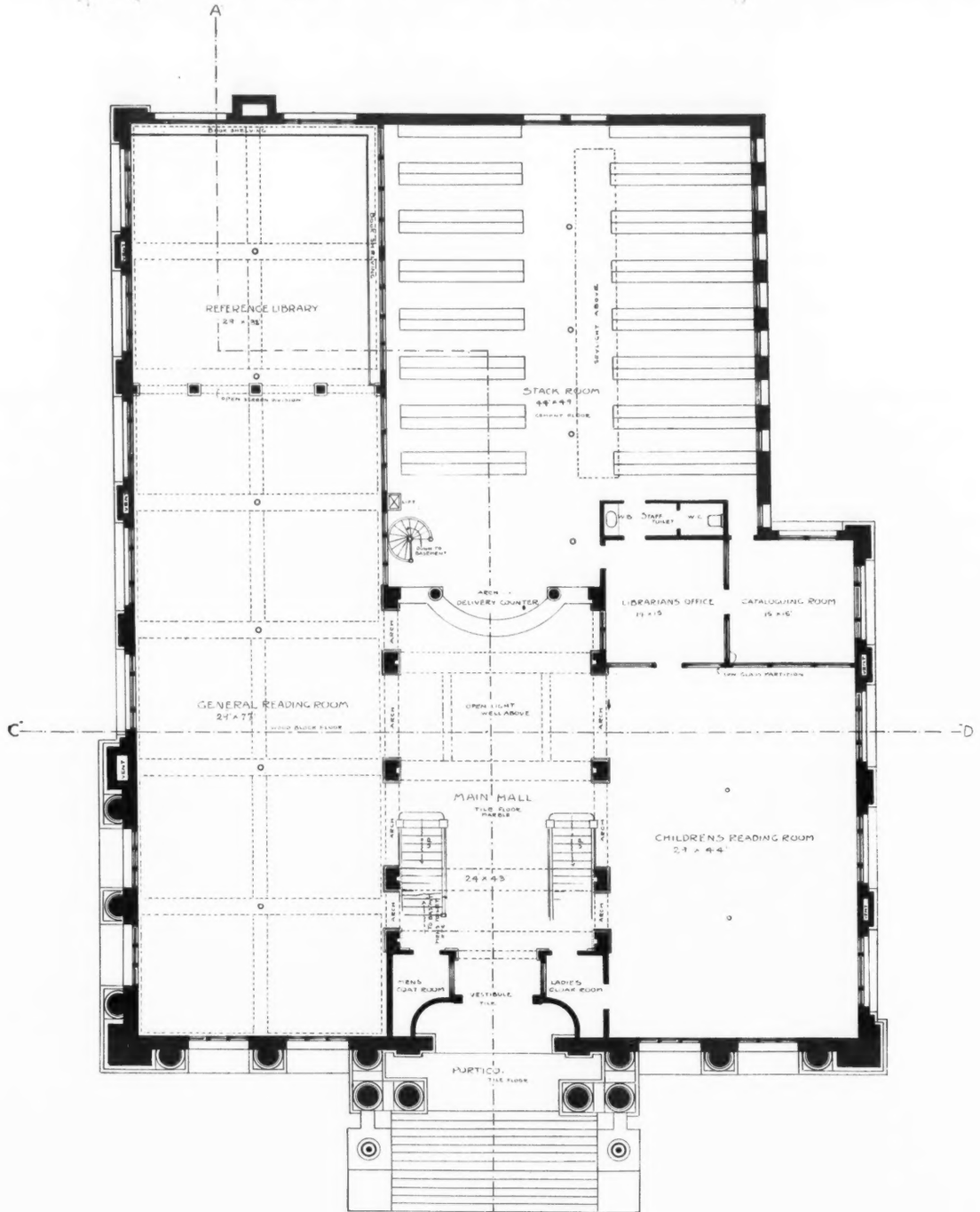
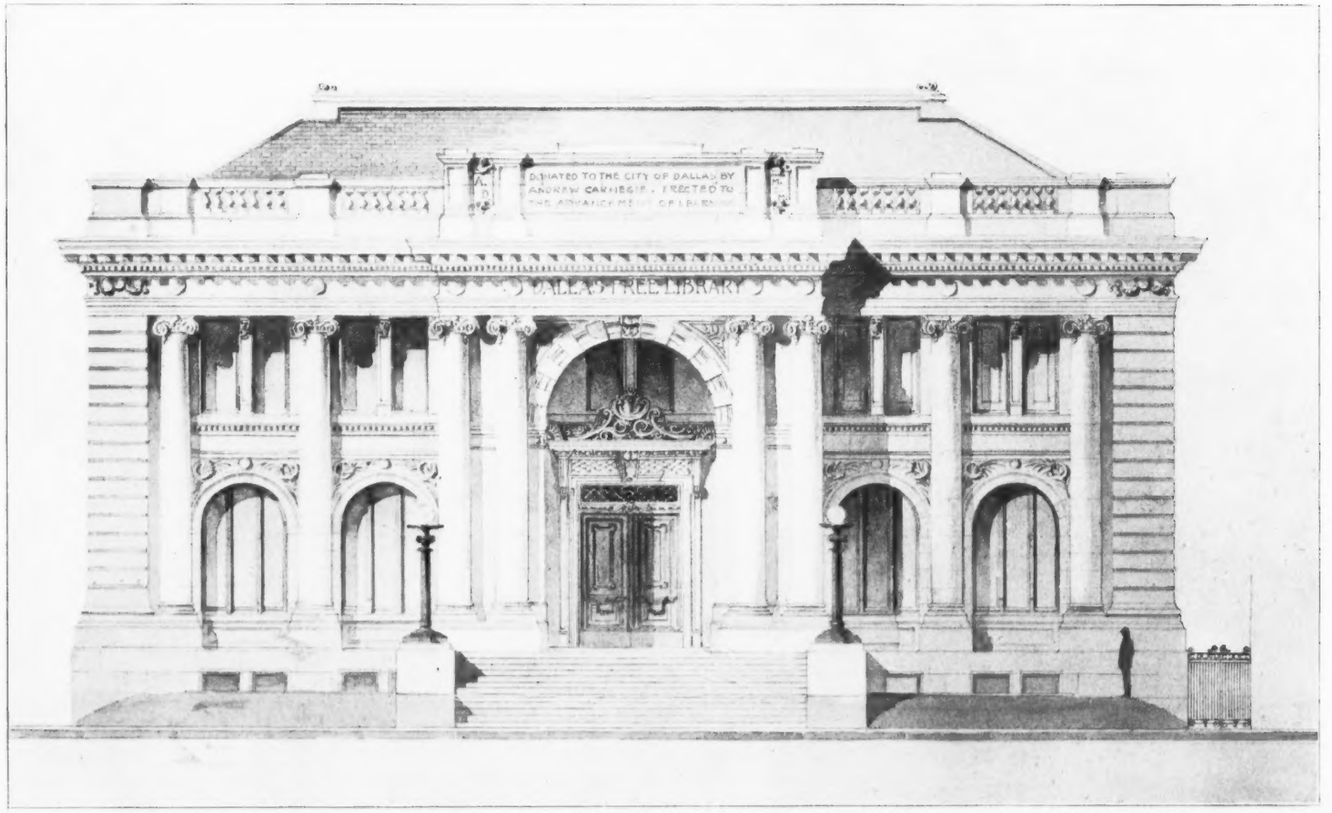

A
C
D
REFERENCE LIBRARY
STACK ROOM
44'x49'
SKYLIGHT ABOVE
LIFT
STAFF TOILET
W.C.
DELIVERY COUNTER
LIBRARIANS OFFICE
CATALOGUING ROOM
GENERAL READING ROOM
24'x77'
OPEN LIGHT WELL ABOVE
MAIN HALL
TILE FLOOR
MARBLE
CHILDRENS READING ROOM
24'x44'
24'x43'
MENS COAT ROOM
VESTIBULE
LADIES CLOAK ROOM
PORTICO
TILE FLOOR

FIRST FLOOR PLAN.



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